

MASTER COPY

IF YOU NEED A BOOK, THE PRINTER'S
ASSISTANT WILL MAKE YOU A COPY

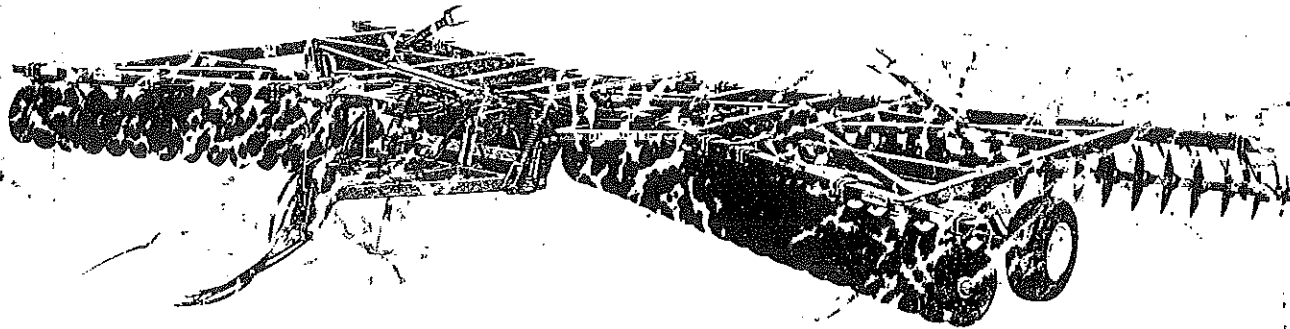
OWNER'S MANUAL

13

DO NOT TAKE FROM FILE

1950

With Serial
No 3436 On



FLEX-WING TANDEM DISC HARROW

STANDARD GANG

1952, 1955, 1956, 1959,
1960, 1963, 1970, 1973,

ROCK FLEX

1964, 1965, 1966, 1968,
1969, 1976, 1979

KRAUSE

Warranty

KRAUSE PLOW CORPORATION

HUTCHINSON, KANSAS

THE KRAUSE PLOW CORPORATION, HUTCHINSON, KANSAS, EXPRESSLY WARRANTS EACH NEW PRODUCT MANUFACTURED BY IT TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND SERVICE FOR A PERIOD OF ONE YEAR AFTER DELIVERY TO THE ORIGINAL RETAIL PURCHASER OR FIRST USER OF THE PRODUCT.

KRAUSE'S OBLIGATION UNDER THIS WARRANTY IS LIMITED TO REPAIRING AND/OR REPLACING, AT ITS OPTION, ANY PART OR PARTS WITHIN THE APPLICABLE ONE YEAR PERIOD, AS SET OUT ABOVE, WHICH SHALL BE RETURNED BY THE OWNER OR ANY KRAUSE AUTHORIZED DEALER TO THE FACTORY AND WHICH UPON EXAMINATION SHALL DISCLOSE TO KRAUSE'S SATISFACTION TO BE DEFECTIVE.

KRAUSE MAY, AT ITS OPTION, ELECT TO GRANT ADJUSTMENTS IN THE FIELD THROUGH AN AUTHORIZED REPRESENTATIVE AND MAY THEREBY ELECT TO WAIVE THE REQUIREMENT THAT PARTS BE RETURNED TO KRAUSE'S FACTORY.

A NEW WARRANTY PERIOD IS NOT ESTABLISHED FOR REPLACEMENTS. REPLACEMENTS ARE WARRANTED FOR THE REMAINING PORTION OF THE ONE YEAR ORIGINAL WARRANTY PERIOD. THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS UNDER THIS WARRANTY WILL BE MADE WITHOUT CHARGE TO THE OWNER EXCEPT FOR TRANSPORTATION.

KRAUSE DOES NOT WARRANT DISC BLADES, TIRES, CHISEL SHANKS, HYDRAULIC CYLINDERS, ACCESSORIES AND OTHER PARTS NOT MANUFACTURED BY IT BUT SUPPLIED WITH OR AS A PART OF ITS PRODUCTS. KRAUSE WILL, HOWEVER, OBTAIN AND PASS ON ANY ADJUSTMENTS PROVIDED BY THE MANUFACTURERS OF SUCH PARTS UNDER THESE MANUFACTURER'S WARRANTIES.

THE PROVISIONS OF THIS WARRANTY DO NOT APPLY TO ANY PRODUCT OR PARTS WHICH HAVE BEEN SUBJECT TO MISUSE, NEGLIGENCE OR ACCIDENT, OR WHICH HAVE BEEN REPAIRED OR ALTERED OUTSIDE OF KRAUSE'S FACTORY IN ANY WAY SO AS IN THE JUDGEMENT OF KRAUSE TO AFFECT ADVERSELY ITS PERFORMANCE OR RELIABILITY. NEITHER DOES THIS WARRANTY APPLY TO NORMAL MAINTENANCE SERVICE AND PARTS, OR TO NORMAL DETERIORATION DUE TO WEAR AND EXPOSURE.

TO THE EXTENT ALLOWED BY APPLICABLE LAW, THIS WARRANTY IS EXPRESSLY IN LIEU OF OTHER WARRANTIES, EXPRESSED OR IMPLIED, IN FACT OR BY LAW, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES OF REPAIR OR REPLACEMENT AS SET FORTH ARE THE ONLY REMEDIES UNDER THIS WARRANTY. KRAUSE DISCLAIMS ANY OBLIGATIONS OR LIABILITY FOR LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS OR DIRECT, CONSEQUENTIAL, SPECIAL OR INCIDENTAL DAMAGES. THIS WARRANTY IS IN LIEU OF ANY OTHER OBLIGATION OR LIABILITY OF KRAUSE OF ANY NATURE WHATSOEVER BY REASON OF THE MANUFACTURE, SALE, LEASE OR USE OF SUCH PRODUCTS AND KRAUSE NEITHER ASSUMES, NOR AUTHORIZES ANYONE TO ASSUME FOR IT, ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH SUCH PRODUCTS.

1950 SERIES WING TANDEM
DEALER PREDELIVERY CHECK
TO BE CHECKED BY DEALER

CUSTOMER _____ DATE _____

ADDRESS _____

DEALER _____

MODEL NUMBER _____ SERIAL NUMBER _____

DEALER CHECK:

1. _____ Check to see that all rocker shaft bolts are tight and pins are in place.
2. _____ Check to see that hydraulic cylinders are full of oil (air bled out of cylinders). Clevis pins with hairpin clips should be in place.
3. _____ Examine hydraulic hoses to see that they are protected from damage.
4. _____ Bolts attaching the spindle weldments to the rocker shaft should be tight. Check to see that bearings have been adjusted and greased.
5. _____ Check lug bolts holding wheels to the hub to see that they are torqued from 90 to 95 ft. lbs.
6. _____ The correct size tire, 11.L X 15, 6-ply with 32 P.S.I. or 11.L X 15 8-ply with 36 P.S.I. should be on the implement.
7. _____ Check to see that bolts attaching hitch to frame and clevis weldment to hitch are in place and tightened.
8. _____ Jack should be operational for support of tongue when implement is not attached to a tractor.
9. _____ Wings are attached with special pins and secured with roll pins.
10. _____ Wing and road lock are correctly installed and operate satisfactorily.
11. _____ Restrictors are installed in wing lift cylinder rod end ports.
12. _____ All decals are in place per page A16 of this owner's manual.
13. _____ Customer review sheet filled out and signed.

DELIVERED BY _____

DATE _____

1950 SERIES WING TANDEM
CUSTOMER REVIEW SHEET

CUSTOMER _____ DATE _____

ADDRESS _____

DEALER _____

MODEL NUMBER _____ SERIAL NUMBER _____

1. _____ Owner's manual provided.
2. _____ Warranty card filled out and mailed.
3. _____ Review safety warnings and cautions as listed in this owner's manual.
4. _____ Review recommended maximum road speed, width, and height for implement.
5. _____ Review field operational speeds, horsepower, depth, and rock conditions.
6. _____ Demonstrate the proper use of road and wing locks.
7. _____ Explain hydraulic cylinder stroke control for depth control of tillage tool.
8. _____ Review limitations of additional weight and transport speed when adding attachments.
9. _____ Explain the importance of maintaining the tools through lubrication, checking that bolts are kept tight, and replacement of worn or broken parts.
10. _____ Recommend that a safety chain be used with the tool.
11. _____ Check wheel lug bolts frequently until they become set.

DEALER _____ DATE _____

CUSTOMER _____ DATE _____

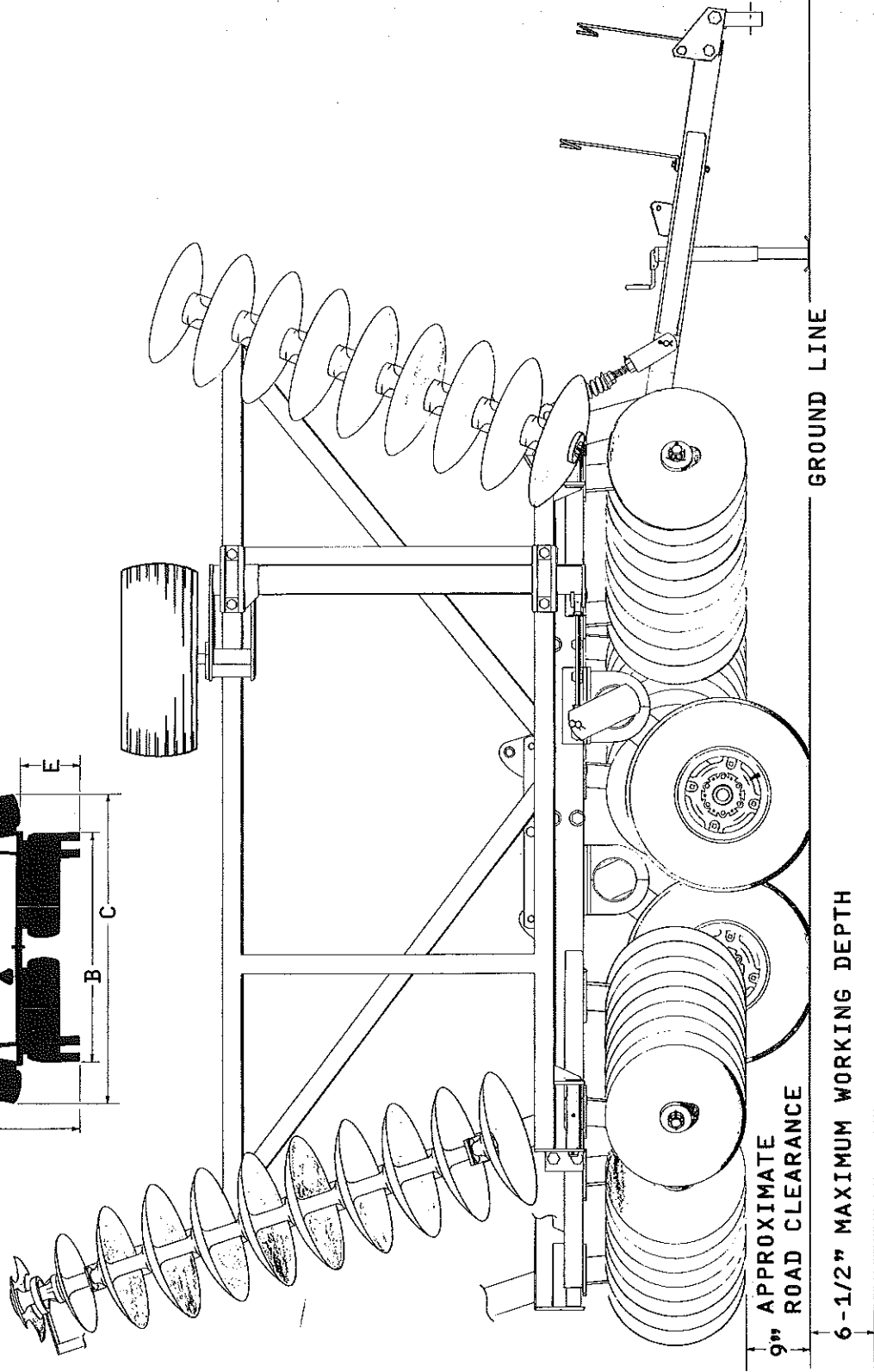
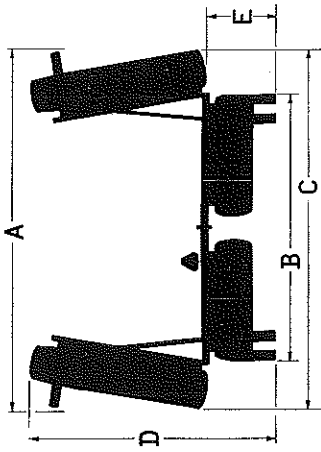
CONTENTS

DEALER PREDELIVERY CHECK SHEET		SPRING LOADED SCRAPERS	P26
CUSTOMER REVIEW SHEET		TRASH BARS	P27
TRANSPORT INFORMATION	2	HYDRAULIC HOSE GROUPS:	
SPECIFICATIONS	3	Wing Lift System	P28
GENERAL INFORMATION PAGE	6	Depth Control System	P30
<u>OPERATING SECTION</u>		HYDRAULIC CYLINDERS:	
ABOUT YOUR TANDEM DISC	01	Prince 4" X 8" (Tongue Leveling)	P31
PREPARING FOR OPERATION	01	Prince 4" X 8" 3-Port (Depth)	P32
HITCHING & UNHITCHING	02	Prince 4" X 32" (Wing Lift)	P33
Hitching To The Tractor	02	Prince 4" X 8" (Depth Control)	P34
Unhitching From The Tractor	03	DECAL PLACEMENT PAGE	P35
TRANSPORTING	03	<u>ASSEMBLY SECTION</u>	
Road Lock Assemblies	03	SAFETY	A2
Raising The Wings	04	ASSEMBLY AREA	A2
Lowering The Wings	04	PART LOCATIONS	A2
Transport Safety	04	MODEL NUMBER	A2
FIELD ADJUSTMENTS	06	CENTER FRAME HALVES	A3
Leveling The Frames	06	ROCKER SHAFTS & HALF CLAMPS	A4
Front To Rear Leveling	06	CENTER LINKAGE ASSEMBLY	A5
Side To Side Leveling	06	CENTER DUAL HUBS	A5
Disc Gang Spacing	07	WHEELS & TIRES	A6
Scraper Adjustments	08	TONGUE	A6
Trash Bars	08	TONGUE STAND	A7
Spring Scraper Adjustments	09	ADJUSTMENT SCREWS	A7
FIELD OPERATION	010	HITCHING CLEVIS	A7
Working Depth	010	HOSE CARRIERS	A7
Controlled Depth	010	HYDRAULICS	A8
Turning In The Field	010	ROAD LOCKS	A9
Flexibility	010	WING FRAMES	A9
SERVICING	011	WING ROCKER SHAFTS	A10
General Maintenance	011	WING HUBS	A10
Lubrication	011	ROCKER SHAFT ADJUSTMENT LINKS	A10
Storage	012	WING LIFT CYLINDER LUGS	A10
Hydraulics	012	WING LOCK ARMS	A11
Disc Gangs	012	WING EXTENSIONS	A11
REPAIR PARTS	013	TYPICAL DISC GANG INFORMATION	A11
POSSIBLE REMEDIES FOR FIELD PROBLEMS	014-018	DISC GANGS	A12
<u>PARTS SECTION</u>		TIE RODS	A13
FRAMES	P2	DISC GANG ATTACHMENT	A13
TONGUE, HITCH & JACK	P4	FLEX GANG SCRAPERS	A14
WING FRAMES & EXTENSIONS	P6	RIGID GANG SCRAPERS	A15
CENTER ROCKER SHAFTS	P7	SPRING LOADED SCRAPERS	A16
WING ROCKER SHAFTS	P8	ROCK FLEX TRASH BARS	A17
HUB ASSEMBLY	P9	DECALS	A18
HUB ASSEMBLY	P10	PLACEMENT PAGES:	
DISC BLADES, WHEELS & TIRES	P12	MODEL PAGE MODEL PAGE	
ROAD LOCK ASSEMBLIES	P13	1952 A20 1966 A36	
TIE ROD ASSEMBLIES	P14-P16	1955 A22 1968 A38	
SPACER SPOOLS	P18	1956 A24 1969 A40	
RIGID BEARING ARMS	P19	1959 A26 1970 A42	
MIDDLE BEARING ARM KITS	P20	1960 A28 1973 A44	
ROCK FLEX BEARING ARMS	P22	1963 A30 1976 A46	
RIGID SCRAPERS	P23	1964 A32 1979 A48	
EXTENSION SCRAPER ASSEMBLIES	P24	1965 A34	
		SAFETY FIRST	Back Cover

TRANSPORT INFORMATION

MODELS

	A	B	C	D	E
1952, 1954, 1955, 1964, 1967	14'6"	12'6"	16'0"	11'0"	3'0"
1956, 1958, 1959, 1965, 1968	13'0"	12'6"	16'0"	12'0"	3'0"
1960, 1962, 1963, 1966, 1969	11'6"	12'6"	16'0"	13'6"	3'0"
1970, 1972, 1973, 1976, 1979	11'6"	12'6"	16'0"	15'0"	3'0"



SPECIFICATIONS

M O D E L	TOTAL NO. OF DISC BLADES INCLUDING EXTENSIONS	SPACING	DISC BLADE SIZE	ASAE CUT WIDTH		CUT WIDTHS		WHEEL SPACINGS	
				Ft. & In.	Metres	CENTER	WING	CENTER	WING
1952	70	9-1/8"	22"	25' 2"	7.65	12'	6'6"	88"/128"	236"/ *
1954	74	8" F 9-1/8" R	20" or 22"	25' 2"	7.65	12'	6'6"	88"/128"	236"/ *
1955	78	8"	20" or 22"	24' 10"	7.55	12'	6'5"	88"/128"	236"/ *
1956	78	9-1/8"	22"	27' 6"	8.40	12'	7'9"	88"/128"	236/278
1958	82	8" F 9-1/8" R	20" or 22"	27' 6"	8.40	12'	7'9"	88"/128"	236/278
1959	86	8"	20" or 22"	27' 1"	8.30	12'	7'6"	88"/128"	236/278
1960	86	9-1/8"	22"	30' 10"	9.40	12'	9'5"	88"/128"	278/298
1962	90	8" F 9-1/8" R	20" or 22"	30' 10"	9.40	12'	9'5"	88"/128"	278/298
1963	94	8"	20" or 22"	30' 0"	9.15	12'	9'0"	88"/128"	278/298
1970	94	9-1/8"	22"	33' 10"	10.30	12'	10' 11"	88"/128"	278/298
1972	100	8" F 9-1/8" R	20" or 22"	33' 10"	10.30	12'	10' 11"	88"/128"	278/298
1973	106	8"	20" or 22"	33' 10"	10.30	12'	10' 11"	88"/128"	278/298

ROCK FLEX MODELS

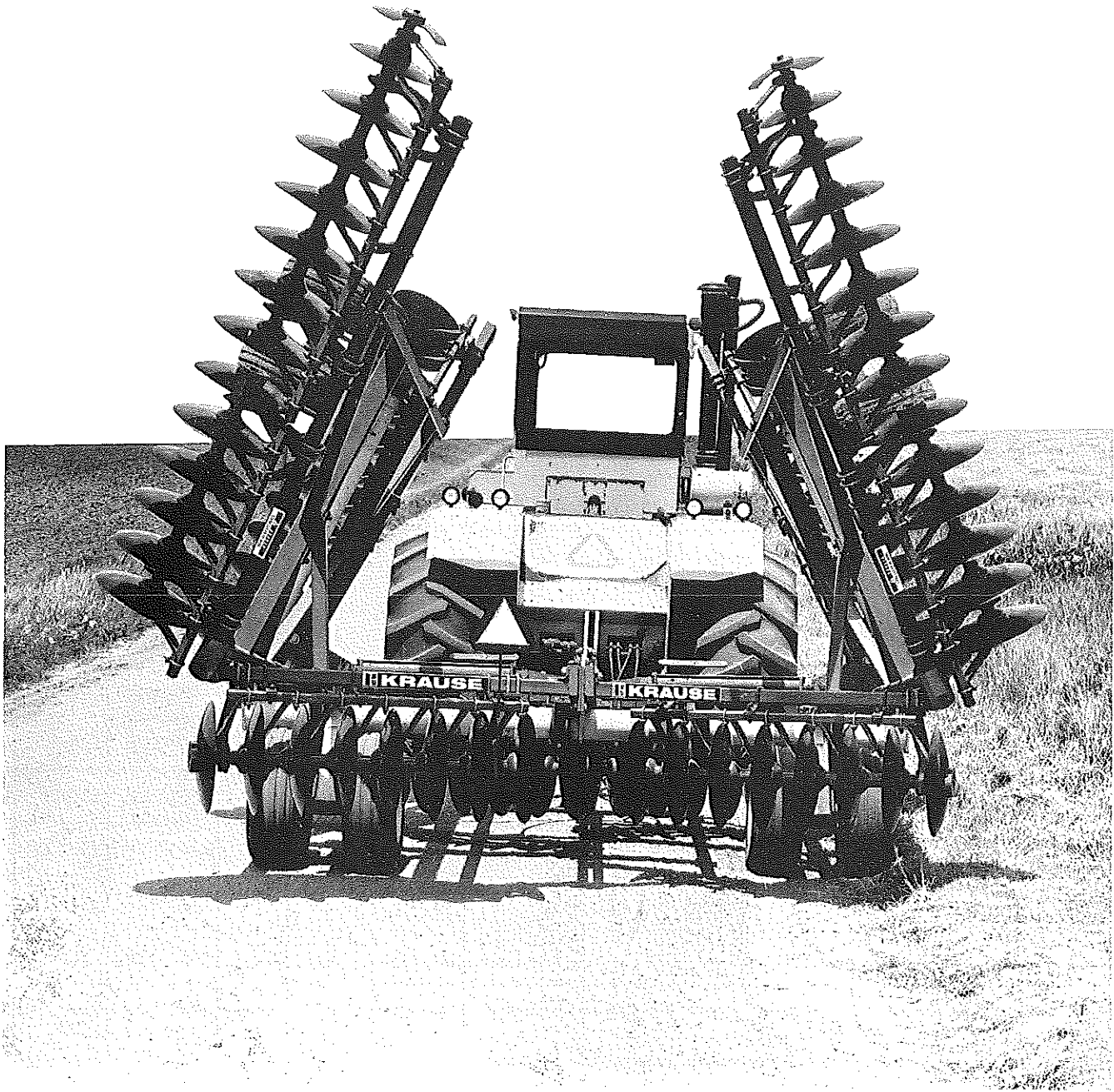
1964	70	9-1/8"	22"	25' 2"	7.65	12'	6'6"	88"/128"	236/ *
1965	78	9-1/8"	22"	27' 6"	8.40	12'	7'9"	88"/128"	236/278
1966	86	9-1/8"	22"	30' 10"	9.40	12'	9'5"	88"/128"	278/298
1967	78	8"	20" or 22"	24' 10"	7.55	12'	6'5"	88"/128"	236/ *
1968	86	8"	20" or 22"	27' 1"	8.30	12'	7'6"	88"/128"	236/278
1969	94	8"	20" or 22"	30' 0"	9.15	12'	9'0"	88"/128"	278/298
1976	94	9-1/8"	22"	33' 10"	10.30	12'	10' 11"	88"/128"	278/298
1979	106	8"	20" or 22"	33' 10"	10.30	12'	10' 11"	88"/128"	278/298

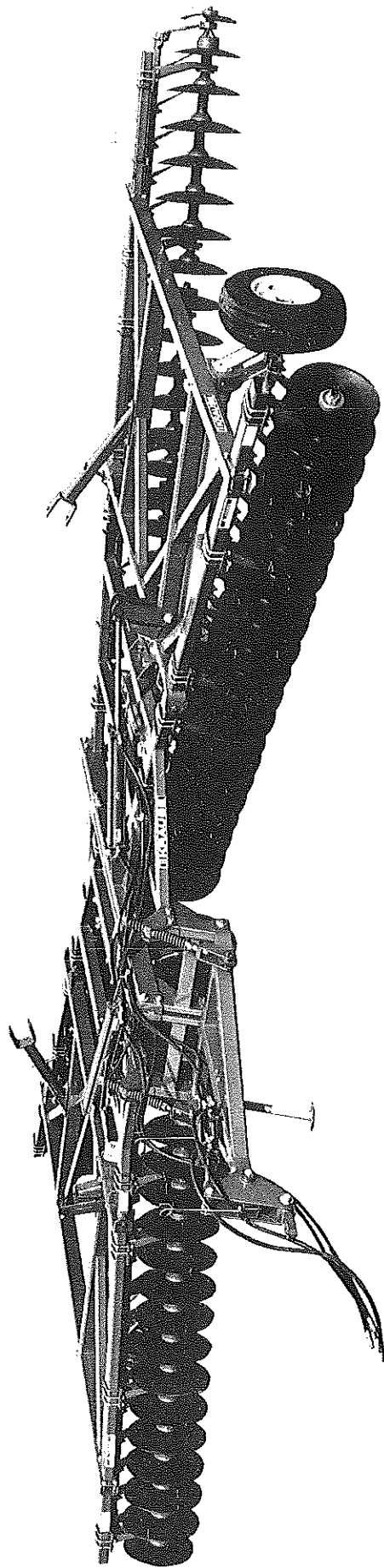
*DUAL WING WHEEL OPTION NOT AVAILABLE.

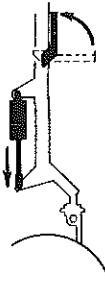
TYPICAL ALL MODELS

ALL WHEELS ARE 6 BOLT, 15 X 10.

NOTE: ADDITION OF SPIKE OR TINE ATTACHMENT MAY ADD TO THE OVERALL TRANSPORT WIDTH & HEIGHT.







EXTEND TONGUE LEVELING CYL. AND
SWING STAND UNDER TONGUE. SECURE
IN PLACE WITH HANDLE.

TONGUE
STAND

TIE ROD WRENCH
STORAGE HOLE

WING LIFT
CYLINDER

RESTRICTOR

TIE ROD NUT

-TORQUE TO 600 FT.LB.

WHEEL BOLT
-TORQUE 90 -
95 FT.LB.

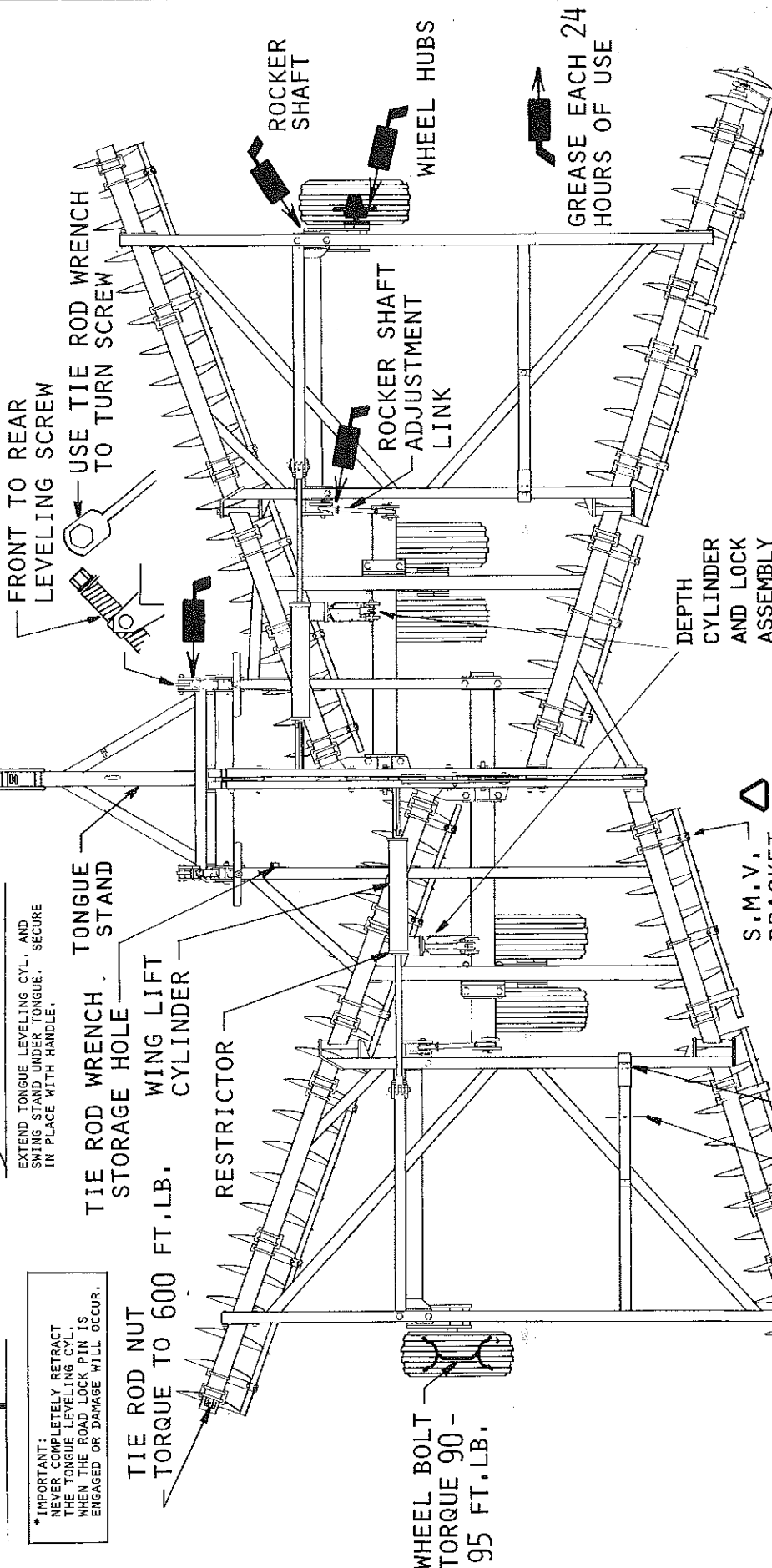
S.M.V.
BRACKET

WING LOCK
AND WING LOCK PIN

STORAGE HOLE FOR WING
LOCK PIN.

OPERATING INFORMATION

READ OPERATING INSTRUCTIONS SECTION IN
THIS BOOK FOR DETAILED INFORMATION



ROCKER
SHAFT

WHEEL HUBS

GREASE EACH 24
HOURS OF USE

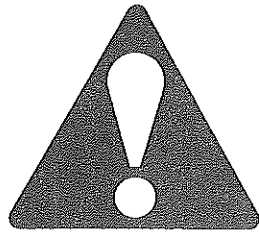
ROCKER SHAFT
ADJUSTMENT
LINK

DEPTH
CYLINDER
AND LOCK
ASSEMBLY

READ ALL SAFETY DECALS ON THE UNIT
AND READ THE SAFETY INSTRUCTIONS
ON THE BACK COVER AND THROUGHOUT
THE OWNER'S MANUAL.

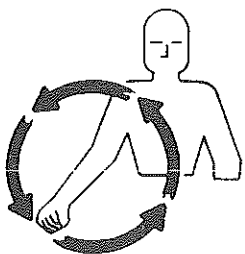
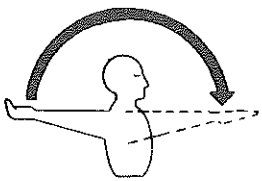
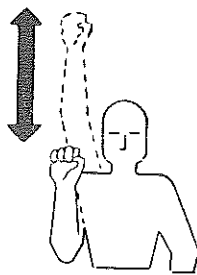
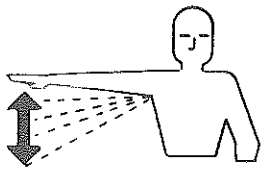
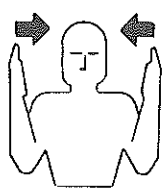
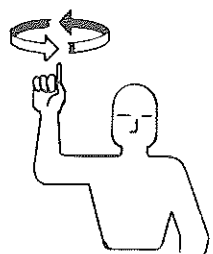
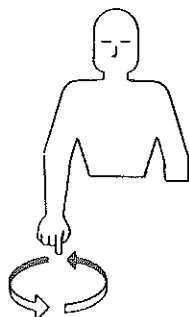
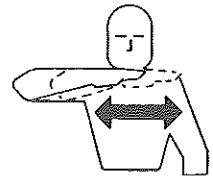
OPERATING SECTION

SAFETY ALERT SYMBOL



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

TEN MOST COMMON HAND SIGNALS USED IN THE FIELD

 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 INSTRUCTIONS

 READ ALL THE SAFETY DECALS ON THE HARROW AND REVIEW THE SAFETY FIRST SUGGESTED ON THE BACK COVER OF THE MANUAL TO REFRESH YOUR MEMORY. WATCH FOR THE SAFETY SYMBOL AND READ THE INFORMATION. THIS IS FOR YOUR OWN PROTECTION.

ABOUT YOUR TANDEM DISC

This tandem disc was designed for medium primary to finish work and can be pulled over a wide range of field speeds ranging from 3.5 to 6 M.P.H., with maximum working depth under normal conditions of 6.5 inches. Do not exceed 5 M.P.H. in rocky conditions.

Horsepower requirement will be about 6 HP per foot of cut in average soil conditions (check Krause Disc Harrow Selection Guide for additional information).

It is advised adding of attachments be limited to Krause original equipment only.

 **CAUTION:** ADDING OF ADDITIONAL WEIGHT COULD CAUSE FRAME OR AXLE FAILURES RESULTING IN LOSS OF CONTROL DURING TRANSPORT.

PREPARING THE HARROW FOR OPERATION

Inspect the new harrow before operating. The wings should be down, the road locks engaged, the tongue jack down and the extended hydraulic cylinders pinned and full of oil.

 **DANGER:** BE SURE ROAD LOCK PIN IS IN PLACE BEFORE WORKING AROUND THE DISC HARROW. ANY HYDRAULIC FAILURE COULD CAUSE THE UNIT TO DROP SUDDENLY, CAUSING PERSONAL INJURY.

Inspect for any loose bolts.

Check disc gangs for tight tie rod nuts and clinched cotter pins.

Look at the top of each bearing arm and check to see if it is flush with the bottom of the gang beams. See page A 13 "DISC GANGS".

Check tire pressure. Inflate 6-ply tires to 32 PSI and 8-ply to 36 PSI.

 **CAUTION:** FREQUENTLY CHECK TO SEE THAT THE WHEEL LUG BOLTS ARE TORQUED 90 TO 95 FT. LBS., PARTICULARLY DURING THE INITIAL TRANSPORTING AND OPERATION OF THE TILLAGE TOOL. THE BOLTS MAY WORK LOOSE, RESULTING IN THE LOSS OF A WHEEL AND SUBSEQUENT LOSS OF CONTROL OF THE TOOL AND/OR TRACTOR.

Make sure that all grease zerk locations have been sufficiently greased. Grease zerks will be found on the rocker shaft bearings, rocker shaft adjustment links, tongue adjustment screws, and wheel hubs. USE EXTREME CAUTION WHEN WORKING AROUND DISC BLADES.

Inspect the hydraulic system for tell-tale leaks and loose fittings. Tighten if needed. The manufacturer of the hydraulic cylinders requests that the owners not use teflon tape as a sealer. Loose tape fragments may cause cylinder valve or O-ring leaks that can cause drifting or poor cylinder operation. MAKE SURE RESTRICTORS ARE IN THE ROD END PORT OF WING LIFT CYLINDERS.

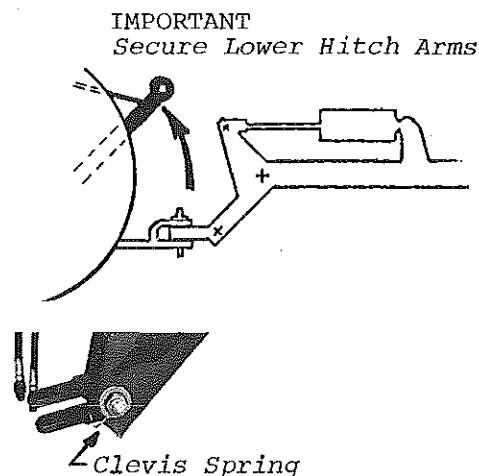
HITCHING & UNHITCHING



CAUTION: DO NOT ALLOW ANY PERSON TO STAND BETWEEN THE TRACTOR AND HARROW WHILE BACKING INTO POSITION. SUDDEN LOSS OF CONTROL COULD CAUSE SERIOUS INJURY OR DEATH TO A PERSON CAUGHT BETWEEN THE TRACTOR AND IMPLEMENT. TELL YOUR HELPER TO WAIT UNTIL YOU GIVE HIM THE SIGNAL THAT THE TRACTOR IS IN PARK OR NEUTRAL AND THE HAND BRAKE IS SET AND THE ENGINE SHUT OFF.

HITCHING TO THE TRACTOR

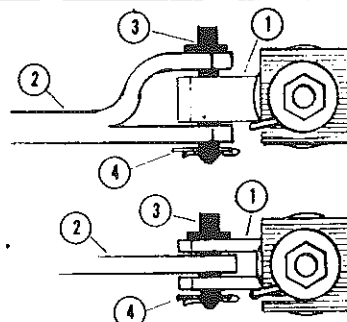
1. Position the tractor in front of the harrow.
2. Raise the lower three point hitch arms, and secure to prevent damage to the tongue.
3. Unpin the tractor drawbar to allow side to side movement.
4. Pivot the clevis of the harrow forward, held in place with the clevis spring.
5. Connect the hose couplers to the tractor.



Check tractor reservoir and fill if needed. If you are sure the harrow hydraulic systems are full of oil and free of air, (See Service Section) extend or retract the tongue leveling cylinder until the clevis is drawbar height.

Note: Do not completely retract tongue cylinder or damage may occur to road locks.

6. Attach Clevis^① to tractor Drawbar^② with Clevis Pin^③ that fits the hole size in the clevis. Make sure to Pin^④ or bolt the clevis pin to prevent loss.
7. Place tongue stand in storage position.
8. Re-pin the drawbar for transport.



CAUTION: AIR IN HYDRAULIC SYSTEM WILL ALLOW DISC HARROW OR WINGS TO DROP SUDDENLY.
DO NOT OPERATE THE WING HYDRAULICS UNTIL YOU HAVE READ THE WING LIFT AND LOCK OPERATIONS UNDER "TRANSPORTING".

UNHITCHING HARROW FROM THE TRACTOR

If the harrow is not to be used for the remainder of the day, select a good parking place that will permit the lowering of the wings. The harrow should be parked in the storage position, with the exception of unpinning the rod ends of the cylinders. If the harrow is to remain parked for storage over a long period of time, be sure to read storage suggestions. To unhitch the tractor from the harrow, place the tractor in park or neutral and set the hand brake. Go to the back of the harrow and unpin the two wing locks. Have all personnel stand clear and lower the wings. If the harrow was transported safely, the road lock pin was engaged. Check to be sure it is pinned, then extend the tongue leveling cylinder and lower the jack to the ground. Be sure to pin the jack in this position. Retract the tongue leveling cylinder until the clevis pin has no weight on the drawbar of the tractor. If the clevis pin does not loosen, it is a good sign that you are not parking on level ground and the harrow will require the tires to be chocked or blocked. With tractor in park, turn off tractor power. Relieve any pressure that might be in the implement hydraulic system by moving the tractor control lever(s) back and forth. Disconnect the harrow hoses. The tractor may be moved away from the parked implement.

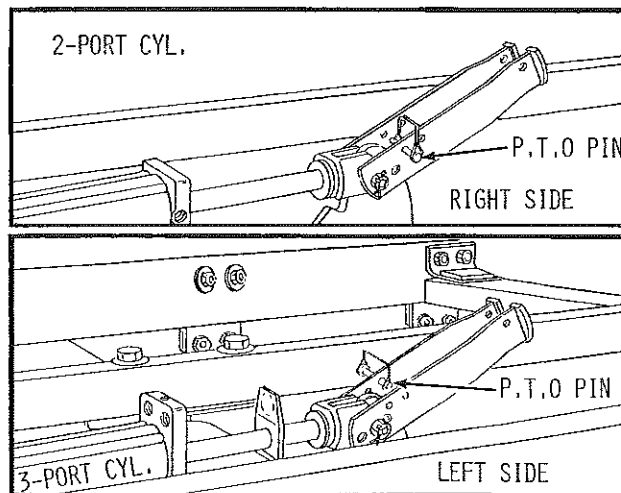
 **CAUTION:** DO NOT STAND ON OR STRADDLE A TONGUE WHEN UNHITCHING. IF ATTACHMENTS HAVE BEEN ADDED TO REAR OF UNIT, IT MAY AFFECT THE BALANCE OF THE IMPLEMENT, CAUSING THE TONGUE TO COME UP SUDDENLY WHEN UNHITCHING.

TRANSPORTING

 **WARNING:** ALWAYS USE TRANSPORT LOCK AND WING LOCKS WHEN TRANSPORTING IMPLEMENTS TO PREVENT UNIT FROM FALLING DUE TO HYDRAULIC FAILURE OR ACCIDENTAL ACTIVATION OF THE OPERATOR'S CONTROL. LOWERING OF THE TOOL DURING TRANSPORT COULD RESULT IN LOSS OF CONTROL OF IMPLEMENT AND/OR TRACTOR.

ROAD LOCK ASSEMBLIES

To release the two road lock assemblies, extend the depth cylinders to the maximum stroke. Remove the small P.T.O. pins from the lock arms and pivot the lock arms back as far as possible. To prevent damage to road lock or hydraulic cylinder while lock is in release position, replace P.T.O. pin in storage hole as shown.



RAISING THE WINGS

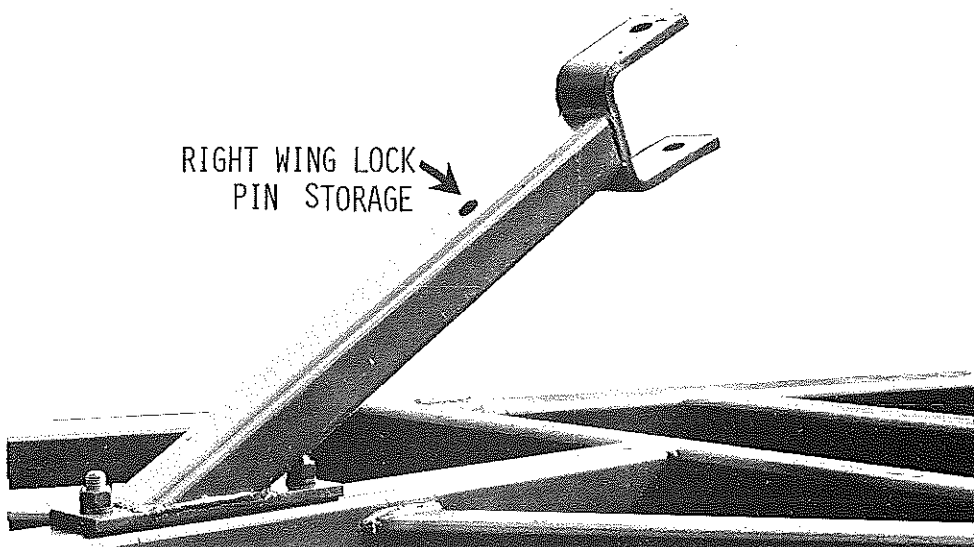
The harrow should be in the raised position with the road lock assemblies engaged. Be sure the wing locking pins are in the storage holes and not in the wing lock arm clevis. Retract the wing lift cylinders to the minimum stroke, raising the wings to the folded position with the clevis ends of the wing lock arms resting on top of the center frame. Remove the pins from the storage holes and secure the lock arms to the frame.



WARNING: ALWAYS STAND CLEAR OF WINGS WHEN THEY ARE IN RAISED POSITION. A HYDRAULIC FAILURE OR ACTIVATION OF HYDRAULIC CONTROLS BY SOMEONE COULD RESULT IN SERIOUS INJURY TO ANYONE UNDER THE WINGS.

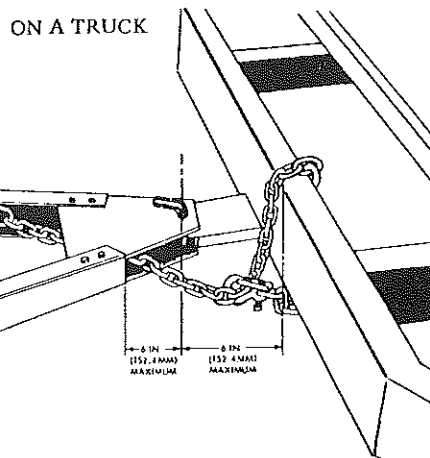
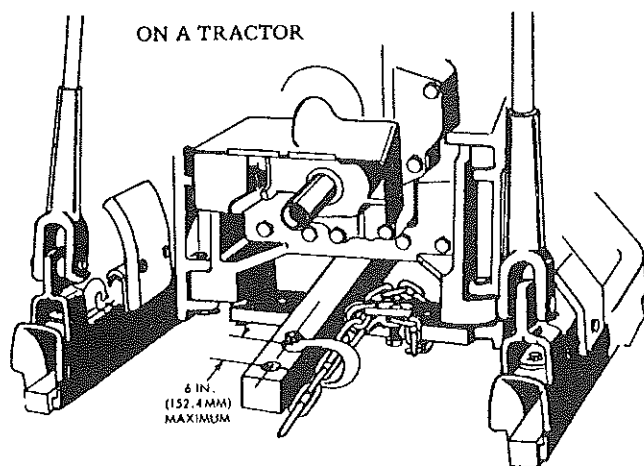
LOWERING THE WINGS

To lower the wings, be sure the cylinders are retracted to the minimum stroke, then remove the wing lock pins and place in storage hole provided. Be sure you unlock both wings, then lower the wings with all persons standing at a safe distance.



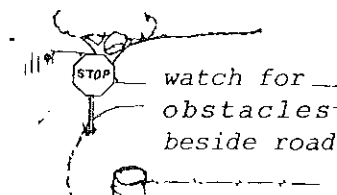
TRANSPORT SAFETY

Always use a safety chain with tensile strength equal to the gross weight of the unit, plus any attachments, when transporting.



Use the ASAE slow-moving vehicle (SMV) emblem. The SMV is to be mounted, point up, in a plane perpendicular to the direction of travel ± 10 degrees. It shall be placed centrally at the rear of the vehicle, unobscured, and 2' to 6' (0.61 to 1.8m) above the ground, measured from the lower edge of the emblem. The SMV emblem should be wiped clean before entering the road or highways. A bracket has been provided.

Comply with state and local laws pertaining to lighting and road widths. Transport during daylight hours only. Watch your clearance. Be aware of obstacles on the side of the road that might be caught by the disc when passing by. Pull over to the side of the road to permit safe clearance for oncoming traffic and passing vehicles.



Keep the red and yellow reflectors clean and visible. Replace the reflectors if they become faded or damaged. Watch for narrow bridges and re-route if necessary. Watch for pedestrians on the side of the roadway that need to be warned of your width and presence.

CAUTION: ALWAYS CHECK CONDITION OF TRANSPORT LOCK PINS, TIRES, WHEELS, HUBS, SAFETY CHAIN, HITCH BOLTS AND CLEVIS PIN BEFORE TRANSPORTING THE TANDEM DISC. PIN YOUR TRACTOR DRAWBAR DURING TRANSPORT.

Check specifications pages and be aware of transport height and width of your tandem disc model.

CAUTION: DO NOT EXCEED 15 M.P.H. IN TRANSPORT ON BEST SURFACE. EXCEEDING THIS SPEED CAN RESULT IN WHEEL HUBS OR SPINDLES AND LOSS OF CONTROL OF IMPLEMENT AND/OR TRACTOR. DO NOT TRANSPORT WITH VEHICLE WEIGHING LESS THAN THE GROSS WEIGHT OF YOUR IMPLEMENT AND ATTACHMENTS.

FIELD ADJUSTMENTS

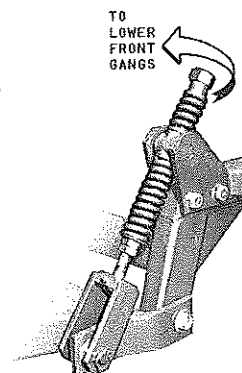
LEVELING THE FRAMES

A level harrow in the working position will give the most efficient, uniform penetration and field leveling possible. Leveling the harrow for the first time should be performed on a level surface if possible. Hitch the tractor to the clevis and extend the tongue leveling cylinder to the maximum stroke. Lower the wings and extend the wing lift cylinders to the maximum stroke.

FRONT TO REAR LEVELING

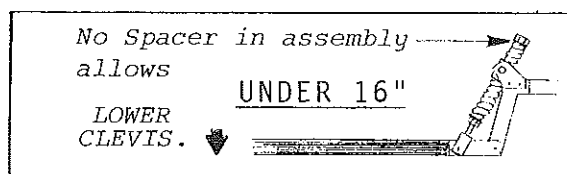
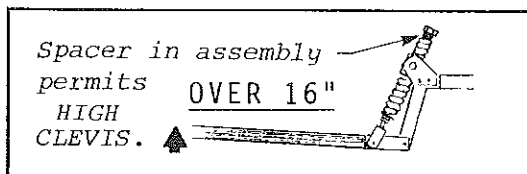
With unit out of the ground and tongue cylinder fully extended, turn both tongue leveling screws until the frame is level front to rear.

Note: Turn clockwise to lower the front and counter-clockwise to raise the front. The unit should retain a level condition when lowered to the plowing position. The angle of the front frame members can give an illusion that the front gangs are running deeper than the back. When checking the front-to-rear leveling in the field, always stand well away from the unit and view the frames from frame height.



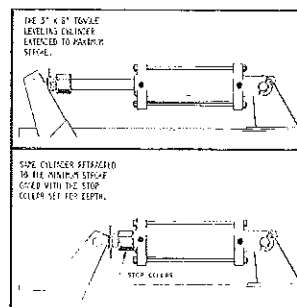
CONVERT TO LOW DRAWBAR

The tongue has been assembled for high drawbar tractors. To convert to a low drawbar tongue position, lower the harrow to the ground. Block up the tongue to relieve spring tension on the adjustment screws. Remove the two Adjustment Screws. Disassemble each adjustment screw and reassemble, leaving the spacers out of the assemblies, and adjusting the Jam Nuts to allow 15" between the flat washer and base of the Spacer.



To prevent excessive play in the tongue leveling screws, check to be sure the jam nut on each leveling screw is snug against the spring.

Some minor adjustments may be required at various plow depths. These adjustments can usually be made by adjusting the depth control stop collar on the tongue leveling cylinder. During field plowing operation, always make sure the tongue leveling cylinder is retracted to the stop collar on cylinder rod.



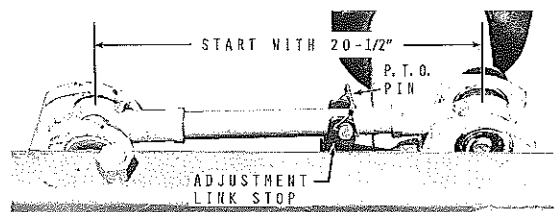
SIDE TO SIDE LEVELING

These harrows are in three sections from side to side and will flex for even penetration on irregular fields, if adjusted properly. After the front-to-rear leveling has been established, check the wing frames to see if they are level with the center frame from side to side.

Wheel hubs have off-center spindles for additional adjustments. **MAKE SURE** all hubs are in the same position before attempting to level the unit from side to side. **See Page A 6** If the wings are not level with the center frame, disengage the road lock and lower the disc gangs to the ground, relieving the weight of the unit from the wheels. Level the wings by turning the rod of the adjustment links between the wing rocker shafts and the center rocker shafts.

To **RAISE** the wing, remove P.T.O. Pin & Link Stop. Shorten the distance between the two ball ends. The average setting is approximately 20-1/2" from center-to-center of the clevis pins. When lowering the wing, **NEVER EXTEND PAST 21" CENTER-TO-CENTER: REPOSITION OFFSET SPINDLES ON WING WHEELS IF MORE ADJUSTMENT IS NECESSARY.**

The wings may not be level with center section frame when the harrow is in the raised position. Be sure to replace the Link Stop and P.T.O. Pin after the adjustments are complete.

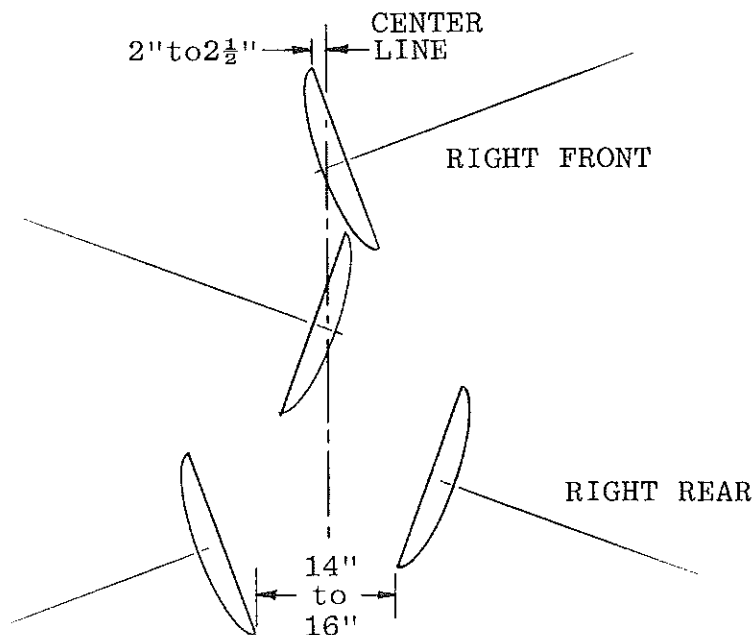


Check wing extensions to make sure they are level with the frame. Shims are provided for making any necessary adjustments.

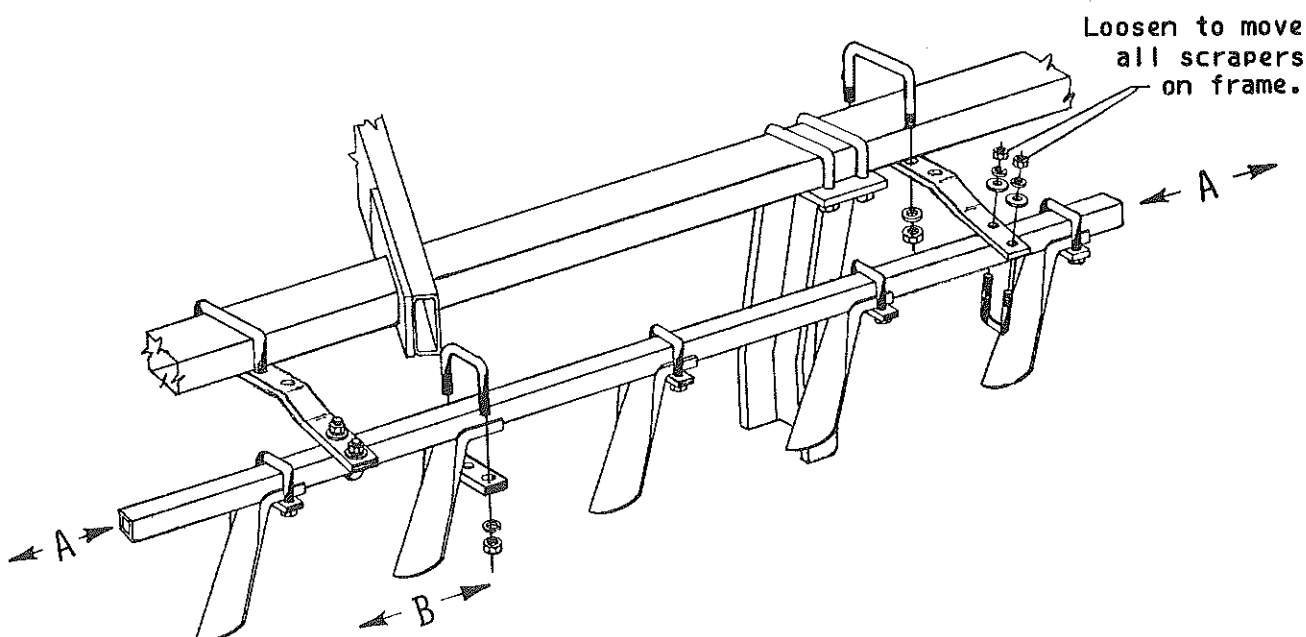
DISC GANG SPACING

FRONT gangs are overlapping and should be adjusted as shown.

BACK gang spacing should be 14" to 16" apart. Field conditions, blade size, and speed will affect this setting. Move gangs out to eliminate a ridge or move in to eliminate a furrow.



SCRAPER ADJUSTMENTS



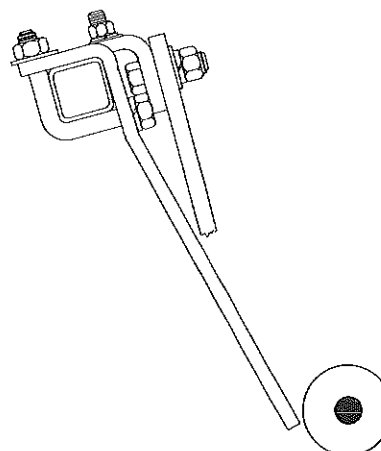
- A. Scrapers can be adjusted by moving the entire assembly from side to side at the bracket location.
- B. Also, each scraper blade can be adjusted individually along its mounting frame.

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 frame to move scraper blades away from disc blades. Most conditions, scrapers should be positioned approximately 2" in from the cutting edge and approximately 1/8" from the surface of the disc blade.

Each field requires some individual scraper adjustment. Moving scrapers one way or the other will help solve your individual scraper problems. Removal of scraper blade at bearing arm may be necessary in some conditions. Frequent examination will prevent damage to scraper assemblies and spacer spools. Some wet or heavy trash conditions may require use of chain trash guard option, part number 1582-146-0.

TRASH BARS (MODELS 1965 THROUGH 1979 ONLY)

Trash bars should be set to run about 1/8" from the spacer spool. This adjustment is made by changing the torque on the L-Bolts which attach the bars to their frame. Tightening the lower nut will move the bar away from the spool. Tightening the upper nut will move the bar into the spool.

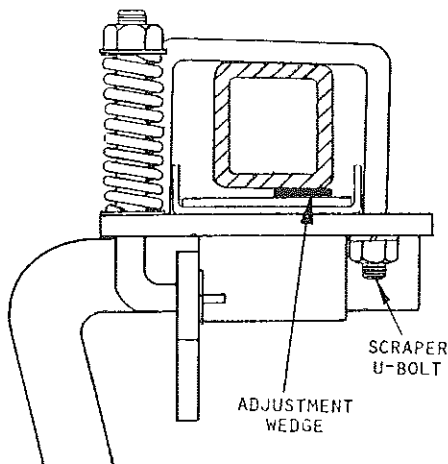
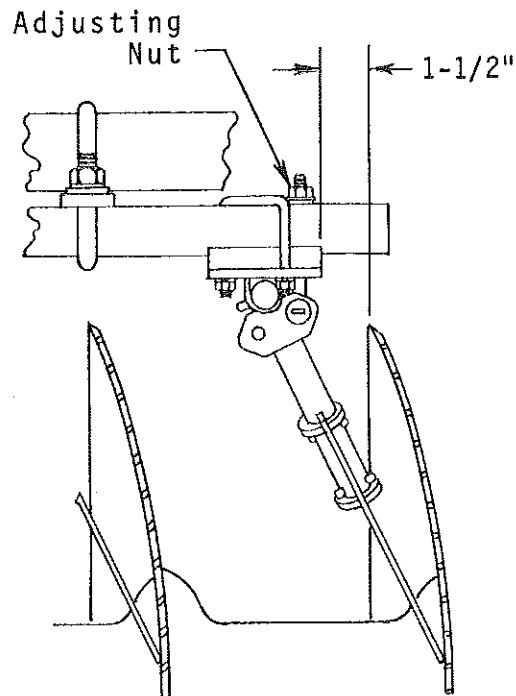


SPRING LOADED SCRAPER ADJUSTMENTS

Spring scrapers can be adjusted towards or away from the disc blades by moving the entire assembly or moving individual scrapers, similar to rigid scraper adjustments. Spring scrapers are in the correct position when the scraper mounting plate is 1-1/2" from the edge of the disc blade as shown in the illustration below. In most conditions the edge of the scraper blade should be approximately 3/4" in from the outside cutting edge of the disc blade.

Use the following procedure to adjust the scraper blade force against the disc blade.

1. Loosen the adjusting nut until the scraper blade starts to move away from the disc blade.
2. Retighten the adjusting nut until the scraping edge of the blade is just contacting the disc blade. (At this point there should not be any force against the disc blade.)
3. Tighten the adjusting nut one complete revolution for each 5 lbs. of scraper force desired against the disc. The initial setting should be approximately 15 lbs. or three complete revolutions.
4. In moderate conditions, a smaller scraper force may be desired and in tough conditions a larger force may be required. The scraper setting should fall between a 10 lb. minimum, and a 30 lb. maximum setting.



There is an adjustment wedge used to mount the spring scraper next to the extension trash bar loop on the rear outer disc blades. This scraper can be tilted towards the spool by tightening and loosening the nuts on the scraper U-Bolt. This scraper should be adjusted so that the the scraper does not hang over the outside of the taper disc blade.

FIELD OPERATION

WORKING DEPTH

The depth of your disc harrow is controlled by the remote cylinder control lever of the tractor. The wheels will act as gauge wheels to regulate working depth. Your disc harrow will not work uniformly, unless 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.

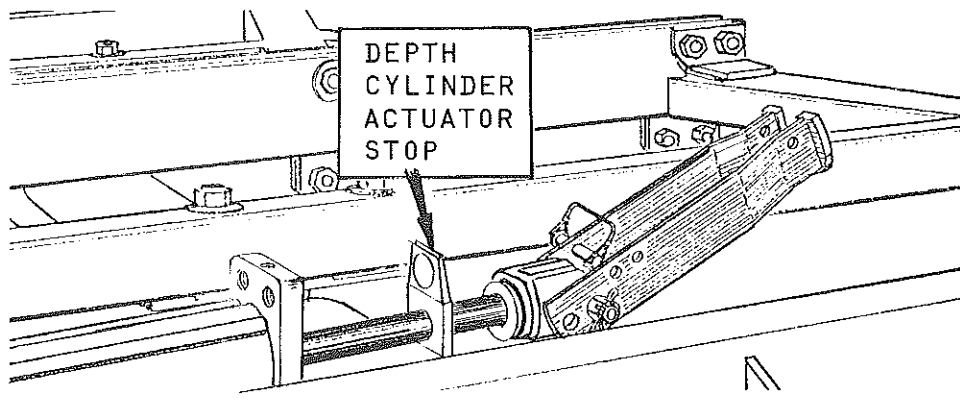
MODELS 1964 THROUGH 1969 -- Remember to reduce speeds when working in extremely rocky conditions. Field speeds should not exceed 5 M.P.H. You will get better penetration and less blade breakage at lower speeds.

CONTROLLED DEPTH

After determining the correct depth, position the actuator stop or adjust stop collars on your hydraulic cylinder rod so the wheels will lower the frames and gang to the same position each time. If the cylinder is equipped with hydraulic depth stop, make sure you align the actuator stop with the poppet.



WARNING: LOWER IMPLEMENT TO THE GROUND BEFORE ENTERING FRAME TO MAKE ADJUSTMENTS.



TURNING IN THE FIELD

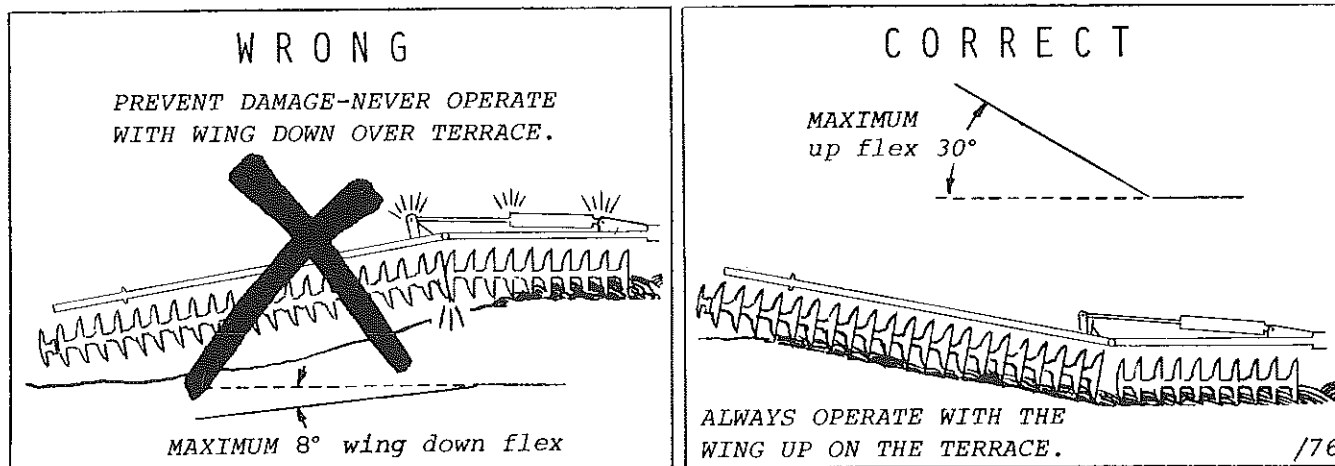
Short turns at working depth may result in driving the front blade deeper in the ground, causing damage to disc blades or bearings. If short turns must be executed, raise the unit out of the ground and complete the turn before engaging the tool for further tilling.

IMPORTANT: 4-WHEEL DRIVE TRACTORS CAUSE SEVERE SIDE STRAIN ON TONGUE AND CLEVIS UNLESS THE DRAWBAR IS FREE TO SWING. ALWAYS ALLOW DRAWBAR TO SWING DURING FIELD OPERATION.

FLEXIBILITY

ALWAYS WORK WITH WINGS DOWN: Major damage may occur to disc blades and bearing arms if used with wings up. For maximum flexibility, make sure the wing hydraulic cylinders are fully extended after the wing is down.

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.



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. TORQUE AT 600 FT. LBS.

Torque wheel bolts to 90 - 95 ft. lb. The Krause Disc is a ruggedly designed implement which will perform efficiently if properly adjusted, lubricated, and if the blades are kept sharp.

LUBRICATION

Regreaseable gang bearings should be greased after each use and after long periods of storage. Rocker shaft bearing clamps, wing leveling screw rod ends and tongue adjustment screws should be lubricated with multi-purpose type grease after each 24 hours of use. FOR YOUR SAFETY- LOWER WINGS AND IMPLEMENT TO THE GROUND BEFORE ENTERING FRAME TO LUBRICATE OR ADJUST. CRAWL OVER FRAME AND WATCH FOR OBSTRUCTIONS AND PROTRUSIONS.

Grease wheel bearings every 24 hours of use. Check for excessive end play each time bearings are greased. Once a year, clean and repack wheel bearings. Replace seals each time bearings are removed. Replace worn or damaged parts. Repack bearings with high-quality wheel bearing grease. After repacking, replace hub with seal and rear bearing already assembled. Use light oil on seal surface and use extreme care when pushing seal over the spindle. Install front bearing, flat washer, and slotted nut. Tighten nut while turning hub until there is resistance to rotation. Then back off nut 1 to 3 notches until hub turns freely without end play. Install new cotter pin and hub cap.

STORAGE

Wings should not be stored in raised position: Make sure transport road lock pins are in place. Coat disc blades and hydraulic cylinder shafts with rust preventative during extended periods of storage. Cylinder rod ends may be unpinned and the cylinders retracted to protect the polished surface of the cylinder rods. For added safety lower unit to the ground during long periods of storage. Inspect the unit for worn or damaged parts and replace as needed to avoid delays the next season.

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 support the cylinders so the rod ends will clear frame members or lugs when fully extended. Back the tractor to the front of the harrow and connect the hydraulic hoses to the tractor. Check the tractor hydraulic reservoir and make sure it is full of the manufacturer's recommended oil. If you are sure the implement connections are tight and leak proof, begin filling the system by extending and retracting the cylinders. Hold the control lever open and pause at the end of each stroke of the cylinders to bleed the air from the system. Continue the cycles until the cylinders respond with immediate solid actuation. When you are sure the systems are free of air, pin the rod ends of the cylinders to the implement cylinder lugs.



WARNING:

IF INJURED BY ESCAPING HYDRAULIC FLUID, SEE A DOCTOR AT ONCE. SERIOUS INFECTION OR REACTION CAN DEVELOPE IF PROPER TREATMENT IS NOT ADMINISTERED IMMEDIATELY. ESCAPING FLUID FROM A SMALL HOLE CAN BE ALMOST INVISIBLE. USE CARDBOARD OR WOOD TO SEARCH FOR SUSPECTED LEAKS. DO NOT USE YOUR HANDS.

DISC GANGS

Refer to Assembly Section of this book when replacing disc blades, bearings or spools. Use the same procedure as described when setting up a new unit. Leave flange bolts one turn loose until bearing arms are in place on the gang beam and tie rod is tightened to 600 ft. lb. Tighten one bearing arm to the gang beam then tighten its flange bolts. Make sure the other bearing arm top plate is parallel with the bottom of the gang beam before tightening its U-bolts. Tighten other flange bolts. See Page A13



DANGER:

SERIOUS INJURY CAN BE INFLICTED BY DISC BLADES AND DISC GANGS IF NOT HANDLED SAFELY. WATCH FOR UNSAFE CONDITIONS. KEEP YOUR CO-WORKERS SAFETY IN MIND. SHOULD PERSONAL INJURY OCCUR, HAVE MEDICAL TREATMENT ADMINISTERED IMMEDIATELY.

REPAIR PARTS

Refer to the Assembly Section of this book when repairing or replacing parts, and follow the same procedure as used when assembling a new unit. Reverse this procedure for disassembly. The Parts Section of this book will show a breakdown of assemblies, location of parts, and part numbers.

It is recommended KRAUSE replacement parts be used.



CAUTION: IF REPLACING HYDRAULIC HOSE, USE ONLY HOSE THAT MEETS OR EXCEEDS 2,500 P.S.I.

REPLACEMENT TIRES FOR THE CENTER SECTION MUST HAVE A MINIMUM CAPACITY OF 3,000 LBS. AT 15 M.P.H.

IMPORTANT: REPAIR OF HYDRAULIC CYLINDER SHOULD BE MADE BY AUTHORIZED KRAUSE DEALER.

POSSIBLE REMEDIES FOR FIELD PROBLEMS

PROBLEM	POSSIBLE CAUSES	POSSIBLE REMEDY
Leaving Center Ridge	Excessive Speed	Reduce Speed
	Rear Gangs Cutting Too Deep	Shorten Length of Tongue Adjustment Screws
		Reduce Tension on Leveling Screw Springs
	Rear Discs are Set Too Close Together	Readjust Distance Between Inside Disc Blades (16 inches average setting on 22 inch disc., 14 inches on 20 inch disc.)
		Reduce the Size of the Inside Rear Blades
Leaving Center Furrow	Discing Too Slowly	Increase Speed. Not to Exceed 6 M.P.H.--5 M.P.H., on Rock Models
	Rear Gang Not Cutting Deep Enough	Lengthen Tongue Adjustment Screws
		Increase Tension on Adjustment Screw Springs
	Rear Blades are Too Far Apart	Readjust Distance Between Disc Blades (average setting 14" to 16")
Leaving Untilled Center Strip	Discing Too Shallow	Increase Depth
	Front Center Gangs Too Far Apart	Move Front Center Gangs In.

PROBLEM	POSSIBLE CAUSES	POSSIBLE REMEDY
Leaving Ridge on Outside	Front Running Too Deep	Adjust Leveling Screws on Tongue
	Not Enough Overlap	Move Tractor Toward Plowed Ground
	Incorrect Size of Blade on Extension Disc	Increase Size of Extension Disc Blades
	Wing Section Running Too Deep	Adjust Wing Rocker Shaft Leveling Screw
	Excessive Speed	Reduce Speed
Leaving Furrow on Outside	Rear Running Too Deep	Readjust Tongue Leveling Screws
	Incorrect Size of Blade on Extension Disc	Decrease Size of Extension Disc Blade
Center Section Not Level from Side to Side	Incorrect Air Pressure in Tires	Inflate 6-Ply to 32 PSI and 8-Ply to 36 PSI
	Incorrect Assembly of Wheel Hubs	Center Hubs are Offset on Their Mounting Plates. Make Sure All Center Hubs Are Set Alike
Wing Sections Not Level from Side to Side	Rocker Shaft Adjustment Screw Setting	Lengthen Screw to Lower Wings
		Shorten Screw to Raise Wings

PROBLEM	POSSIBLE CAUSES	POSSIBLE REMEDY
Wing Sections Will Not Stay Level from Side to Side	Rocker Shaft Adjustment Screw Moving	Readjust Screw, Tighten Jam Nut.
Disc Not Level Front to Rear During Field Operation	Tongue Adjustment Screw Settings	Lengthen Screw to Raise Front, Shorten Screw to Lower Front
Disc Not Level During Transport	Adjustment of Leveling Screw Springs	Adjust Tension on Leveling Screw Springs
Gangs Plugging	Extremely Wet Conditions	Decrease Depth of Work or Allow to Dry If Possible
	Worn or Improper Adjustment of Scraper Blades	Readjust Scrapers, Replace Worn Parts
Gang Does Not Revolve	Obstruction in Disc Gang	Check for Rocks, Mud, Roots, etc.
	Scrapers	Check for Scraper Adjusted Too Tight to the Disc Blade
	Siezed Bearing	Replace
	Plugging at Bearing Arm	Try Removing Scraper at This Location

PROBLEM	POSSIBLE CAUSES	POSSIBLE REMEDY
Wing Will Not Flex Down Far Enough	Wing Lift Cylinder	Make Sure Cylinders are Fully Extended
Disc Will Not Penetrate or Penetrates Too Much	Stroke Control Settings on Wheel Control Cylinders	Readjust Depth Control Stops or Depth Control Rings
Discs Have Excessive Wobble	Tie Rod Nut Loose	Re-torque Nut on Tie Rod to 600 Ft-lb
Disc Will Not Lower or Wings Will Not Lower	Transport Locks Engaged	Disengage Locks
Wings will Not Raise to Transport Position	Plugged Restrictor	Remove Restrictor from Rod End of Cylinder and Check Orifice for Foreign Material
	Insufficient Hydraulic Pressure	Check Tractor Hydraulic System
Inadequate Transport Clearance	Wheel Control Cylinders Not Extended	Extend Cylinders
	Tire Pressure Low	Inflate 6-Ply to 32 PSI and 8-Ply to 36 PSI
	Disc Not Level Front to Rear	Adjust Leveling Screws

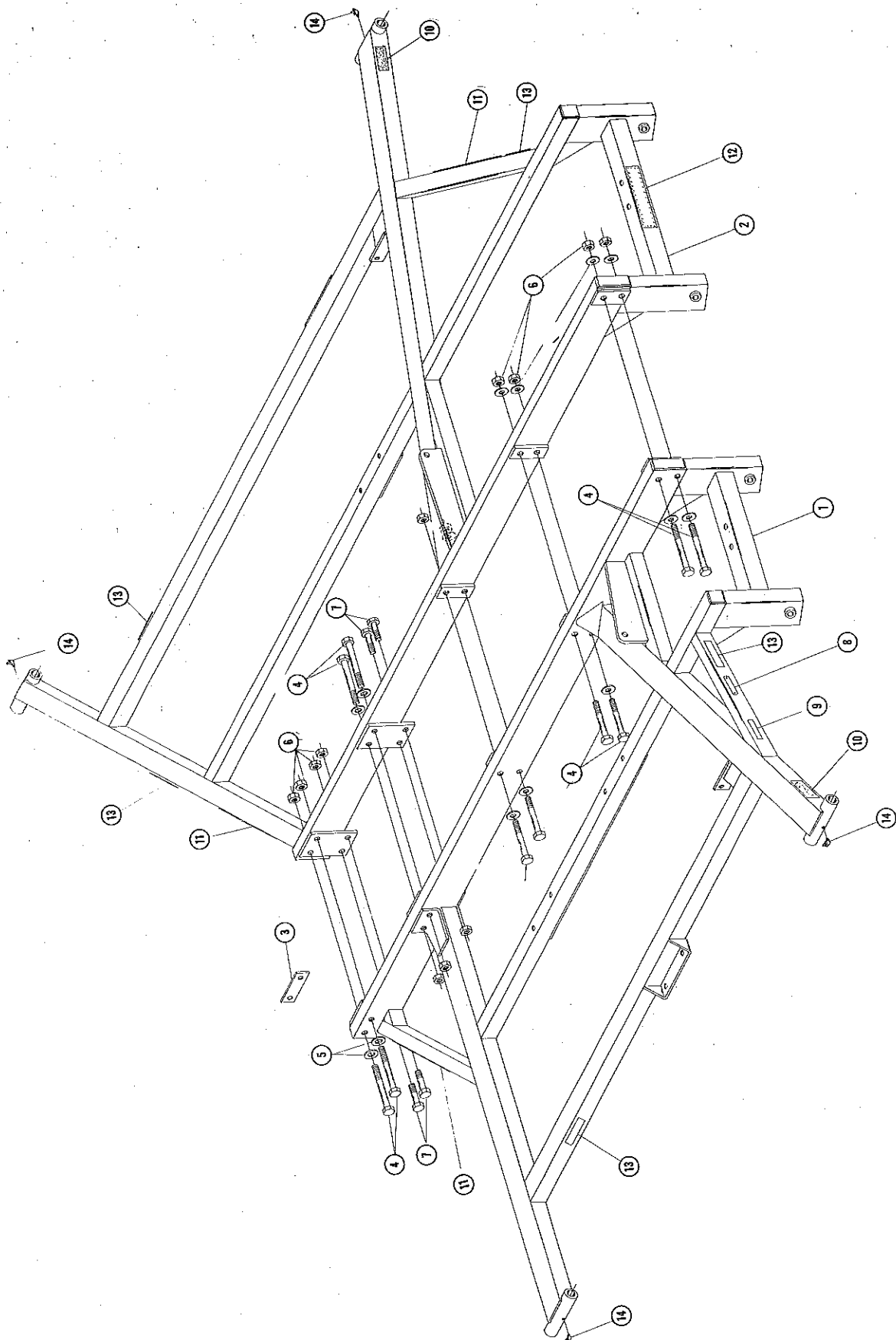
PROBLEM	POSSIBLE CAUSES	POSSIBLE REMEDY
Wheels have Excessive Wobble	Loose Wheel Bolts	Immediately Stop and Torque Bolts
	Loose Spindle Nut	Tighten Nut Until Tight Then Back Off One or Two Notches

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. THE OPERATOR CAN ALSO IDENTIFY PART NAMES TO CLARIFY PROPER OPERATIONAL STEPS.

NOTES

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

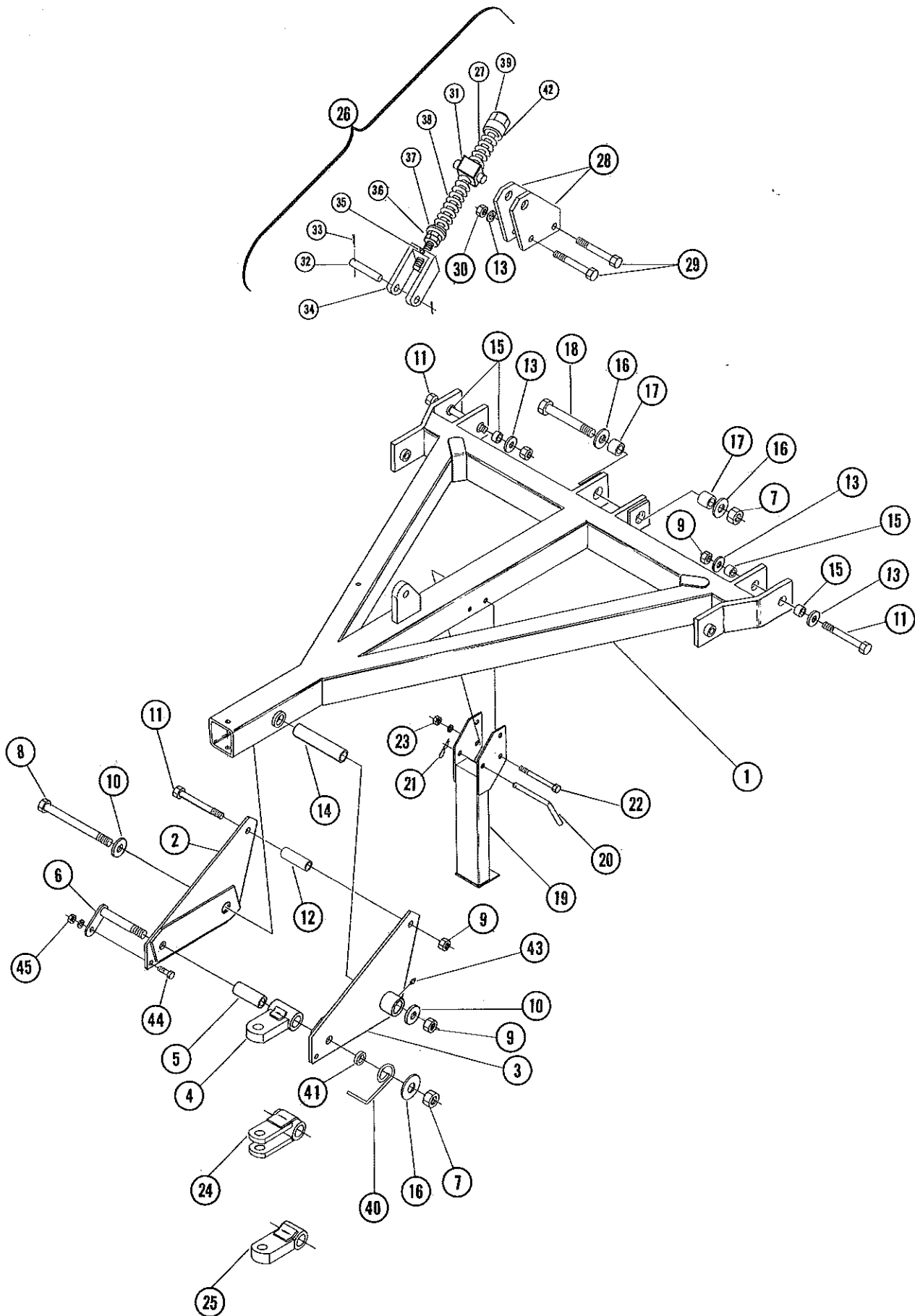


F R A M E S

9/81

FOR MODELS - ALL

[illegible]



TONGUE, HITCH & JACK

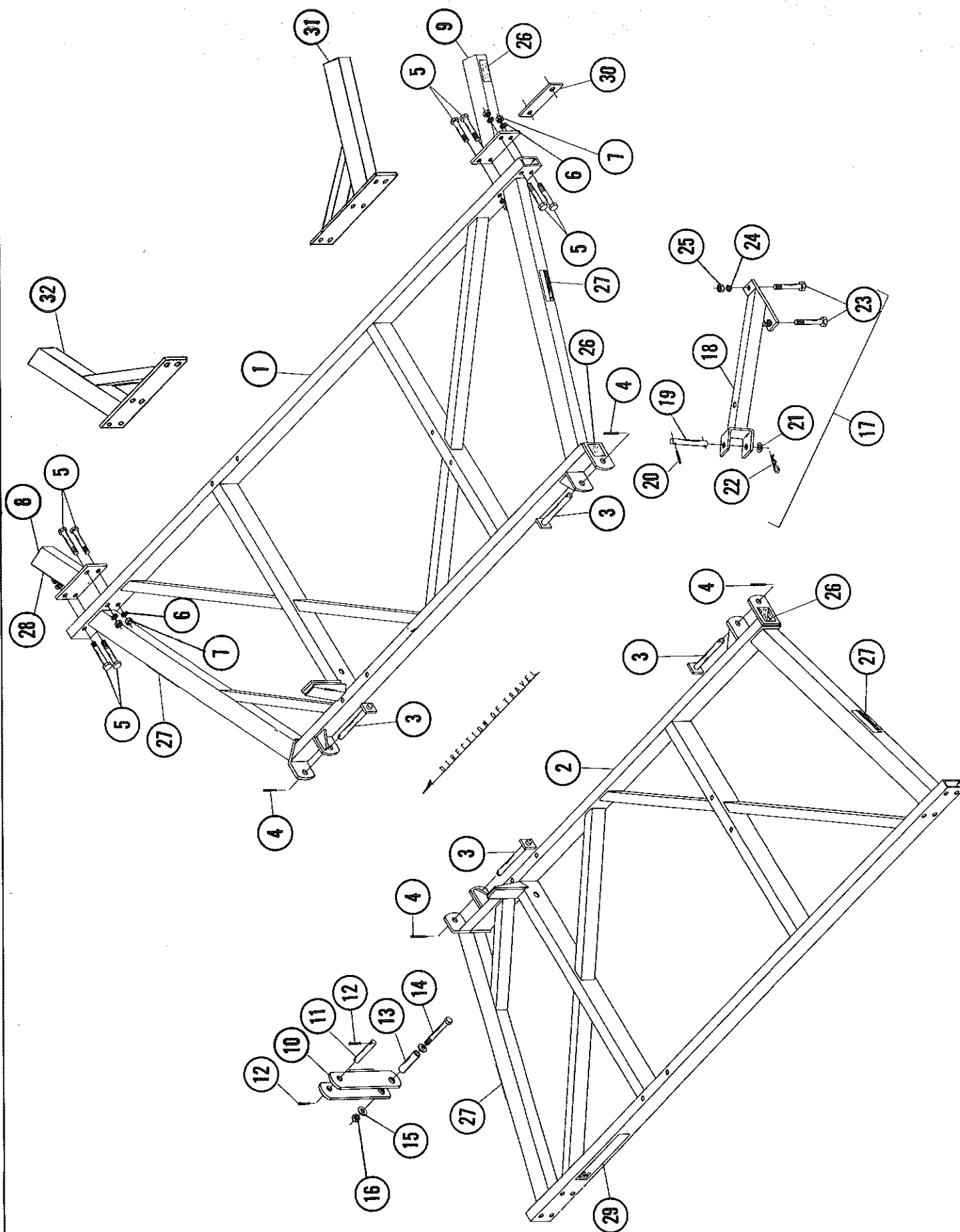
FOR MODELS - ALL

9/81

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
1	1963-30-0	Tongue Weldment	1
2	1963-34-0	Right Hitch Strap	1
3	1963-35-0	Left Hitch Strap	1
4	270-76-0	Hitch (1-1/2"Dia. Pin Hole)	1
5	960A-0-15	Hitch Tube	1
6	1963-36-0	Hitch Bolt	1
7	63-126	1-1/4NC Self Locking Nut	2
8	62-265	1NC X 11" Machine Bolt	1
9	63-119	1NC Self Locking Nut	4
10	770-101-3	Flat Washer	2
11	62-252	1NC X 7" Cap Screw	3
12	2145-0-1	Spacer Tube	1
13	64-119	1" Std. Flat Washer	4
14	1963-0-1	Spacer Tube	1
15	960-0-3	Tongue Bushing	4
16	64-126	1-1/4" Std. Flat Washer	3
17	960-0-4	Tongue Bushing	2
18	62-282	1-1/4NC X 11" Machine Bolt	1
19	1960-36-0	Stand	1
20	1960-0-4	Handle	1
21	60-716	#3 Hair Pin Cotter	1
22	62-182	5/8NC X 5-1/2" Cap Screw	1
23	63-110	5/8NC Self Locking Nut	1
*24	270-75-0	Hitch (1-1/4"Dia. Pin Hole)	1
*25	1330-54-0	Crawler Clevis (1-3/4"Dia. Pin Hole)	1
26	960-35-0	Adjustment Screw Assembly	2
27	76-111	Spring	1
▲28	960-0-5	Trunnion Bracket	4
▲29	62-247	1NC X 5-1/2" Cap Screw	4
▲30	63-119	1NC Self Locking Nut	4
31	1055-30-1	Trunnion	1
32	960-35-2	Pin	1
33	60-706	7/32"Dia. X 2" Cotter Key	2
34	960-34-0	Adjustment Screw Clevis	1
35	65-101	1/8NPT Zerk	1
36	63-124	1-1/4NC Jam Nut	2
37	64-126	1-1/4" Std. Flat Washer	1
38	76-110	Spring	1
39	99-107	Adjustment Screw	1
40	76-119	Clevis Spring	1
41	1901-0-21	Bushing	1
42	2426-6-2	Spacer	1
43	65-101	1/8NPT Zerk	2
44	62-136	1/2NC X 1-1/2" Cap Screw	1
45	63-107	1/2NC Self Locking Nut	1

* Optional Clevis

▲ Not Part of Assembly



W I N G F R A M E S & E X T E N S I O N S

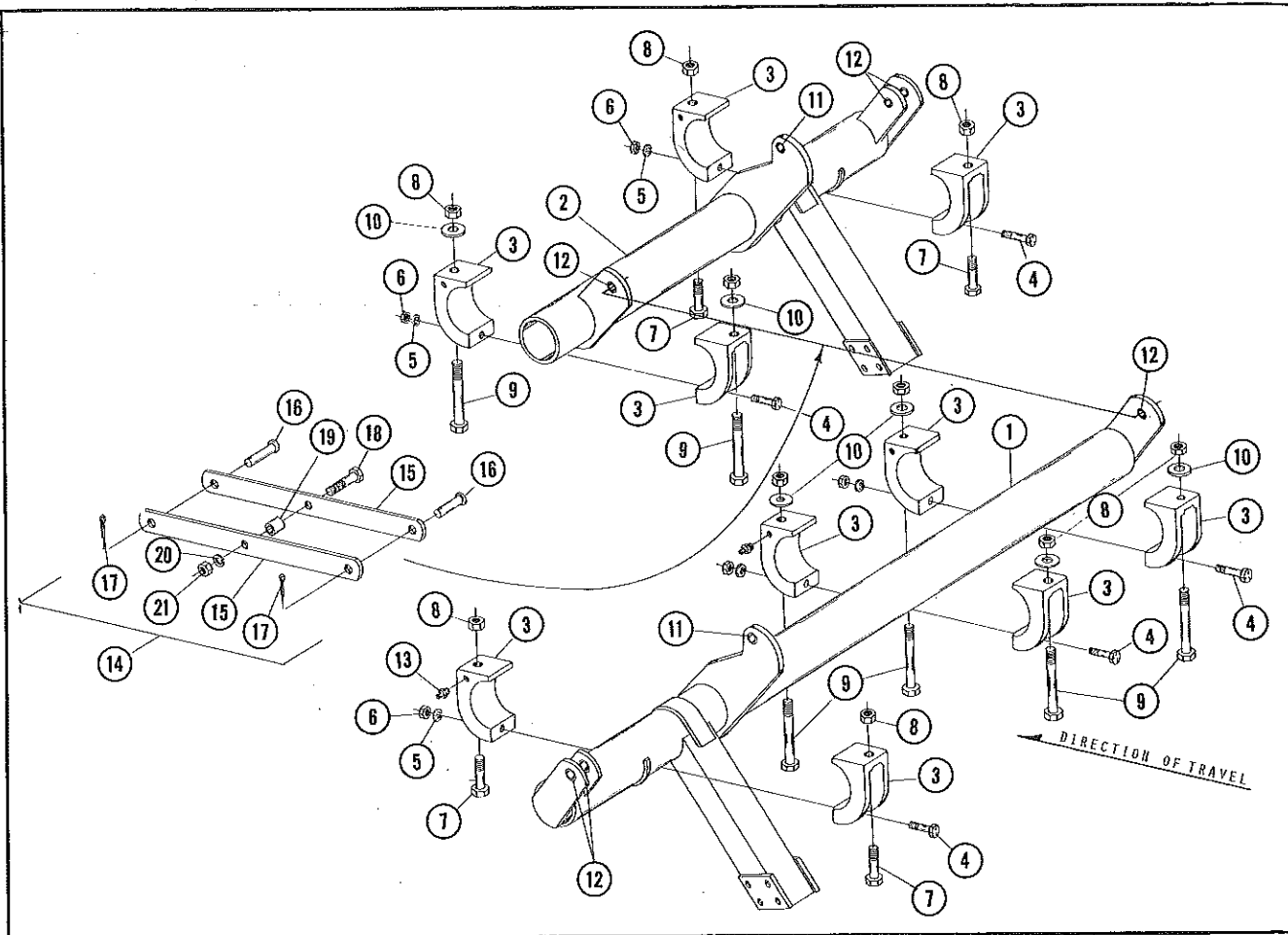
FOR MODELS - ALL

5/82

[illegible]

▲	For Models -	1952, 1955, 1956, 1959, 1964, 1965, 1968
▲▲	For Models -	1960, 1963, 1966, 1969, 1970, 1973, 1976, 1979
*	For Models -	1952, 1955, 1964
**	For Models -	1956, 1959, 1960, 1963, 1965, 1966, 1968, 1969
+	For Models -	1970, 1973, 1976, 1979

CENTER ROCKER SHAFTS

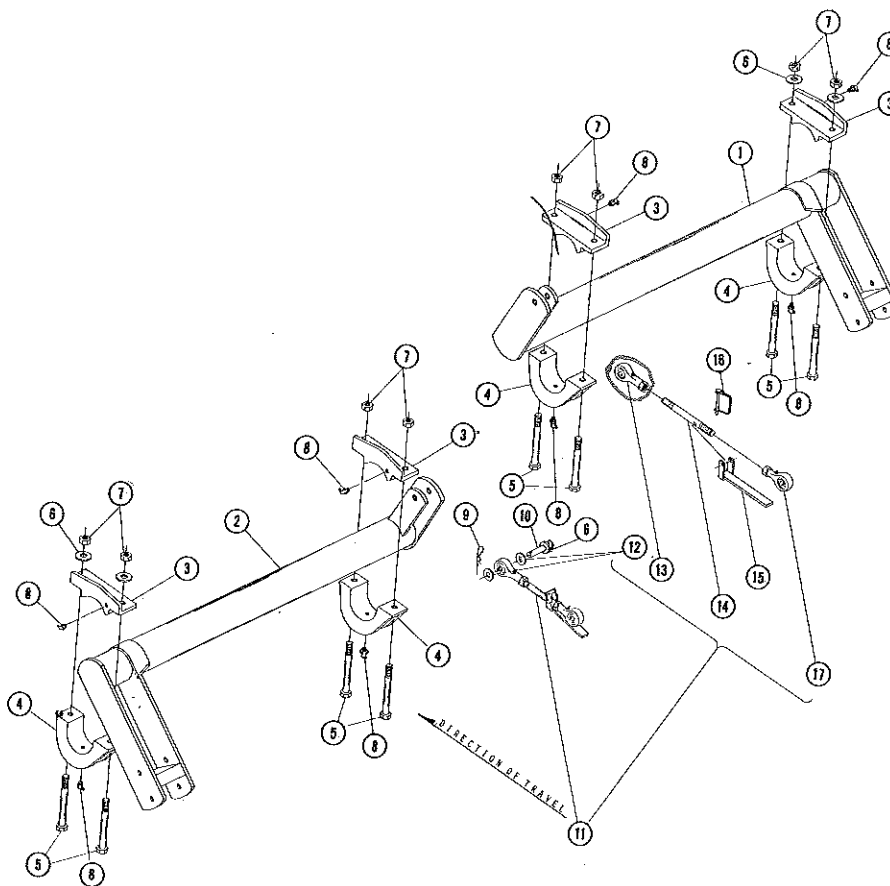


9/81

FOR MODELS - ALL

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
1	1960-10-0A	Left Rocker Shaft	1
2	1960-15-0A	Right Rocker Shaft	1
3	2145-0-16	Rocker Shaft Clamp Half	10
4	62-195	GRADE 5 3/4NC X 2-1/2" Cap Screw	5
5	64-112	3/4" Std. Lock Washer	5
6	63-112	3/4NC Hex Nut	5
7	62-237	1NC X 3" Cap Screw	4
8	63-119	1NC Self Locking Nut	10
9	62-250	1NC X 6-1/2" Cap Screw	6
10	64-119	1" Std Flat Washer	6
11	53-102	Wear Sleeve	2
12	53-103	Wear Sleeve	6
13	65-101	1/8NPT Zerk	20
14	1960-31-0	Linkage Assembly	1
15	1960-31-2	Link	2
16	60-221	1"Dia. X 3" Clevis Pin	2
17	60-702	3/16"Dia. X 1-1/2" Cotter Pin	2
18	62-198	3/4NC X 3-1/2" Cap Screw	1
19	1960-31-1	Spacer	1
20	64-112	3/4" Std. Lock Washer	1
21	63-112	3/4NC Hex Nut	1

WING ROCKER SHAFTS



FOR MODELS - ALL

9/81

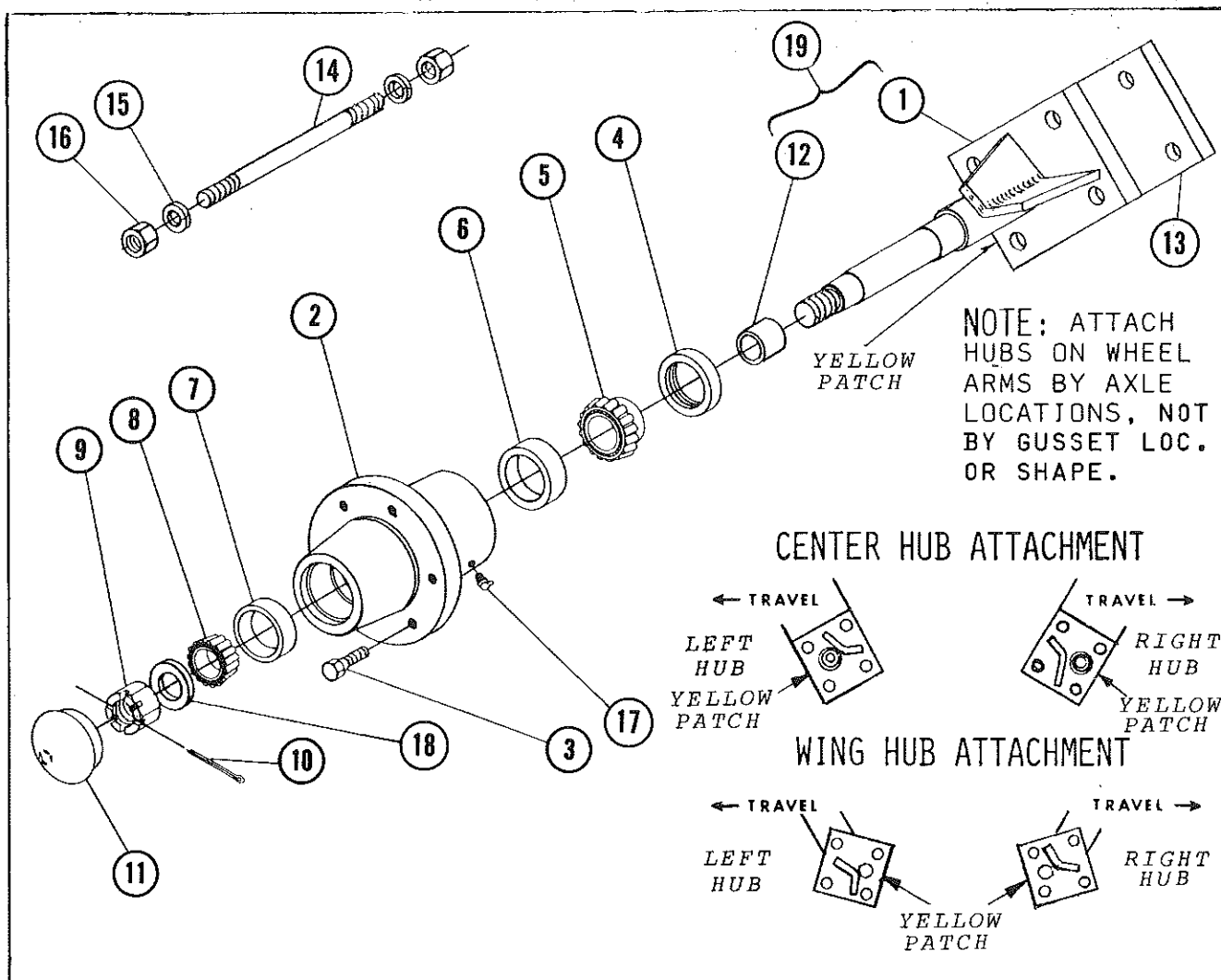
ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
*1	956-12-0	Right Wing Rocker Shaft	1
**	960-12-0	Right Wing Rocker Shaft	1
*2	956-11-0	Left Wing Rocker Shaft	1
**	960-11-0	Left Wing Rocker Shaft	1
3	1256-0-6	Rocker Bearing Plate	4
4	1112-0-1A	Rocker Shaft Clamp	4
5	62-258	1NC X 8-1/2" Machine Bolt	8
6	64-119	1" Std. Flat Washer	6
7	63-119	1NC Self Locking Nut	8
8	65-102	1/8NPT X 90° Zerk	8
9	60-717	#4 Hair Pin Cotter	4
10	60-223	1"Dia. X 4" Clevis Pin	4
11	1960-40-0A	Adjustment Link Assembly	2
12	64-119	1" Std. Flat Washer	4
13	43-106	* Left Hand Rod End	1
14	1960-40-1A	Adjustment Rod	1
15	3514-41-0A	Adjustment Screw Stop	1
16	60-103	5/16"Dia. P.T.O. Pin	1
17	43-107	Right Hand Rod End	1

Not Part Of Assembly

* Used on Models - 1952, 1955, 1956, 1959, 1964, 1965, 1968

** Used on Models - 1960, 1963, 1966, 1969, 1970, 1973, 1976, 1979

HUB ASSEMBLY

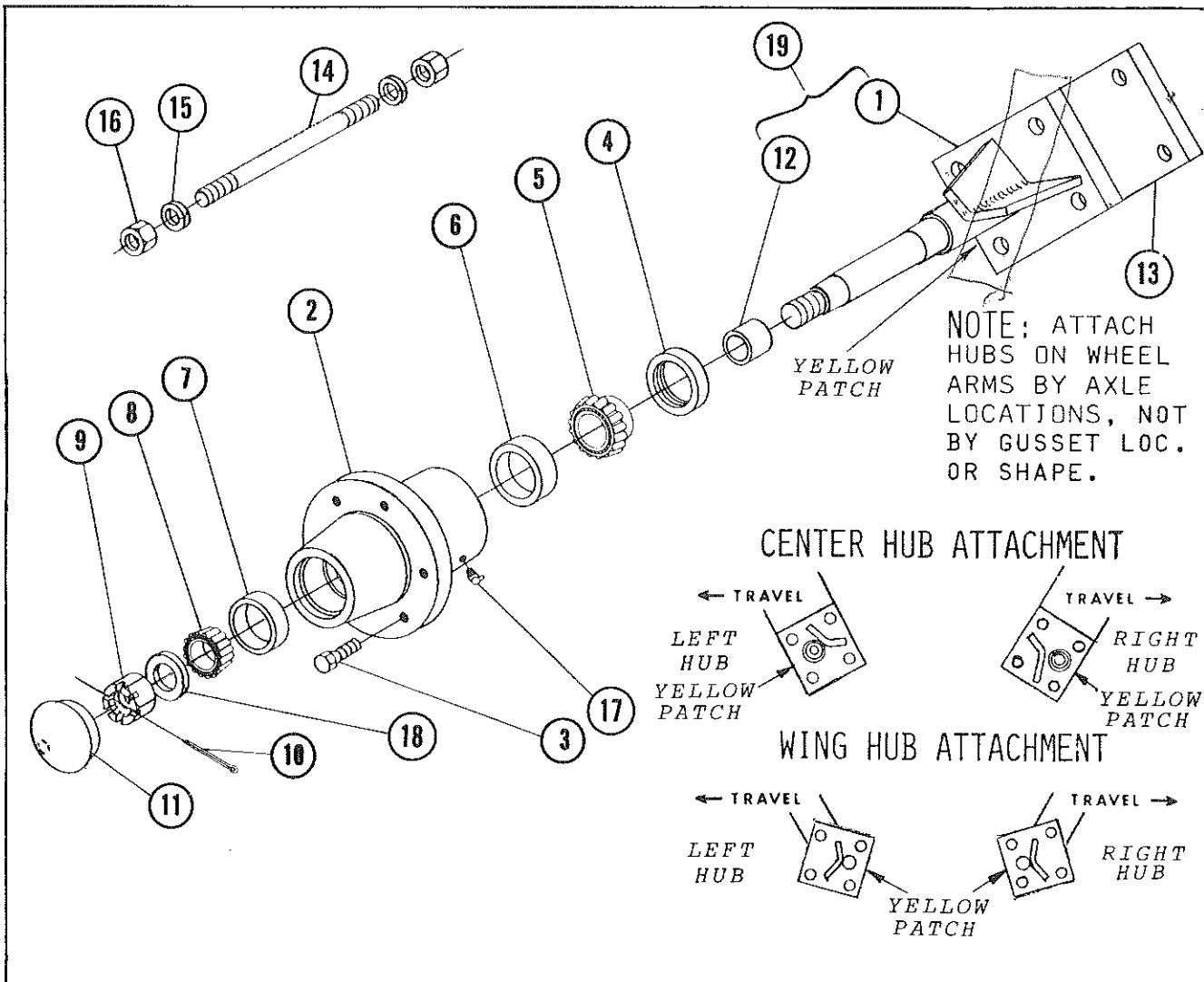


9/81

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
	1918-17-0	Hub & Axle Assembly	Specify
1	1918-12-0	Stub Axle Weldment	1
2	1918-8-1	Hub	1
3	62-295	Wheel Bolt	6
4	42-108	Seal	1
5	41-113	Cone	1
6	41-210 209	Cup	1
7	41-208	Cup	1
8	41-112	Cone	1
9	63-120	1" - 14NF Slotted Hex Nut	1
10	60-702	3/16"Dia. X 1-1/2" Cotter Key	1
11	52-302	Hub Cap	1
12	53-105	Wear Ring	1
*13	1112-70-1	Axle Plate	2
14	62-294	Axle Stud	4
15	64-112	3/4" Std. Lock Washer	8
16	63-112	3/4NC Hex Nut	8
17	65-103	1/4NPT X 90° Zerk	1
18	64-120	1" SAE Flat Washer	1
19	1918-15-0	Repair Spindle & Sleeve Assembly	

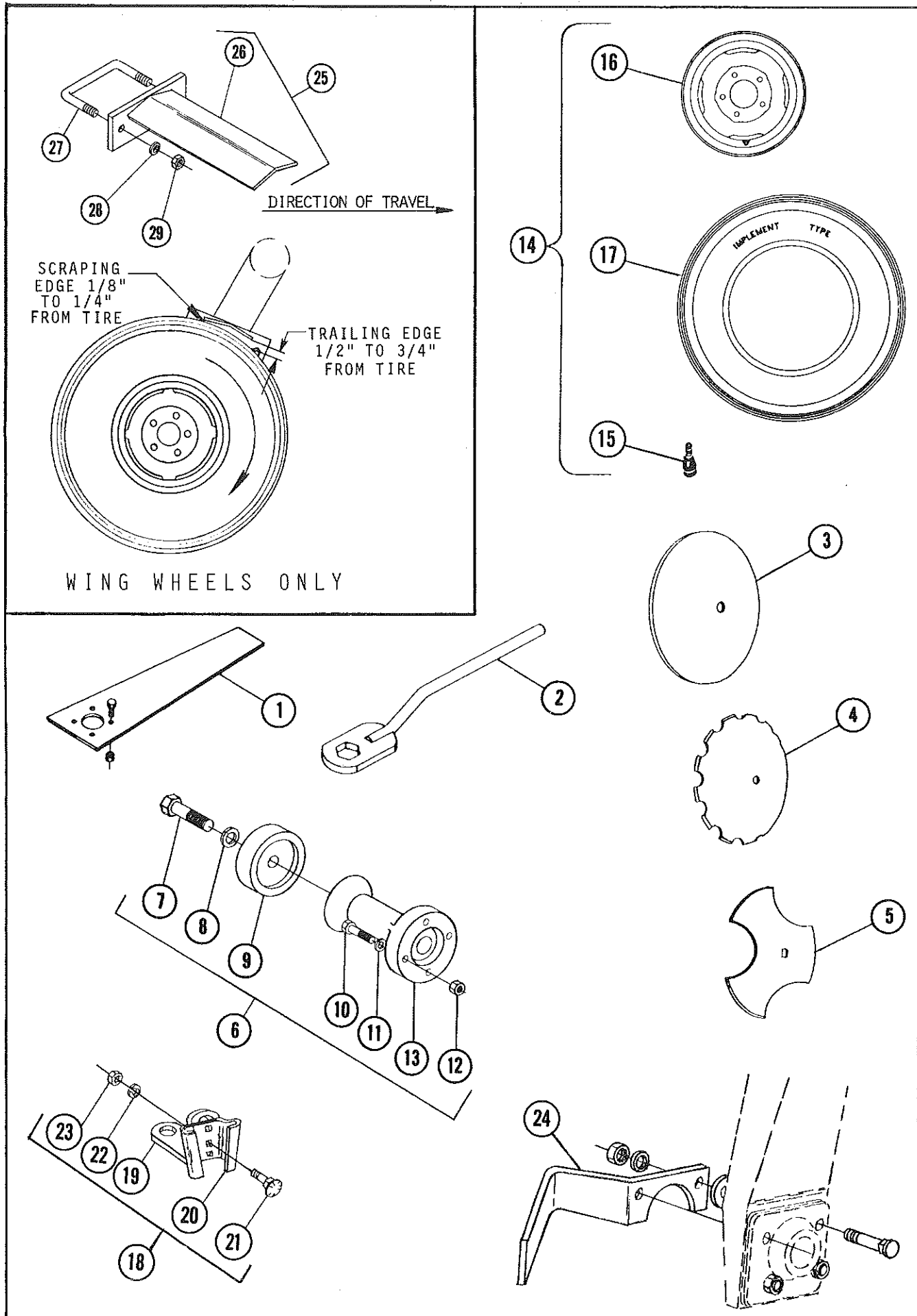
* Not Part of Assembly
To Be Used With Single Wheels Only.

HUB ASSEMBLY



9/81

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
	2135-17-0	Hub & Axle Assembly	Specify
1	2135-12-0	Stub Axle Weldment	1
2	2135-8-1	Hub	1
3	62-295	Wheel Bolt	6
4	42-109	Seal	1
5	41-114	Cone	1
6	41-210	Cup	1
7	41-208	Cup	1
8	41-112	Cone	1
9	63-120	1"- 14NF Slotted Hex Nut	1
10	60-702	3/16"Dia. X 1-1/2" Cotter Key	1
11	52-302	Hub Cap	1
12	53-108	Wear Sleeve	1
13	1112-70-1	Axle Plate	2
14	1112-71-1	Axle Stud	4
15	64-112	3/4" Std. Flat Washer	4
16	63-112	3/4NC Hex Nut	4
17	65-103	1/4NPT X 90° Zerk	1
18	64-120	1" SAE Flat Washer	1
19	2135-15-0	Repair Spindle & Sleeve Assembly	



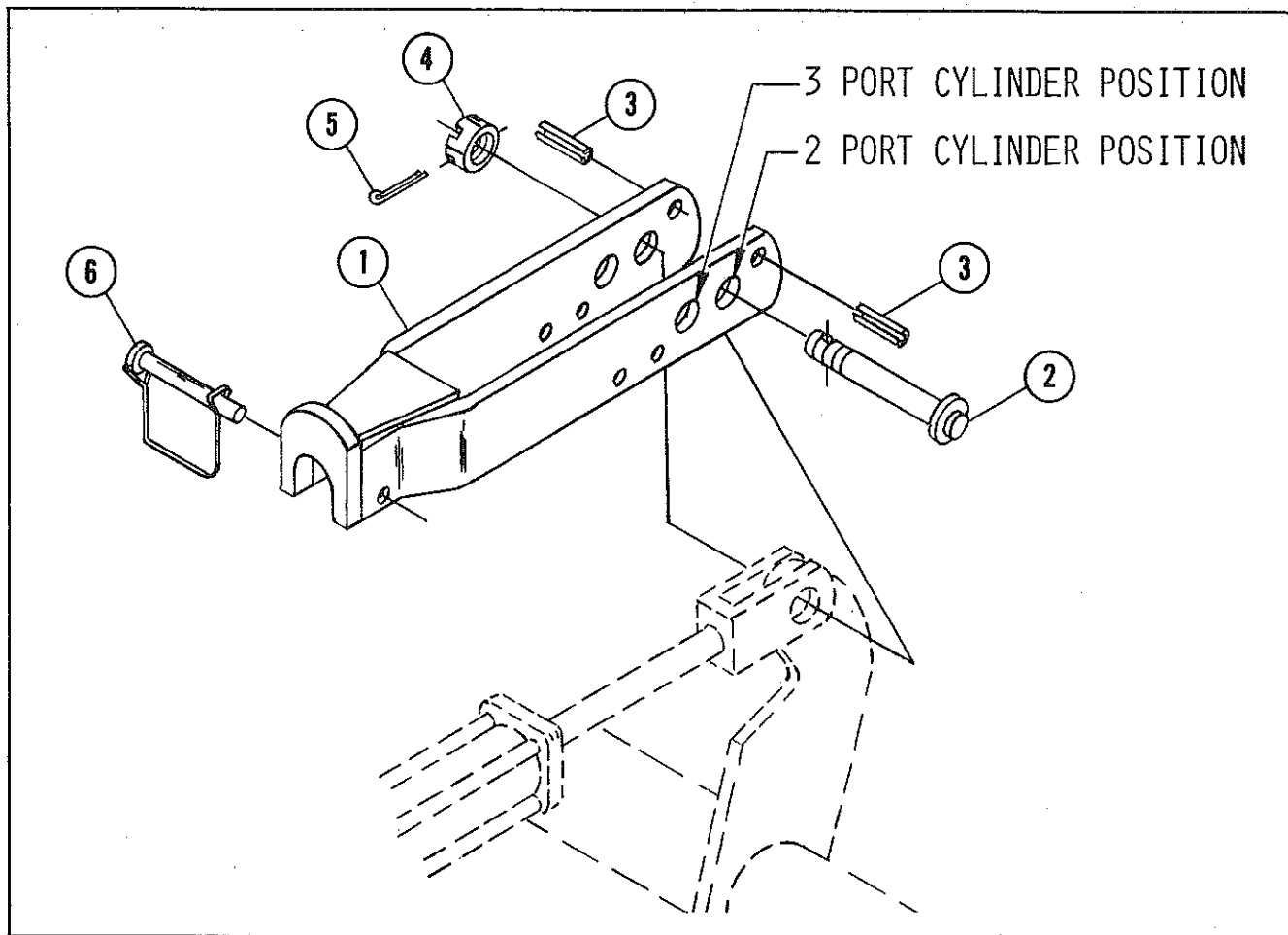
DISC BLADES, WHEELS & TIRES

FOR MODELS - ALL

5/82

[illegible]

ROAD LOCK ASSEMBLY



FOR MODELS - ALL

9/81

[illegible]

1-1/2" TIE RODS							5/82
3/8" X 2" ROLL PIN	1 1/2" SLOTTED HEX NUT	LENGTH	1 1/2" SLOTTED HEX NUT	1 1/2" SLOTTED HEX NUT	5/16" X 3" COTTER PIN		
MODEL	LOCATION	LENGTH	DISC SPACING	NO. OF DISC	ALLOY TIE ROD		
1952	CENTER	Front 79-1/8"	9-1/8"	9	2224-18-1		
	WING	Rear 70"	9-1/8"	8	2222-18-1		
1955	CENTER	Front 78-3/8"	9-1/8"	8	2222-18-1		
	WING	Rear 70-3/8"	9-1/8"	9	2224-18-1		
1956	CENTER	Front 79-1/8"	8"	10	2214-18-1		
	WING	Rear 70-3/8"	8"	9	2212-18-1		
1959	CENTER	Front 86-1/2"	8"	9	2215-18-1		
	WING	Rear 94-1/2"	8"	12	2216-18-1		
1960	CENTER	Front 79-1/8"	9-1/8"	9	2224-18-1		
	WING	Rear 70"	9-1/8"	8	2222-18-1		
1963	CENTER	Front 102-1/2"	8"	13	2217-18-1		
	WING	Rear 54-3/8"	8"	7	2135-82-1		
1964	CENTER	Front 79-1/8"	9-1/8"	9	2224-18-1		
	WING	Rear 70"	9-1/8"	8	2222-18-1		
1965	CENTER	Front 79-1/8"	9-1/8"	9	2224-18-1		
	WING	Rear 70"	9-1/8"	8	2222-18-1		
	CENTER	Front 88-1/4"	9-1/8"	10	2225-18-1		
	WING	Rear 97-3/8"	9-1/8"	11	2227-18-1		

Tie rod number does not include nuts or pins.

1-1/2" TIE RODS

5/82

MODEL	LOCATION	LENGTH	DISC SPACING	NO. OF DISC	ALLOY TIE ROD
1966	CENTER	Front Rear	79-1/8"	9	2224-18-1
			70"	8	2222-18-1
	WING	Front Rear	106-1/2"	12	2228-18-1
			51-3/4"	6	2146-82-1
1968	CENTER	Front Rear	60-7/8"	7	2136-82-1
			78-3/8"	10	2214-18-1
	WING	Front Rear	70-3/8"	9	2212-18-1
			86-1/2"	11	2215-18-1
1969	CENTER	Front Rear	94-1/2"	12	2216-18-1
			78-3/8"	10	2214-18-1
	WING	Front Rear	70-3/8"	9	2212-18-1
			102-1/2"	13	2217-18-1
1970	CENTER	Front Rear	54-3/8"	7	2135-82-1
			54-3/8"	7	2135-82-1
	WING	Front Rear	79-1/8"	9	2224-18-1
			70"	8	2222-18-1
1973	CENTER	Front Rear	60-7/8"	7	2136-82-1
			60-7/8"	7	2136-82-1
	WING	Front Rear	51-3/4"	6	2146-82-1
			79-1/8"	9	2224-18-1
1976	CENTER	Front Rear	78-3/8"	10	2214-18-1
			70-3/8"	9	2212-18-1
	WING	Front Rear	62-3/8"	8	2138-82-1
			62-3/8"	8	2138-82-1
1976	CENTER	Front Rear	54-3/8"	7	2135-82-1
			78-3/8"	10	2214-18-1
	WING	Front Rear	79-1/8"	9	2224-18-1
			70"	8	2222-18-1
1976	CENTER	Front Rear	60-7/8"	7	2136-82-1
			60-7/8"	7	2136-82-1
	WING	Front Rear	51-3/4"	6	2146-82-1
			79-1/8"	9	2224-18-1

Tie rod number does not include nuts or pins.

1-1 1/2" TIE RODS

5/82

3/8" X 2" ROLL PIN	1 1/2" SLOTTED HEX NUT	1 1/2" SLOTTED HEX NUT	5/16" X 3" COTTER PIN
-----------------------	---------------------------	---------------------------	--------------------------

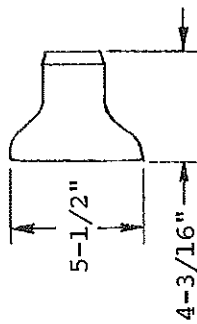
MODEL	LOCATION	LENGTH	DISC SPACING	NO. OF DISC	ALLOY TIE ROD
1979	CENTER	Front	8"	10	2214-18-1
		Rear	8"	9	2212-18-1
	WING	Front Inside	8"	8	2138-82-1
		Front Outside	8"	8	2138-82-1
		Rear Inside	8"	7	2135-82-1
		Rear Outside	8"	10	2214-18-1

Tie rod number does not include nuts or pins.

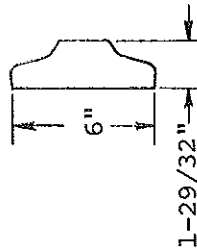
SPACER SPOOLS

8" SPACING

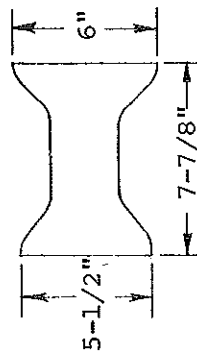
374-0-9
LONG
HALF SPOOL



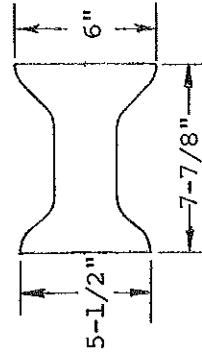
1918-0-8
SHORT
HALF SPOOL



1280-0-7
CAST
SPACER SPOOL

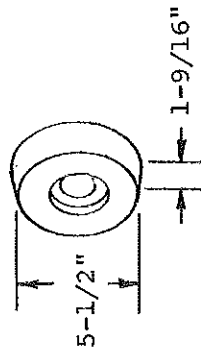


2165-0-8
DUCTILE
SPACER SPOOL

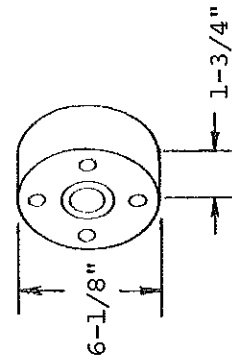


Ductile Spool For Rock Model

2212-18-2
END WASHER



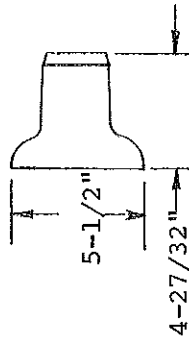
END WASHERS
FOR
ALL MODELS



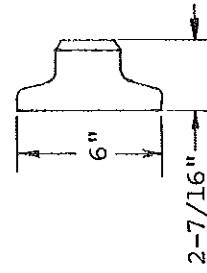
2212-18-3
LARGE END WASHER

9-1/8" SPACING

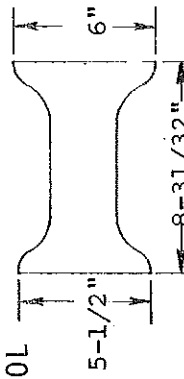
364-0-9
LONG
HALF SPOOL



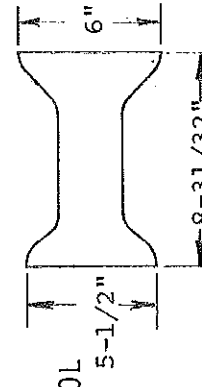
1280-0-10
SHORT
HALF SPOOL



364-0-7
CAST
SPACER SPOOL

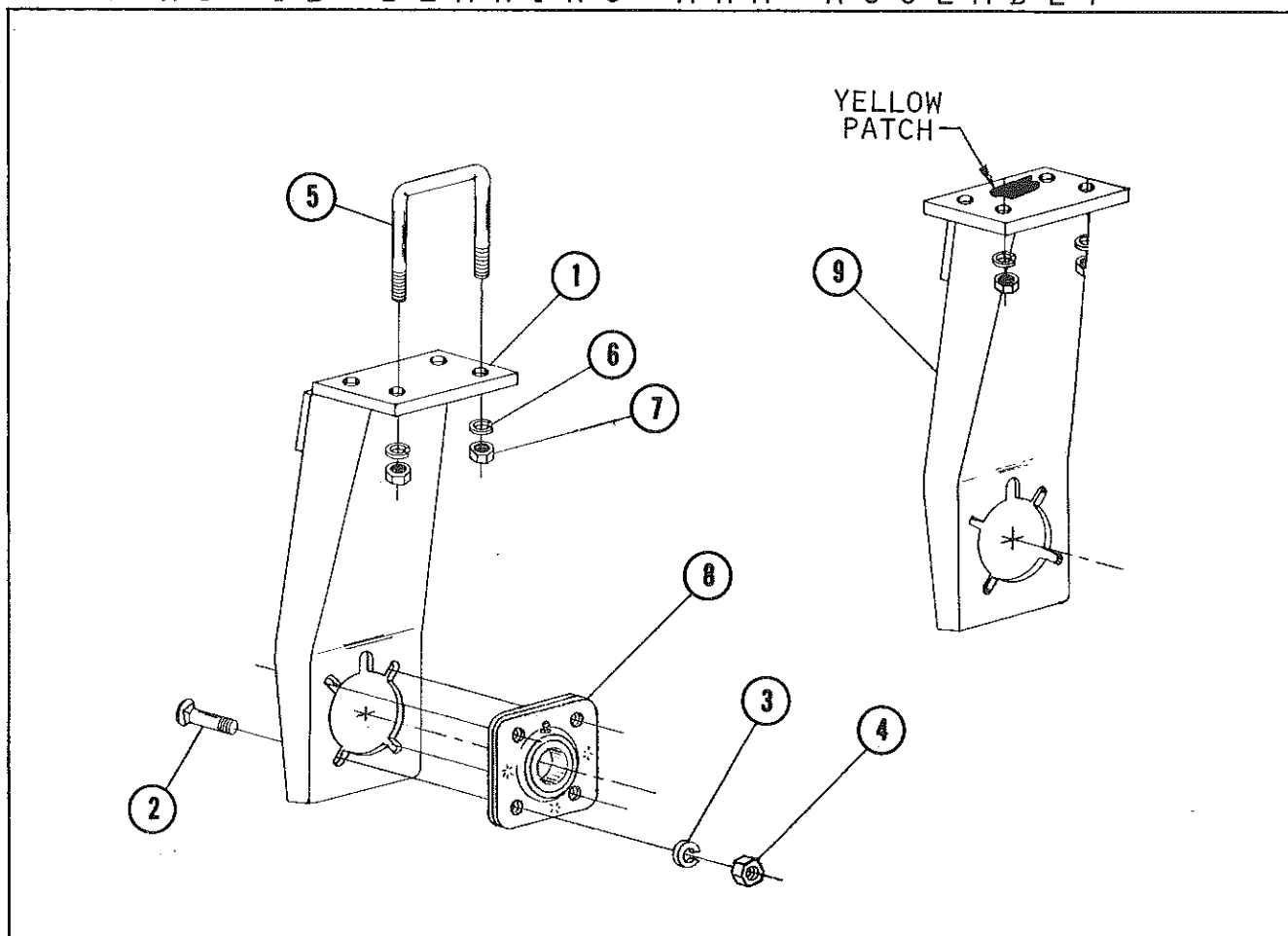


2166-0-9
DUCTILE
SPACER SPOOL



Ductile Spool For Rock Model

RIGID BEARING ARM ASSEMBLY



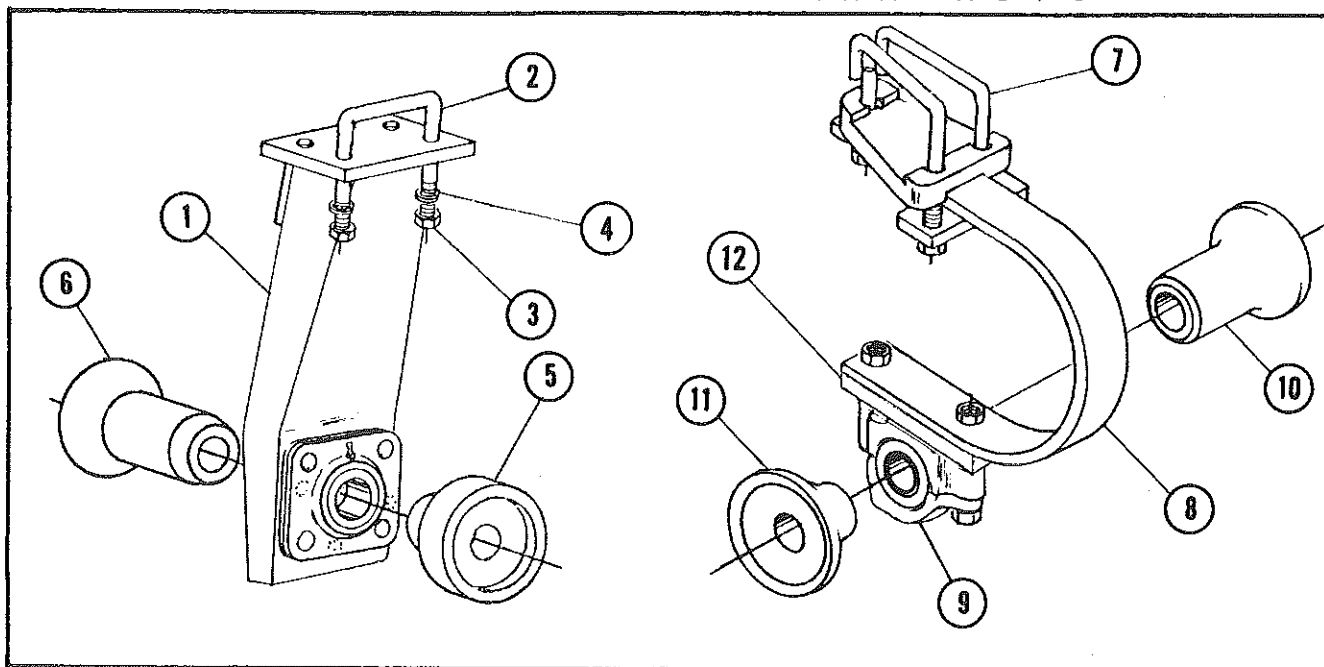
FOR MODELS - 1952 - 1963, 1970 - 1973

9/81

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
	1918-11-0	Regreaseable Bearing Arm Assembly	Specify
1	1963-7-0	Bearing Arm	1
2	62-137	1/2NC X 1-1/2" Carriage Bolt	4
3	64-107	1/2" Std. Lock Washer	4
4	63-106	1/2NC Hex Nut	4
*5	61-110	U-Bolt	2
*6	64-112	3/4" Std. Lock Washer	4
*7	63-112	3/4NC Hex Nut	4
8	40-109	Bearing Assembly	1
ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
	1918-10-0	Regreaseable Bearing Arm Assembly (Yellow Top)	
9	1963-9-0	Bearing Arm	1
2	62-137	1/2NC X 1-1/2" Carriage Bolt	4
3	64-107	1/2" Std. Lock Washer	4
4	63-106	1/2NC Hex Nut	4
*5	61-110	U-Bolt	2
*6	64-112	3/4" Std. Lock Washer	4
*7	63-112	3/4NC Hex Nut	4
8	40-109	Bearing Assembly	1

* Not Part of Assembly

MIDDLE BEARING ARM KITS



RIGID MIDDLE BEARING ARM KITS

1955-16-0 REGREASEABLE MIDDLE BEARING ARM KIT FOR 8" SPACING

1	1918-11-0	Bearing Arm Assembly	1
2	61-110	U-Bolt	2
3	63-112	3/4NC Hex Nut	4
4	64-112	3/4" STD. Lock Washer	4
5	1918-0-8	Short Half Spool	1
6	374-0-9	Long Half Spool	1

1952-16-0 REGREASEABLE MIDDLE BEARING ARM KIT FOR 9-1/8" SPACING

1	1918-11-0	Bearing Arm Assembly	1
2	61-110	U-Bolt	2
3	63-112	3/4NC Hex Nut	4
4	64-112	3/4" STD. Lock Washer	4
5	1280-0-10	Short Half Spool	1
6	364-0-9	Long Half Spool	1

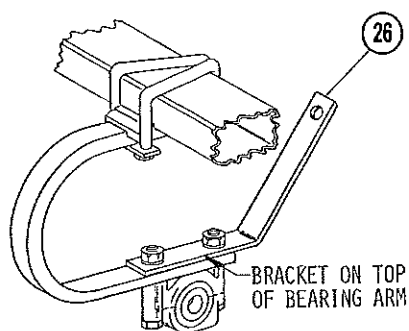
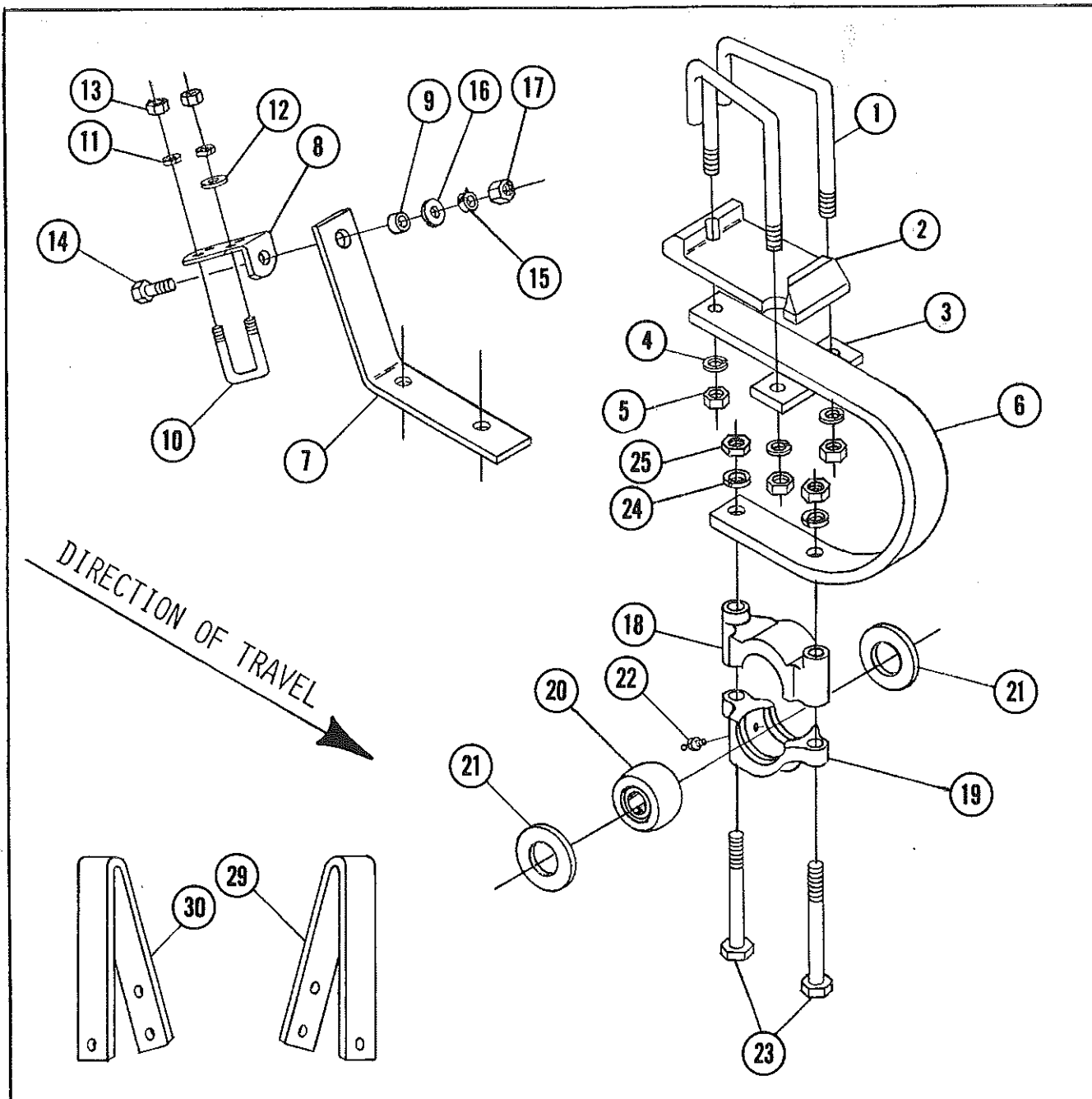
ROCK FLEX MIDDLE BEARING ARM KITS

1968-14-0 REGREASEABLE MIDDLE BEARING ARM KIT FOR 8" SPACING

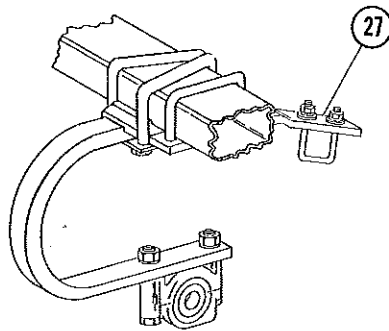
7	1965-16-0	Tri-Bolt Assembly	1
8	31-132	Shank	1
9	1922-21-0	Regreaseable Bearing Assembly	1
1	364-0-9	Long Half Spool	1
11	1918-0-8	Short Half Spool	1
12	922-81-1	Spacer	1

1965-15-0 REGREASEABLE MIDDLE BEARING ARM KIT FOR 9-1/8" SPACING

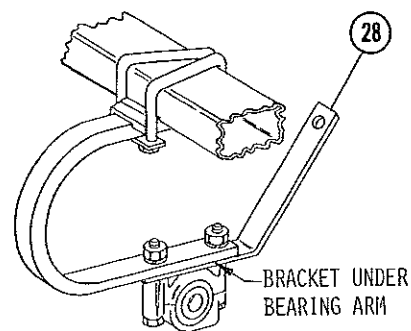
7	1965-16-0	Tri-Bolt Assembly	1
8	31-132	Shank	1
9	1922-21-0	Regreaseable Bearing Assembly	1
10	364-0-9	Long Half Spool	1
11	1280-0-10	Short Half Spool	1
12	922-81-1	Spacer	1



ROCK FLEX BEARING ARM
FOR RIGID SCRAPERS



ROCK FLEX BEARING ARM WITH
BRACKET FOR SPRING SCRAPERS



ROCK FLEX BEARING ARM
FOR TRASH BARS

SUPERSEAL ROCK FLEX BEARING ARM ASSEMBLY

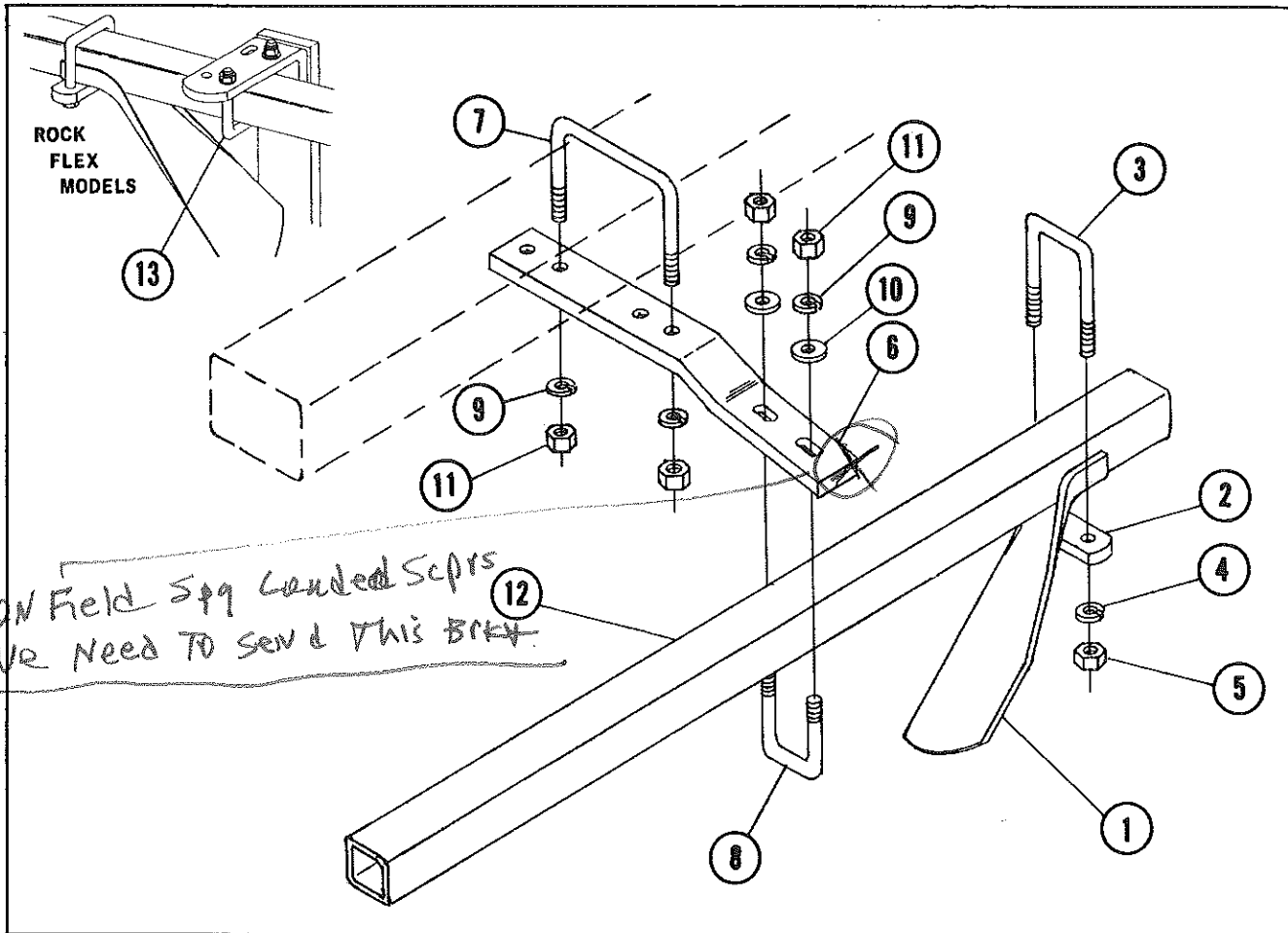
FOR MODELS - 1964, 1965, 1966, 1968, 1969, 1976, 1979

5/82

[illegible]

* Regreaseable Bearing assemblies may be used on older units originally equipped with sealed bearings. The regreaseable bearing is 1/2" wider than the sealed bearings, therefore new half spools may be required.

SCRAPERS



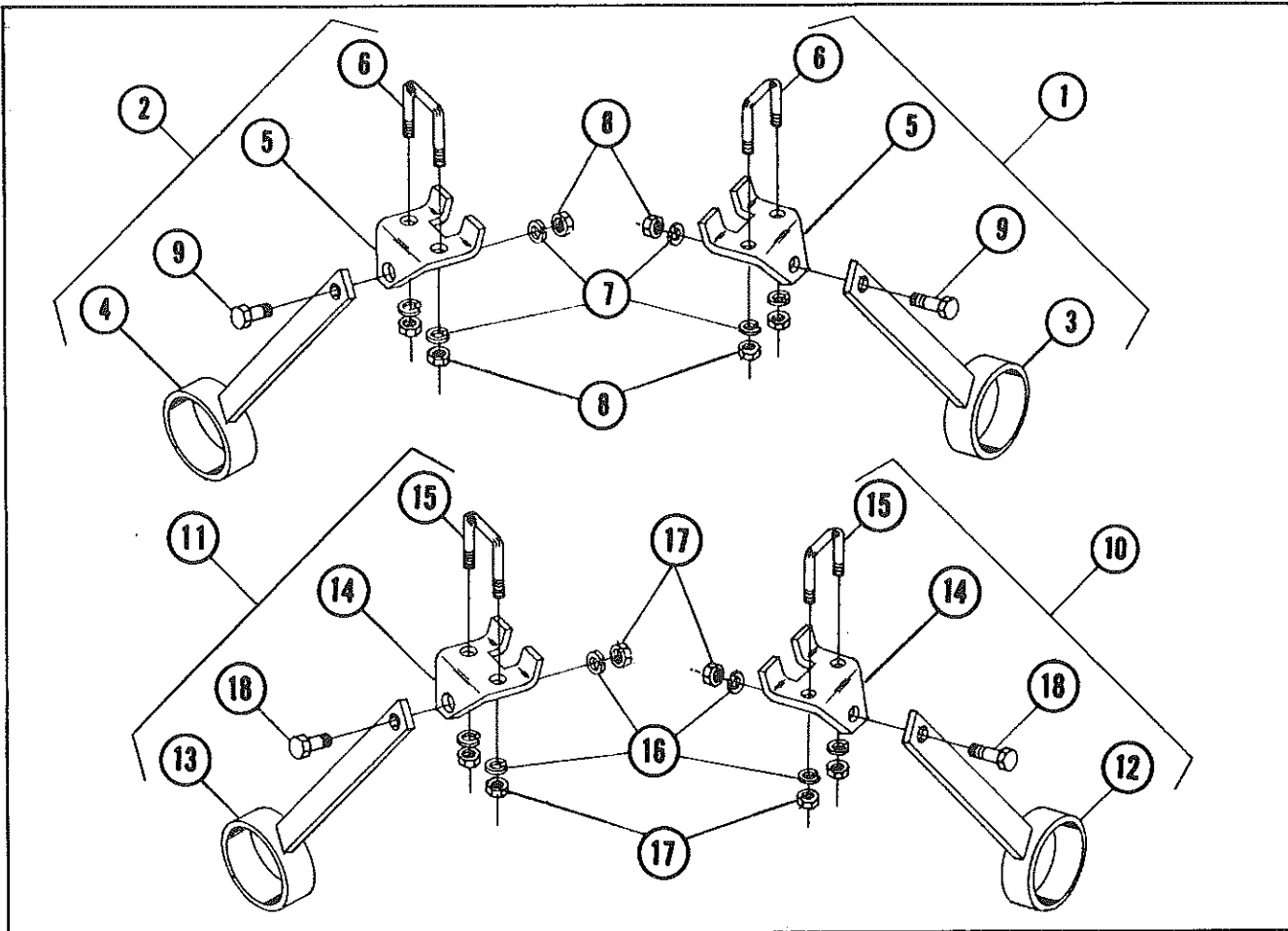
FOR MODELS - ALL

5/82

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
1	32-103	Left Scraper Bracket (388-185-2) SHOWN	
	32-101	Right Scraper Bracket (388-186-2)	
2	1483-286-1	Clamp	
3	61-108	U-Bolt	
4	64-107	1/2" STD. Lock Washer	
5	63-106	1/2NC Hex Nut	
X 6	32-113	Bracket	
7	61-107	U-Bolt	
8	61-119	U-Bolt	
9	64-109	5/8" STD. Lock Washer	
10	64-110	5/8" STD. Flat Washer	
11	63-109	5/8NC Hex Nut	
*12		Scraper Frame	
13		Bracket Clip (For Rock Flex Models For Parts Listing See P21)	

* NOTE: For scraper frame part number, locations, and length see placement page for your model.

EXTENSION TRASH BAR ASSEMBLIES



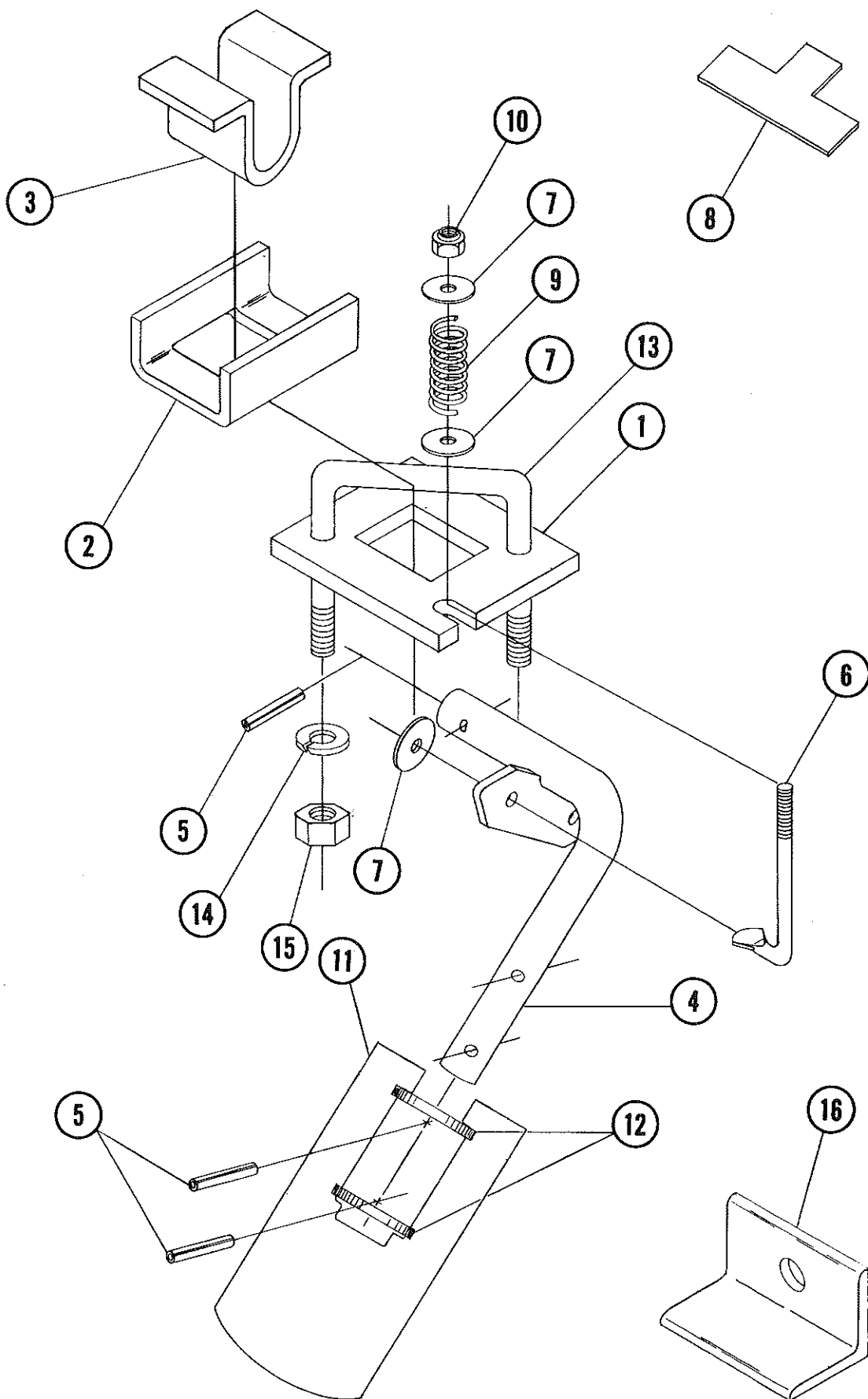
8/81

FOR MODELS - ALL

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
*1	960A-145-0	Right Extension Trash Bar Assembly	Specify
*2	960A-146-0	Left Extension Trash Bar Assembly	Specify
3	960-144-0A	Right Extension Trash Bar	1
4	960-143-0A	Left Extension Trash Bar	1
5	960A-145-1	Bracket	1
6	61-116	U-Bolt	1
7	64-109	5/8" STD. Lock Washer	3
8	63-109	5/8NC Hex Nut	3
9	62-168	5/8NC X 2" Cap Screw	1
▲10	2008-43-0	Right Extension Trash Bar Assembly	Specify
▲11	2008-44-0	Left Extension Trash Bar Assembly	Specify
12	960-144-0A	Right Extension Trash Bar	1
13	960-143-0A	Left Extension Trash Bar	1
14	2008-43-1	Bracket	1
15	61-119	U-Bolt	1
16	64-109	5/8" STD. Lock Washer	3
17	63-109	5/8NC Hex Nut	3
18	62-168	5/8NC X 2" Cap Screw	1

* Used On Units With Rigid Scrapers

▲ Used On Units With Spring Loaded Or Combination Scrapers



SPRING LOADED SCRAPERS

FOR MODELS - ALL

2/82

[illegible]

* Not Part Of Assembly

▲ Used Only In Conjunction With 1-3/4" Scraper Bar.

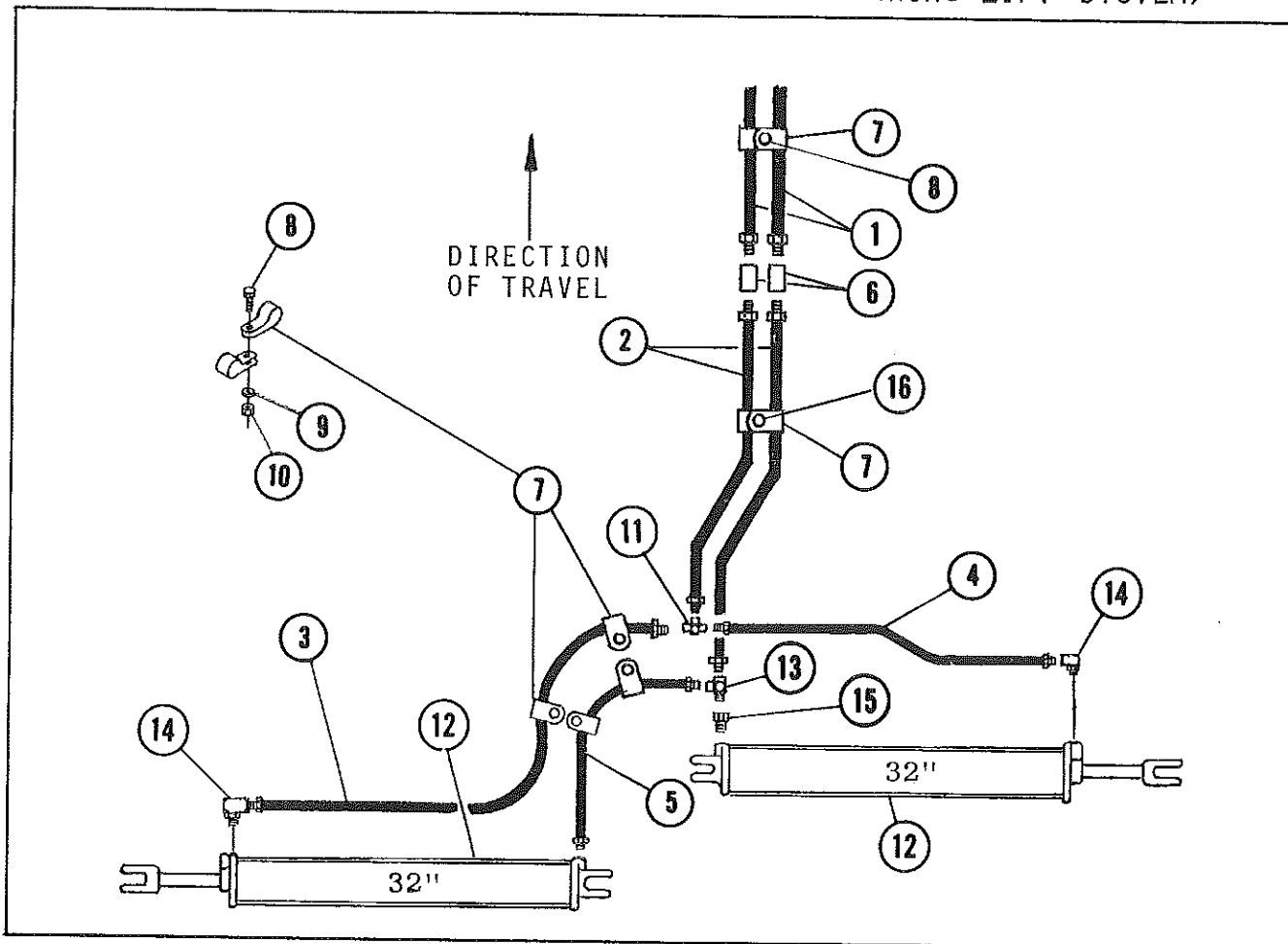
This diagram shows an exploded view of a metal bracket assembly. The components are numbered as follows:

- 1**: The main L-shaped bracket.
- 2**: A threaded rod passing through the bracket's hole.
- 3**: A washer or spacer ring.
- 4**: A lock washer or spacer ring.
- 5**: A nut or washer.
- 6**: A rectangular metal plate or insert.
- 7**: A U-bolts assembly used to secure the bracket to a surface.

$$\frac{9}{81}$$
[illegible]

**See Bracket Clip Parts Listing On Page P20

HYDRAULIC HOSE GROUP (WING LIFT SYSTEM)

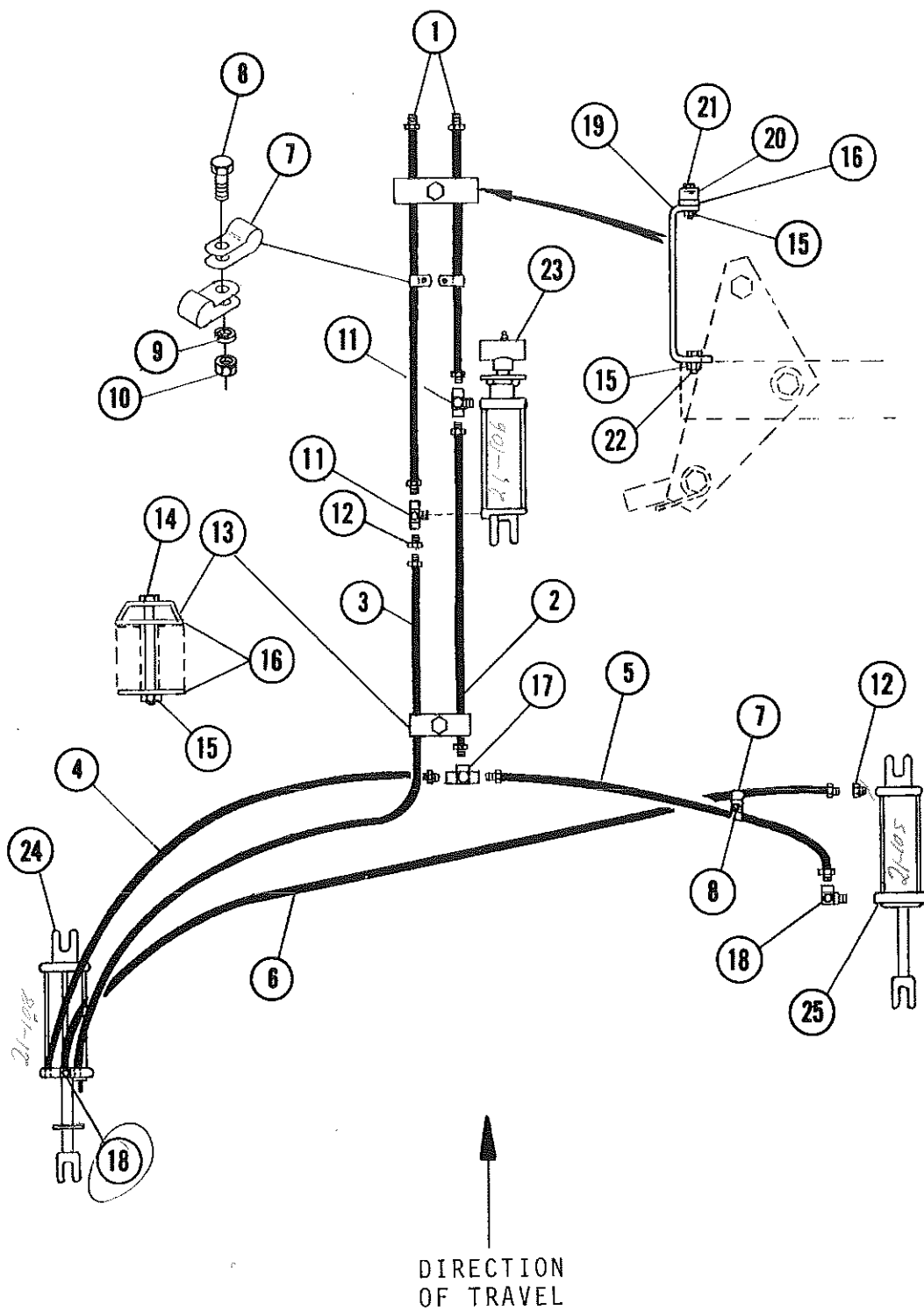


FOR MODELS - ALL

9/81

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
1	24-135	Rubber Hose 92" Long	2
2	24-145	Hydraulic Hose 61" Long	2
3	24-148	Hydraulic Hose 79" Long	1
4	24-143	Hydraulic Hose 46" Long	1
5	24-144	Hydraulic Hose 55" Long	1
6	25-110	1/2"NPT Female Pipe Coupling	2
7	25-127	3/4" I.D. Hose Clamp	8
8	62-108	3/8NC X 1" Cap Screw	3
9	64-103	3/8" Std. Lock Washer	4
10	63-102	3/8NC Hex Nut	4
11	25-122	3/8NPTF Female Pipe Tee	1
*12	20-109	4" X 32" Hydraulic Cylinder	2
13	25-118	3/8NPTF Service Tee	1
*14	25-132	90° Restrictor	2
15	25-101	1/2 - 3/8NPTF Reducer Bushing	1
16	62-125	3/8NC X 5" Cap Screw	1
	1960-97-0	Relief Valve Kit (Optional)	

*Not Part of Assembly



HYDRAULIC HOSE GROUP (DEPTH CONTROL SYSTEM)

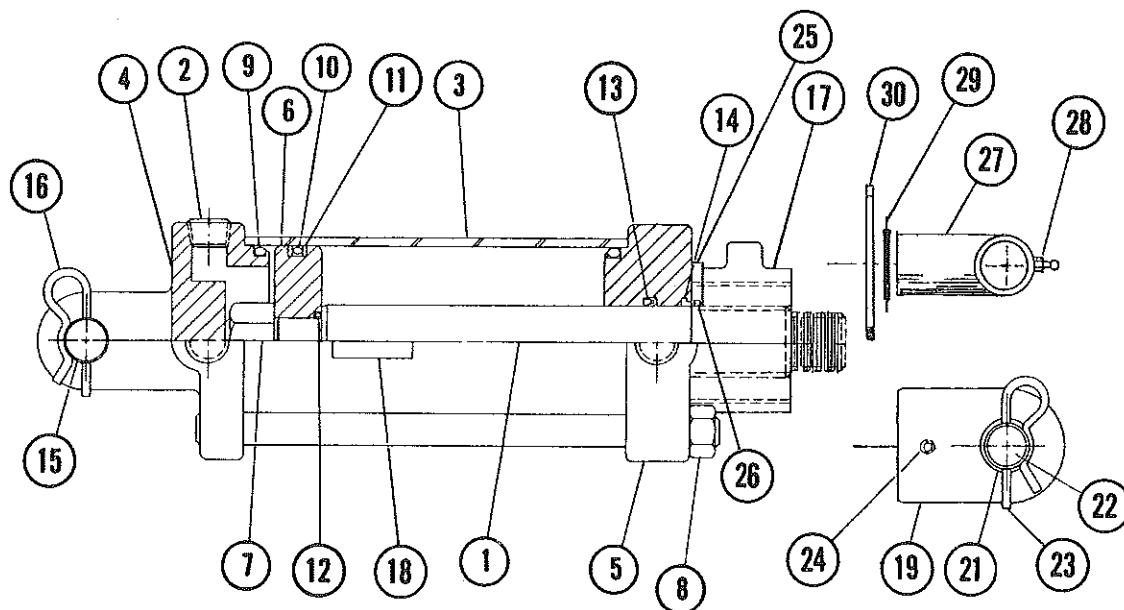
9/81

FOR MODELS - ALL

[illegible]

*Not Part of Assembly

PRINCE HYDRAULIC CYLINDER (FOR TONGUE LEVELING)



21-106 PRINCE HYDRAULIC CYLINDER 4" X 8"
Retracted - 20-1/2" Stroke - 8" Extended - 28-1/4"

5/82

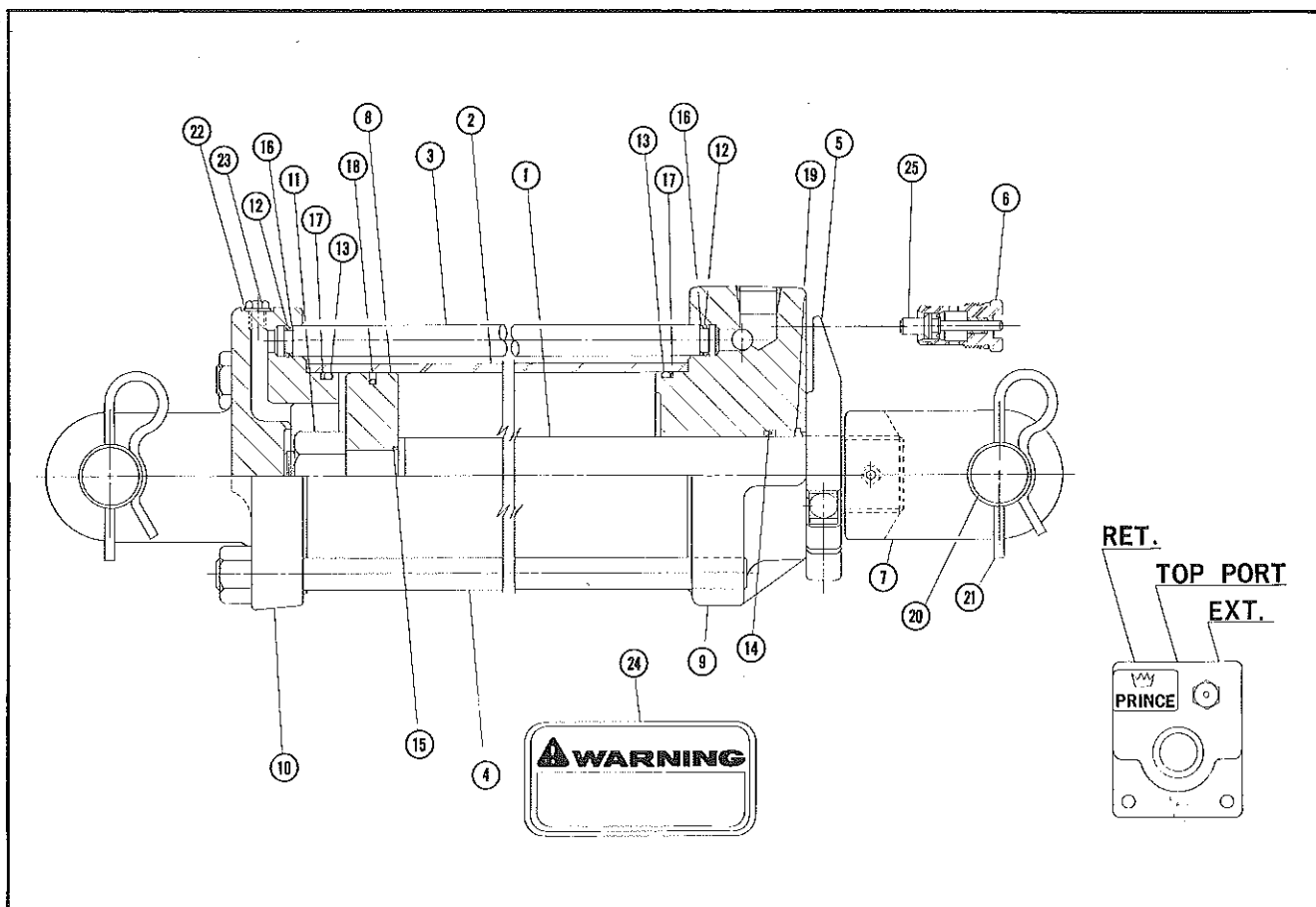
ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
1	21-255	Piston Rod (1-1/2" Dia.)	1
2	21-281	Pipe Plug	1
3	21-256	Tube	1
4	21-257	Butt Casting	1
5	21-223	Gland Casting	1
6	21-224	Piston	1
7	21-225	Lock Nut	1
8	21-259	Tie Rod	4
* 9	21-289	O-Ring	2
*10	21-290	O-Ring	1
*11	21-291	Back-Up Washer	2
*12	21-228	O-Ring	1
*13	21-350	U-Cup	1
*14	21-231	Wiper	1
15	21-260	Clevis Pin	1
16	21-219	Hair Pin Clip	2
17	21-261	Stroke Control	1
18	74-113	Cylinder Warning Decal	1
19	21-364 or 21-346	Clevis Assembly <i>21-527</i>	1
21	21-262	Bushing	2
22	21-260	Clevis Pin	1
23	21-219	Hair Pin Clip	2
24	-----	3/8"SAE X 3/8" Set Screw (3/16" Hex Socket)	1
25	21-263	Dust Cover	1
26	21-264	O-Ring	1
	21-232	Seal Kit (Contains * Items)	

1963-90-0 TONGUE LEVELING CYLINDER ASSEMBLY

▲	21-106	Prince 4" X 8" Hydraulic Cylinder Assembly	1
27	1963-91-0	Cylinder Pivot	1
28	65-101	1/8NPT Zerk	1
29	64-128	1-5/16" Internal Lock Washer (Shakeproof)	1
30	961-40-4	Screw Lock	1

▲Remove Clevis Assembly Item 19, and ADD Items 27 thru 30.

PRINCE 3-PORT HYDRAULIC CYLINDER

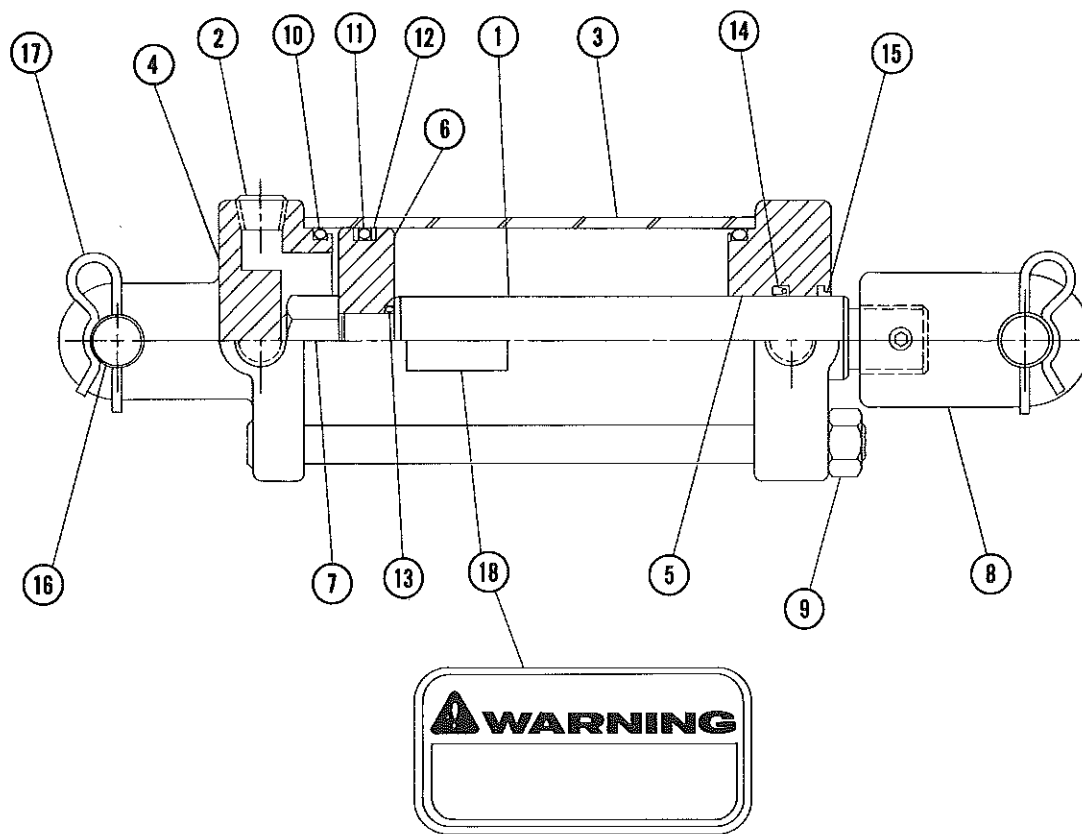


21-108 4" X 8" HYDRAULIC CYLINDER WITH 3-PORT STROKE CONTROL 5/82
 Retracted - 20-1/4" Stroke - 8" Extended - 28-1/4" Rod - 1-1/2"

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
1	21-269	Piston Rod	1
2	21-270	Tube	1
3	21-271	Manifold	1
4	21-272	Tie Rod	4
5	21-273	Striker Plate Assembly	1
6	21-238	Valve Assembly	1
7	21-226	Clevis Assembly	1
8	21-240	Piston	1
9	21-274	Gland	1
10	21-242	Butt Clevis	1
11	21-225	Lock Nut	1
*12	21-243	O-Ring	2
*13	21-244	O-Ring	2
*14	21-350	U-Cup	1
*15	21-228	O-Ring	1
*16	21-246	Back-Up Washer	2
*17	21-247	Back-Up Washer	2
18	21-249	Urethane Seal Assembly	1
19	21-231	Wiper	1
20	21-260	Clevis Pin	2
21	21-219	Hair Pin Clip	4
22	21-252	Nyltite Seal	1
23	21-253	Cap Screw	1
24	74-113	Cylinder Warning Decal	1
25	21-368	Plunger Assembly	
	21-275	Seal Kit (Includes * Items)	
	21-369	Seal Kit (For Item 6 Valve Assembly)	

2226861
109.95

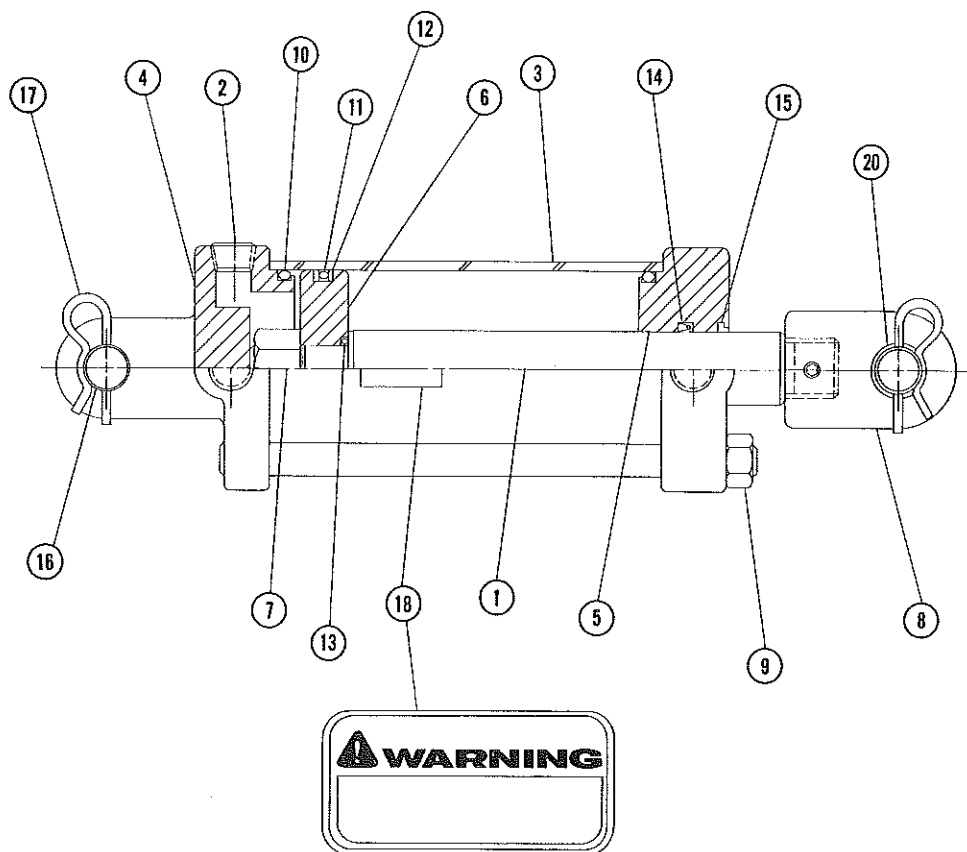
PRINCE HYDRAULIC CYLINDER



21-107 4" X 32" HYDRAULIC CYLINDER 5/82
 Retracted - 42-3/4" Stroke - 32" Extended - 74-3/4" Rod - 1-1/2"

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
1	21-265	Piston Rod	1
2	21-281	Pipe Plug (1/2" Socket Head)	1
3	21-266	Tube	1
4	21-283	Butt	1
5	21-223	Gland	1
6	21-224	Piston	1
7	21-225	Lock Nut	1
8	21-267	Clevis Assembly	1
9	21-268	Tie Rod	4
*10	21-289	O-Ring	2
*11	21-290	O-Ring	1
*12	21-291	Back-Up Washer	2
*13	21-228	O-Ring	1
*14	21-350	U-Cup	1
*15	21-231	Wiper	1
16	21-296	Clevis Pin	2
17	21-219	Hair Pin Clip	4
18	74-113	Cylinder Warning Decal	1
	21-232	Seal Kit (Contains * Items)	

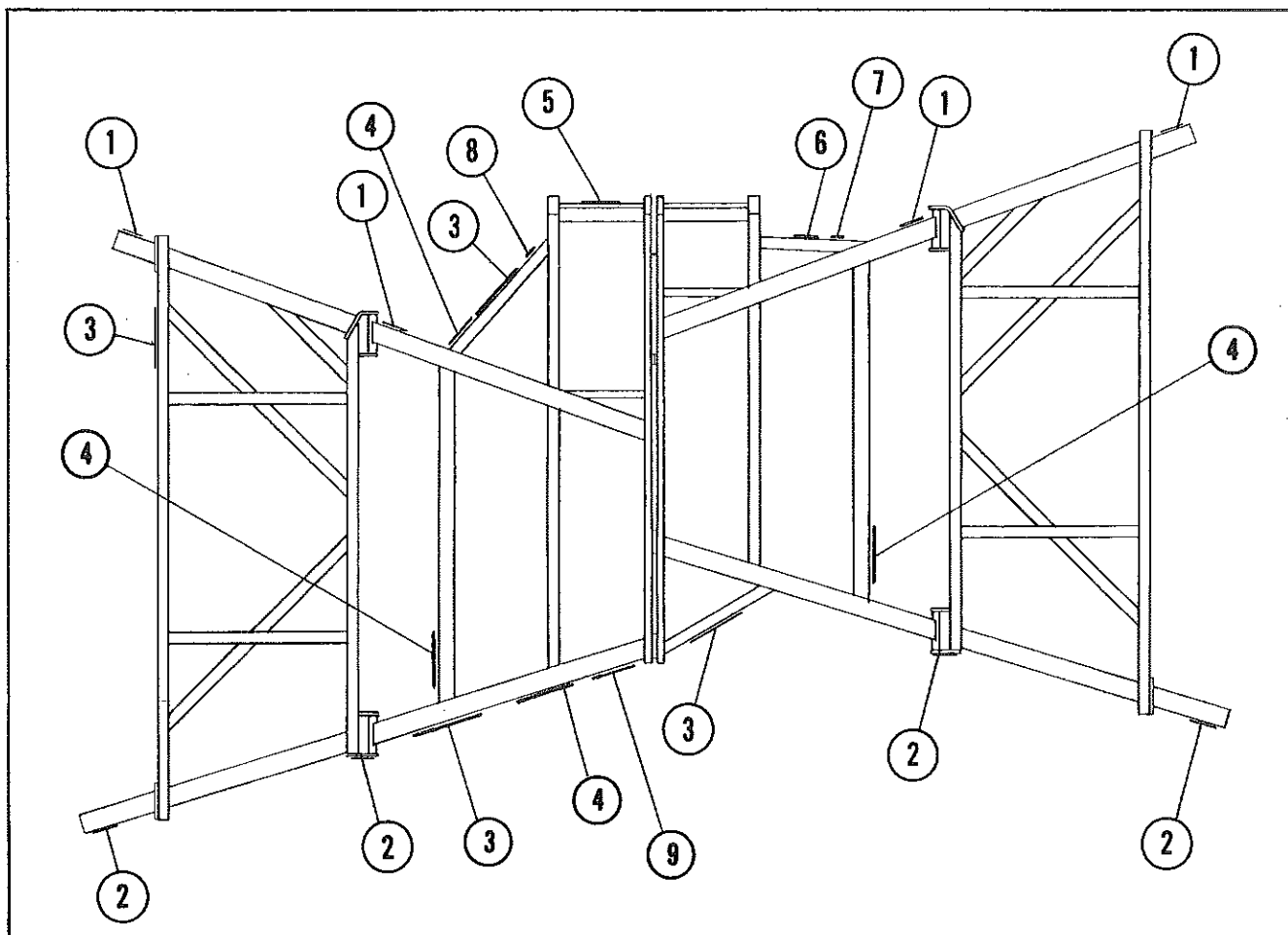
PRINCE HYDRAULIC CYLINDER



21-105 4" X 8" HYDRAULIC CYLINDER
 Retracted - 20-1/4" Stroke - 8" Extended - 28-1/4" Rod - 1-1/2" 5/82

ITEM	PART NUMBER	PART DESCRIPTION	QUANTITY
1	21-370	Piston Rod	1
2	21-281	Pipe Plug (1/2" Socket Head)	1
3	21-256	Tube	1
4	21-257	Butt	1
5	21-223	Gland	1
6	21-224	Piston	1
7	21-225	Lock Nut	1
8	21-346	Clevis Assembly 21-527	1
9	21-259	Tie Rod	4
*10	21-289	O-Ring	2
*11	21-290	O-Ring	1
*12	21-291	Back-Up Washer	2
*13	21-228	O-Ring	1
*14	21-350	U-Cup	1
*15	21-231	Wiper	1
16	21-260	Clevis Pin	2
17	21-219	Hair Pin Clip	4
18	74-113	Cylinder Warning Decal	1
	21-232	Seal Kit (Contains * Items)	

DECALS



FOR MODELS - ALL

9/81

[illegible]

ASSEMBLY SECTION

THE FOLLOWING SECTION ILLUSTRATES A GENERAL METHOD FOR THE ASSEMBLY OF THIS SERIES KRAUSE TILLAGE TOOL. YOU MUST KNOW THE MODEL NUMBER OF THE UNIT BEING ASSEMBLED WHENEVER MAKING REFERENCE TO THIS SECTION. THE FOLLOWING PICTURES AND DRAWINGS WILL SHOW BOLTS, PINS, NUTS AND ETC., WITH THE DESCRIPTIVE SIZE AND LENGTHS IN THE ACCOMPANYING PARAGRAPH AND A PARTS LISTING REFERENCE PAGE NUMBER. IF ANY DIFFICULTY SHOULD BE ENCOUNTERED DURING THE ASSEMBLY, RECHECK THE ILLUSTRATIONS, ASSEMBLY STEPS AND PART LIST DRAWINGS.

PROPER BOLT USE

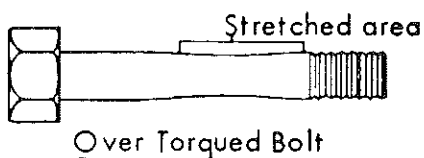
OVER TORQUED BOLTS is probably one of the most frequent causes for bolt breakages. MAXIMUM TIGHTNESS DOES NOT MEAN MAXIMUM STRENGTH. A bolt in a stretched condition due to over torsioning is more subject to failure under a heavy load or shock than a bolt that is correctly tightened. Torque hand wrench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

The following table lists the torque requirements for bolts with coarse threads. Torque values for plated or oiled bolts are unpredictable due to the lubricating effect and require slightly less torque than black bolts.

RECOMMENDED TORQUE VALUES IN FOOT POUNDS

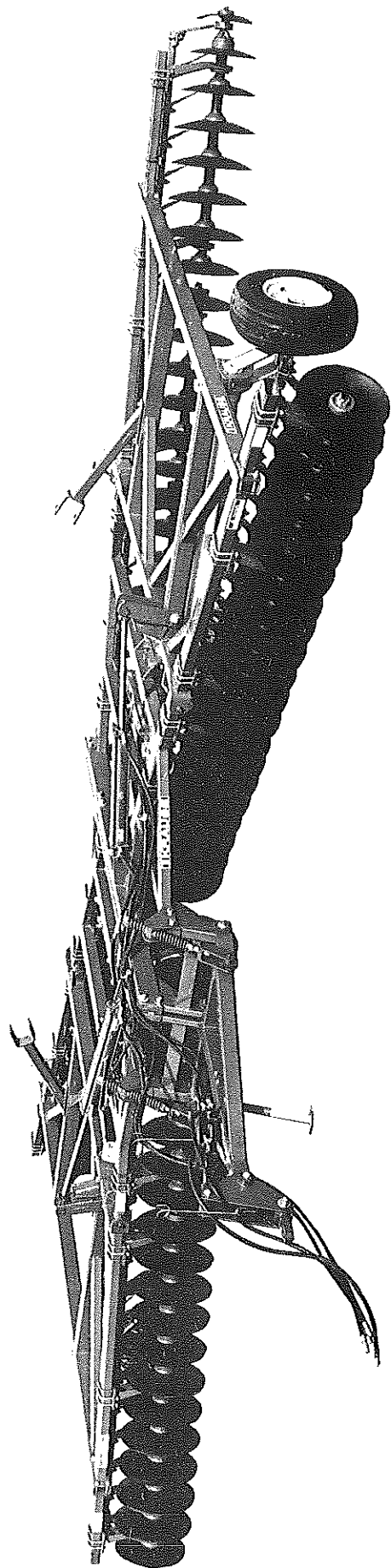
For S.A.E. Grade 2 and Grade 5 coarse thread cap screws and bolts shown are suggested MAXIMUM for fasteners, carrying only the residue oil of the manufacturer.

BOLT SIZE	BLACK BOLTS		PLATED or OILED BOLTS	
	GRADE 2	GRADE 5	GRADE 2	GRADE 5
3/8"	19	32	16	24
7/16"	30	50	24	40
1/2"	45	72	34	58
5/8"	86	150	63	118
3/4"	150	250	120	200
7/8"	140	360	105	280
1"	220	560	175	450
1-1/8"	260	700	205	560
1-1/4"	380	980	300	780
1-1/2"	580	1200	460	960
TIE ROD TIGHTENING TORQUE				
1-1/2" Dia. Rods			600 Ft. Lbs	
1-3/4" Dia. Rods			800 Ft. Lbs	
2" Dia. Rods			1200 Ft. Lbs	



Incorrect use of GRADED bolts is another problem. Generally two grades are used on Krause tools, Grade 2 and Grade 5. 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. It is very important that these bolts are used in the proper locations as recommended

[illegible]



ASSEMBLY

STUDY THE NAMES AND LOCATIONS OF THE PARTS AND FAMILIARIZE YOURSELF WITH THE TANDEM BEFORE STARTING THE ASSEMBLY. READING THE WRITTEN INSTRUCTIONS THAT FOLLOW WILL BE HELPFUL.

SAFETY

 READ ALL THE SAFETY NOTATIONS IN THE ASSEMBLY INSTRUCTIONS FOR YOUR OWN PROTECTION. ACCIDENTS CAN BE PREVENTED BY RECOGNIZING THE CAUSE OF AN ACCIDENT BEFORE IT CAN HAPPEN.

ASSEMBLY AREA

Select an area for the assembly that will be large enough to accommodate the completed tandem. The surface of the work area should be as level as possible. Use the proper hand tools to insure proper bolt tightness. Refer to the page titled "Proper Bolt Use" for the recommended torque values for different size bolts.

PART LOCATIONS

FRONT - The front of the frame can be determined by the location of the name plate that has been attached to the right front frame member.

RIGHT and LEFT sides can be established by standing behind the frame and looking toward the front, or the direction of travel.

TOP - To be sure the frame is right side up, position the front hitch posts of the frame pointing down.

MODEL NUMBER

It is very important that you know the model number of the tandem being assembled. The model number is stamped on the name plate that has been attached to the right front frame member. Use the model number whenever you refer to the assembly instructions. The Parts Listing must be used to obtain detailed part numbers and bolt length descriptions.



The first stage in the assembly of the tandem is to assemble a self-supporting frame.



WARNING: ALWAYS ATTACH CHAINS SECURELY. WHEN A CHAIN BREAKS UNDER LOAD, THE RECOIL ACTION CAN CAUSE THE LOOSE END TO WHIP IN ANY DIRECTION WITH DANGEROUS FORCE THAT COULD CAUSE INJURY TO ANY PERSON NEAR BY.

PROOF LOAD RATING OF CHAIN MUST EQUAL OR EXCEED 5 TIMES WEIGHT BEING LIFTED.

WEIGHT OF ASSEMBLY CENTER FRAME AND ROCKER SHAFT - 2,700LB

WEIGHT OF CENTER SECTION WITH DISC GANGS ATTACHED - 4,500LB

CENTER FRAME HALVES

Bolt the two-piece center frame halves together on the ground. Be sure to use flat washers where shown on the parts list and drawing. Torque the frame bolts and check the two sides for level. If the frames do not appear to be level, use shims provided in the bolt box to correct.

A level can be used to check the frames for leveling as shown in figure 2, next page.

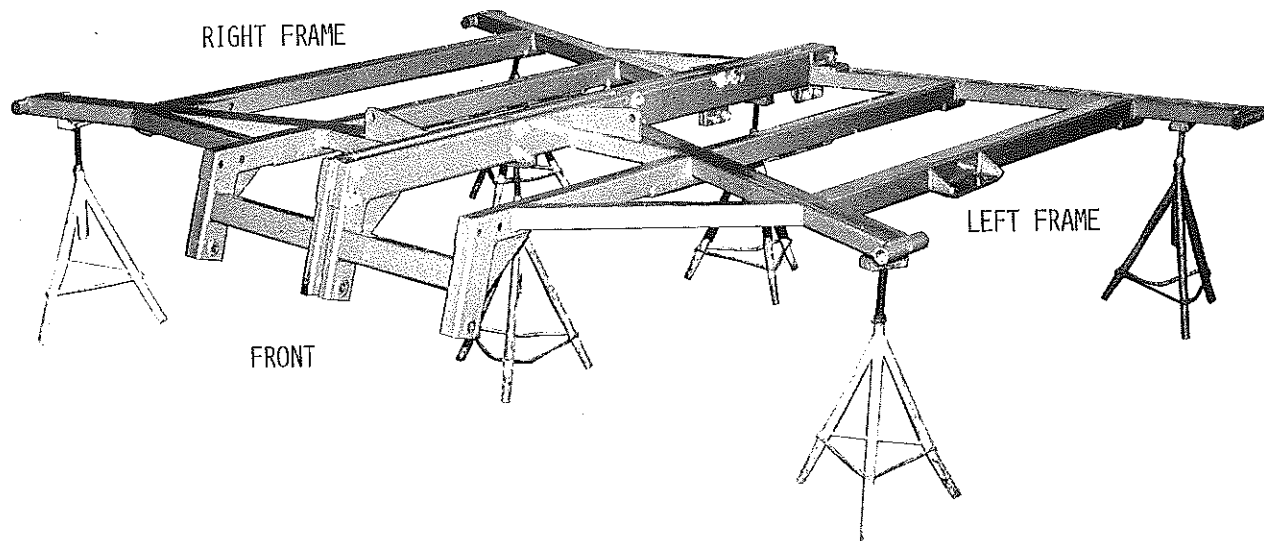
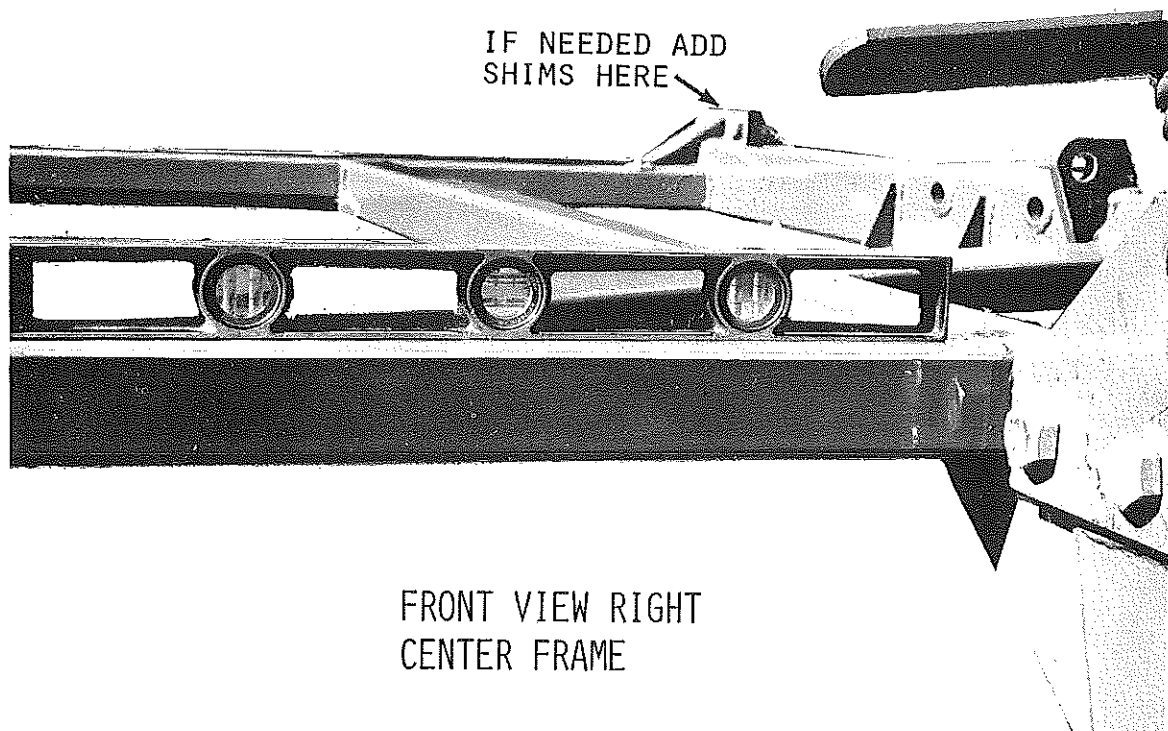


Fig.1



FRONT VIEW RIGHT
CENTER FRAME

Fig. 2

Raise the assembled frame and place it on sturdy stands approximately 36" high, in the center of the assembly area. The front should be facing a direction that will permit future hitching.

ROCKER SHAFTS & HALF CLAMPS

Position the right and left rocker shafts under the frame on the correct sides. The rocker shaft cylinder lugs will be pointing up and to the front. The wheel arms should be pointing to the back.

Remove the dirt and paint from the grease channels in the rocker shaft half clamps.

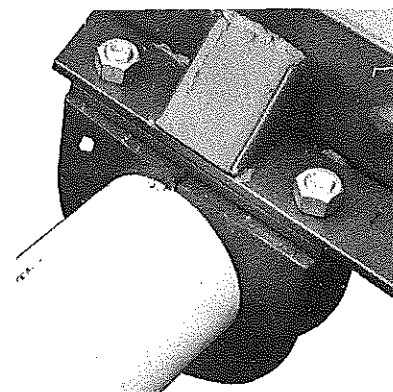


Fig. 3

Join two half clamps together around the rocker shaft tube with a GRADE 5 bolt at each location where the rockers will attach to the bottom of the frame. Place zerks into the zerk holes in the rocker shaft clamps.

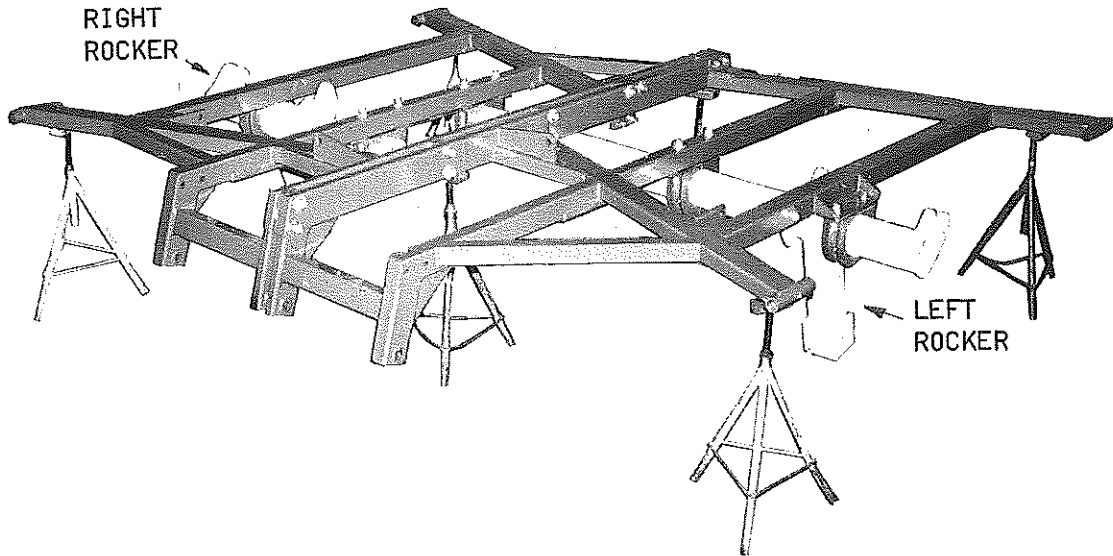
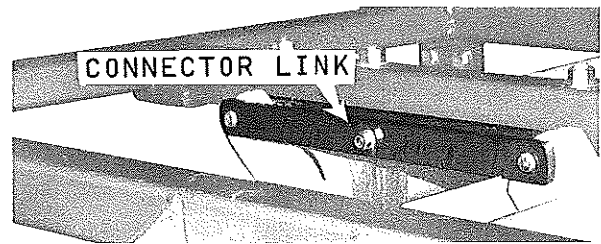


Fig. 4

CENTER LINKAGE ASSEMBLY

Attach the links between the large rocker shaft lugs with clevis pins and cotter pins as shown in figure 5. Bolt the two links together in the middle making sure the spacer is between the two links to prevent crushing when the bolt is tightened.



CENTER SECTION DUAL HUBS

Using the axle stud bolts provided, attach the dual hubs to both rocker shaft wheel arms. Make sure the hubs are positioned with the axle (spindle) at the same location on each side. The axle is off center on the mounting plate, and will appear different on opposite sides as illustrated. The yellow patch on each hub edge will help. (See Fig.6)

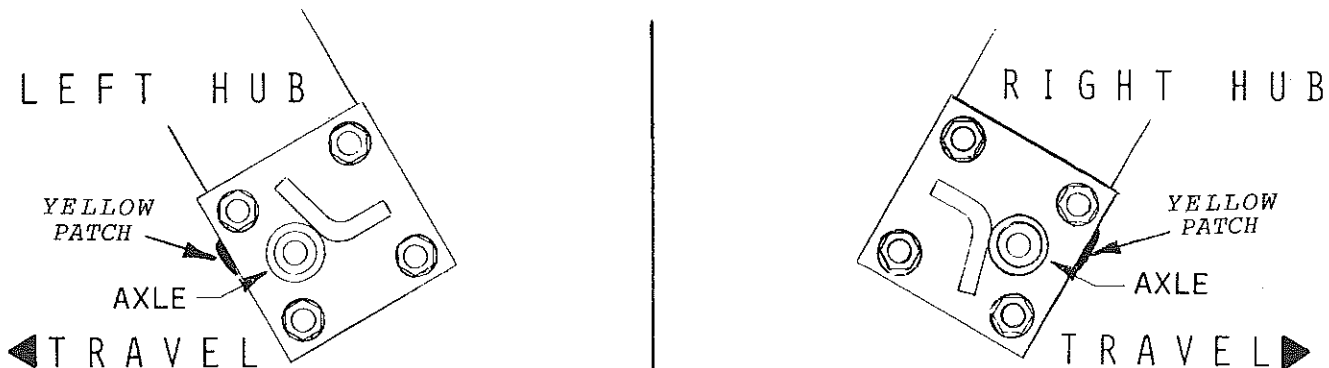
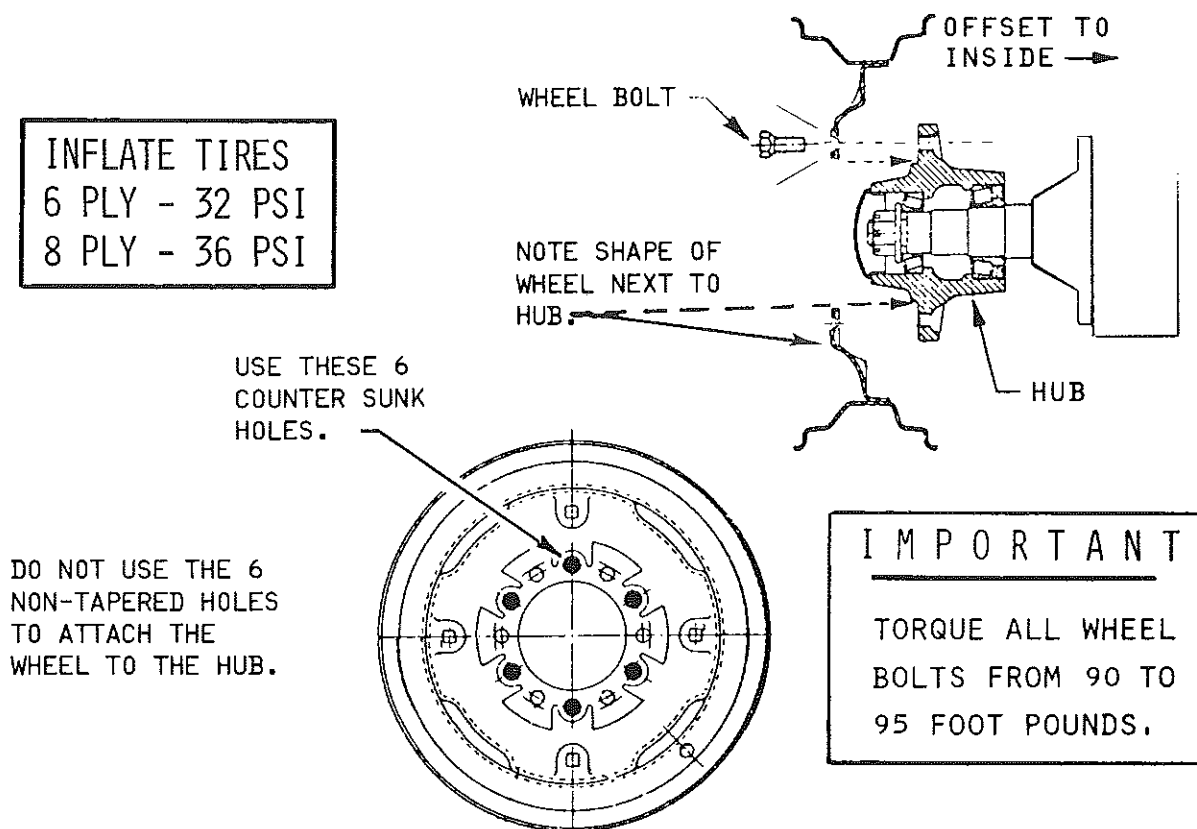


Fig. 6

WHEELS AND TIRES

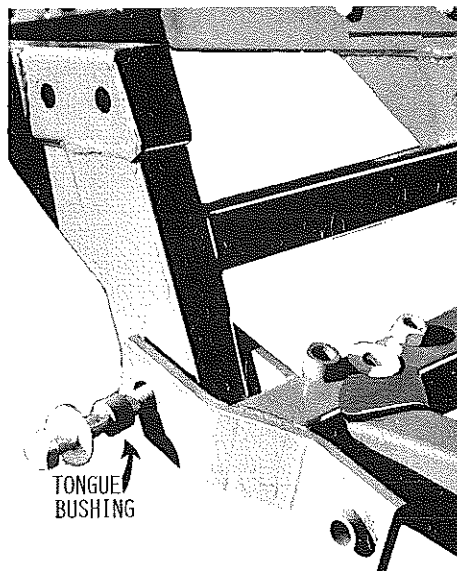
This series of tandems have been furnished with 15 x 10, 6 bolt wheels that require 11L x 15 tires. Remove the 6 wheel bolts in each hub and attach the wheels and tires to the hubs through the counter sunk wheel bolt holes as shown in the drawing below. Note how the wheel has been formed to fit the hub in a concave shape next to the hub.



IMPORTANT: USE 11.L X 15 8-PLY TIRES ON CENTER SECTION

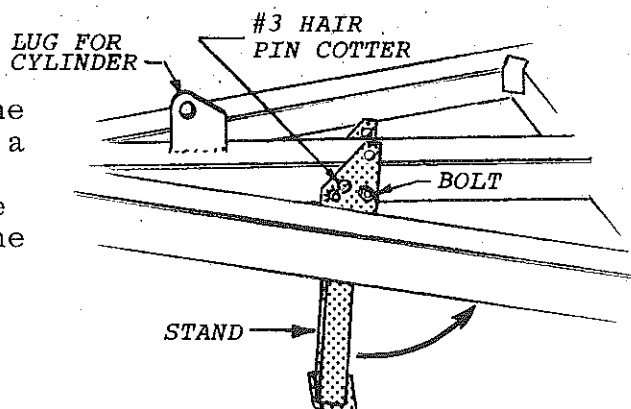
TONGUE

Position the tongue in front of the frame with the tongue right side up. The top of the tongue will have a cylinder lug for the tongue leveling cylinder to be pinned to at a later time. Slide the tongue up to the frame with the three tongue yokes around the three frame hitch posts, making sure that bushings and flat washers are used. Bolt the tongue in place.



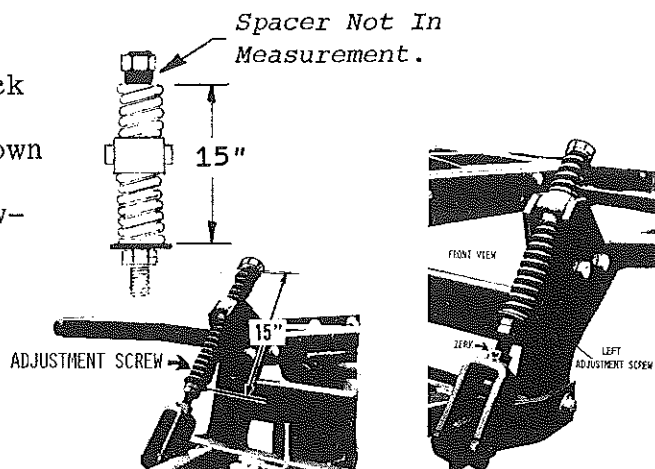
TONGUE STAND

The tongue stand can be bolted to the tongue to hold it in position. Use a 5/8nc X 5-1/2" Cap Screw and Self Locking Nut through the holes in the stand and tongue that will permit the stand to swing back when the handle is removed. With the stand in the lowered position, place the handle through the front holes and secure with a #3 Hair Pin Cotter.



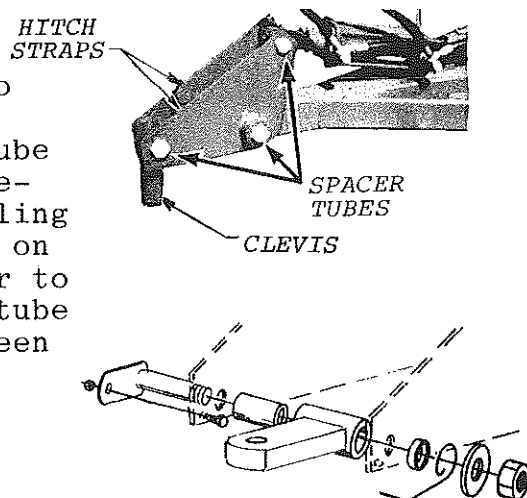
ADJUSTMENT SCREWS

Both tongue adjustment screws must have the same spring tension. Check both adjustment screws to be sure they have a dimension of 15" as shown at the right. The assemblies are shipped with a spacer for high drawbar clevis hitching, and the 15" dimension will be from the flat washer to the bottom of the spacer. If the drawbar is to be changed to the lower position, remove the spacer from both assemblies and adjust the springs to 15" between the flat washers and the bottom of the screw nut on top. Position the adjustment screws between the trunnion brackets and bolt to the frame as shown. Unscrew the clevis of the adjustment screws and pin the clevis to the arms on the tongue. Be sure the zerk is to the front before pinning. Spread the cotter pins to prevent loss.



HITCHING CLEVIS

Attach the right and left hitch straps to the tongue using the special spacer tube and washers provided. Place the clevis tube inside the clevis and attach the clevis between the tongue straps. The tongue leveling cylinder, will have a pivot tube threaded on the rod end. Pin the base of the cylinder to the lug on the tongue, and with a spacer tube inside the pivot tube, bolt the tube between the two tongue strap lugs on top.



HOSE CARRIERS

Bolt the hose carriers to the top of the tongue, making sure that two flat washers are under the bolt heads.

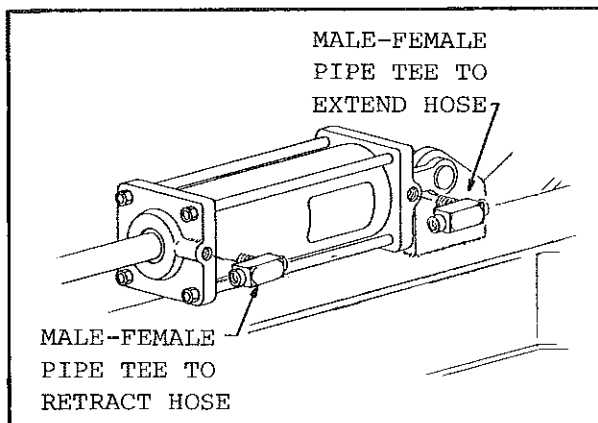
HYDRAULICS



CAUTION:

DO NOT PIN THE ROD END OF WING LIFT OR DEPTH CONTROL CYLINDERS TO THE LUGS UNTIL ALL HYDRAULIC PLUMBING IS COMPLETED AND THE ENTIRE SYSTEM HAS BEEN PURGED OF AIR AND FULL OF HYDRAULIC OIL.

Attach the hoses and fittings to the tongue leveling cylinder as shown in the illustration to the right. The drawing and hose schematics in the Parts Section will clarify.



Pin the base end of both depth control cylinders to the lugs on each side of the center frame. Connect the proper hoses from the tongue leveling cylinder to the ports on the depth cylinders.
(See Hose Schematic on Page P25)

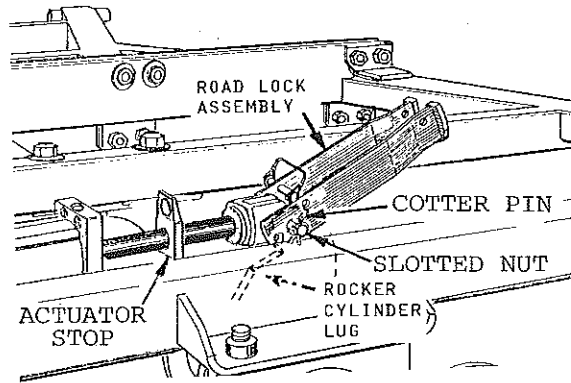
Pin the base of the wing lift cylinders to the front of the main frame with the hose port to the front. Do not pin the rod end of the cylinder until all hydraulics are assembled and purged of air. (NOTE: Tightly screw a 45° restrictor assembly into the rod end port of the wing cylinder, and a 90° restrictor assembly into the rod end of the right wing cylinder. The hose couplings screw into the restrictor assemblies.)

Block up the rod ends of all four cylinders to permit safe clearance of the rods while the wing lift and depth systems are filled with oil and all air removed from both systems. (See Operation Section, under "HYDRAULICS".) Connect the hoses to the tractor and bleed the systems. When both systems are full of oil and free of air, leave all cylinder rods fully extended and disconnect the hose couplers from the tractor.

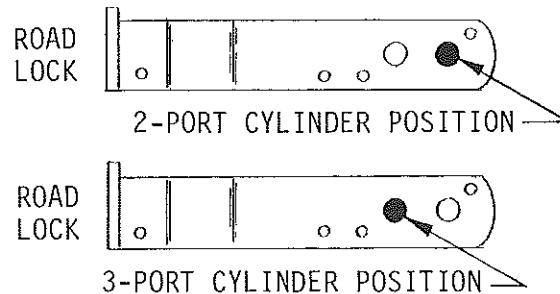
NOTE: THE HYDRAULIC PLUMBING WILL REQUIRE APPROXIMATELY 6 GALLONS OF HYDRAULIC OIL TO FILL THE ENTIRE SYSTEM.

ROAD LOCKS

Extend the cylinder rods and position the clevis ends around the rocker shaft lugs and position the road lock assemblies over the cylinder clevis. NOTE: The three port cylinder placed on the left rocker shaft and the two port cylinder on the right rocker shaft. Pin the road lock and cylinder clevis to the rocker lift lug and secure the road lock bolt with a slotted nut and cotter pin.



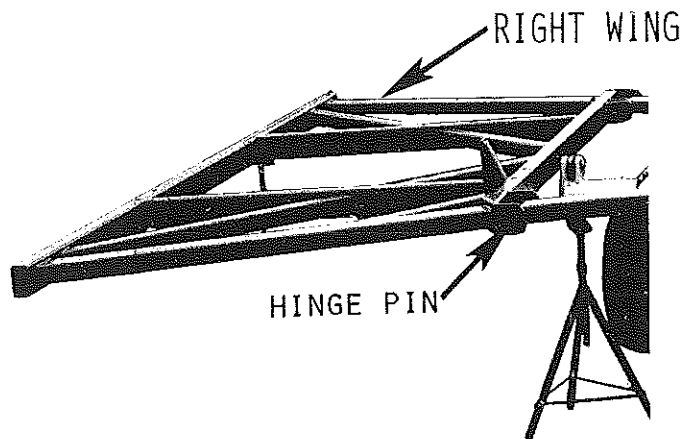
Remove the small P.T.O. pins from the lock assemblies and lower the lock arms toward the cylinder over the rod, and replace the P.T.O. pins in the locks under the cylinder rods.



Leave the blocks under the wing lift cylinders. With tongue jack down, remove the support stands from under the center frame.

WING FRAMES

Attach the right and left wing frames to the center section using the large hinge pins. Insert the pins from the inside out and secure with roll pins. Set stands under the wings for support.



WING ROCKER SHAFTS

There are right and left wing rocker shafts. Attach the rockers under the correct wings with the bearing spacers and bearing clamps. The outside clamps fit between the wheel arm weldments that locates the rocker shafts from side to side. Make sure the wheel arms are pointing to the back, with the linkage lug pointing up. Clean paint and dirt from the grease channels in the bearing spacers and add zerks to the zerk holes. The zerks in the spacer plates will mount to the outside.

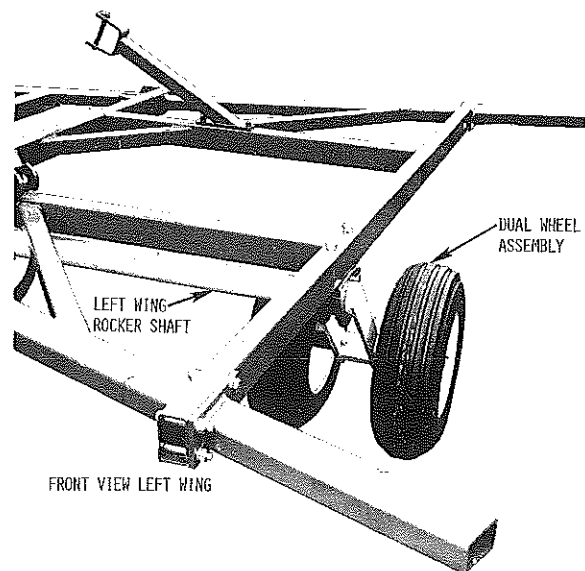


Fig.14

WING HUBS

Attach the single or dual hubs to the wing rocker shaft wheel arms as shown in the drawing, figure 15. Bolt the single wheel hub on the outside on Models 1956, 1959, 1960, 1963, 1965, 1966, 1968, 1969. Bolt wheel on inside of wheel arm on Models 1952, 1955, 1964, 1967. Be sure the axles are in the correct positions. Bolt the tire mounted wheels to the hubs using the counter sunk wheel bolt holes only. Torque the wheel bolts from 90 to 95 Ft. Lbs.

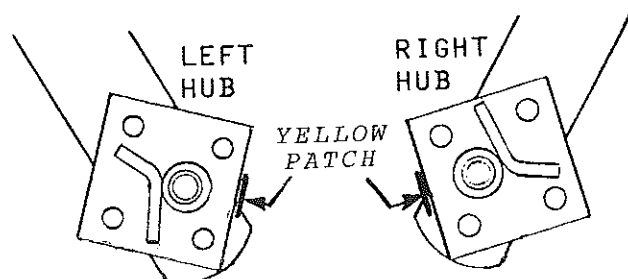


Fig.15

ROCKER SHAFT ADJUSTMENT LINKS

Figure 16. Attach the adjustment links between the rocker shafts. Pin the linkage ball ends between the lugs with the zerks on top, adding flat washers where noted on the parts list drawing. Remove the link stops and adjust the links to $20\frac{1}{2}$ " center to center of the pins. DO NOT EXCEED 21". Lock the adjustment links with the link stops, and remove the stands that held the wings up.

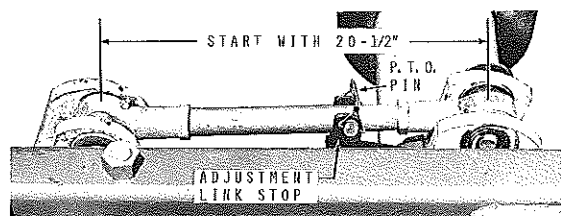


Fig. 16

WING LIFT CYLINDER LUGS

Attach the wing lift cylinder lugs to the wing frame members as shown in figure 17. Be sure to insert the spacer tubes, and use a flat washer on each side.

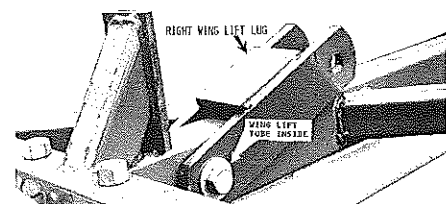


Fig.17

WING LOCK ARMS

Bolt the wing locks to the top of the right and left wing frames. The yoke, or top of the wing locks should be pointing toward the center of the harrow frame. A storage hole has been provided to hold the wing lock pins when the wings are down. Place the pins in the storage holes and secure with the hair pin cotters. Fig.18

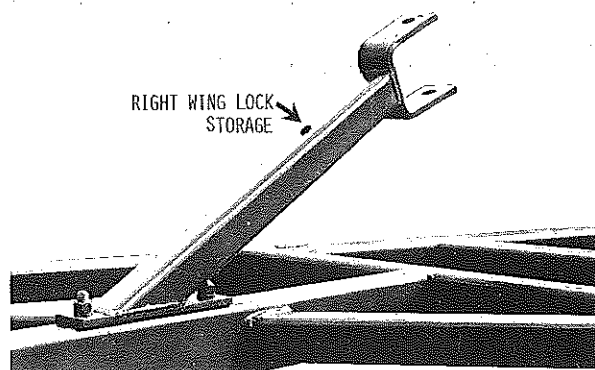


Fig.18

WING EXTENSIONS

Each wing has a front and back wing extension. Be sure to attach the correct extension at the proper location. If the extensions are not level with the wing frames, use shims provided to correct the difference. See figure 19 for attachment.

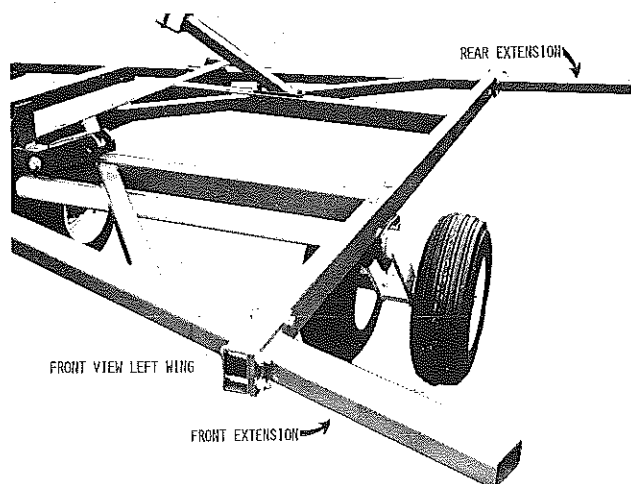


Fig.20

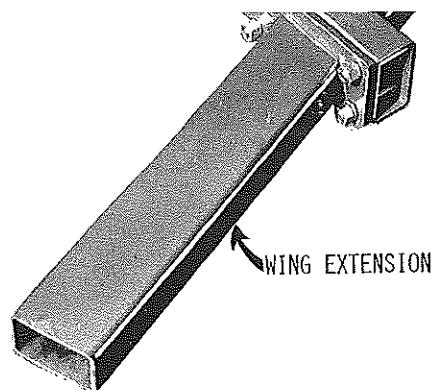


Fig.19

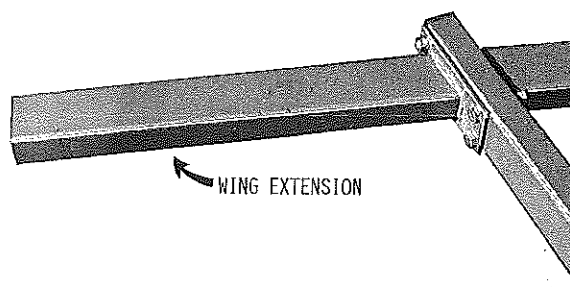


Fig.21

TYPICAL DISC GANG INFORMATION

There are two different kinds of disc gang assemblies: Rigid Gang Models 1952 through 1963 and Flex Gang Models 1964 through 1969. The disc gangs are to be assembled and attached at specific locations on the tandem, as indicated on the placement drawings. Each disc gang has a tie rod with end washers, spacer spools, half spools and bearing arm assemblies. The disc blades must be assembled on the tie rods taking care to use smaller diameter blades where noted on the drawing. Back wing gang assemblies will have three blades that reduce in size. The lead blades on the front wing gangs are 2" smaller.

DISC GANGS



DANGER: DUE TO DISC GANG AND DISC BLADE WEIGHT AND SHARPNESS, SERIOUS INJURY CAN BE INFLICTED IF NOT HANDLED SAFELY. WATCH FOR UNSAFE CONDITIONS AND BE AWARE OF THE UNEXPECTED. KEEP YOUR CO-WORKERS SAFETY IN MIND. SHOULD PERSONAL INJURY OCCUR, HAVE MEDICAL TREATMENT ADMINISTERED IMMEDIATELY.

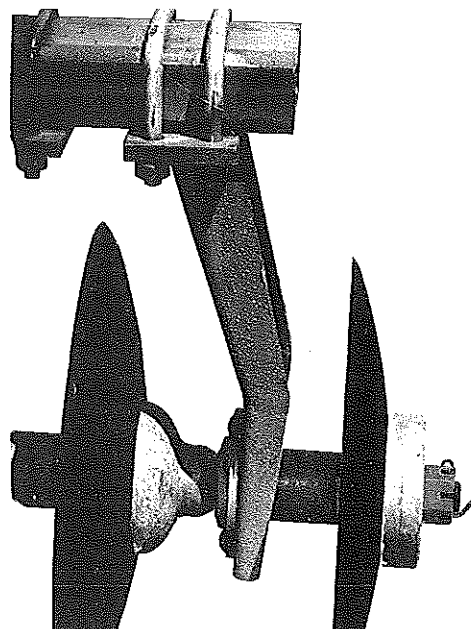
PLACEMENT DRAWINGS

Turn to the placement drawing that reflects the model number stamped on the name plate. This top view drawing has important information that will serve as a guide for proper gang assembly, attachment and adjustment. The facing page will detail parts and descriptions.

BEARING ARMS

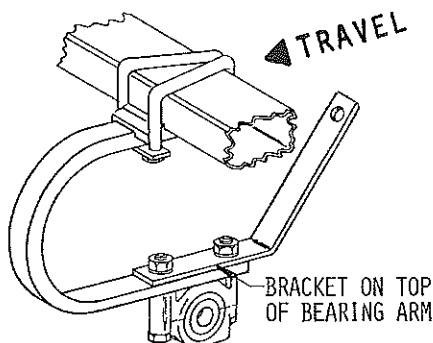
If the name plate reads Model 1952 through 1963, you will be assembling a rigid gang model. The bearing arm makes the difference. These models have rigid bearing arms. Slightly loosen the bearing bolts before assembly. See Photo at right.

IMPORTANT: SOME BEARING ARMS HAVE YELLOW MARKS ON TOP OF THE MOUNTING PLATE. SEE PLACEMENT DRAWING FOR THE CORRECT LOCATION.

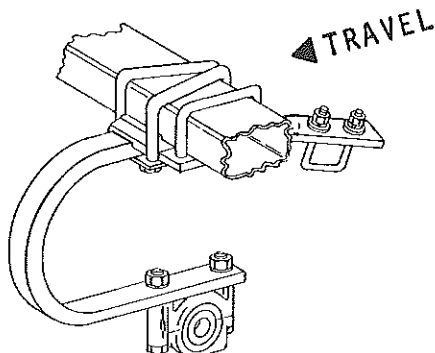


Models 1964 through 1969, and models 1976 and 1979, are flex gang models and will have the "C" type bearing arm as shown in the illustration below. Note that the "C" shape is toward the front (direction of travel).

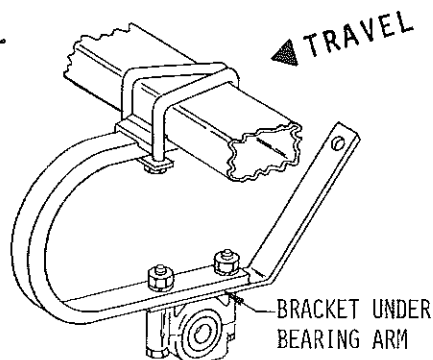
IMPORTANT: THE DIRECTION OF TRAVEL WILL DETERMINE THE CORRECT INSTALLATION OF THE BEARING ARM ASSEMBLIES ON EACH DISC GANG ASSEMBLY.



ROCK FLEX BEARING ARM
FOR RIGID SCRAPERS



ROCK FLEX BEARING ARM WITH
BRACKET FOR SPRING SCRAPERS



ROCK FLEX BEARING ARM
FOR TRASH BARS

TIE RODS

Each tie rod will be shipped with a nut on each end. They have been secured with a roll pin on one end and a cotter pin and tie rod nut to permit the assembly of spools, blades and bearings. Fig.24

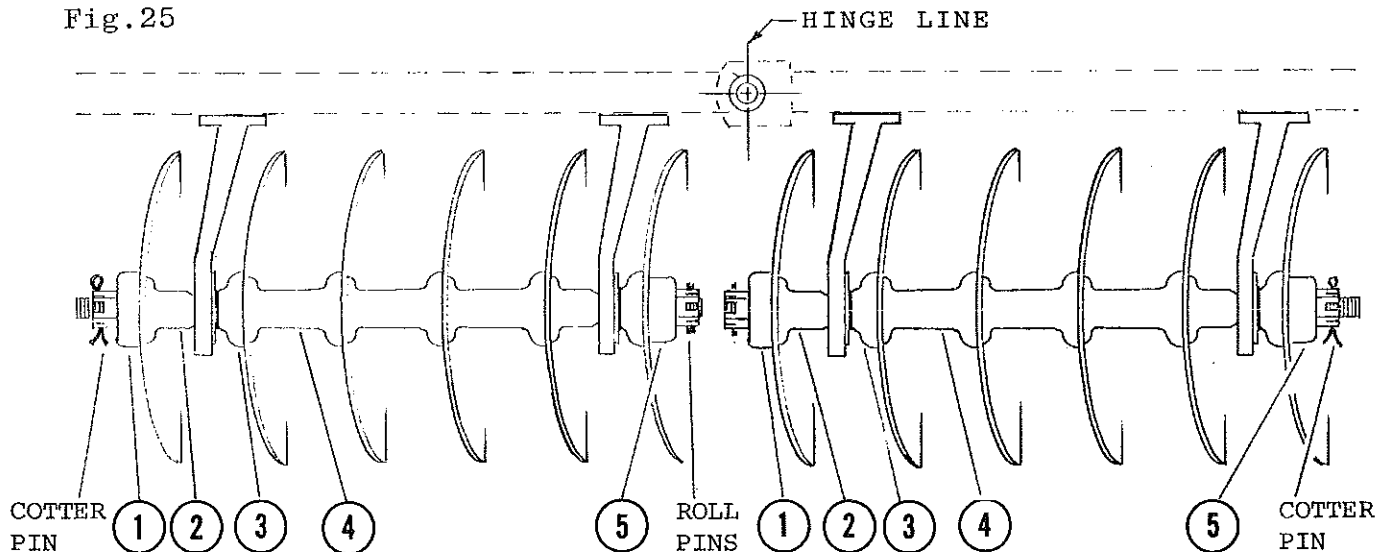
$\frac{3}{8} \times \frac{1}{2}$ Cotter Pin

$1\frac{3}{4}$ " Slotted Hex Nut

Fig.24

GANG ASSEMBLY

Fig.25



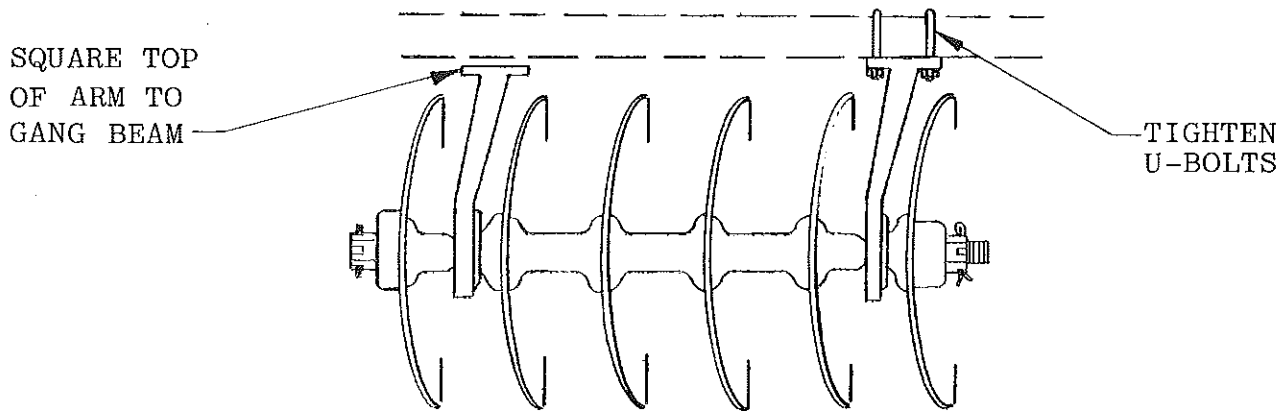
Assemble the disc gangs as shown above. The frame hinge determines the location of the TIE ROD ROLL PIN. Note how the castings have been shaped to fit the contour of the disc blades. The long half spool (Item 2) and the short half spool (Item 3) are designed to provide proper spacing between the disc blades on each side of the bearing assemblies. The spacer spool (Item 4) will provide the required spacing between all other blades on the tie rod assembly.

When each gang is assembled, tighten the tie rod nut to approximately 600 foot pounds. Mark the end blade of the gang assembly to indicate the location of attachment on the tandem, such as C F R for Center Front Right.

DISC GANG ATTACHMENT

After all gangs have been assembled, roll the gangs to the locations marked on each gang. Starting with the front gangs, attach each gang to the frame member by looping a length of chain around the frame member and the center spool of the gang. Raise the gang under the frame until the top of bearing arm touches the bottom of frame member. Join the bearing arms to the frames with u-bolts. Using the placement drawings, adjust and tighten in place. Make sure the top of the bearing arm is parallel with the bottom of the frame member as the u-bolts are drawn up tight.

IMPORTANT: TIGHTEN LEAD BEARING ARM FIRST, CHECK SECOND AND THIRD ARMS BEFORE TIGHTENING TO MAKE SURE TOP OF ARM IS SQUARE WITH GANG BEAM. FAILURE TO SQUARE ARM TO GANG BEAMS WILL RESULT IN PRE-LOAD OF BEARINGS.



FLEX GANG SCRAPERS

The flex gang scraper mounting brackets are pre-assembled at the factory. The scraper bar assemblies can be attached to the mounting brackets with the U-Bolts provided. There are two sets of holes in each mounting bracket. The U-Bolts should be placed in the holes that are in the side opposite to where the scraper is mounted as shown in Figure 29. Adjust the scrapers to the disc blades the same as described for the rigid gang type scrapers.

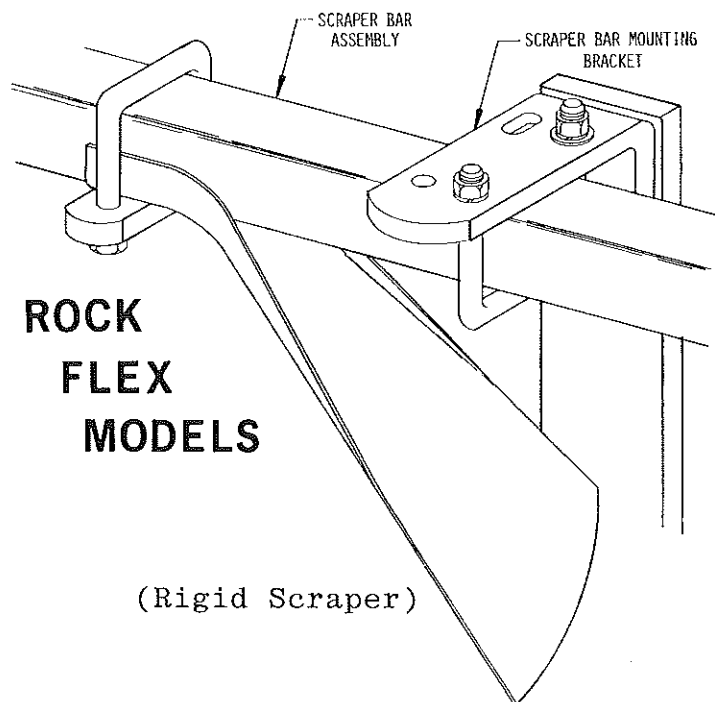
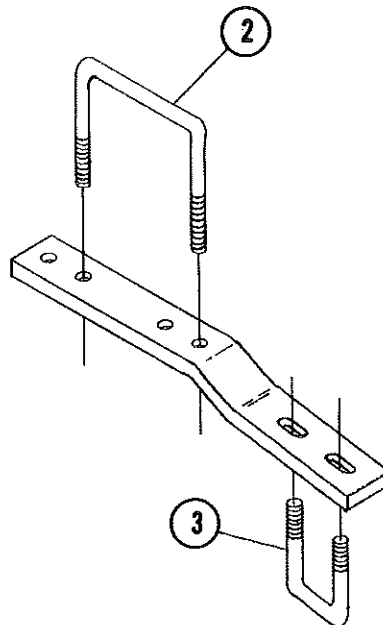
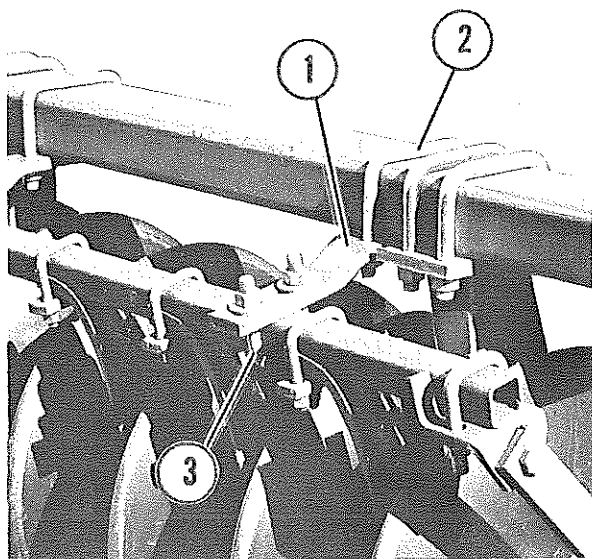


Figure 29

RIGID GANG SCRAPERS

STEP 1.

The placement drawing will show scraper bracket locations. Mark these locations on the frames and attach a bracket ① at each mark with the large bracket U-Bolt ②.



NOTE: There are two different hole locations for the large bracket U-Bolt ②. For rigid scrapers the U-Bolt ② uses the holes which position the scraper bar close to the gang beam.

STEP 2.

Remove the small U-Bolts ③ at the back of the brackets and attach the correct scraper frame assembly loosely under the brackets as shown, making sure each disc blade is scraped except the two front outside wing tapered blades, and the two rear inside center blades. The two back outside scraper frames will have extension trash bar loops.

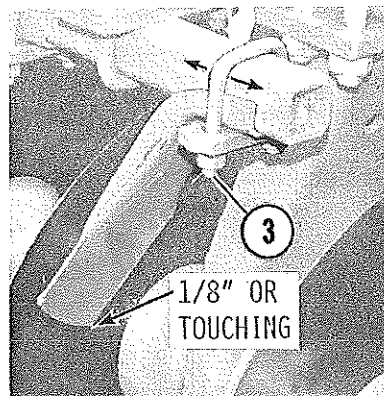
STEP 3.

Adjust each scraper frame in the brackets by moving the frame toward the concave side of the disc blades until a scraper touches a disc. Align the brackets on the harrow frame and tighten the large U-Bolts. Re-check the same scraper to be sure it is touching, or is within 1/8" from the disc and tighten the smaller U-Bolts.

STEP 4.

Adjust each scraper blade if not within 1/8" or touching the disc blade by loosening the scraper U-Bolt ③.

IMPORTANT: DO NOT RESTRICT THE ROTATION OF THE GANG BY FORCING THE SCRAPER BLADES AGAINST THE DISC BLADES.

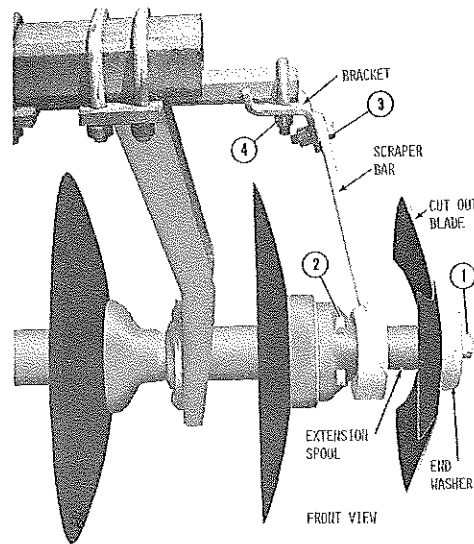


STEP 5.

Remove the machine bolts and washers ① from the extension spools. Remove and discard the 1/2" nuts from the four bolts and attach the extension spools to the end washers on the outside rear disc gangs with the 1/2" bolts ②.

Loosen the bracket bolts 3 and U-Bolt nuts ④. Position the loop of the trash bar over the extension spool as shown in the parts listing, and slide the U-Bolt over the extended scraper frame. Place the "3-Notch" cut out blade over the square cast locator and secure

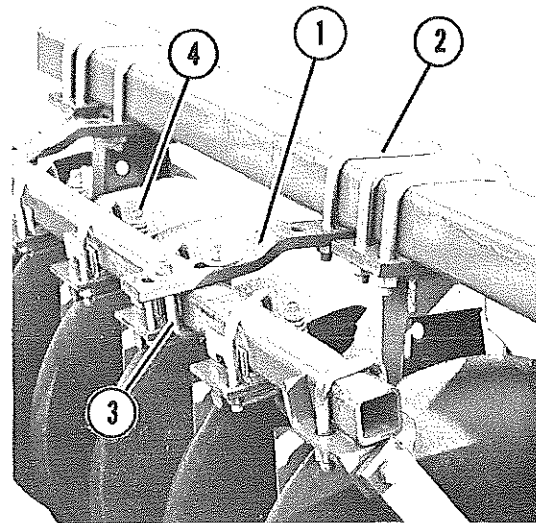
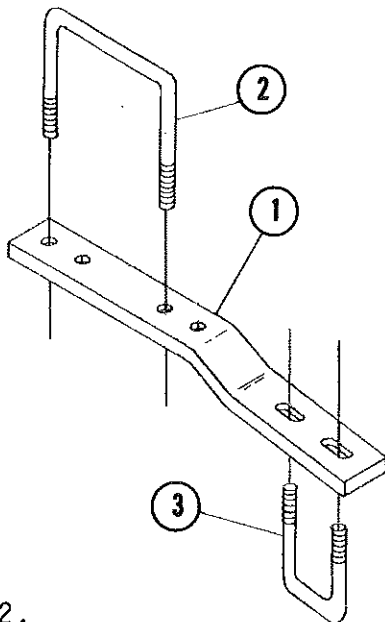
in place with the extension washer and machine bolt. Adjust the bracket on the scraper frame making sure the loop is in the center of the spool. Tighten the bracket U-Bolt, then rotate the gang to be sure the cut out blade notches clear the bar of the extension scraper.



SPRING LOADED SCRAPERS

STEP 1.

The placement drawing will show scraper bracket locations. Mark these locations on the frame and attach a bracket ① at each mark with the large bracket U-Bolt ②.



NOTE: There are different hole locations for the large bracket U-Bolt ②. For spring scrapers the U-Bolt uses the holes which position the scraper bar away from the gang beam as shown to the left.

STEP 2.

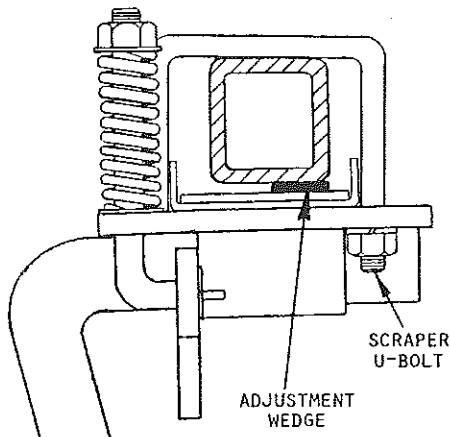
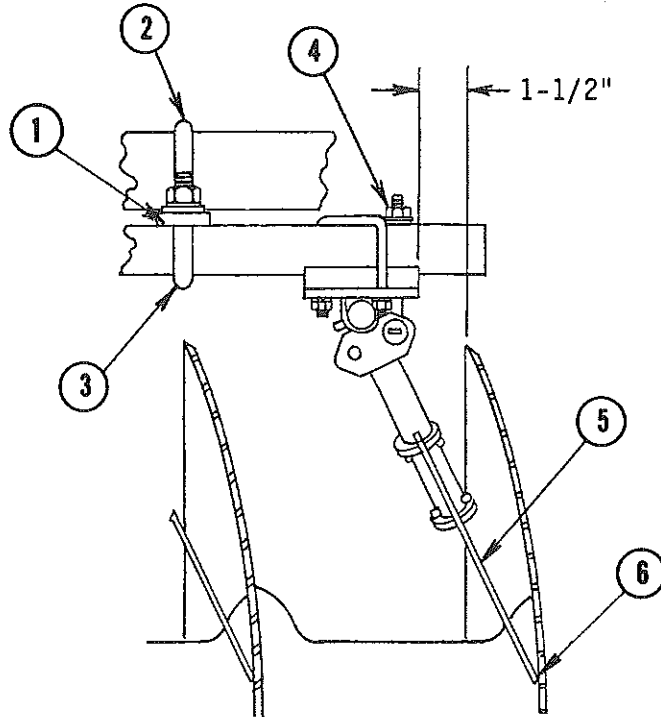
Remove the small U-Bolts ③ at the back of the brackets and attach the correct scraper frame assembly loosely under the brackets as shown, making sure each disc blade is scraped except the two front front outside wing tapered blades, and the two rear inside center disc blades. The two rear outside scraper frames will have extension trash bar loops.

STEP 3.

Loosen the adjustment nut (4) on each spring scraper. Adjust each scraper frame toward the concave side of the disc blades until the scraper mounting plate is 1-1/2" from the edge of the brackets (1) on the harrow frame and tighten U-Bolts (2) and (3).

STEP 4.

Use the following procedure to adjust the correct amount of scraper blade force against the disc blade. First loosen the adjusting nut (4) a little more until the scraper blade (5) starts to move away from the disc. Next, retighten the adjustment nut (4) slightly until the scraping edge of the blade (6) is just contacting the disc blade. Continue tightening the adjusting nut (4) from the point, one revolution for each 5 lbs. of scraper force desired. For initial set up, tighten it 3 complete revolutions, which should be approximately 15 lbs. of force.

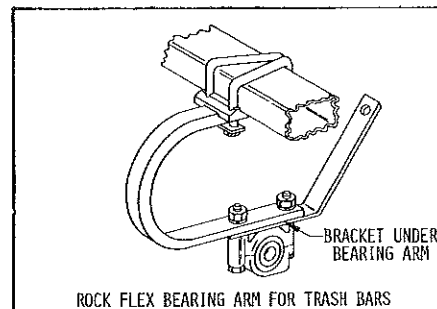


There is an adjustment wedge used to mount the spring scraper next to the extension trash bar loop on the rear outer disc blades. This scraper can be tilted towards the spool by tightening and loosening the nuts on the scraper U-Bolt. This scraper should be adjusted so that the scraper does not hang over the outside of the taper disc blade.

ROCK FLEX TRASH BARS

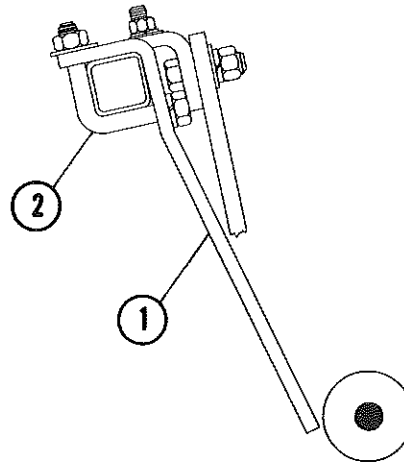
STEP 1.

Loosen the bolts holding the spacers and plate on the center bracket. Slide the trash bar frame into position, making sure that the holes for end brackets are in alignment with the holes in the trash bar frame. Then bolt the frames to the back of the brackets using the spacer provided. Tighten all bracket bolts.



STEP 2.

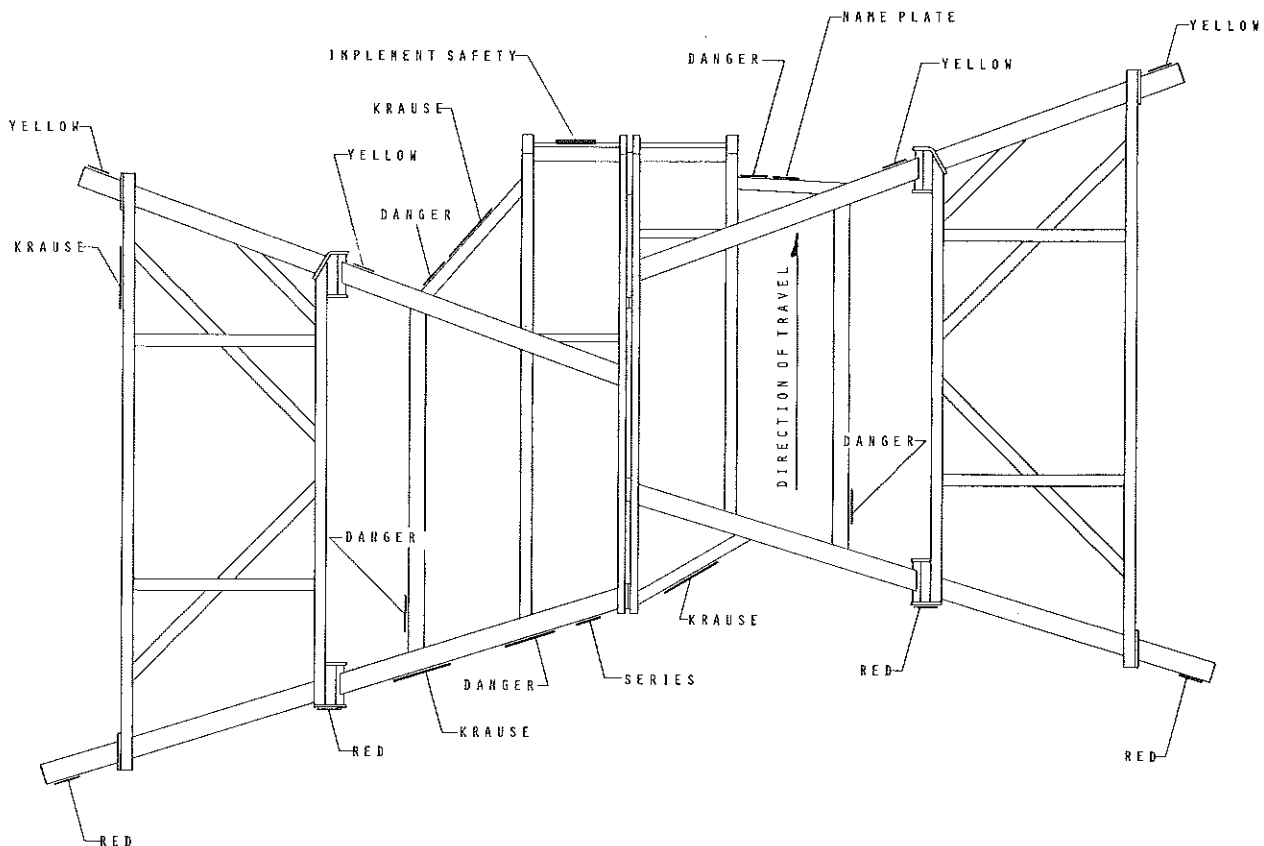
Attach and adjust trash bars ① to the frame with the "L" bolts ② as shown. The trash bars should not be rubbing spools. To adjust, loosen the upper nut on the "L" bolt and tighten the lower nut.



DECALS

It is very important that all decals be placed on the harrow frame at the locations shown in the drawing. These decals reflect safety and operating messages that are just as important as the parts that have been assembled.

FOUR	74-107	YELLOW REFLECTOR
FOUR	74-108	RED REFLECTOR
FOUR	74-100	KRAUSE DECAL
FIVE	74-102	DANGER DECAL
ONE	74-117	IMPLEMENT SAFETY DECAL
ONE	74-115	NAME PLATE
TWO	74-128	PATENT DECAL
ONE	74-121	CAUTION DECAL
ONE	74-124	SERIES DECAL



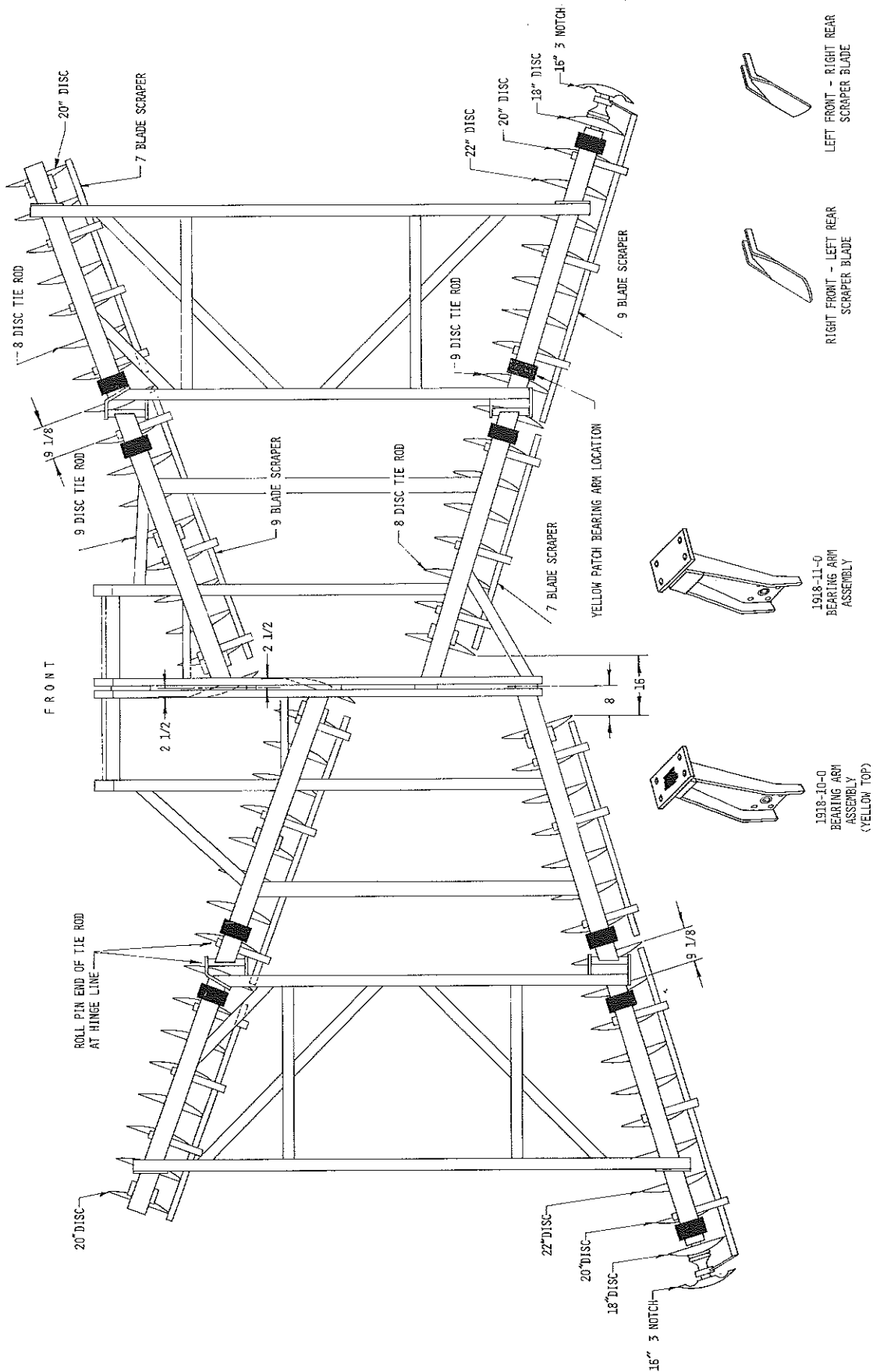
MODEL 1952

9 1/8 SPACING

LEFT SIDE SHOWN WITH 22" DISC

RIGHT SIDE SHOWN WITH 22" DISC

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT



MODEL 1952

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	TIE ROD	
						ASSEMBLY	NUMBER
Center Front	9	9-1/8"	2224-18-1	79-1/8"	22"	1015H-993-0L	
Center Rear	8	9-1/8"	2222-18-1	70"	22"	1015H-982-0L	
Wing Front	8	9-1/8"	2222-18-1	70"	22"	1015H-982-0L	
Wing Rear	9	9-1/8"	2224-18-1	79-1/8"	22"	1015H-992-0L	

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-119	22	62
30-108	20	4
30-104	18	2
30-148	16 Cut Out	2

SCRAPERS

SSC RAPERS		SPRING LOADED SCRAPERS 1952-388-0		RIGID SCRAPERS 1952-288-0	
LOCATION	NO. OF SCRAPERS	SCRAPER	SCRAPER	SCRAPER	LENGTH
		ASSEMBLY	BAR	ASSEMBLY	
<u>CENTER_SECTION</u>					
L. Front	9	2009-090-0A	2008-1-795	*956A-185-0	80"
R. Front	9	2009-090-0B	2008-1-795	*956A-186-0	80"
L. Rear	7	*2009-070-0B	2008-1-615	952A-186-0	60"
R. Rear	7	*2009-070-0A	2008-1-615	952A-185-0	60"
<u>WING_SECTION</u>					
L. Front	7	2009-070-0A	2008-1-615	*952A-185-0	60"
R. Front	7	2008-070-0B	2008-1-615	*952A-186-0	60"
L. Rear	9+Ext.	*2008-091-0B	2008-1-865	952A-184-0	86"
R. Rear	9+Ext.	*2009-091-0A	2008-1-865	952A-183-0	86"

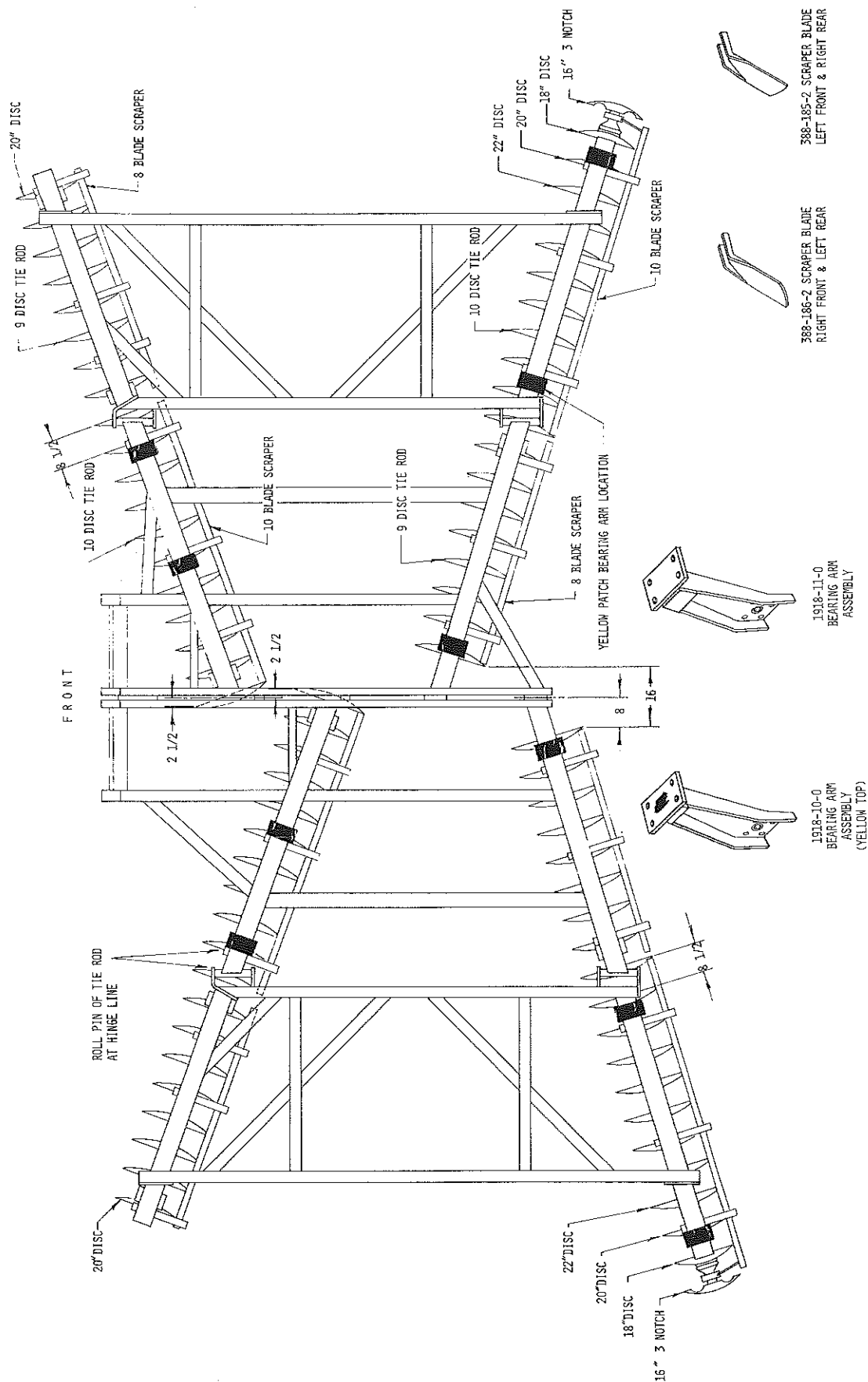
* 1952-488-0 COMBINATION SCRAPER GROUP (Rigid Scrapers on Front, Spring Scrapers on Rear)

8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE

LEFT SIDE SHOWN WITH
22" DISC

**RIGHT SIDE SHOWN WITH
22" DISC**



MODEL 1955

5/82

TIE RODS

LOCATION	NUMBER DISC	NUMBER OF BRG. ARMS	TIE ROD NUMBER	TIE ROD ASSEMBLY	LENGTH	PART NUMBER	DIAMETER	QUANTITY
Center Front	10	3	2214-18-1	1015H-803-0L	78-3/8"	30-119	22"	68
Center Rear	9	2	2212-18-1	1015H-892-0L	70-3/8"	30-108	20"	4
Wing Front	9	2	2212-18-1	1015H-892-0L	70-3/8"	30-104	18"	2
Wing Rear	10	2	2214-18-1	1015H-802-0L	78-3/8"	30-148	16" Cut Out	2

SCRAPERS

LOCATION	NUMBER OF BLADES SCRAPED	SCRAPER ASSEMBLY NUMBER	SCRAPER BAR NUMBER	LENGTH
<u>RIGID SCRAPERS 1955-288-0</u>				
Left Center Front	10	955A-185-0	955A-186-1	78"
Right Center Front	10	955A-186-0	955A-186-1	78"
Left Center Rear	8	959A-186-0	959A-185-1	62"
Right Center Rear	8	959A-185-0	959A-185-1	62"
Left Wing Front	8	959A-185-0	959A-185-1	62"
Right Wing Front	8	959A-186-0	959A-185-1	62"
Left Wing Rear	10 + EXT.	955A-184-0	955A-183-1	86"
Right Wing Rear	10 + EXT.	955A-183-0	955A-183-1	86"
<u>SPRING SCRAPERS 1955-388-0</u>				
Left Center Front	10	2008-100-0A	2008-1-785	78-1/2"
Right Center Front	10	2008-100-0B	2008-1-785	78-1/2"
Left Center Rear	8	2008-080-0B	2008-1-625	62-1/2"
Right Center Rear	8	2008-080-0A	2008-1-625	62-1/2"
Left Wing Front	8	2008-080-0A	2008-1-625	62-1/2"
Right Wing Front	8	2008-080-0B	2008-1-625	62-1/2"
Left Wing Rear	10 + EXT.	2008-101-0B	2008-1-865	86-1/2"
Right Wing Rear	10 + EXT.	2008-101-0A	2008-1-865	86-1/2"
<u>COMBINATION SCRAPERS 1955-488-0</u>				
Left Center Front	10	955A-185-0	955A-186-1	78"
Right Center Front	10	955A-186-0	955A-186-1	78"
Left Center Rear	8	2008-080-0B	2008-1-625	62-1/2"
Right Center Rear	8	2008-080-0A	2008-1-625	62-1/2"
Left Wing Front	8	959A-185-0	959A-185-1	62"
Right Wing Front	8	959A-186-0	959A-185-1	62"
Left Wing Rear	10 + EXT.	2008-101-0B	2008-1-865	86-1/2"
Right Wing Rear	10 + EXT.	2008-101-0A	2008-1-865	86-1/2"

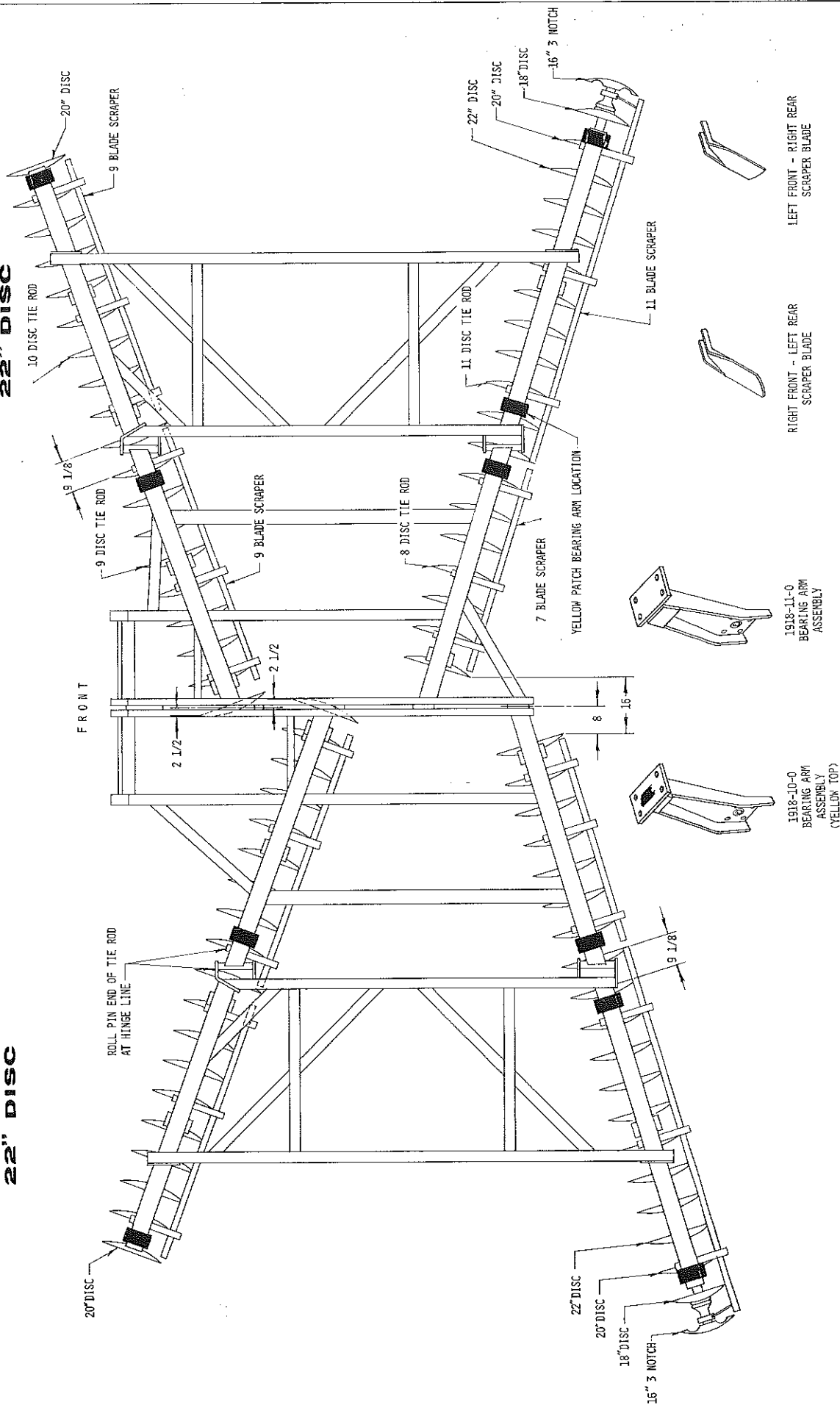
MODEL 1956

9 1/8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDES OF UNIT

LEFT SIDE SHOWN WITH 22" DISC

RIGHT SIDE SHOWN WITH 22" DISC



5/82

MODEL 1956

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	BLADE SIZE	LENGTH	TIE ROD ASSEMBLY NUMBER
Center Front	9	9-1/8"	2224-18-1	22"	79-1/8"	1015H-993-0L
Center Rear	8	9-1/8"	2222-18-1	22"	70"	1015H-982-0L
Wing Front	10	9-1/8"	2225-18-1	22"	88-1/4"	1015H-903-0L
Wing Rear	11	9-1/8"	2227-18-1	22"	97-3/8"	1015H-913-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-119	22	70
30-108	20	4
30-104	18	2
30-148	16 Cut Out	2

SCRAPERS

SCRAPERS		SPRING LOADED SCRAPERS 1965-388-0				RIGID SCRAPERS 1965-288-0			
LOCATION	NO. OF SCRAPERS	SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH	SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH		
CENTER SECTION									
L. Front	9	2009-090-0A	2008-1-795	79-1/2"	*956A-185-0	955A-185-1	80"		
R. Front	9	2009-090-0B	2008-1-795	79-1/2"	*956A-186-0	955A-185-1	80"		
L. Rear	7	*2009-070-0B	2008-1-615	61-1/2"	952A-186-0	1159-183-1	60"		
R. Rear	7	*2009-070-0A	2008-1-615	61-1/2"	952A-185-0	1159-183-1	60"		
WING SECTION									
L. Front	9	2009-090-0A	2008-1-795	79-1/2"	*956A-185-0	955A-185-1	80"		
R. Front	9	2009-090-0B	2008-1-795	79-1/2"	*956A-186-0	955A-185-1	80"		
L. Rear	11+Ext.	*2009-111-0B	2008-1-104	104"	956A-184-0	1165-183-1	108"		
R. Rear	11+Ext.	*2009-111-0A	2008-1-104	104"	956A-183-0	1165-183-1	108"		

* 1956-488-0 COMBINATION SCRAPER GROUP (Rigid Scrapers on Front, Spring Scrapers on Rear.

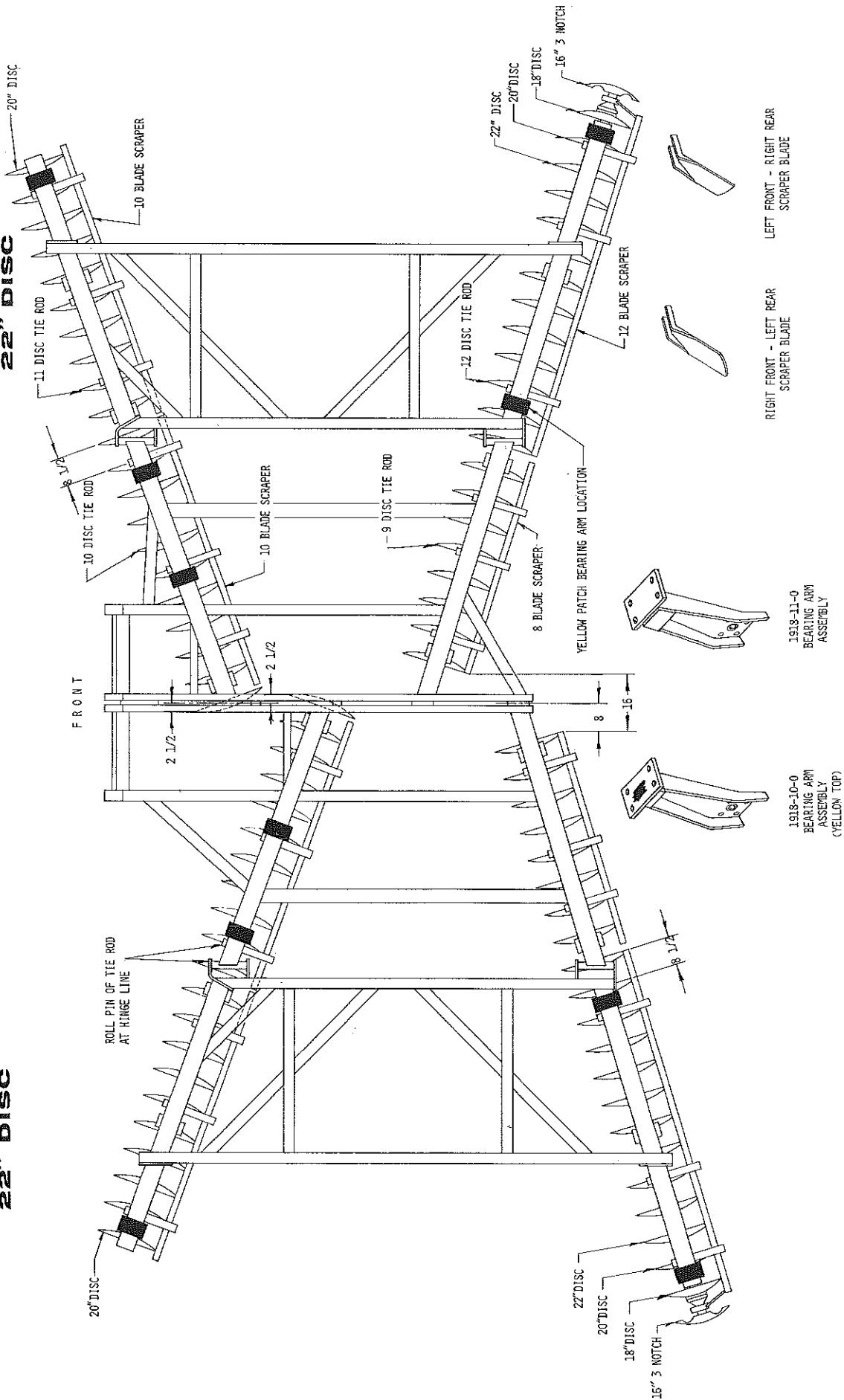
MODEL 1959

8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

LEFT SIDE SHOWN WITH 22" DISC

RIGHT SIDE SHOWN WITH 22" DISC



MODEL 1959

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	TIE ROD ASSEMBLY NUMBERS
Center Front	10	8"	2214-18-1	78-3/8"	22"	1015H-803-0L
Center Rear	9	8"	2212-18-1	70-3/8"	22"	1015H-892-0L
Wing Front	11	8"	2215-18-1	86-1/2"	22"	1015H-813-0L
Wing Rear	12	8"	2216-18-1	94-1/2"	22"	1015H-823-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-119	22	78
30-108	20	4
30-104	18	2
30-148	16 Cut Out	2

SCRAPERS

LOCATION	NO. OF SCRAPERS
----------	--------------------

CENTER_SECTION

L. Front	10
R. Front	10
L. Rear	8
R. Rear	8

WING_SECTION

L. Front	10
R. Front	10
L. Rear	12+Ext.
R. Rear	12+Ext.

SPRING LOADED SCRAPERS 1968-388-0

SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
---------------------	----------------	--------

2008-100-0A	2008-1-785	78-1/2"
2008-100-0B	2008-1-785	78-1/2"
*2008-080-0B	2008-1-625	52-1/2"
*2008-080-0A	2008-1-625	62-1/2"

2008-100-0A	2008-1-785	78-1/2"
2008-100-0B	2008-1-785	78-1/2"
*2008-121-0B	2008-1-104	104"
*2008-121-0A	2008-1-104	104"

RIGID SCRAPERS 1968-288-0

SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
---------------------	----------------	--------

*955A-185-0	955A-186-1	78" # 97.23
*955A-186-0	955A-186-1	78" "
959A-186-0	959A-185-1	62" # 81.04
959A-185-0	959A-185-1	62" "

*955A-185-0	955A-186-1	78" ✓
*955A-186-0	955A-186-1	78" ✓
959A-184-0	1164-183-1	100" # 129.05
959A-183-0	1164-183-1	100" "

* 1959-488-0 COMBINATION SCRAPER GROUP (Rigid Scrapers on Front, Spring Scrapers on Rear)

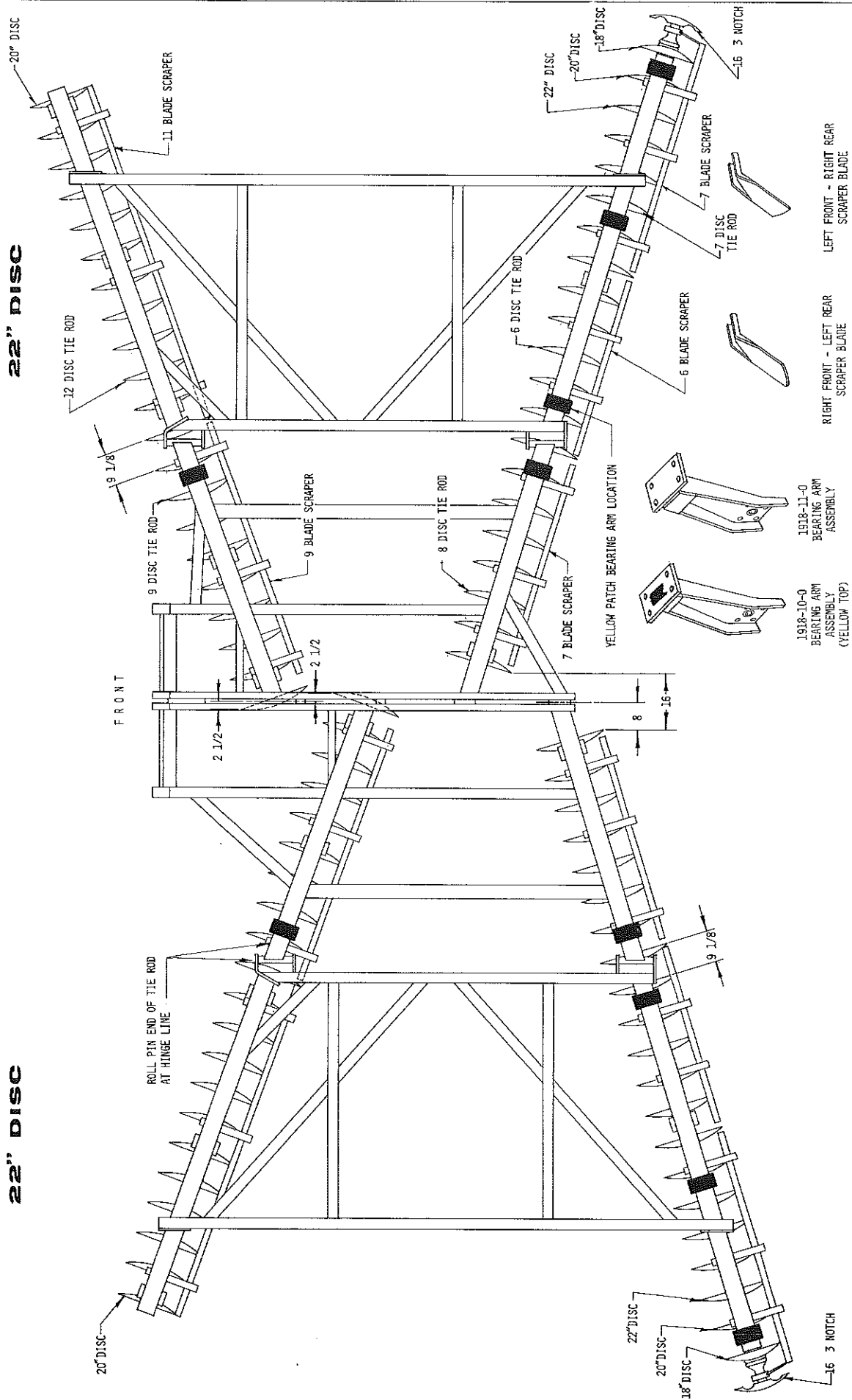
MODEL 1960

9 1/8 SPACING

LEFT SIDE SHOWN WITH 22" DISC

RIGHT SIDE SHOWN WITH 22" DISC

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT



5/82

MODEL 1960

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	TIE ROD ASSEMBLY NUMBER
Center Front	9	9-1/8"	2224-18-1	79-1/8"	22"	1015H-993-0L
Center Rear	8	9-1/8"	2222-18-1	70"	22"	1015H-982-0L
Wing Front	12	9-1/8"	2228-18-1	106-1/2"	22"	1015H-923-0L
Wing Rear I.	6	9-1/8"	2146-82-1	51-3/4"	22"	1015H-962-0L
Wing Rear O.	7	9-1/8"	2136-82-1	60-7/8"	22"	1015H-972-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-119	22	78
30-108	20	4
30-104	18	2
30-148	16 Cut Out	2

SCRAPERS

		SPRING LOADED SCRAPERS 1966-388-0		RIGID SCRAPERS 1966-288-0	
LOCATION	NO. OF SCRAPERS	SCRAPER ASSEMBLY	SCRAPER BAR	SCRAPER ASSEMBLY	SCRAPER BAR
<u>CENTER SECTION</u>					
L. Front	9	2009-090-0A	2008-1-795	*956A-185-0	955A-185-1
R. Front	9	2009-090-0B	2008-1-795	*956A-186-0	955A-185-1
L. Rear	7	*2009-070-0B	2008-1-615	952A-186-0	1159-183-1
R. Rear	7	*2009-070-0A	2008-1-615	952A-185-0	1159-183-1
<u>WING SECTION</u>					
L. Front	11	2009-110-0A	2008-1-975	*1592-185-0	1164-183-1
R. Front	11	2009-110-0B	2008-1-975	*1592-186-0	1164-183-1
L. Rear	6	*2009-060-0B	2008-1-525	960A-196-0	1159-185-1
	7+Ext.	*2009-071-0B	2008-1-68	960A-184-0	1160-183-1
R. Rear	6	*2009-060-0A	2008-1-525	960A-195-0	1159-185-1
	7+Ext.	*2009-071-0A	2008-1-68	960A-183-0	1160-183-1

* 1960-488-0 COMBINATION SCRAPER GROUP (Rigid Scrapers on Front, Spring Scrapers on Rear)

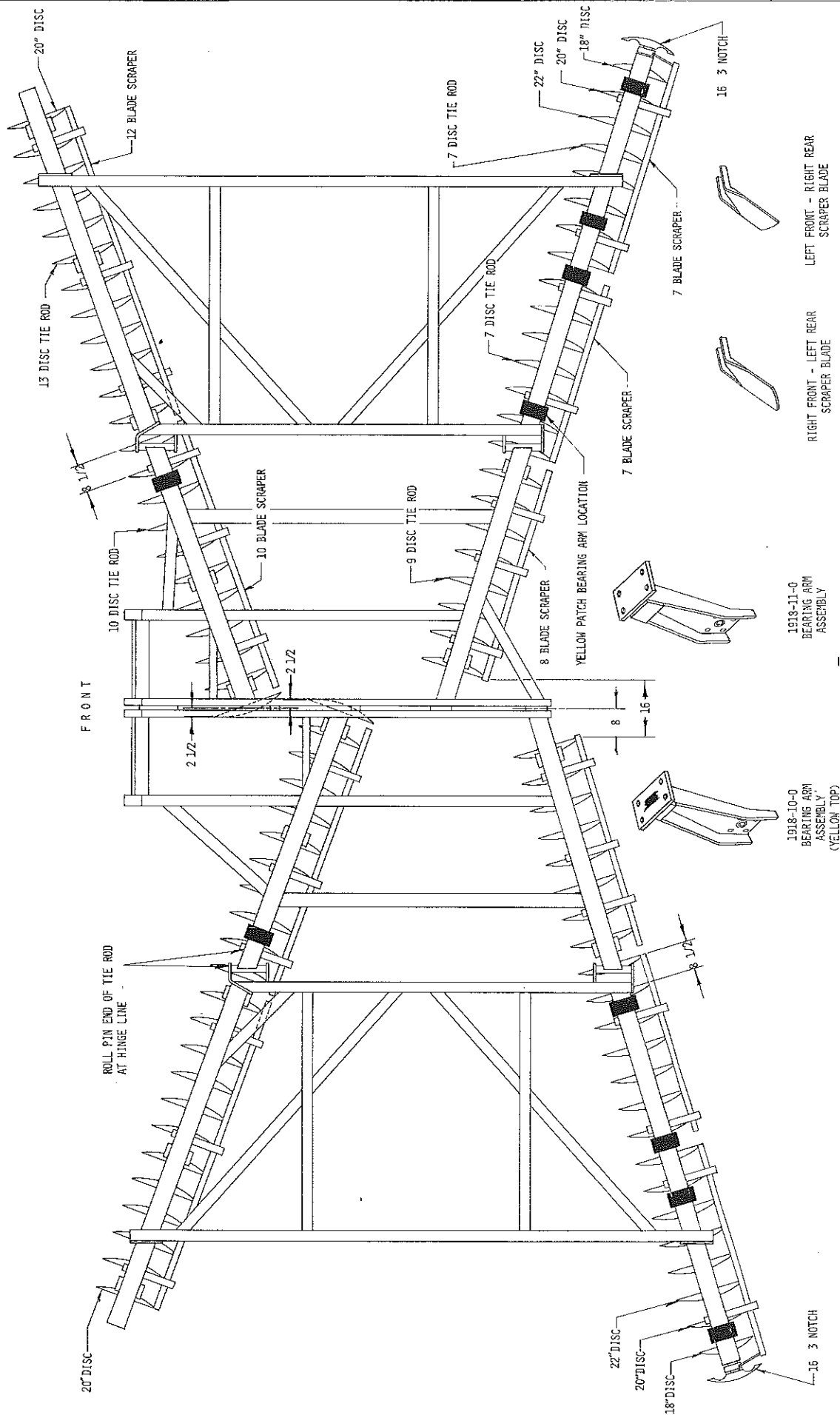
MODEL 1963

8 SPACING

LEFT SIDE SHOWN WITH 22" DISC

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

RIGHT SIDE SHOWN WITH 22" DISC



9/81

MODEL 1963

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	TIE ROD ASSEMBLY NUMBERS
Center Front	10	8"	2214-18-1	78-3/8"	22"	1015H-803-0L
Center Rear	9	8"	2212-18-1	70-3/8"	22"	1015H-892-0L
Wing Front	13	8"	2217-18-1	102-1/2"	22"	1015H-833-0L
Wing Rear I.	7	8"	2135-82-1	54-3/8"	22"	1015H-872-0L
Wing Rear O.	7	8"	2135-82-1	54-3/8"	22"	1015H-872-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-119	22	86
30-108	20	4
30-104	18	2
30-148	16 Cut Out	2

SCRAPERS

SPRING LOADED SCRAPERS 1969-388-0

LOCATION	NO. OF SCRAPERS
CENTER_SECTION	
L. Front	10
R. Front	10
L. Rear	8
R. Rear	8
WING_SECTION	
L. Front	12
R. Front	12
L. Rear	7
R. Rear	7+Ext.

SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
2008-100-0A	2008-1-785	78-1/2"
2008-100-0B	2008-1-785	78-1/2"
*2008-080-0B	2008-1-625	62-1/2"
*2008-080-0A	2008-1-625	62-1/2"
2008-120-0A	2008-1-945	94-1/2"
2008-120-0B	2008-1-945	94-1/2"
*2008-070-0B	2008-1-545	54-1/2"
*2008-071-0B	2008-1-615	61-1/2"
*2008-070-0A	2008-1-545	54-1/2"
*2008-071-0A	2008-1-615	61-1/2"

RIGID SCRAPERS 1969-288-0

SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
*955A-185-0	955A-186-1	78"
*955A-186-0	955A-186-1	78"
959A-186-0	959A-185-1	62"
959A-185-0	959A-185-1	62"
*1583-185-0	1583-185-1	94"
*1583-186-0	1583-185-1	94"
963A-196-0	961A-185-1	54"
963A-184-0	959A-185-1	62"
963A-195-0	961A-185-1	54"
963A-183-0	959A-185-1	62"

*1963-488-0 COMBINATION SCRAPER GROUP (Rigid Scrapers on Front, Spring Scrapers on Rear)

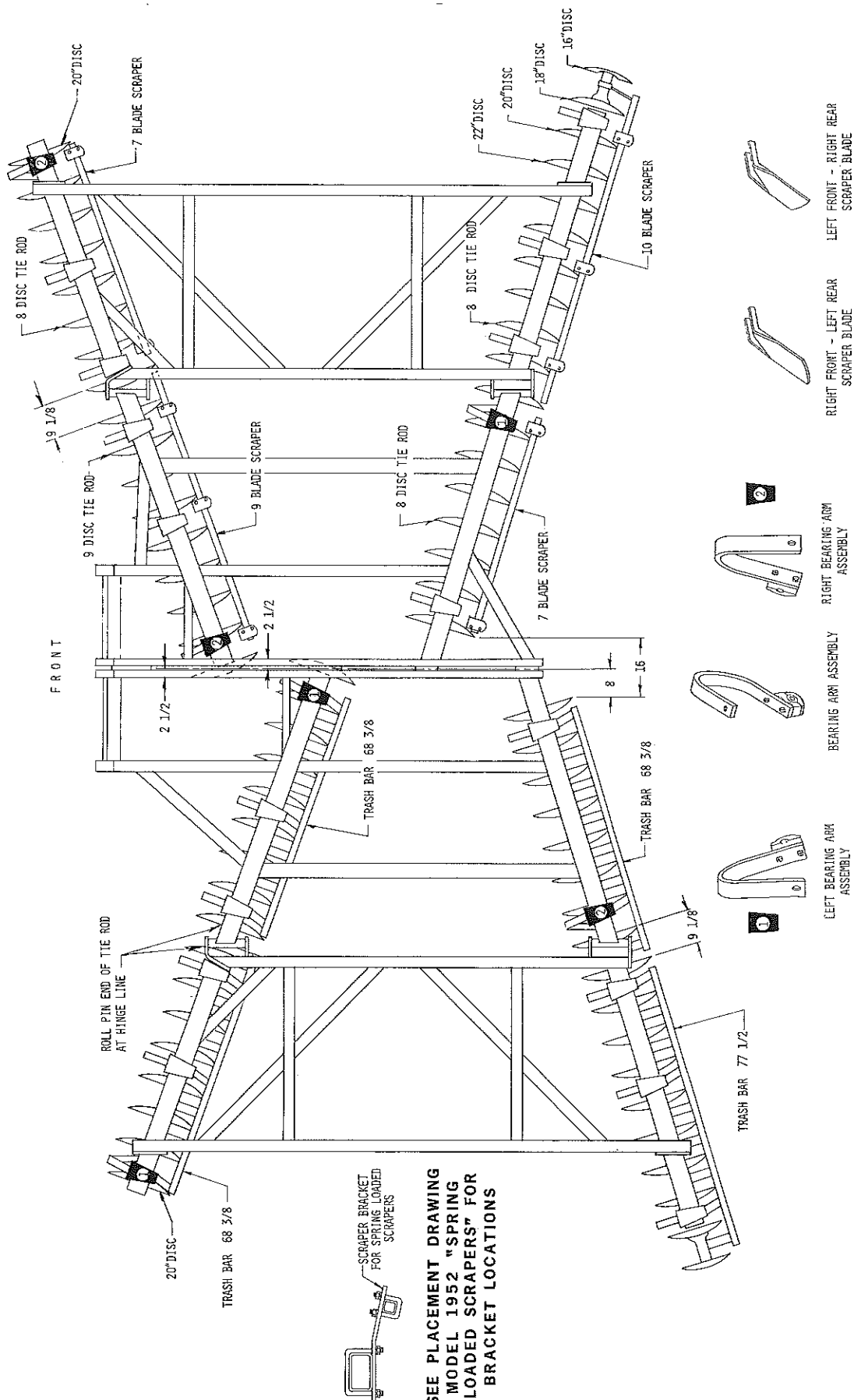
MODEL 1964

9 1/8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

LEFT SIDE SHOWN WITH 22" DISC & TRASH BARS

RIGHT SIDE SHOWN WITH 22" DISC & SCRAPERS



9/81

MODEL 1964									
TIE RODS									
LOCATION	QTY, DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	DISC SIZE	DUCTILE SPOOL ASSEMBLY NUMBER			
Center Front	9	9-1/8"	2224-18-1	79-1/8"	22"	1017H-993-0L			
Center Rear	8	9-1/8"	2222-18-1	70"	22"	1017H-982-0L			
Wing Front	8	9-1/8"	2222-18-1	70"	22"	1017H-983-0L			
Wing Front	9	9-1/8"	2224-18-1	79-1/8"	22"	1017H-993-0L			
DISC BLADES 22" MODEL									
PART NUMBER	DIAMETER	NO. REQ'D.	TRASH BAR FRAMES						
30-159	22"	62	LOCATION	TRASH BAR	LENGTH	BUNDLE NUMBER			
30-108	20"	4	Front Wing	2008-1-68	68"	1964-234-0			
30-104	18"	2	Rear Wing	2008-1-785	78-1/2"				
30-100	16"	2	Front Center	2008-1-68	68"	1965-234-0			
		2	Rear Center	2008-1-68	68"				
SCRAPERS									
NO. OF SCRAPERS			SPRING LOADED SCRAPERS 1952-388-0				RIGID SCRAPERS 1952-288-0		
LOCATION			SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH	SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH	
CENTER_SECTION									
Left Front	9		2009-090-0A	2008-1-795	79-1/2"	956A-185-0	955A-185-1	80"	
Right Front	9		2009-090-0B	2008-1-795	79-1/2"	956A-186-0	955A-185-1	80"	
Left Rear	7		2009-070-0B	2008-1-615	61-1/2"	952A-186-0	1159-183-1	60"	
Right Rear	7		2009-070-0A	2008-1-615	61-1/2"	952A-185-0	1159-183-1	60"	
WING_SECTION									
Left Front	7		2009-070-0A	2008-1-615	61-1/2"	952A-185-0	1159-183-1	60"	
Right Front	7		2009-070-0B	2008-1-615	61-1/2"	952A-186-0	1159-183-1	60"	
Left Rear	9 + Ext.		2009-091-0B	2008-1-865	86-1/2"	952A-184-0	955A-183-1	86"	
Right Rear	9 + Ext.		2009-091-0A	2008-1-865	86-1/2"	952A-183-0	955A-183-1	86"	

5/82

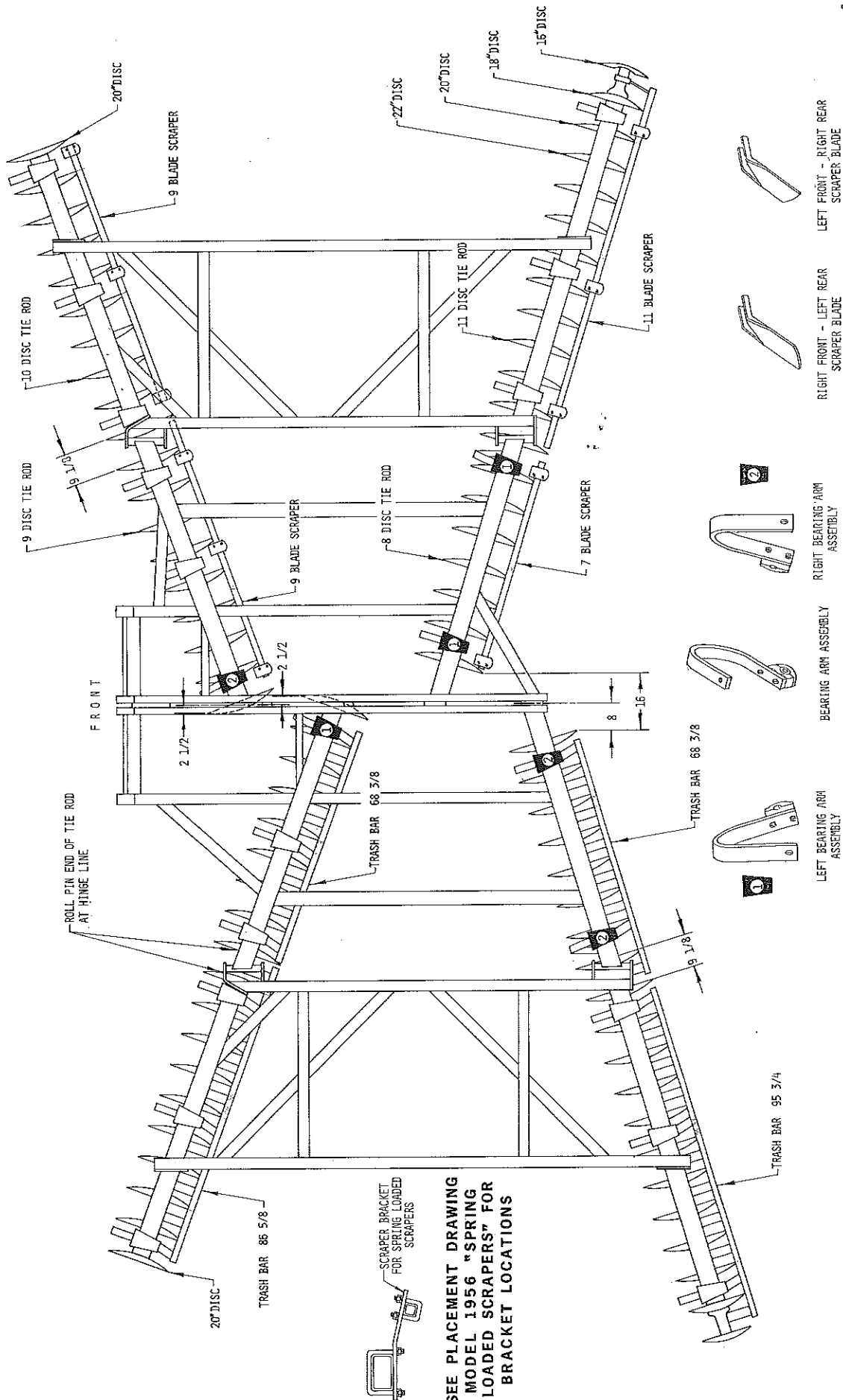
MODEL 1965

9 1/8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

LEFT SIDE SHOWN WITH 22" DISC & TRASH BARS

RIGHT SIDE SHOWN WITH 22" DISC & SCRAPERS



SEE PLACEMENT DRAWING
MODEL 1956 "SPRING
LOADED SCRAPERS" FOR
BRACKET LOCATIONS

MODEL 1965									
TIE RODS									
LOCATION		QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	DUCTILE SPOOL ASSEMBLY NUMBER		
Center Front		9	9-1/8"	2224-18-1	79-1/8"	22"	1017H-993-0L		
Center Rear		8	9-1/8"	2222-18-1	70"	22"	1017H-982-0L		
Wing Front		10	9-1/8"	2225-18-1	88-1/4"	22"	1017H-903-0L		
Wing Rear		11	9-1/8"	2227-18-1	97-3/8"	22"	1017H-913-0L		
DISC BLADES 22" MODELS					TRASH BAR FRAMES				
PART NUMBER		DIAMETER		NO. REQ'D.	LOCATION	TRASH BAR	LENGTH	BUNDLE NUMBER	
30-159		22		70	F. Wing	2008-1-865	86-1/2"	]-----1968-234-0	
30-108		20		4	R. Wing	2008-1-945	94-1/2"		
30-104		18		2	F. Center	2008-1-68	68"	]-----1965-234-0	
30-100		16		2	R. Center	2008-1-68	68"		
SCRAPERS									
LOCATION		NO. OF SCRAPERS		SPRING LOADED SCRAPERS 1965-388-0			RIGID SCRAPERS 1965-288-0		
		SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH	SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH		
L.F. Center		2009-090-0A	2008-1-795	79-1/2"	956A-185-0	955A-185-1	80"		
R.F. Center		2009-090-0B	2008-1-795	79-1/2"	956A-186-0	955A-185-1	80"		
L.R. Center		2009-070-0B	2008-1-615	61-1/2"	952A-186-0	1159-183-1	60"		
R.R. Center		2009-070-0A	2008-1-615	61-1/2"	952A-185-0	1159-183-1	60"		
L.F. Wing		2009-090-0A	2008-1-795	79-1/2"	956A-185-0	955A-185-1	80"		
R.F. Wing		2009-090-0B	2008-1-795	79-1/2"	956A-186-0	955A-185-1	80"		
L.R. Wing		2009-111-0B	2008-1-104	104"	956A-184-0	1165-183-1	108"		
R.R. Wing		2009-111-0A	2008-1-104	104"	956A-183-0	1165-183-1	108"		

5/82

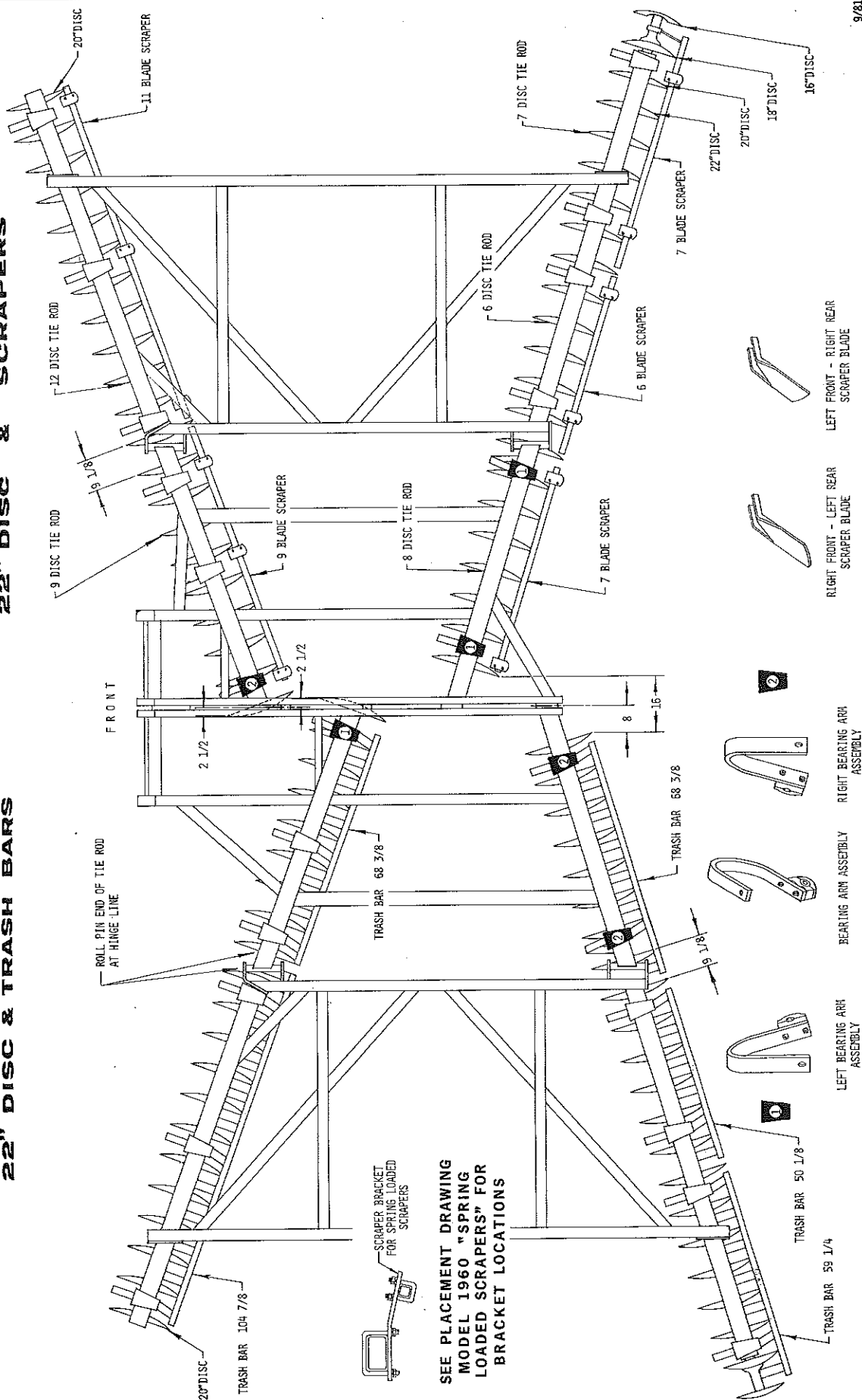
MODEL 1966

9 1/8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

LEFT SIDE SHOWN WITH 22" DISC & TRASH BARS

RIGHT SIDE SHOWN WITH 22" DISC & SCRAPERS



SEE PLACEMENT DRAWING
MODEL 1960 "SPRING
LOADED SCRAPERS" FOR
BRACKET LOCATIONS

MODEL 1966

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	DUCTILE SPOOL ASSEMBLY NUMBERS
Center Front	9	9-1/8"	2224-18-1	79-1/8"	22"	1017H-993-0L
Center Rear	8	9-1/8"	2222-18-1	70"	22"	1017H-982-0L
Wing Front	12	9-1/8"	2228-18-1	106-1/2"	22"	1017H-923-0L
Wing Rear I.	6	9-1/8"	2146-82-1	51-3/4"	22"	1017H-962-0L
Wing Rear O.	7	9-1/8"	2136-82-1	60-7/8"	22"	1017H-972-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-159	22	78
30-108	20	4
30-104	18	2
30-100	16	2

TRASH BAR FRAMES

LOCATION	TRASH BAR	LENGTH	BUNDLE NUMBER
F. Wing	2008-1-104	104"	1969-235-0
R. Inside Wing	2008-1-525	52-1/2"	1966-234-0
R. Outside Wing	2008-1-615	61-1/2"	
F. Center	2008-1-68	68"	1965-234-0
R. Center	2008-1-68	68"	

SCRAPERS

LOCATION	NO. OF SCRAPERS
L.F. Center	9
R.F. Center	9
L.R. Center	7
R.R. Center	7
L.F. Wing	11
R.F. Wing	11
L.R.I. Wing	6
L.R.O. Wing	7+Ext.
R.R.I. Wing	6
R.R.O. Wing	7+Ext.

SPRING LOADED SCRAPERS 1966-388-0

SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
2009-090-0A	2008-1-795	79-1/2"
2009-090-0B	2008-1-795	79-1/2"
2009-070-0B	2008-1-615	61-1/2"
2009-070-0A	2008-1-615	61-1/2"
2009-110-0A	2008-1-975	97-1/2"
2009-110-0B	2008-1-975	97-1/2"
2009-060-0B	2008-1-525	52-1/2"
2009-071-0B	2008-1-68	68"
2009-060-0A	2008-1-525	52-1/2"
2009-071-0A	2008-1-68	68"

RIGID SCRAPERS 1966-288-0

SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
956A-185-0	955A-185-1	80"
956A-186-0	955A-185-1	80"
952A-186-0	1159-183-1	60"
952A-185-0	1159-183-1	60"
1592-185-0	1164-183-1	100"
1592-186-0	1164-183-1	100"
960A-196-0	1159-185-1	52"
960A-184-0	1160-183-1	68"
960A-195-0	1159-185-1	52"
960A-183-0	1160-183-1	68"

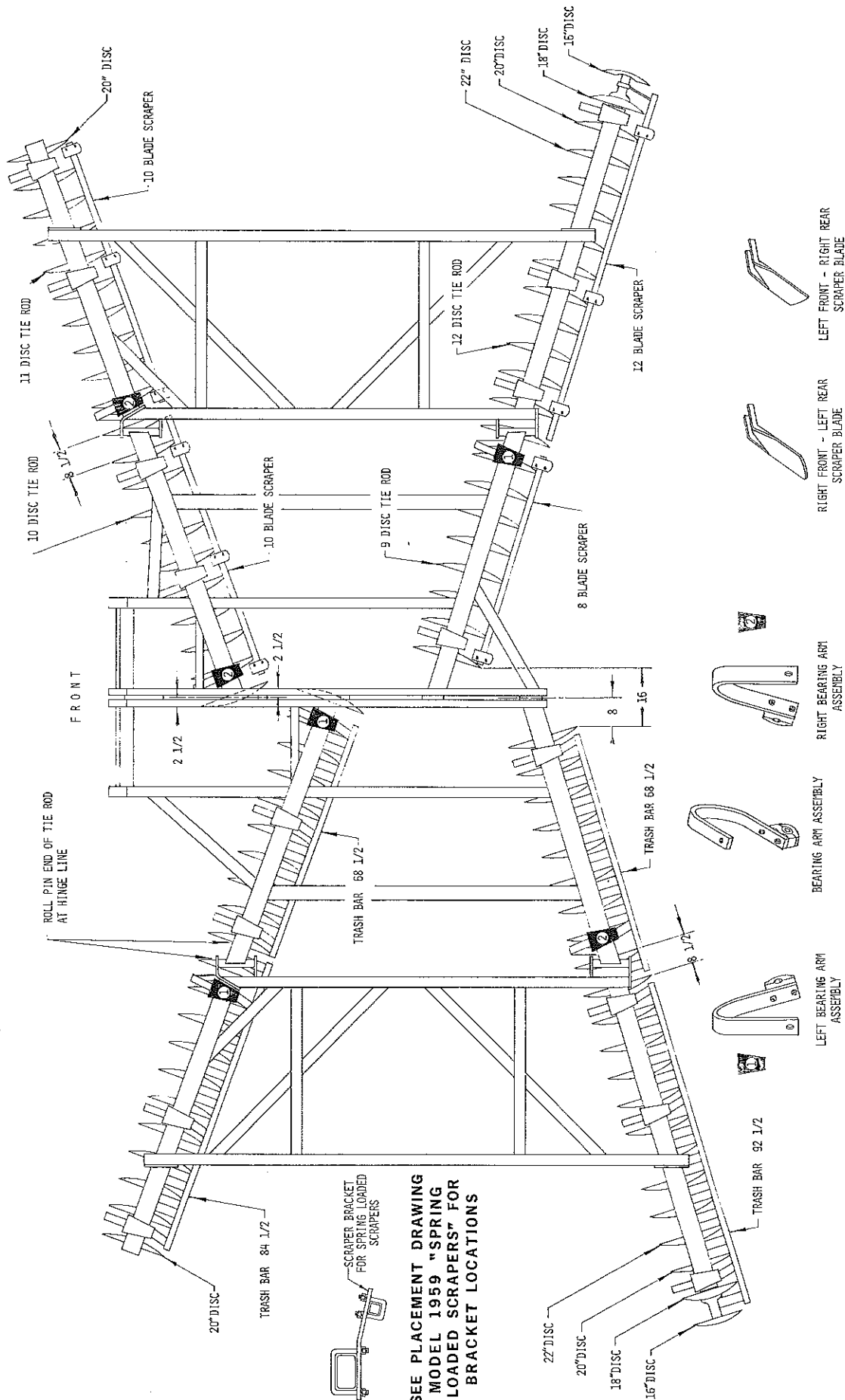
MODEL 1968

8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT.

LEFT SIDE SHOWN WITH 22" DISC & TRASH BARS

RIGHT SIDE SHOWN WITH 22" DISC & SCRAPERS



SEE PLACEMENT DRAWING
MODEL 1959 "SPRING
LOADED SCRAPERS" FOR
BRACKET LOCATIONS

MODEL 1968

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	DUCTILE SPOOL ASSEMBLY NUMBERS
Center Front	10	8"	2214-18-1	78-3/8"	22"	1017H-803-0L
Center Rear	9	8"	2212-18-1	70-3/8"	22"	1017H-892-0L
Wing Front	11	8"	2215-18-1	86-1/2"	22"	1017H-813-0L
Wing Rear	12	8"	2216-18-1	94-1/2"	22"	1017H-823-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-159	22	78
30-108	20	4
30-104	18	2
30-100	16	2

TRASH BAR FRAMES

LOCATION	TRASH BAR	LENGTH	BUNDLE NUMBER
F. Wing	2008-1-865	86-1/2"	1968-234-0
R. Wing	2008-1-945	94-1/2"	
F. Center	2008-1-68	68"	1965-234-0
R. Center	2008-1-68	68"	

SCRAPERS

LOCATION	NO. OF SCRAPERS
----------	--------------------

L.F. Center	10
R.F. Center	10
L.R. Center	8
R.R. Center	8
L.F. Wing	10
R.F. Wing	10
L.R. Wing	12+Ext.
R.R. Wing	12+Ext.

SPRING LOADED SCRAPERS 1968-388-0

SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
2008-100-0A	2008-1-785	78-1/2"
2008-100-0B	2008-1-785	78-1/2"
2008-080-0B	2008-1-625	62-1/2"
2008-080-0A	2008-1-625	62-1/2"
2008-100-0A	2008-1-785	78-1/2"
2008-100-0B	2008-1-785	78-1/2"
2008-121-0B	2008-1-104	104"
2008-121-0A	2008-1-104	104"

RIGID SCRAPERS 1968-288-0

SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
955A-185-0	955A-186-1	78"
955A-186-0	955A-186-1	78"
959A-186-0	959A-185-1	62"
959A-185-0	959A-185-1	62"
955A-185-0	955A-186-1	78"
955A-186-0	955A-186-1	78"
959A-184-0	1164-183-1	100"
959A-183-0	1164-183-1	100"

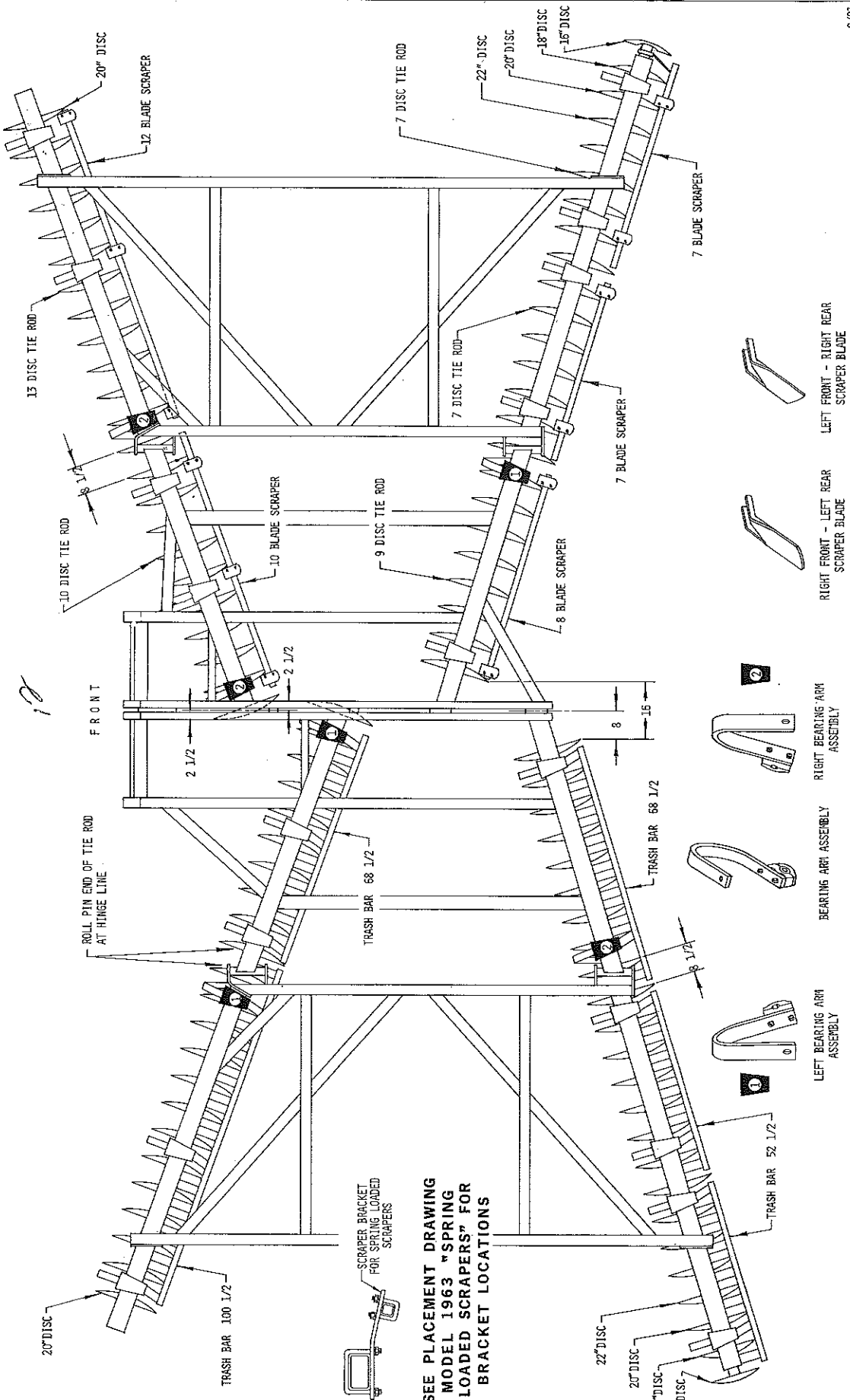
MODEL 1969

8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

LEFT SIDE SHOWN WITH 22" DISC & TRASH BARS

RIGHT SIDE SHOWN WITH 22" DISC & SCRAPERS



MODEL 1969

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	DUCTILE SPOOL ASSEMBLY NUMBERS
Center Front	10	8"	2214-18-1	78-3/8"	20"	1017H-803-0L
Center Rear	9	8"	2212-18-1	70-3/8"	20"	1017H-892-0L
Wing Front	13	8"	2217-18-1	102-1/2"	20"	1017H-833-0L
Wing Rear I.	7	8"	2135-82-1	54-3/8"	20"	1017H-872-0L
Wing Rear O.	7	8"	2135-82-1	54-3/8"	20"	1017H-872-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-159	22"	86
30-108	20"	4
30-104	18"	2
30-100	16"	2

TRASH BAR FRAMES

LOCATION	TRASH BAR	LENGTH	BUNDLE NO.
F. Wing	2008-1-104	104"	1969-235-0
R. Inside Wing	2008-1-525	52-1/2"	1969-234-0
R. Outside Wing	2008-1-525	52-1/2"	1969-234-0
F. Center	2008-1-68	68"	1965-234-0
R. Center	2008-1-68	68"	1965-234-0

SCRAPERS

SPRING LOADED SCRAPERS 1969-388-0

LOCATION	NO. OF SCRAPERS	SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
L.F. Center	10	2008-100-0A	2008-1-785	78-1/2"
R.F. Center	10	2008-100-0B	2008-1-785	78-1/2"
L.R. Center	8	2008-080-0B	2008-1-625	62-1/2"
R.R. Center	8	2008-080-0A	2008-1-625	62-1/2"
L.F. Wing	12	2008-120-0A	2008-1-945	94-1/2"
R.F. Wing	12	2008-120-0B	2008-1-945	94-1/2"
L.R.I. Wing	7	2008-070-0B	2008-1-545	54-1/2"
L.R.O. Wing	7+Ext.	2008-071-0B	2008-1-615	61-1/2"
R.R.I. Wing	7	2008-070-0A	2008-1-545	54-1/2"
R.R.O. Wing	7+Ext.	2008-071-0A	2008-1-615	61-1/2"

RIGID SCRAPERS 1969-288-0

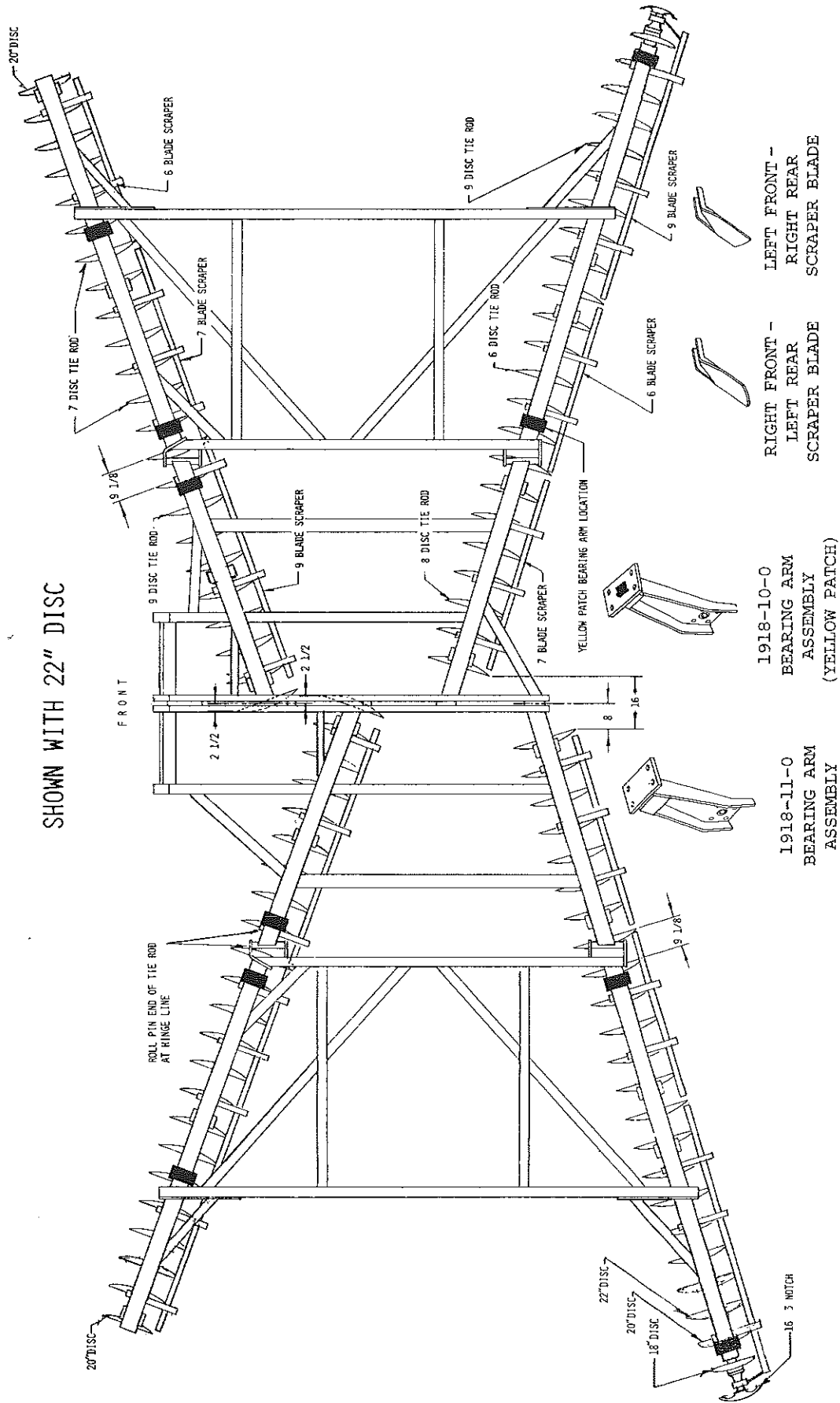
SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
955A-185-0	*955A-186-1	78"
955A-186-0	*955A-186-1	78"
959A-186-0	959A-185-1	62"
959A-185-0	959A-185-1	62"
1583-185-0	*1583-185-1	94"
1583-186-0	*1583-185-1	94"
963A-196-0	961A-185-1	54"
963A-184-0	959A-185-1	62"
963A-195-0	961A-185-1	54"
963A-183-0	959A-184-1	62"

MODEL 1970

9 1/8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

SHOWN WITH 22" DISC



MODEL 1970

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	TIE ROD ASSEMBLY NUMBERS
Center Front	9	9-1/8"	2224-18-1	79-1/8"	22"	1015H-993-0L
Center Rear	8	9-1/8"	2222-18-1	70"	22"	1015H-982-0L
Wing Front I.	7	9-1/8"	2136-82-1	60-7/8"	22"	1015H-972-0L
Wing Front O.	7	9-1/8"	2136-82-1	60-7/8"	22"	1015H-972-0L
Wing Rear I.	6	9-1/8"	2146-82-1	51-3/4"	22"	1015H-962-0L
Wing Rear O.	9	9-1/8"	2224-18-1	79-1/8"	22"	1015H-992-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-119	22	86
30-108	20	4
30-104	18	2
30-148	16	Cut Out 2

SCRAPERS

SPRING LOADED SCRAPERS 1976-388-0

NO. OF SCRAPERS

CENTER_SECTION

L. Front	9
R. Front	9
L. Rear	7
R. Rear	7

WING_SECTION (Front)

Lf. Inside	7
Rt. Inside	7
Lf. Outside	6
Rt. Outside	6

WING_SECTION (Rear)

Lf. Inside	6
Rf. Inside	6
Lf. Outside	9+Ext.
Rt. Outside	9+Ext.

* 1970-488-0 COMBINATION SCRAPER GROUP (Rigid Scrapers on Front, Spring Scrapers on Rear)

RIGID SCRAPERS 1976-288-0

SCRAPER ASSEMBLY

SCRAPER BAR

LENGTH

956A-185-0	955A-185-1	80"
956A-186-0	955A-185-1	80"
952A-186-0	1159-183-1	60"
952A-185-0	1159-183-1	60"

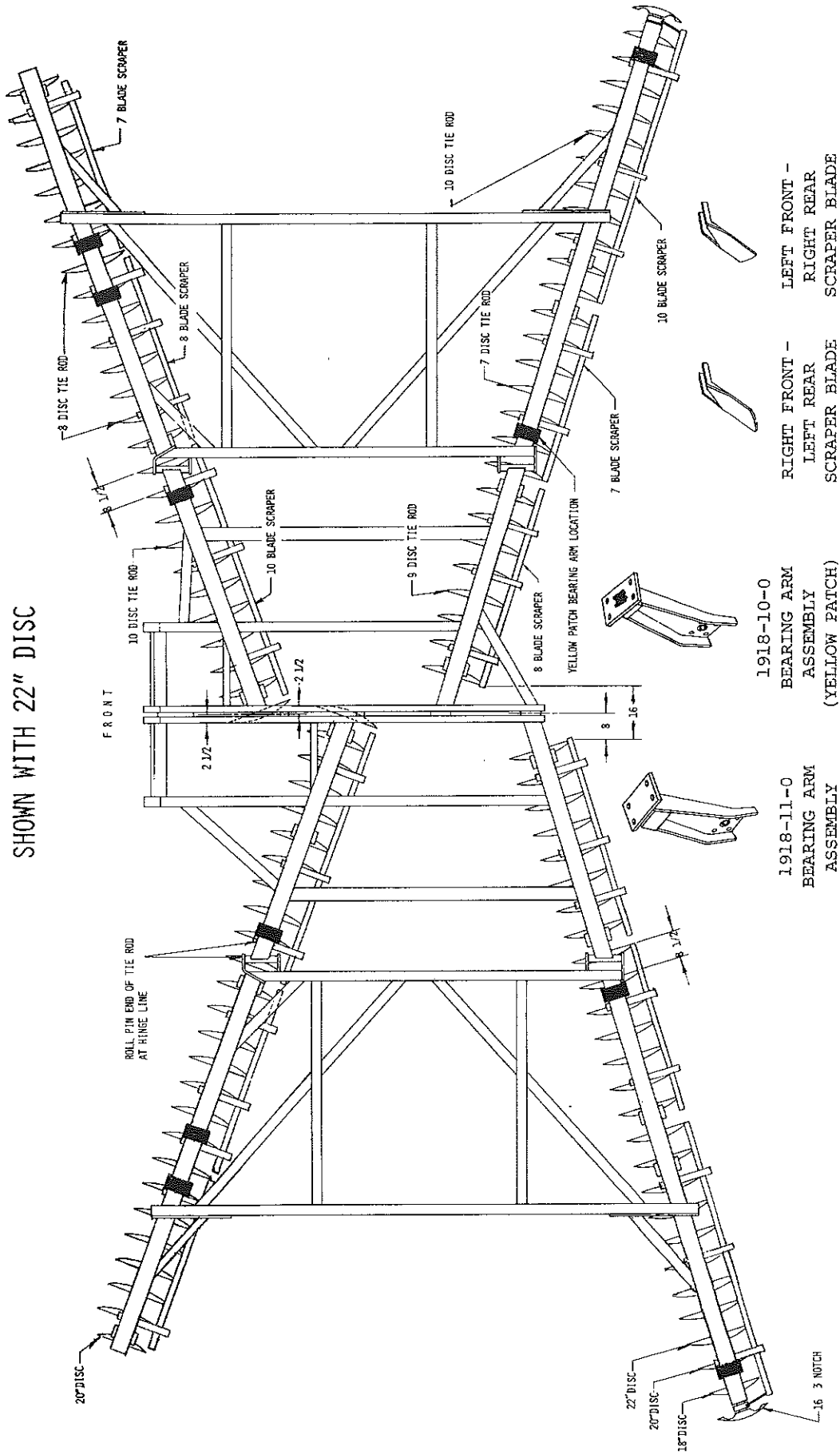
952A-185-0	1159-183-1	60"
952A-186-0	1159-183-1	60"
960A-195-0	1159-185-1	52"
960A-196-0	1159-185-1	52"

960A-196-0	1159-185-1	52"
960A-195-0	1159-185-1	52"
952A-184-0	955A-183-1	86"
952A-183-0	955A-183-1	86"

MODEL 1973
8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

SHOWN WITH 22" DISC



MODEL 1973

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	TIE ROD ASSEMBLY NUMBERS
Center Front	10	8"	2214-18-1	78-3/8"	22"	1015H-803-0L
Center Rear	9	8"	2212-18-1	70-3/8"	22"	1015H-892-0L
Wing Front I.	8	8"	2138-82-1	62-3/8"	22"	1015H-882-0L
Wing Front O.	8	8"	2138-82-1	62-3/8"	22"	1015H-882-0L
Wing Rear I.	7	8"	2135-82-1	54-3/8"	22"	1015H-872-0L
Wing Rear O.	10	8"	2214-18-1	78-3/8"	22"	1015H-802-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-119	22"	98
30-108	20"	4
30-104	18"	2
30-100	16" Cut Out	2

SCRAPERS

NO. OF SCRAPERS		SCRAPER ASSEMBLY		SCRAPER BAR		LENGTH	
LOCATION		SCRAPER ASSEMBLY		SCRAPER BAR		LENGTH	
<u>CENTER_SECTION</u>							
10		2008-100-OA	2008-1-785	78-1/2"	* 955A-185-0	955A-186-1	78"
10		2008-100-OB	2008-1-785	78-1/2"	* 955A-186-0	955A-186-1	78"
8		*2008-080-OB	2008-1-625	62-1/2"	959A-186-0	959A-185-1	62"
8		*2008-080-OA	2008-1-625	62-1/2"	959A-185-0	959A-185-1	62"
<u>WING_SECTION (Front)</u>							
8		2008-080-OA	2008-1-625	62-1/2"	* 959A-185-0	959A-185-1	62"
8		2008-080-OB	2008-1-625	62-1/2"	* 959A-186-0	959A-185-1	62"
7		2008-070-OB	2008-1-545	54-1/2"	* 963A-195-0	961A-185-1	54"
7		2008-070-OA	2008-1-545	54-1/2"	* 963A-196-0	961A-185-1	54"
<u>WING_SECTION (Rear)</u>							
7		*2008-070-OB	2008-1-545	54-1/2"	963A-196-0	961A-185-1	54"
7		*2008-070-OA	2008-1-545	54-1/2"	963A-195-0	961A-185-1	54"
10+Ext.		*2008-101-OB	2008-1-865	86-1/2"	955A-184-0	955A-183-1	86"
10+Ext.		*2008-101-OA	2008-1-865	86-1/2"	955A-183-0	955A-183-1	86"

*1973-488-0 COMBINATION SCRAPER GROUP (Rigid Scrapers on Front, Spring Scrapers on Rear)

9 1/8 SPACING

Diagram illustrating a trash bar assembly. The assembly includes a 20° disc, a trash bar (59 1/4), and a roll pin end of a tie rod at a hinge line. The diagram shows the trash bar (59 1/4) and the roll pin end of the tie rod at the hinge line.

Diagram illustrating a scraper bracket for spring loaded scrapers. The bracket is shown attached to a structure, with a label pointing to it: "SCRAPER BRACKET FOR SPRING LOADED SCRAPERS".

**SEE PLACEMENT DRAWING
MODEL 1970 "SPRING
LOADED SCRAPERS" FOR
BRACKET LOCATIONS**

LEFT
BEARING
ARM
ASSEMBLY

BEARING
ARM
ASSEMBLY

RIGHT
BEARING
ARM
ASSEMBLY

SCRAPER BLADE
RIGHT FRONT & LEFT REAR

SCRAPER BLADE
LEFT FRONT & RIGHT REAR

9 BLADE SCRAPER

V9 DISC TIE ROD

RIGHT SIDE SHOWN WITH SCRAPERS

SHOWN WITH 22" DISC

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

9/81

MODEL 1976

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	DUCTILE SPOOL ASSEMBLY NUMBERS
Center Front	9	9-1/8"	2224-18-1	79-1/8"	22"	1017H-993-0L
Center Rear	8	9-1/8"	2222-18-1	70"	22"	1017H-982-0L
Wing Front I.	7	9-1/8"	2136-82-1	60-7/8"	22"	1017H-972-0L
Wing Front O.	7	9-1/8"	2136-82-1	60-7/8"	22"	1017H-972-0L
Wing Rear I.	6	9-1/8"	2146-82-1	51-3/4"	22"	1017H-962-0L
Wing Rear O.	9	9-1/8"	2224-18-1	79-1/8"	22"	1017H-993-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-159	22"	86
30-108	20"	4
30-104	18"	2
30-100	16" Cut Out	2

TRASH BAR FRAMES

LOCATION	TRASH BAR	LENGTH	BUNDLE NUMBER
F. Center	2008-1-68	68-1/2"	1965-234-0
R. Center	2008-1-68	68-1/2"	
F. Inside Wing	2008-1-615	61-1/2"	1976-234-0
F. Outside Wing	2008-1-615	61-1/2"	
R. Inside Wing	2008-1-525	52-1/2"	1976-235-0
R. Outside Wing	2008-1-785	78-1/2"	

SCRAPERS

LOCATION	NO. OF SCRAPERS
L.F. Center	9
R.F. Center	9
L.R. Center	7
R.R. Center	7
L.F.I. Wing	7
R.F.I. Wing	7
L.R.I. Wing	6
R.R.I. Wing	6
L.F.O. Wing	6
R.F.O. Wing	6
L.R.O. Wing	9+Ext.
R.R.O. Wing	9+Ext.

SPRING LOADED SCRAPERS 1976-388-0

SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
2009-090-0A	2008-1-795	79-1/2"
2009-090-0B	2008-1-795	79-1/2"
2009-070-0B	2008-1-615	61-1/2"
2009-070-0A	2008-1-615	61-1/2"
2009-070-0A	2008-1-615	61-1/2"
2009-070-0B	2008-1-615	61-1/2"
2009-060-0B	2008-1-525	52-1/2"
2009-060-0A	2008-1-525	52-1/2"
2009-060-0A	2008-1-525	52-1/2"
2009-060-0B	2008-1-525	52-1/2"
2009-091-0B	2008-1-863	86-1/2"
2009-091-0A	2008-1-865	86-1/2"

RIGID SCRAPERS 1976-288-0

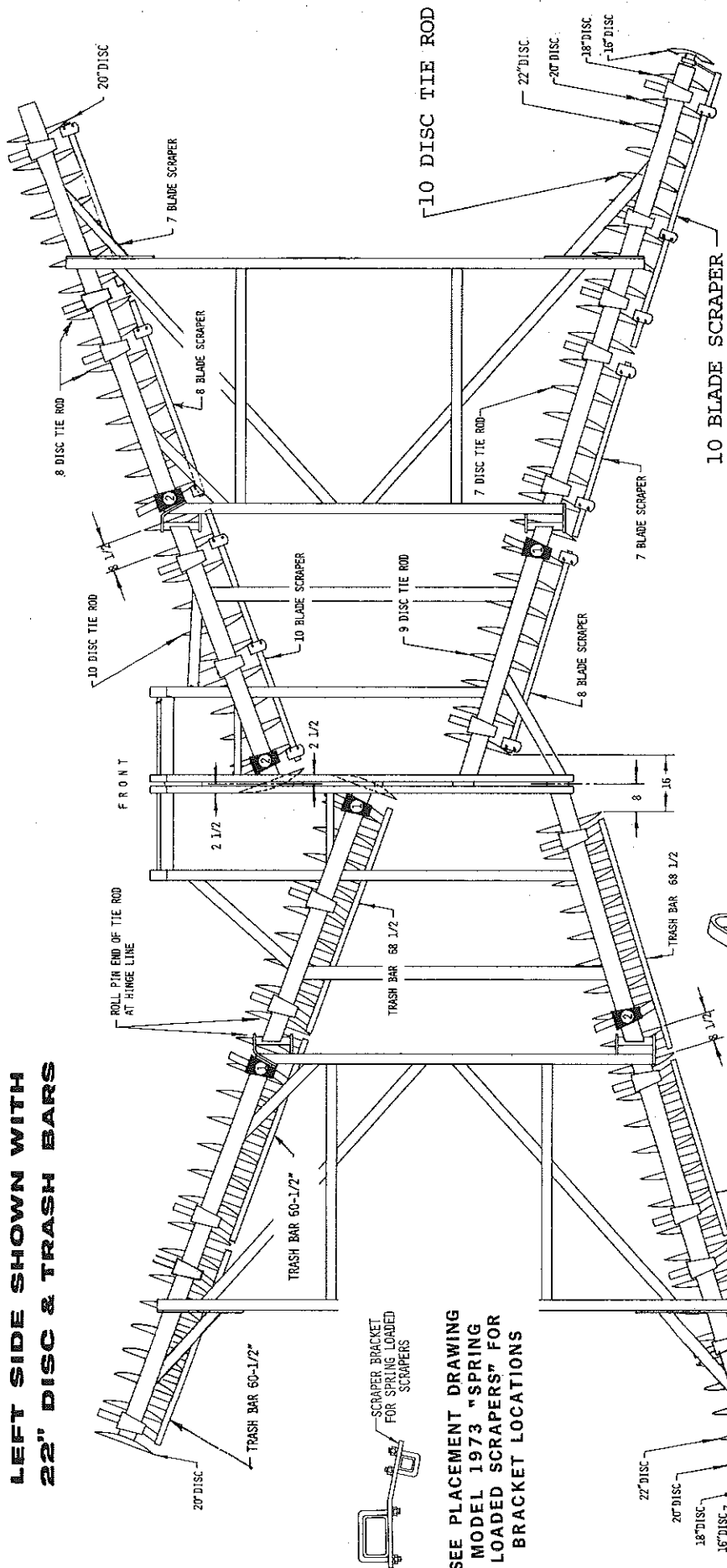
SCRAPER ASSEMBLY	SCRAPER BAR	LENGTH
955A-185-0	955A-186-1	78"
955A-186-0	955A-186-1	78"
952A-186-0	1159-183-1	60"
952A-185-0	1159-183-1	60"
952A-185-0	1159-183-1	60"
952A-186-0	1159-183-1	60"
960A-195-0	1159-185-1	52"
960A-196-0	1159-185-1	52"
960A-196-0	1159-185-1	52"
960A-195-0	1159-185-1	52"
952A-184-0	955A-183-1	86"
952A-183-0	955A-183-1	86"

MODEL 1979

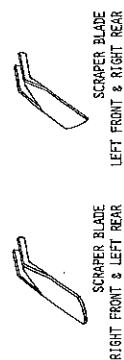
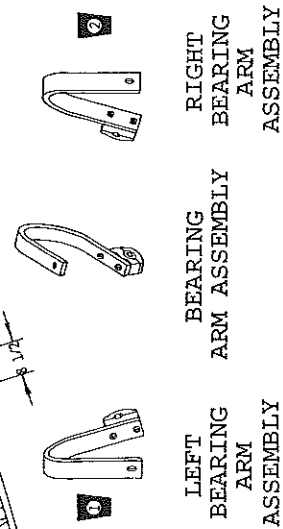
8 SPACING

NOTE: DIMENSIONS GIVEN APPLY TO BOTH RIGHT & LEFT SIDE OF UNIT

LEFT SIDE SHOWN WITH 22" DISC & TRASH BARS



SEE PLACEMENT DRAWING
MODEL 1973 "SPRING
LOADED SCRAPERS" FOR
BRACKET LOCATIONS



MODEL 1979

TIE RODS

LOCATION	QTY DISC	DISC SPACING	ALLOY TIE ROD NUMBER	LENGTH	BLADE SIZE	DUCTILE SPOOL ASSEMBLY NUMBERS
Center Front	10	8"	2214-18-1	78-3/8"	20"	1017H-803-0L
Center Rear	9	8"	2212-18-1	70-3/8"	20"	1017H-892-0L
Wing Front I.	8	8"	2138-82-1	62-3/8"	20"	1017H-882-0L
Wing Front O.	8	8"	2138-82-1	62-3/8"	20"	1017H-882-0L
Wing Rear I.	7	8"	2135-82-1	54-3/8"	20"	1017H-872-0L
Wing Rear O.	10	8"	2214-18-1	78-3/8"	20"	1017H-803-0L

DISC BLADES 22" MODELS

PART NUMBER	DIAMETER	NO. REQ'D.
30-159	22"	98
30-108	20"	4
30-104	18"	2
30-100	16"	2

TRASH BAR FRAMES

LOCATION	TRASH BAR	LENGTH	BUNDLE NUMBER
F. Center	2008-1-68	68"	1965-234-0
R. Center	2008-1-68	68"	
F. Inside Wing	2008-1-615	61-1/2"	1976-234-0
F. Outside Wing	2008-1-615	61-1/2"	
R. Inside Wing	2008-1-525	52-1/2"	1976-235-0
R. Outside Wing	2008-1-785	78-1/2"	

SCRAPERS

LOCATION	NO. OF SCRAPERS	SPRING LOADED SCRAPERS 1979-388-0		RIGID SCRAPERS 1979-288-0	
		SCRAPER ASSEMBLY	SCRAPER BAR	SCRAPER ASSEMBLY	SCRAPER BAR
L.F. Center	10	2008-100-0A	2008-1-785	955A-185-0	955A-186-1
R.F. Center	10	2008-100-0B	2008-1-785	955A-186-0	955A-186-1
L.R. Center	8	2008-080-0B	2008-1-625	959A-186-0	959A-185-1
R.R. Center	8	2008-080-0A	2008-1-625	959A-185-0	959A-185-1
L.F.I. Wing	8	2008-080-0A	2008-1-625	959A-185-0	959A-185-1
R.F.I. Wing	8	2008-080-0B	2008-1-625	959A-185-0	959A-185-1
L.R.I. Wing	7	2008-070-0B	2008-1-545	963A-195-0	961A-185-1
R.R.I. Wing	7	2008-070-0A	2008-1-545	963A-196-0	961A-185-1
L.F.O. Wing	7	2008-070-0A	2008-1-545	963A-196-0	961A-185-1
R.F.O. Wing	7	2008-070-0B	2008-1-545	963A-195-0	961A-185-1
L.R.O. Wing	10+Ext.	2008-101-0B	2008-1-865	955A-184-0	955A-183-1
R.R.O. Wing	10+Ext.	2008-101-0A	2008-1-865	955A-183-0	955A-183-1

