

OPERATOR'S MANUAL

MANURE SPREADER

MS1108

MS1112



HSMFG0903REV.4

HPOMSP2

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WARRANTY:

Warranty coverage is provided by John Deere according to the terms of the Agricultural/Commercial & Consumer Equipment Warranty Statement. Carefully read the warranty statement on the back of your original purchase order for details on coverage and limitations of this warranty.

NOTES

AFTER COMPLETION, DEALER SHOULD REMOVE AND RETAIN FOR RECORDS

FRONTIER DEALER PRE-DELIVERY CHECK LIST

After the Manure Spreader has been completely set-up, check to be certain it is in correct running order before delivering to the customer. The following is a list of points to inspect. Check off each item as you have made the proper adjustments and found the item operating satisfactorily.

- ☐ All Shields and Guards are in place and fastened.
- ☐ All grease fittings have been lubricated.
See lubrication guide in this manual.
- ☐ All mechanisms are operating trouble free.
- ☐ All roller chains are at proper tension.
- ☐ Apron chains are adjusted properly.
- ☐ All bolts and fasteners are tight.
- ☐ All decals are in place and legible.

(Dealer's Name)

Model Number

Serial Number

(Signature of Pre-Delivery Inspector)

(Inspection Date)

DEALER DELIVERY CHECK LIST

This check list that follows is an important reminder of valuable information that should be passed on to the customer at the time this Manure Spreader is delivered.

Check off each item as you explain it to the customer.

This delivery check list, when properly filled out and signed assures the customer that the Pre-delivery service was satisfactorily performed.

- ☐ Explain to the customer that the pre-delivery inspection was made.
- ☐ Explain to the customer all the safety precautions they must exercise when operating this unit.
- ☐ Explain recommended loads for different types of materials.
- ☐ Explain to customer that regular lubrication is required for proper operation and long life of machine. Show customer the lubrication section of Operator's Manual.
- ☐ Give the customer Operator's Manual and make sure he reads and understands all operating and service instructions.
- ☐ Record Serial Number on page 28 of this Manual.

Date Delivered _____

Dealer's Name _____

By _____

Signature of Original Buyer

FRONTIER MODEL MS1108 MANURE SPREADER

Your Frontier spreader has been manufactured of the finest quality materials and components. The performance you get from your machine is largely dependent upon how well you read and understand this manual and apply this knowledge. There is a right and a wrong way to do everything. Please do not assume that you know how to operate and maintain your spreader before reading this manual carefully. Keep this manual available for ready reference.

SPECIFICATIONS

MS1102

Top of Flare Width.	48"
Inside Width.	48"
Inside Length.	96"
Inside Depth.	20"
Overall Width w/6.70 - 15 Tires.	76"
Overall Length.	13'-8"
Overall Length w/Rear Pan.	13'-11-1/2"
Overall Height w/6.70 - 15 Tires.	34-1/2"
Wheel Tread.	67-1/2"
Diameter of Beater.	18-1/2"
Drive Worm.	Single Speed
Weight w/6.70 - 15 Tires.	1140 Lbs.
PTO Speed.	540 RPM
Capacity - Cu. Ft. Struck Level	53
(Old Rating).	80 Bu.
Rear Pan	Optional Equipment
Swing Away Jack.	Standard Equipment

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Note:

Determine right and left side of spreader by viewing it from the rear. If instructions or parts lists call for hardened bolts see page 7 to identify.

FRONTIER MODEL MS1112

MANURE SPREADER

Your Frontier spreader has been manufactured of the finest quality materials and components. The performance you get from your machine is largely dependent upon how well you read and understand this manual and apply this knowledge. There is a right and a wrong way to do everything. Please do not assume that you know how to operate and maintain your spreader before reading this manual carefully. Keep this manual available for ready reference.

SPECIFICATIONS

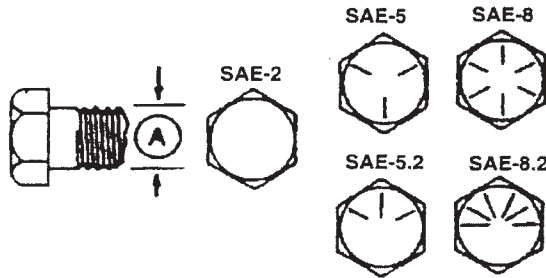
	<u>MS1112</u>
Top Flare Width.....	.54"
Inside Width.....	.48"
Inside Length.....	10'-6"
Inside Depth.....	.22"
Overall Width w/10.00 - 15 Tires.....	.80"
Overall Length.....	15'-3"
Overall Length w/Rear Pan.....	15'-6"
Overall Height w/10.00 - 15 Tires.....	.43"
Wheel Tread.....	.68"
Diameter of Beater.....	.22"
Drive Worm.....	Single Speed
Weight w/10.00 - 15 Tires.....	1430 Lbs.
PTO Speed.....	.540 RPM
Capacity - Cu. Ft. Struck Level.....	.75
(Old Rating).....	125 Bu.
Rear Pan.....	Optional Equipment
Swing Away Jack.....	Standard Equipment

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

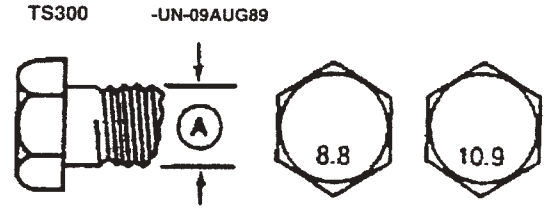
Note:

Determine right and left side of spreader by viewing it from the rear. If instructions or parts lists call for hardened bolts see page 7 to identify.

CAP SCREW TORQUE VALUES



Inch Cap Screw Head Markings



Metric Cap Screw Head Markings

INCH CAP SCREW TORQUE VALUES

Bolt Diameter Wrench (A) Size	Cap Screw Grade							
	SAE 2		SAE 5		SAE 8			
	N-m	lb.-ft	N-m	lb.-ft	N-m	lb.-ft	N-m	lb.-ft
1/4" 7/16"	7	(5)	11	(8)	16	(12)		
5/16" 1/2"	14	(10)	23	(17)	33	(24)		
3/8" 9/16"	24	(18)	41	(30)	54	(40)		
7/16" 5/8"	41	(30)	68	(50)	95	(70)		
1/2" 3/4"	61	(45)	102	(75)	142	(105)		
9/16" 13/16"	88	(65)	142	(105)	203	(150)		
5/8" 15/16"	122	(90)	197	(145)	278	(205)		
3/4" 1-1/8"	217	(160)	353	(260)	495	(365)		
7/8" 1-5/16"	224	(165)	563	(415)	800	(590)		
1" 1-1/2"	332	(245)	848	(625)	1193	(880)		
1-1/4" 1-7/8"	665	(490)	1492	(1100)	2393	(1765)		

METRIC CAP SCREW TORQUE VALUES

Bolt Diameter Wrench (A) Size	Markings on Cap Screw Heads							
	8.8		10.9					
	N-m	lb.-ft	N-m	lb.-ft	N-m	lb.-ft	N-m	lb.-ft
5 mm 8 mm	6	(4.5)	9	(6.5)				
6 mm 10 mm	10	(7.5)	15	(11)				
8 mm 13 mm	25	(18)	35	(26)				
10 mm 16 mm	50	(37)	75	(55)				
12 mm 18 mm	85	(63)	130	(97)				
16 mm 24 mm	215	(159)	315	(232)				
20 mm 30 mm	435	(321)	620	(457)				
24 mm 36 mm	750	(553)	1070	(789)				
30 mm 46 mm	1495	(1103)	2130	(1571)				



CAUTION: Use only metric tools on metric hardware. Other tools may not fit properly. They may slip and cause injury.

DO NOT use these values if a different torque value tightening procedure is listed for a specific application. Torque values listed are for general use only. Check tightness of cap screws periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade. Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fastener threads are clean and you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of amount shown in chart. Tighten toothed or serrated-type lock nuts to full torque value.



**BE
ALERT!**

**YOUR SAFETY
IS INVOLVED.**

THIS SYMBOL IS USED THROUGHOUT THIS BOOK WHENEVER YOUR PERSONAL SAFETY IS INVOLVED. TAKE TIME TO BE CAREFUL. REMEMBER: THE CAREFUL OPERATOR IS THE BEST OPERATOR. MOST ACCIDENTS ARE CAUSED BY HUMAN ERROR. CERTAIN PRECAUTIONS MUST BE OBSERVED TO PREVENT THE POSSIBILITY OF INJURY OR DAMAGE.

TRACTORS

This operator's manual uses the term "Tractor" when identifying the power or the towing source.

RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



UNDERSTAND SIGNAL WORDS

A signal word- DANGER, WARNING, or CAUTION - is used with the safety-alert symbol. DANGER identifies the most serious hazards.

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs.



FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual, and all safety signs on your machine. Follow all recommended precautions and safe operating procedures.

Keep signs in good condition. Immediately replace any missing or damaged signs.



OBSERVE MAXIMUM TRANSPORT SPEED

The maximum transport speed for this implement is 32 km/h (20 mph).

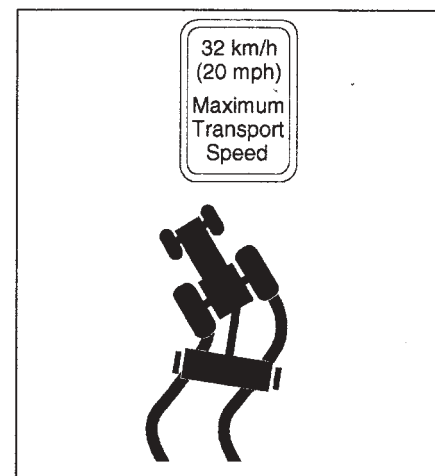
Some tractors are capable of operating at speeds that exceed the maximum transport speed of this implement. Regardless of the maximum speed capability of the tractor being used to tow this implement, do not exceed the implement's maximum transport speed.

Exceeding the implements maximum transport speed can result in:

- Loss of control of the tractor/implement combination
- Reduced or no ability to stop during braking
- Implement tire failure
- Damage to the implement structure or its components

Use additional caution and reduce speed when towing under adverse surface conditions, when turning, and when on inclines.

Do not attempt transport if the fully loaded implement weighs more than 1.5 times the weight of the tractor.



TRACTORS

This operators manual uses the term “Tractor” when identifying the power or the towing source.



WARNING

TO PREVENT SERIOUS INJURY OR DEATH

BEFORE YOU ATTEMPT TO OPERATE THIS EQUIPMENT, READ AND STUDY THE FOLLOWING INFORMATION. IN ADDITION, MAKE SURE THAT EVERY INDIVIDUAL WHO OPERATES OR WORKS WITH THIS EQUIPMENT, WHETHER FAMILY MEMBER OR EMPLOYEE, IS FAMILIAR WITH THESE SAFETY PRECAUTIONS.

KNOW HOW TO STOP UNLOADING MECHANISM BEFORE STARTING IT.

If the machine becomes clogged, disengage the PTO. Stop the tractor engine. Remove Ignition Key and allow all mechanisms to stop before cleaning or working on the machine.

NEVER allow riders in or on the machine.

DO NOT get off the tractor while the spreader is in operation.

DO NOT attempt to perform maintenance or repair with tractor running and PTO hooked up.

DO NOT step up on machine at any time.

NEVER manually feed material into the beaters.

DO NOT allow minors to operate or be near the machine.

DO NOT ALLOW PERSONNEL OTHER THAN THE QUALIFIED OPERATOR NEAR THE MACHINE.

Before starting tractor, be sure PTO shields turn freely and PTO is securely locked to tractor.

DO NOT clean, adjust, or lubricate the machine when any part is in operation.

Keep hands, feet, and clothing away from beaters when they are revolving.

Loose or floppy clothing should not be worn by the operator.

Be sure the machine is clear of people, tools, and other objects before engaging PTO.

DO NOT step over power take off shaft. Stay clear of PTO at all times.

NEVER start manure spreader until all guards and safety shields are secured in place

NEVER hook up 1000 RPM tractor to the spreader.

Frontier always takes the operator and his safety into consideration and guards exposed moving parts for his protection. However, some areas cannot be guarded or shielded in order to assure proper operation. In addition, the operators manual and decals on the machine itself warn you of further danger and should be read and observed closely.

Study The Above Safety Rules

ATTENTION - BE ALERT - YOUR SAFETY IS INVOLVED



! WARNING

DO NOT OPERATE
THIS EQUIPMENT
IF THIS DECAL IS
EXPOSED.
REPLACE SAFETY
SHIELDS.

1494A



! WARNING

**DO NOT
REMOVE
SHIELDS**

**ROTATING PARTS
INSIDE**

12794



! WARNING

DO NOT OPERATE
THIS EQUIPMENT
IF THIS DECAL IS
EXPOSED.
REPLACE SAFETY
SHIELDS.

71494A

! WARNING



CRUSHING HAZARD

TO PREVENT SERIOUS INJURY OR DEATH:

KEEP HANDS AND BODY OUT OF HITCH
AREA WHEN ATTACHING TOWING VEHICLE.

KEEP BODY CLEAR OF CRUSH POINT
BETWEEN TOWING VEHICLE AND LOAD.

KEEP FEET AND LEGS CLEAR FROM UNDER
TONGUE AREA IN CASE OF POSSIBLE JACK
FAILURE.

82502

! DANGER



**ROTATING DRIVELINE
CONTACT CAN CAUSE DEATH
KEEP AWAY!**

DO NOT OPERATE WITHOUT-

- ALL DRIVELINE, TRACTOR
AND EQUIPMENT SHIELDS
IN PLACE.
- DRIVELINES SECURELY
ATTACHED AT BOTH ENDS.
- DRIVELINE SHIELDS THAT
TURN FREELY ON DRIVELINE.

1494L

! DANGER



**NEVER
ALLOW
RIDERS
ON THIS
MACHINE**

9194B



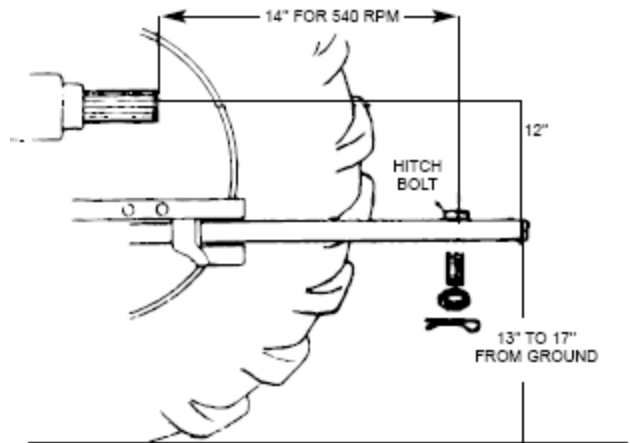
OPERATION MODEL MS1108

(FOR MS1112 SEE PAGE 16)

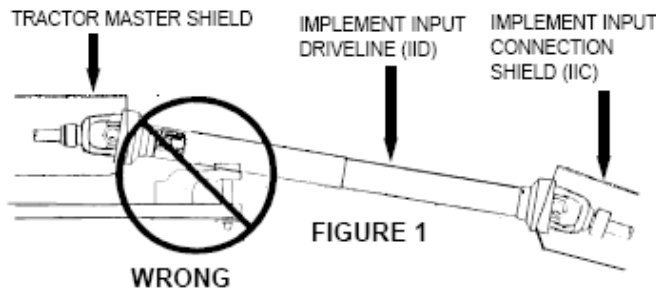
1. Check for proper assembly and adjustment and make sure that all bolts are tightened. Securely retighten after a few hours of operation, as bolts can loosen up on new machinery. Check wheel bolts upon delivery and periodically thereafter. Wheel bolts should be tightened at 60-65 ft./lbs. of torque.
2. Check the tires and inflate to the recommended pressure (6.70 - 15 tires to 32 Pounds).
3. Adjust the tractor hitch and attach the spreader to the tractor as described in the following sections.
4. Lubricate the machine completely and check the oil level of the gear box.
5. Before operation run machine slowly to make sure that the spreader is operating and lubricated properly.

TRACTOR HITCH

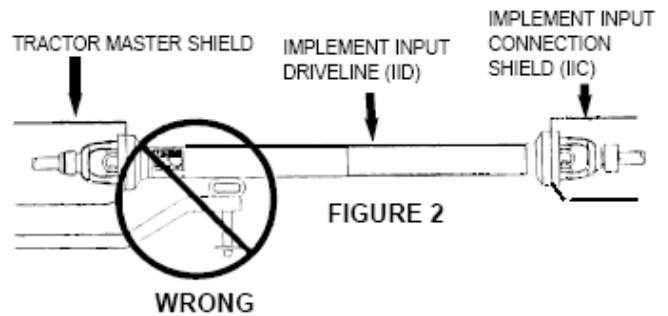
The hitch of the spreader is designed for a standardized tractor hitch. Adjust the drawbar so that it is 13 to 17 inches above the ground. Extend or shorten it so that the horizontal distance from the end of the hitch pin hole is 14 inches, as shown in drawing. An improperly located hitch joint may cause damage to the universal joints of the power take-off. Secure the drawbar so that the hitch pin hole is directly below the power drive line.



If this implement is attached to a tractor with a clevis hitch (hammer-strap) style drawbar, the hammer strap must be removed to prevent damage to the IID guarding and the IID telescoping members. (See Figure 1).



If this implement is attached to a tractor with an offset in the drawbar, be certain it is in the down position to prevent damage to the IID guarding and the IID telescoping members. (See Figure 2).



ATTACHING TO THE TRACTOR

1. Fasten the spreader hitch to the drawbar with a **hitch pin with a safety locking device**. Use 3/4" to 7/8" diameter hitch pin to pull spreader.
2. Remove the weight from the jack (jack is not to be used when spreader is loaded). Remove Jack from Pipe Mount and place on convenient storage mount located inside the left hitch channel. This allows protection of the of Jack from tractor tires during turning.
3. Slide spring loaded locking collar on PTO yoke rearward, and slide yoke onto the tractor PTO shaft. Release spring loaded collar. Be sure pins fall into groove of tractor PTO shaft and collar snaps forward into locking position. **CAUTION:** Do not use a steel hammer to aid in joining PTO parts.

SERVICING

Be certain to disconnect all sources of power before servicing. Keep pant cuffs and other loose clothing away from all chain and gear drives as well as the other moving parts. Keep off the equipment when in use, and keep all safety shields in place; do not attempt to clean, grease or lubricate while the machine is running. Never allow riders in or on the machine.

LOADING

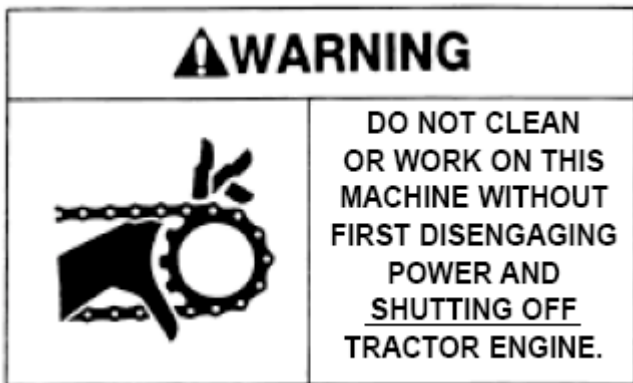
In freezing weather make sure the apron chain is not frozen the spreader floor. Also check to make sure there are no chunks of manure frozen to the floor.

Begin loading the spreader at the front end and work toward the rear until loading is completed. Loading this way permits the materials to be spread uniformly. Loading front to rear is particularly important when the spreader is loaded by a mechanical loader because this type of load requires more power to spread than other loads.

When hauling extremely heavy materials with a large portion of dirt it may be necessary to reduce the load size. Never dump material onto the beater. Do not use extra sideboards. Do not overload spreader. Overloading decreases spreading effectiveness. Do not load more the 15 inches above the beater.

SPREADING

1. When ready to unload, make sure beater is in the engaged position. (See Page 15).
2. Engage the tractor PTO shaft slowly. Failure to do so will cause damage to the gearbox and drive train.



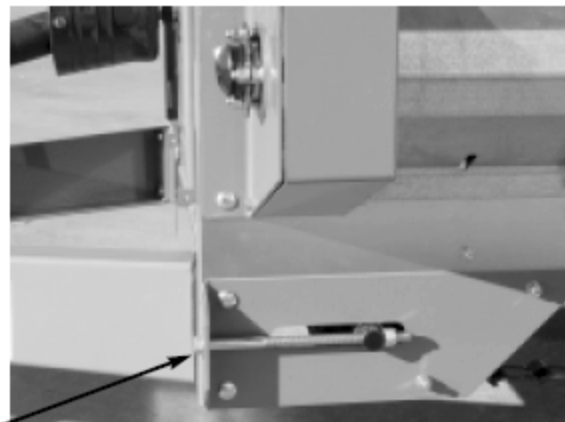
3. When the spreader is almost empty, the bed can be cleaned by moving the beater control lever to the Disengaged position (See Page 15). Disengage PTO before disengaging beater. With the lever in this position the beater will stop and the apron will continue to operate when PTO is re-engaged, thus saving unnecessary driving.
4. Do not operate the spreader with a PTO speed greater than 540 RPM's.

ADJUSTMENTS

APRON

Adjust the apron by tightening the adjusting bolts located at the front of the spreader until the apron chain rests lightly on top of the chain guides located bellow the axle.

NOTE: Tighten the adjusting bolts on each front corner equally on each side so that the apron slats run parallel with the ends of the bed. The apron will be damaged if the machine is operated with one end of the apron slats running ahead of the opposite end. Do not tighten the apron chains excessively.



TIGHTENER BOLT



Shields Removed For Clarity

DRIVE CHAIN

To adjust main drive chain, loosen three bolts holding front center panel on to spreader. Slide panel toward right side of the spreader until proper tension on chain is reached. There should be 1/2 inch deflection at center of drive chain when properly adjusted. Retighten bolts holding front panel.

Over tightening or too loose of a chain will result in excessive wear on the bearings, chain and sprockets.

BOLTS

APRON DRIVE CHAIN

Maintain proper tension on the apron drive chain. There should be 1/4 inch deflection at the side of the chain when properly adjusted. To adjust loosen bolt holding tightener. Slide tightener against drive chain and retighten bolt. Failure to maintain proper tension will result in excessive wear to chain and sprocket.

SHEAR BOLT

The beater and apron drive are protected by one shear bolt. Two shear bolts are provided. Shearing of the bolt is normally due to foreign objects in the manure, or starting the spreader PTO too quickly with high tractor RPM's. Always use Frontier shear bolts, part number HP16SV289, when replacing shear bolts.



**TIGHTENER
BOLT**

Shields Removed For Clarity



Shields Removed For Clarity

**SPARE
SHEAR
BOLTS**

**SHEAR
BOLT**

ADJUSTING WHEEL HUBS

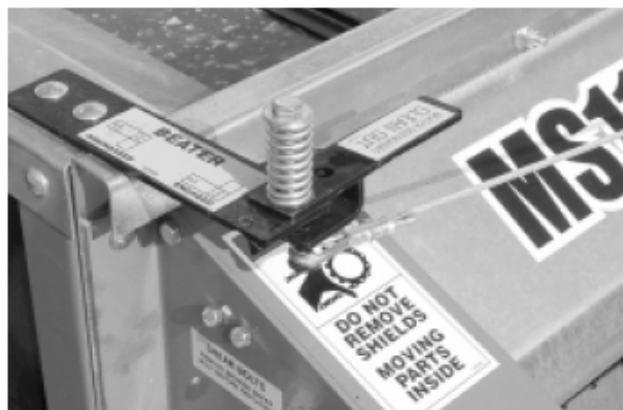
To adjust the wheel hubs, tighten the castellated nut on the spindle to the point where there is no end-play and a slight drag on the bearings, and replace the cotter key with a new one of the correct size.

FAILURE TO FOLLOW THE RECOMMENDED ADJUSTMENTS WILL VOID WARRANTY.



BEATER CONTROL

The beater engage / disengage handle is located at the front left hand side of the spreader. **NEVER** engage or disengage beater with PTO engaged.



Beater Engaged



Beater Disengaged

BEATER

The beater paddles are welded to the beater tube. Replacement of these paddles should be performed by authorized service personnel who are competent welders. When replacing paddles, the sharp edge of the teeth must lead in the direction of beater travel.

When transporting on the highway, regularly clean the reflective tape at the rear of the spreader. There is a holder provided for your SMV sign.

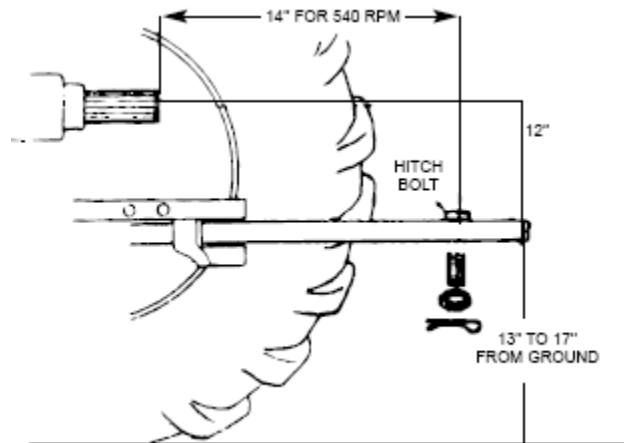
OPERATION MODELS MS1112

(FOR MS1108 SEE PAGE 13)

1. Check for proper assembly and adjustment and make sure that all bolts are tightened. Securely retighten after a few hours of operation, as bolts can loosen up on new machinery. Check wheel bolts upon delivery and periodically thereafter. Wheel bolts should be tightened at 85-90 ft./lbs of torque.
2. Check the tires and inflate to the recommended pressure (10.00-15 to 40 pounds).
3. Adjust the tractor hitch and attach the spreader to the tractor as described in the following sections.
4. Lubricate the machine completely and check the oil level of gearbox.
5. Before operation run machine slowly to make sure that the spreader is operating and lubricated properly.

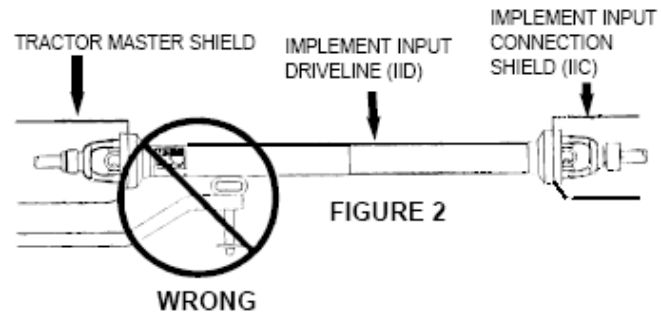
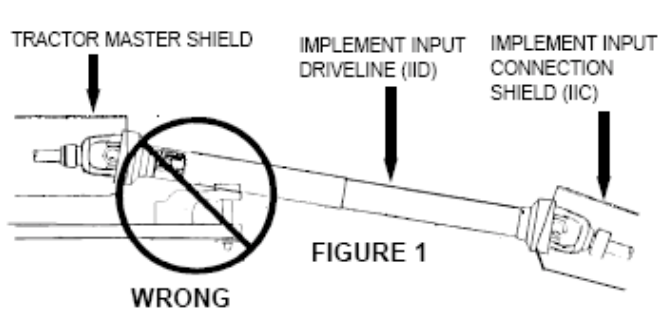
TRACTOR HITCH

The hitch of the spreader is designed for a standardized tractor hitch. Adjust the drawbar so that it is 13 to 17 inches above the ground. Extend or shorten it so that the horizontal distance from the end of the hitch pin hole is 14 inches, as shown in drawing. An improperly located hitch joint may cause damage to the universal joints of the power take-off. Secure the drawbar so that the hitch pin hole is directly below the power drive line.



If this implement is attached to a tractor with a clevis hitch (hammer-strap) style drawbar, the hammer strap must be removed to prevent damage to the IID guarding and the IID telescoping members. (See Figure 1).

If this implement is attached to a tractor with an offset in the drawbar, be certain it is in the down position to prevent damage to the IID guarding and the IID telescoping members. (See Figure 2).



ATTACHING TO THE TRACTOR

1. Fasten the spreader hitch to the drawbar with a **hitch pin with a safety locking device**. Use 1 inch diameter hitch pin to pull spreader.
2. Remove the weight from the jack (jack is not to be used when spreader is loaded). Remove Jack from Pipe Mount and place on convenient storage mount located on top of left hitch channel. This allows protection of the of Jack from tractor tires during turning.
3. Slide spring loaded locking collar on PTO yoke rearward, and slide yoke onto the tractor PTO shaft. Release spring loaded collar. Be sure pins fall into groove of tractor PTO shaft and collar snaps forward into locking position. **CAUTION:** Do not use a steel hammer to aid in joining PTO parts.

SERVICING

Be certain to disconnect all sources of power before servicing. Keep pant cuffs and other loose clothing away from all chain and gear drives as well as the other moving parts. Keep off the equipment when in use, and keep all safety shields in place; do not attempt to clean, grease or lubricate while the machine is running. Never allow riders in or on the machine.

LOADING

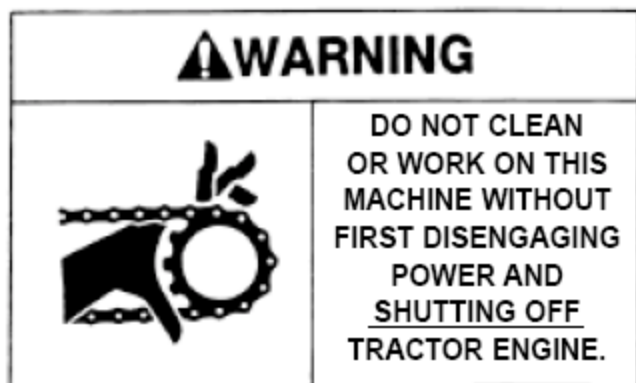
In freezing weather make sure the apron chain is not frozen the spreader floor. Also check to make sure there are no chunks of manure frozen to the floor.

Begin loading the spreader at the front end and work toward the rear until loading is completed. Loading this way permits the materials to be spread uniformly. Loading front to rear is particularly important when the spreader is loaded by a mechanical loader because this type of load requires more power to spread than other loads.

When hauling extremely heavy materials with a large portion of dirt it may be necessary to reduce the load size. Never dump material onto the beater. Do not use extra sideboards. Do not overload spreader. Overloading decreases spreading effectiveness. Do not load more the 15 inches above the beater.

SPREADING

1. When ready to unload, make sure beater is in the engaged position. (See Page 18).
2. Engage the tractor PTO shaft slowly. Failure to do so will cause damage to the gearbox and drive train.
3. When the spreader is almost empty, the bed can be cleaned by moving the beater control lever to the disengage position (See Page 18). Disengage PTO before disengaging beater. With the lever in this position the beater will stop and the apron will continue to operate when PTO is re-engaged, thus saving unnecessary driving.
4. Do not operate the spreader with a PTO speed greater than 540 RPM's.



ADJUSTMENTS

APRON

Adjust the apron by tightening the adjusting bolts until the apron chain clears the underside of the axle by 1 inch.

NOTE: Tighten the adjusting bolts on each front corner equally on each side so that the apron slats run parallel with the ends of the bed. The apron will be damaged if the machine is operated with one end of the apron slats running ahead of the opposite end. Do not tighten the apron chains excessively.



DRIVE CHAIN

To adjust main drive chain, turn nut on adjusting rod (located at the left hand front side of spreader) clockwise.

There should be 1/2 inch deflection at center of drive chain. Over tightening or too loose of a chain will result in excessive wear on the bearing, chain and sprockets

Shields Removed For Clarity

TIGHTENER BOLTS (Drive Chain)

TIGHTENER BOLT (Apron)

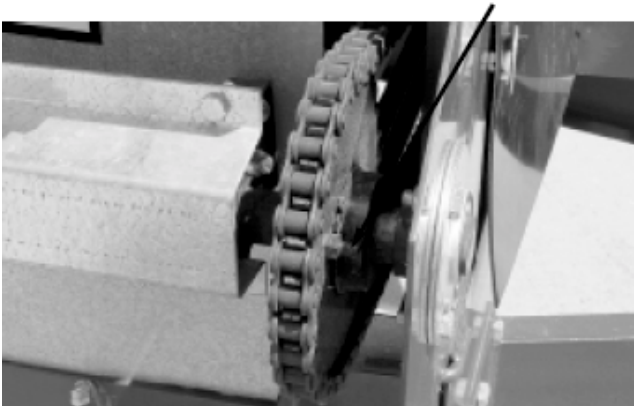
BEATER DRIVE

Maintain proper tension on the beater and apron drive chains. There should be 1/4 inch deflection at the bottom center of each chain. Failure to maintain proper tension will result in undue stress to beater stub shaft and bearings.

SHEAR BOLT

The beater and apron drive are protected by one shear bolt. Two spare shear bolts are provided. Shearing of the bolt is normally due to foreign objects in the manure, or starting the spreader PTO too quickly with high tractor RPM's. Always use Frontier shear bolts, part number HPD31, when replacing shear bolts.

SHEAR BOLT



Shields Removed For Clarity

BEATER CONTROL

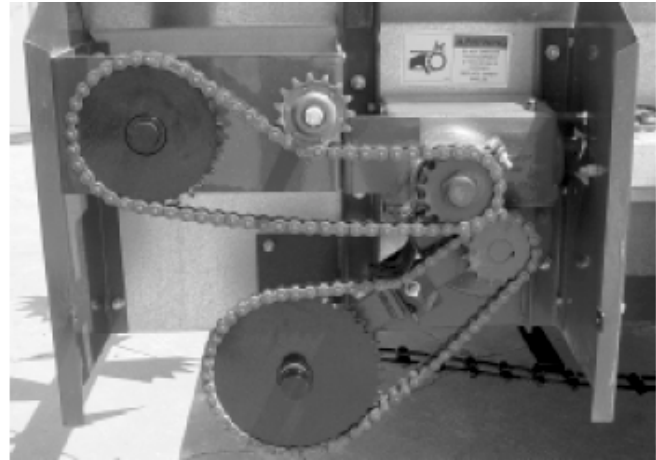
The beater engage/disengage handle is located at the front right hand side of the spreader. **NEVER** engage or disengage beater with PTO engaged.



BEATER

The beater paddles are welded to the beater tube. Replacement of these paddles should be performed by authorized service personnel who are competent welders. When replacing paddles, the sharp edge of the teeth must lead in the direction of beater travel.

When transporting on the highway, regularly clean the reflective tape at the rear of the spreader. There is a holder provided for your SMV sign.



Shields Removed For Clarity

ADJUSTING WHEEL HUBS

To adjust the wheel hubs, tighten the castellated nut on the spindle to the point where there is no end-play and a slight drag on the bearings, and replace the cotter key with a new one of the correct size.

FAILURE TO FOLLOW THE RECOMMENDED ADJUSTMENTS WILL VOID WARRANTY.

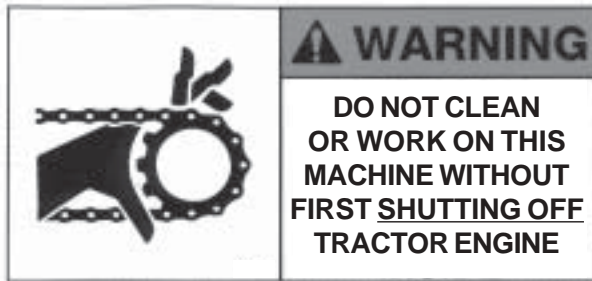


Beater Engaged



Beater Disengaged

LUBRICATION GUIDE MS1108



The operator should become familiar with all lubrication points and establish a systematic routine to insure complete and quick lubrication of the machine.

DRIVE CHAIN

Lubricate the drive chains with a light machine oil. Keep chains aligned with sprockets. This will lengthen the life of the sprockets and chain. Lubricate chains often.

GEARBOX

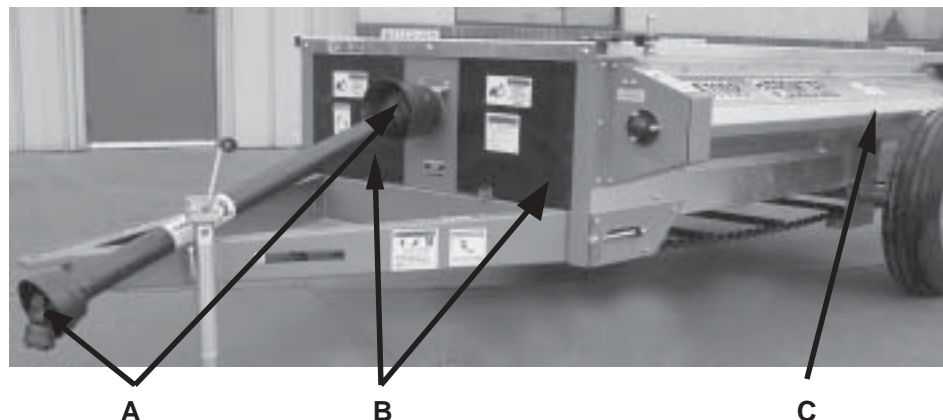
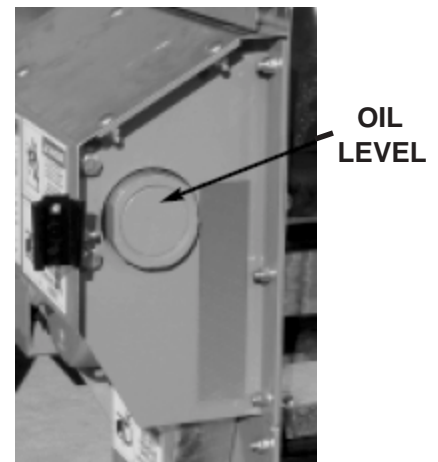
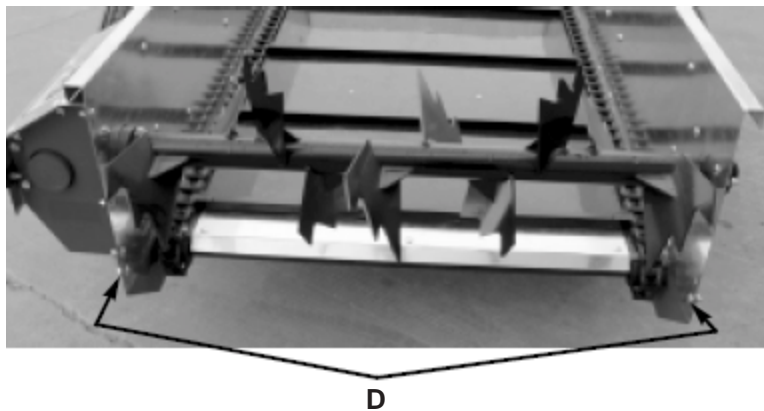
Before using your new machine, check the oil level in the gearbox located at the left rear of the spreader. Keep the gearbox filled to the center of the top shaft of the gearbox with #80 or #90 gear lube.

GREASE FITTINGS

There are 7 grease fittings on this spreader. If these are lubricated properly and often enough it will prolong the life of the spreader (Grease every 20 hours, also **before storage and after power washing**). Make certain that the grease fittings are free of paint and dirt, force a high quality grease into them until the grease comes out around the shaft on the sleeve type bearings. On the sealed ball bearings, grease should be added slowly until a slight bead forms at the seals, indicating the correct amount of lubricant. Wipe off excess grease to prevent the accumulation of chaff and grit around the bearings.

GREASE ZERK LOCATION

- A. (2) One at each end of PTO shaft
- B. (2) One on each idler sprocket
- C. (1) On the side shaft
- D. (2) On each end of drive shaft



LUBRICATION GUIDE *(Continued)*

⚠ DANGER



ROTATING DRIVELINE
CONTACT CAN CAUSE DEATH
KEEP AWAY!
DO NOT OPERATE WITHOUT-

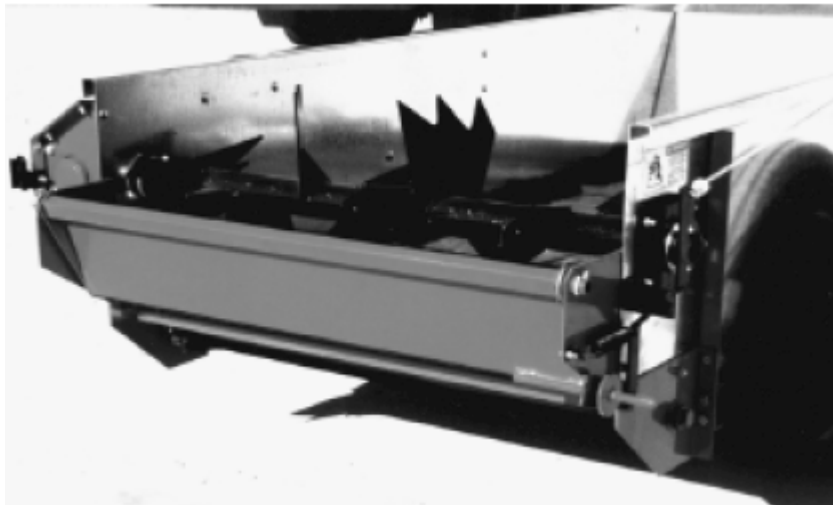
- ALL DRIVELINE, TRACTOR AND EQUIPMENT SHIELDS IN PLACE.
- DRIVELINES SECURELY ATTACHED AT BOTH ENDS.
- DRIVELINE SHIELDS THAT TURN FREELY ON DRIVELINE.

PTO ASSEMBLY - Care must be taken to keep the male and female driving elements well lubricated and free sliding. Failure to observe this precaution will result in excessive pressure being required to collapse or extend the assembly while subject to operating torque. This excessive force may damage or displace the jackshaft bearings. **DO NOT** lubricate the shield surfaces. The shield surfaces must be kept dry, as dirt accumulation on them will quickly cause these units to bind and not rotate. Care should also be taken to be certain that the rotating integral shields are not dented or damaged, as this also will result in excessive force being applied against the jackshaft. Damaged shields also cause obvious difficulties when installing the assembly. If at any time the shields do not turn freely, they should be checked to determine the cause, and repaired or cleaned. To avoid damage to the main drive bearings, avoid turning sharp corners while PTO is running. Start PTO slowly to avoid damage to the drive train.

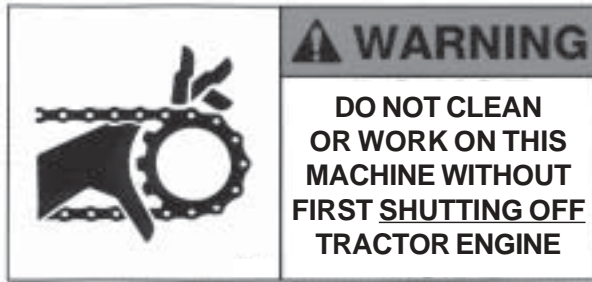
OPTIONAL EQUIPMENT

REAR PAN

The rear pan is optional on the MS1108 manure spreader



LUBRICATION GUIDE MS1112



The operator should become familiar with all lubrication points and establish a systematic routine to insure complete and quick lubrication of the machine.

DRIVE CHAIN

Lubricate the drive chains with a light machine oil. Keep chains aligned with sprockets. This will lengthen the life of the sprockets and chain. Lubricate chains often.

GEARBOX

Before using your new machine, check the oil level in the gearbox located at the left rear of the spreader. Keep the gearbox filled to the center of the top shaft of the gearbox with #80 or #90 gear lube.

GREASE FITTINGS

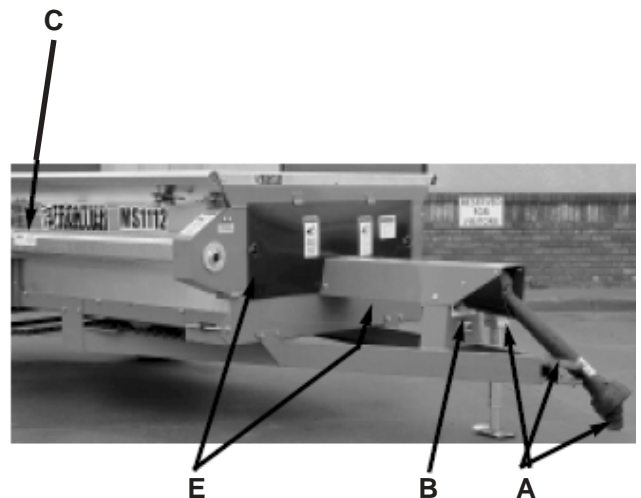
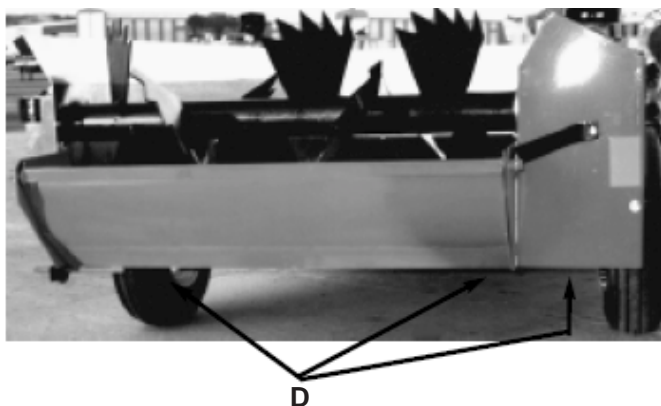
There are 10 grease fittings on this spreader. If these are lubricated properly and often enough it will prolong the life of the spreader (Grease every 20 hours, also **before storage and after power washing**). Make certain that the grease fittings are free of paint and dirt, force a high quality grease into them until the grease comes out around the shaft on the sleeve type bearings. On the sealed ball bearings, grease should be added slowly until a slight bead forms at the seals, indicating the correct amount of lubricant. Wipe off excess grease to prevent the accumulation of chaff and grit around the bearings.



OIL
LEVEL

GREASE ZERK LOCATION

- A. (3) PTO Shaft
- B. (1) Front Jackshaft
- C. (1) Side Shaft
- D. (3) Drive Shaft
- E. (2) Front Idler Sprockets



LUBRICATION GUIDE *(Continued)*



**ROTATING DRIVELINE
CONTACT CAN CAUSE DEATH
KEEP AWAY!
DO NOT OPERATE WITHOUT-**

- ALL DRIVELINE, TRACTOR AND EQUIPMENT SHIELDS IN PLACE.
- DRIVELINES SECURELY ATTACHED AT BOTH ENDS.
- DRIVELINE SHIELDS THAT TURN FREELY ON DRIVELINE.

PTO ASSEMBLY - Care must be taken to keep the male and female driving elements well lubricated and free sliding. Failure to observe this precaution will result in excessive pressure being required to collapse or extend the assembly while subject to operating torque. This excessive force may damage or displace the jackshaft bearings. **DO NOT** lubricate the shield surfaces. The shield surfaces must be kept dry, as dirt accumulation on them will quickly cause these units to bind and not rotate. Care should also be taken to be certain that the rotating integral shields are not dented or damaged, as this also will result in excessive force being applied against the jackshaft. Damaged shields also cause obvious difficulties when installing the assembly. If at any time the shields do not turn freely, they should be checked to determine the cause, and repaired or cleaned. To avoid damage to the main drive bearings, avoid turning sharp corners while PTO is running. Start PTO slowly to avoid damage to the drive train.

OPTIONAL EQUIPMENT

REAR PAN

The rear pan is optional on the MS1112 manure spreader



TROUBLESHOOTING



WARNING

MAKE SURE THAT THE TRACTOR IS SHUT OFF AND SPREADER CAN NOT MOVE BEFORE SERVICING THE MANURE SPREADER. MAINTENANCE AND REPAIR SERVICE WORK TO BE PERFORMED BY A QUALIFIED SERVICE PERSON ONLY.

TROUBLE...	POSSIBLE CAUSE...	POSSIBLE REMEDY...
Beater Does Not Turn	PTO Not Turning	Engage Tractor PTO
	Beater Not Engaged	Engage Beater
	Shear Bolt Sheared	Replaced Shear Bolt See Page #15 MS1108 See Page #18 MS1112
	Front Drive Chain Off, Broken, or Missing	Replace or Repair Front Drive Chain See Page #14 MS1108 See Page #17 MS1112
	Beater to Gear Box Attaching Bolts Sheared or Missing	Replace Sheared or Missing Beater Bolts
	Beater Drive Chain Missing or Broken	Replace or Repair Beater Drive Chain on MS1112
Beater Will Not Disengage	Beater Drive Sprocket Key Sheared or Missing	Replace Sheared or Missing Key
	Beater Engage/Disengage Cable Stretched or Broken	Re-adjust or Replace Cable
Apron Does Not Turn	PTO Not Turning	Engage Tractor PTO
	Shear Bolt Sheared	Replace Shear Bolt See Page #15 MS1108 See Page #18 MS1112
	Front Drive Chain Off, Broken, or Missing	Replace or Repair Front Drive Chain
	Main Apron Broken	Replace or Repair Main Apron
	Keys on Main Apron Shaft Sheared or Missing	Replace Sheared or Missing Keys

DECAL LOCATION MS1108

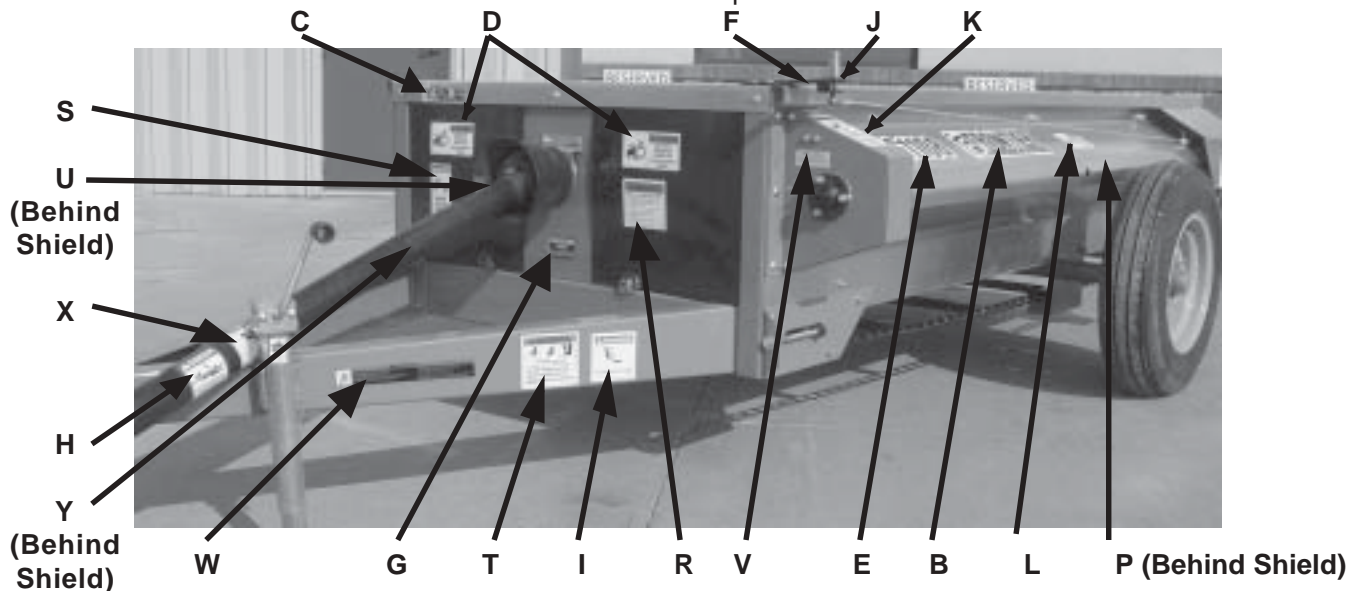
Your Frontier Manure Spreader was manufactured with operator safety in mind. Located on the manure spreader are various decals to aid in operation, and warn of danger or caution areas. Pay close attention to all the decals on your Manure Spreader.

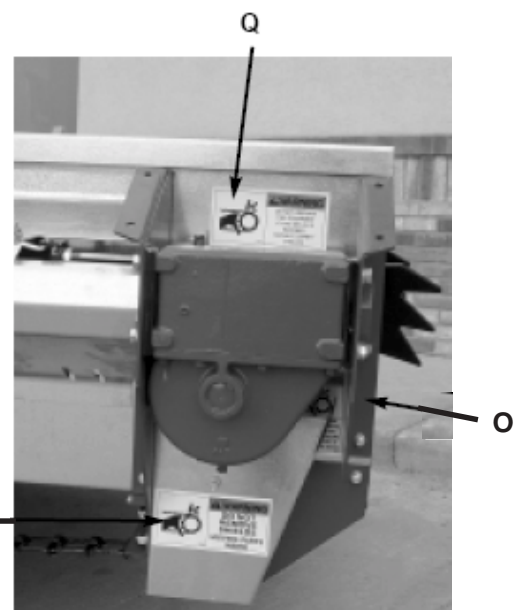
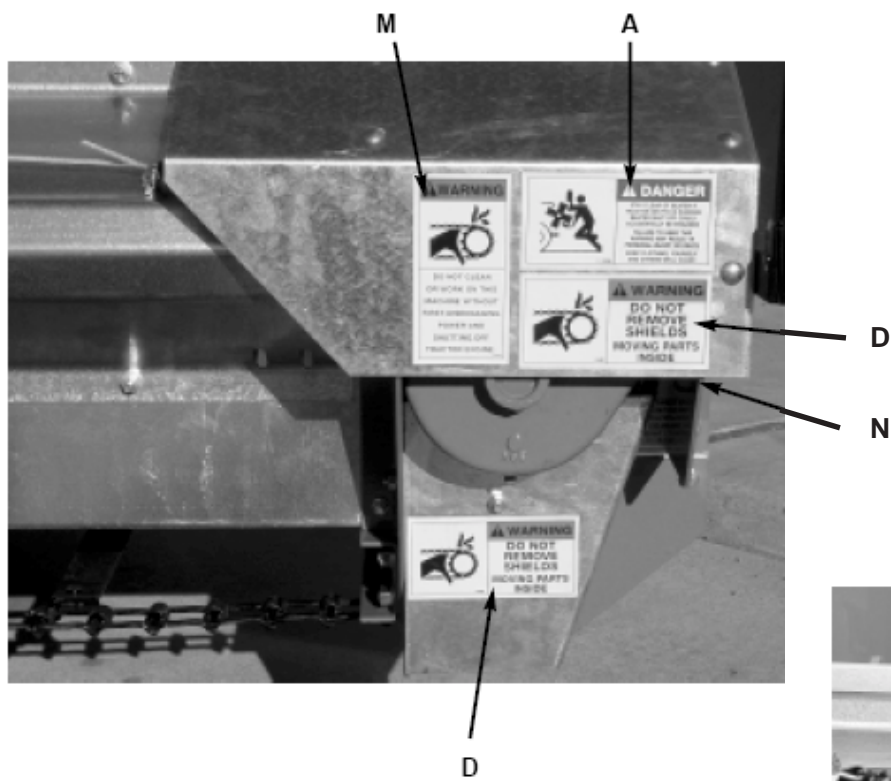


DO NOT REMOVE ANY OF THESE DECALS. IF DECALS ARE LOST, DAMAGED, OR IF MANURE SPREADER IS REPAINTED, REPLACE DECALS. REMEMBER: DECALS ARE FOR YOUR PROTECTION AND SAFETY.

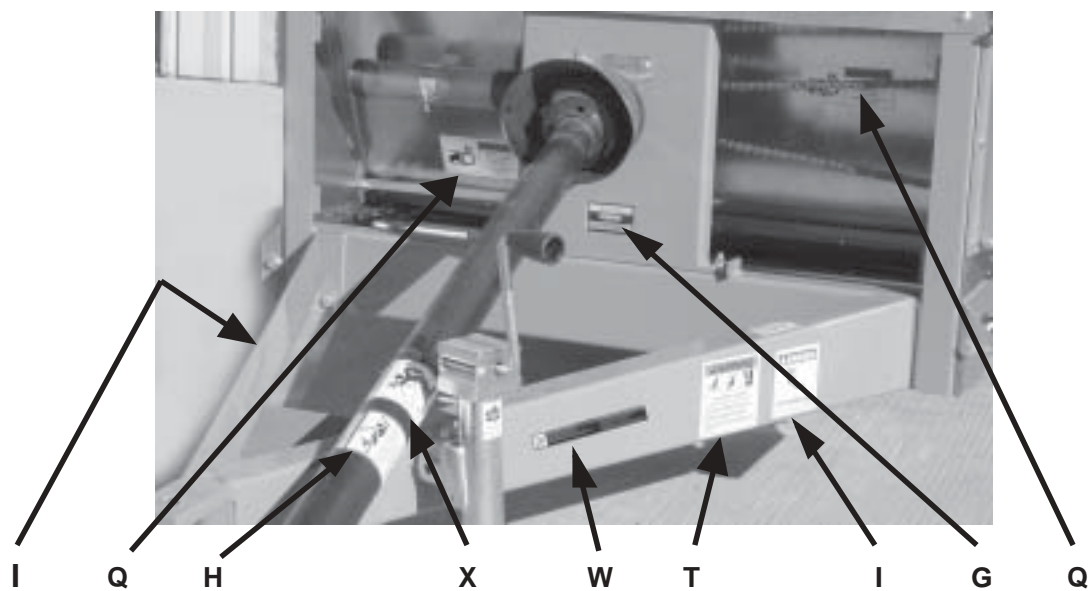
Listed below are the decals on your Manure Spreader. These decals may be ordered individually by part number or by ordering a complete set.

ITEM	PART NO.	DESCRIPTION
A.	HP111593A	(2) Danger - Stay Clear of Beater
B.	HPFRONTIER19	(2) Frontier Decal
C.	5HPFRNTR65	Frontier Decal
D.	HP1494B	(4) Warning - Do Not Remove Shields
E.	HP1108	(2) Frontier Model Decal
F.	HP52703C	Beater Engage/Disengaged
G.		Serial Number
H.	HP16SSV283	Danger - Rotating Driveline
I.	HP9194A	(2) Danger - No Step
J.	HP7143189	Beater Disengaged - Clean Out
K.	HP1494K	Warning - Do Not Remove Shields
L.	HP12794	Warning - Do Not Remove Shields
M.	HP1494J	Warning - Do Not Clean
N.	HP2X9RED	Red Reflector
O.	HP3894	Warning - Do Not Operate
P.	HP71494A	(2) Warning - Do Not Operate
Q.	HP1494A	(3) Warning - Do Not Operate
R.	HPFRON1	Warning - Help Avoid Injury
S.	HP9194B	Danger - Never Allow Riders
T.	HP82602	Warning - Crushing Hazard
U.	HPHS404	Patent Numbers
V.	HP11211176	Shear Bolts
W.	HP92606	Warning - Do Not Exceed Transport Speed
X.	HP16SV384	Danger - Do Not Operate Over 540 RPM
Y.	HP16SV388	Danger - Do Not Operate Guard Missing
	5HP611031108	Complete Set of Decals





(Shields Removed for Clarity)



DECAL LOCATION MS1112

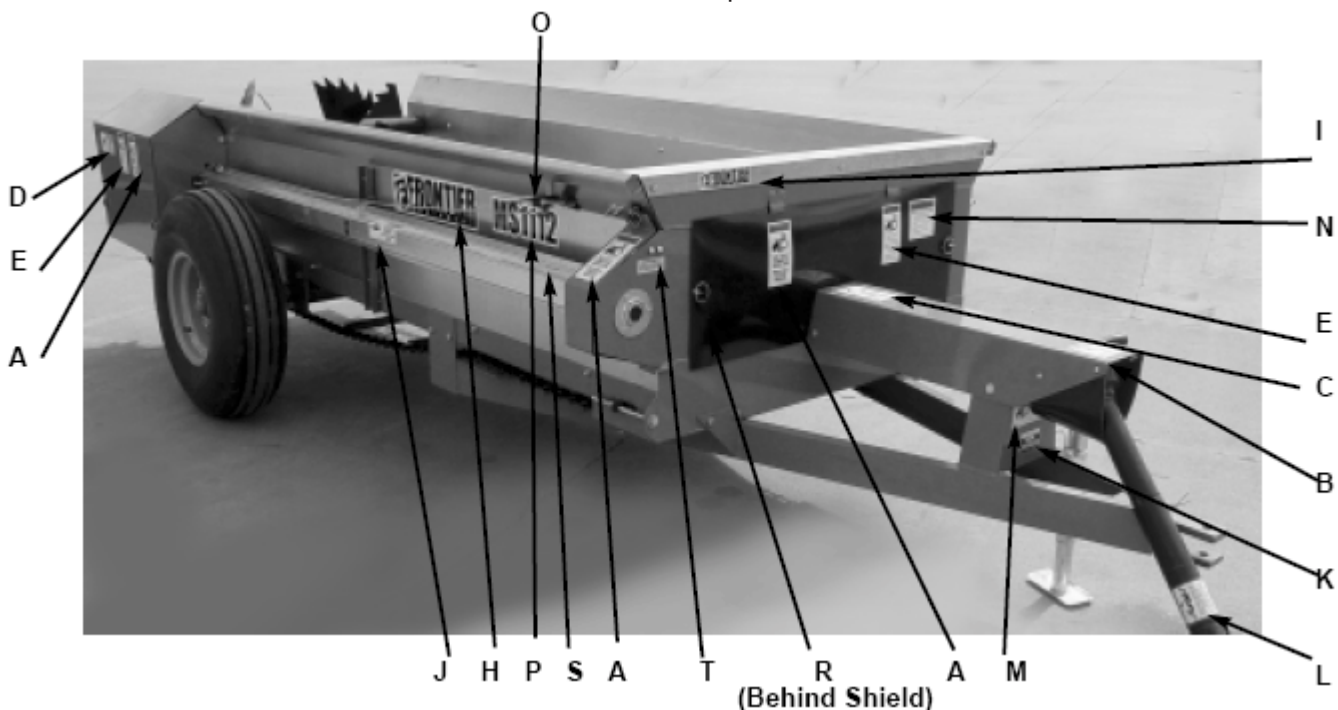
Your Frontier Manure Spreader was manufactured with operator safety in mind. Located on the manure spreader are various decals to aid in operation, and warn of danger or caution areas. Pay close attention to all the decals on your Manure Spreader.

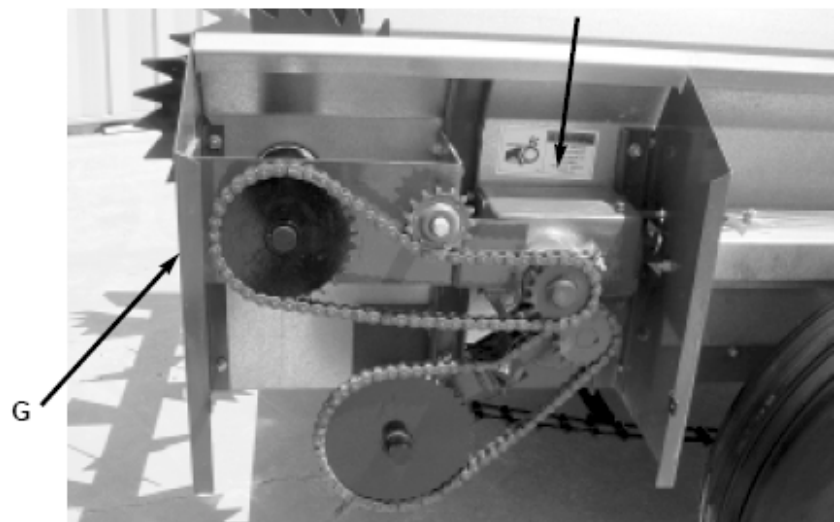
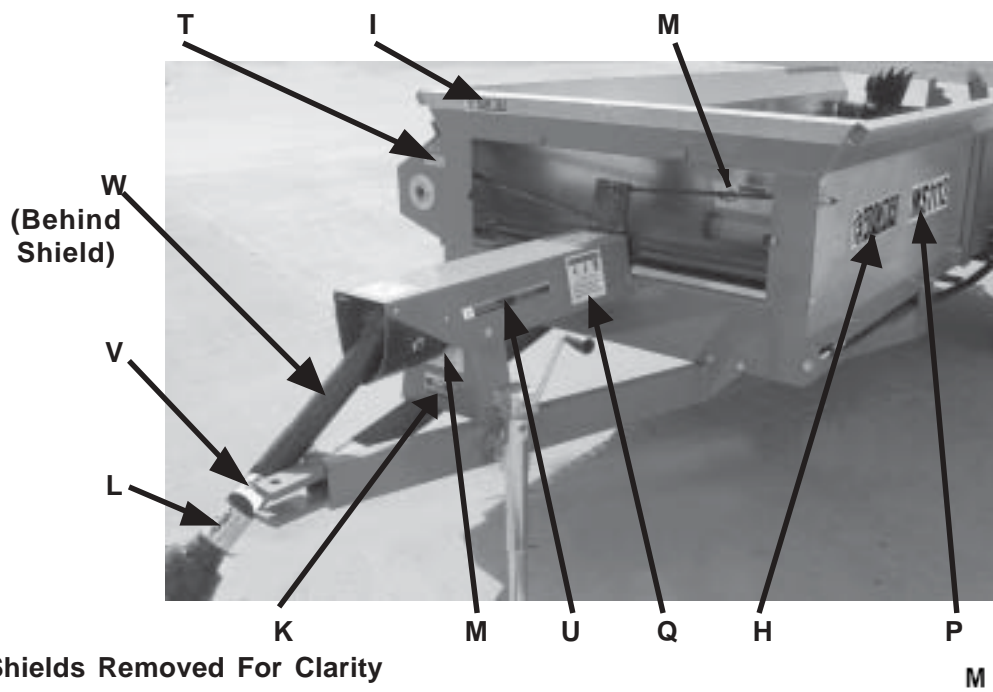
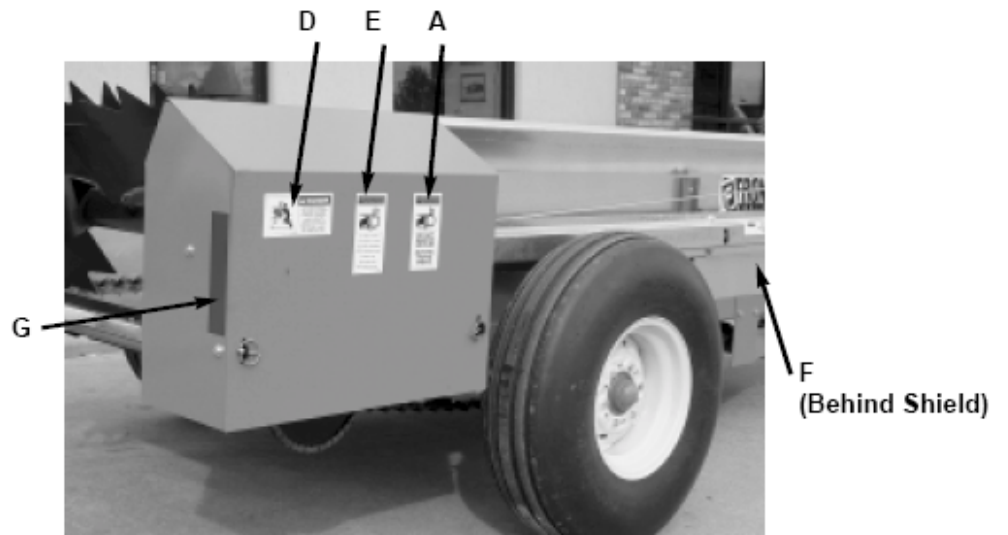


DO NOT REMOVE ANY OF THESE DECALS. IF DECALS ARE LOST, DAMAGED, OR IF MANURE SPREADER IS REPAINTED, REPLACE DECALS. REMEMBER: DECALS ARE FOR YOUR PROTECTION AND SAFETY.

Listed below are the decals on your Manure Spreader. These decals may be ordered individually by part number or by ordering a complete set.

ITEM	PART NO.	DESCRIPTION
A.	HP1494K	(3) Warning - Do Not Remove Shields
B.	HP9194A	Danger - No Step
C.	HP9194B	Danger - Never Allow Riders
D.	HP111593A	(2) Danger - Stay Clear of Beater
E.	HP1494J	(2) Warning - Do Not Clean
F.	HP71494A	(2) Warning - Do Not Operate
G.	HP2X9RED	(2) Red Reflectors
H.	HPFRONTIER19	(2) Frontier Decals
I.	5HPFRNTR65	Frontier Decals
J.	HP12794	Warning - Do Not Remove Shields
K.		Serial Number
L.	HP16SV283	Danger - Rotating Driveline
M.	HP1494A	(3) Warning - Do Not Operate
N.	HPFRON1	Warning - Help Avoid Injury
O.	5HP7143189	Beater Disengaged - Cleanout
P.	HP1112	(2) Frontier Model Decal
Q.	HP82602	Warning - Crushing Decal
R.	HPHS404	Patent Numbers
S.	HP52703D	Beater Engage/Disengage
T.	HP11211176	Shear Bolts
U.	HP92606	Warning - Do Not Exceed Transport Speed
V.	HP16SV384	Danger - Do Not Operate Over 540 RPM
W.	HP16SV388	Danger - Do Not Operate Guard Missing
	5HP65031112	Complete Set of Decals





INSTRUCTIONS FOR ORDERING PARTS

All service parts should be ordered through your authorized Frontier dealer. He will be able to give you faster service if you will provide him with the following.

1. Model & Serial Number - Both can be located on the front main frame on MS1108
On the front PTO bearing support mount on MS1112.
2. All reference to or right apply to the machine as viewed from the rear.
3. Parts should not be ordered from illustration only. Please order by complete part number.
4. If your dealer has to order parts - give shipping instructions
VIA truck - large pieces (please specify local truck lines)
VIA United Parcel Service (include full address)



PLEASE RECORD NUMBERS FOR YOUR UNIT FOR REFERENCE

ABOUT IMPROVEMENTS

FRONTIER IS CONTINUALLY STRIVING TO IMPROVE IT'S PRODUCTS.

We must therefore, reserve the right to make improvements or changes whenever it becomes practical to do so, without incurring any obligation to make changes or additions to the equipment previously sold.

[illegible]

FIGURE 1

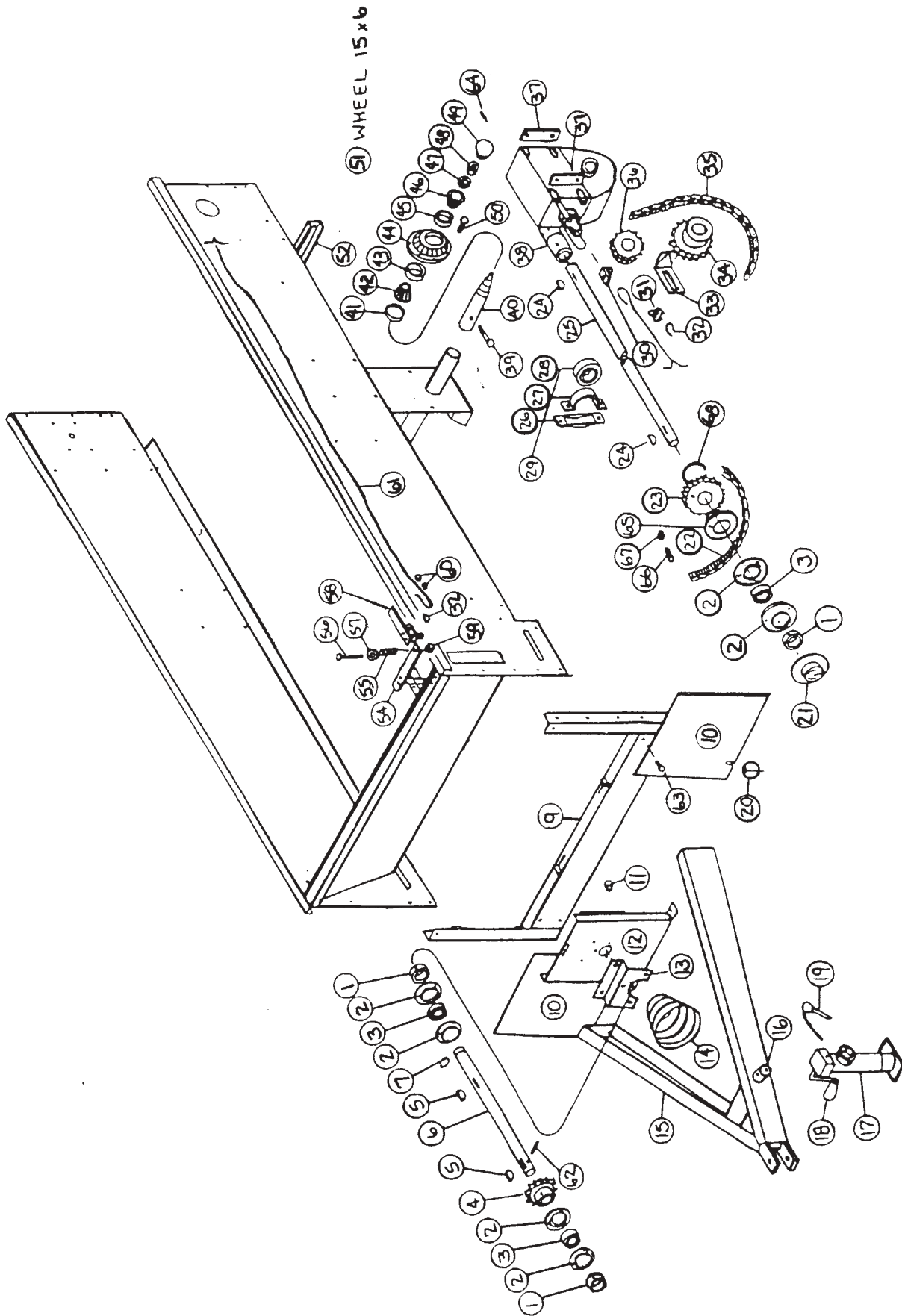


FIGURE 1
MS1108 COMPONENT PARTS

ITEM	PART#	DESCRIPTION	ITEM	PART#	DESCRIPTION
1.	HP4C9	Lock Collar	35.	HP80N25	#50 Roller Chain 50 Pitches
2.	HP4C7	Flange	36.	HP80N26	17T Sprocket
3.	HP4C8	Bearing	37.	HP80N27	Gearbox Mounting Spacer
4.	HP4C4	Input Sprocket 13T	38.	HP80N28	Coupler
5.	HP5B10	Key 1/4"x1"	39.	HP16SV91	Spindle Bolt
6.	HP80N7	Input Shaft	40.	HP12N16	Spindle
7.	HP3G21	Snap Ring	41.	HP12N17	Seal
9.	HP80N9	Front Frame	42.	HP12N18	Inner Bearing
10.	HP80N10	Front Poly Shields	43.	HP12N19	Inner Race
11.	HP80N11	Front Post Spacer	44.	HP12N20	Hub
12.	HP80N12	Front Post	45.	HP12N21	Outer Race
13.	HP80N13	Shield Mounting Bracket	46.	HP12N25	Outer Bearing
14.	HP17G45	Implement Yoke Shield	47.	HPB4	Washer
15.	HP80N14	Pole Assembly	48.	HPB3	Nut
16.	HP12N14	Jack Mount	49.	HP12N23	Dust Cap
17.	HP12N11	Jack	50.	HP12N22	Hub Bolt
18.	HP12N12	Jack Handle	51.	HPRG127	Wheel 15x6
19.	HP12N13	Jack Pin & Chain	52.	HP80N29	Back Cross Beam
20.	HPF56	Lynch Pin	54.	HP80N31	Beater Shut-Off Bracket
21.	HP80N15	Shaft Guard	55.	HP5B6	Spring
22.	HP80N16	#50 Roller Chain 118 Pitches	56.	HP12N51	Bolt 3/8"x2-3/4" GR.5
23.	HPX141	40T Sprocket	57.	HPX67	Washer 3/8"
24.	HP5B10	Key 1/4"x1"	58.	HP12N48	Shifter Bracket
25.	HP80N18	Side Shaft	59.	HPK93	Lock Nut 3/8"
26.	HP80N19	Bearing Cover	60.	HPES5	Cable Clamp
27.	HP80N20	Bearing Holder	61.	HP80N33	Cable
28.	HP80N21	Bearing	62.	HP3G22	Roll Pin 5/16"x1-3/4"
29.	HP80N22	Bearing Assembly	63.	HPR10	Bolt 1/2"x1-1/4" GR.5
30.	HP80N23	Shifter Angle	64.	HPB31	Cotter Pin
31.	HPBFR220	Cable Clamp	65.	HP80N74	Shear Hub
32.	HPES4	Thimble	66.	HP16SV289	Shear Bolt 5/16"x1-1/2" GR.5
33.	HP80N24	Chain Tightener	67.	HPD81	Lock Nut 5/16"
34.	HPST28	24T Sprocket	68.	HP23N75	Snap Ring

FIGURE 2

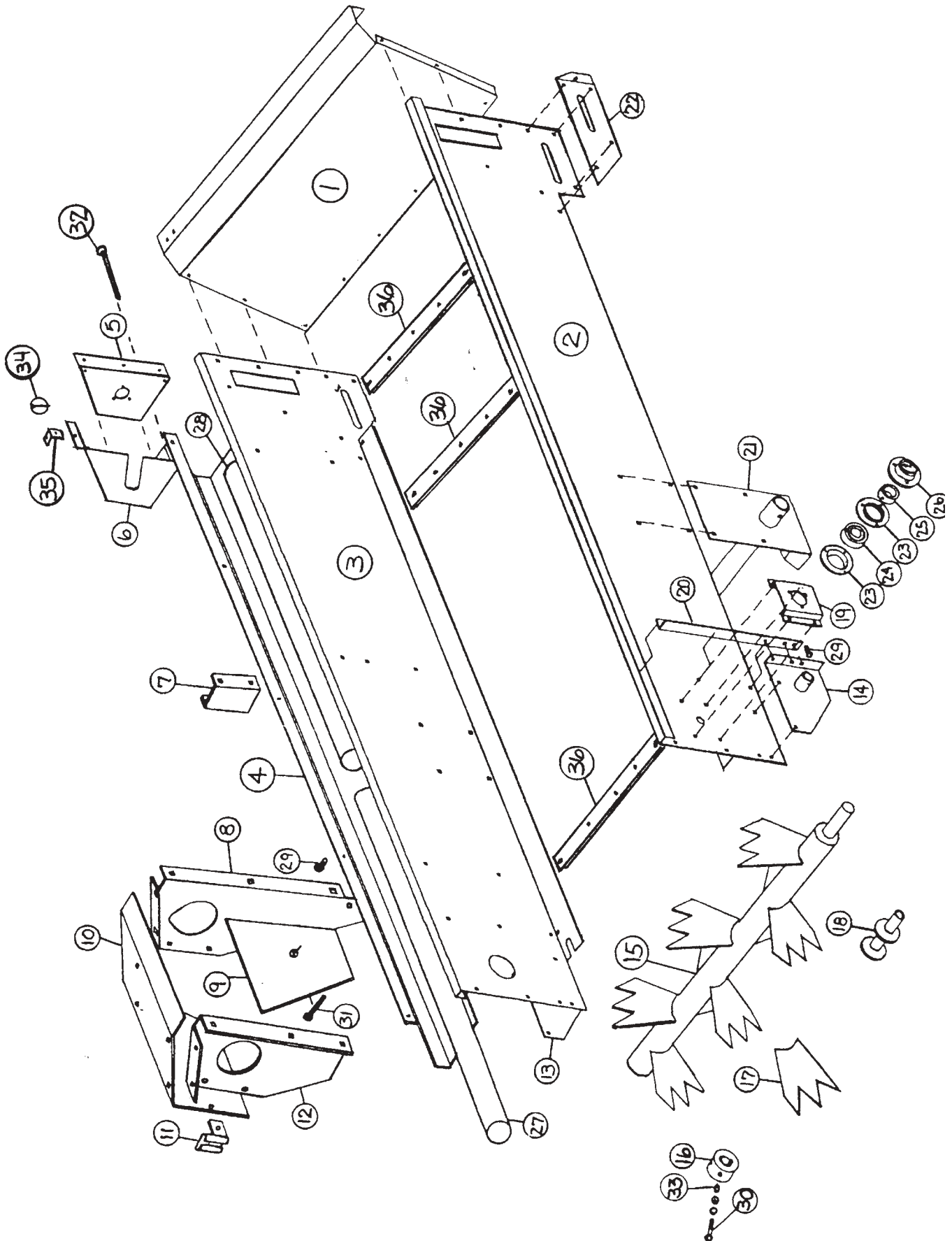
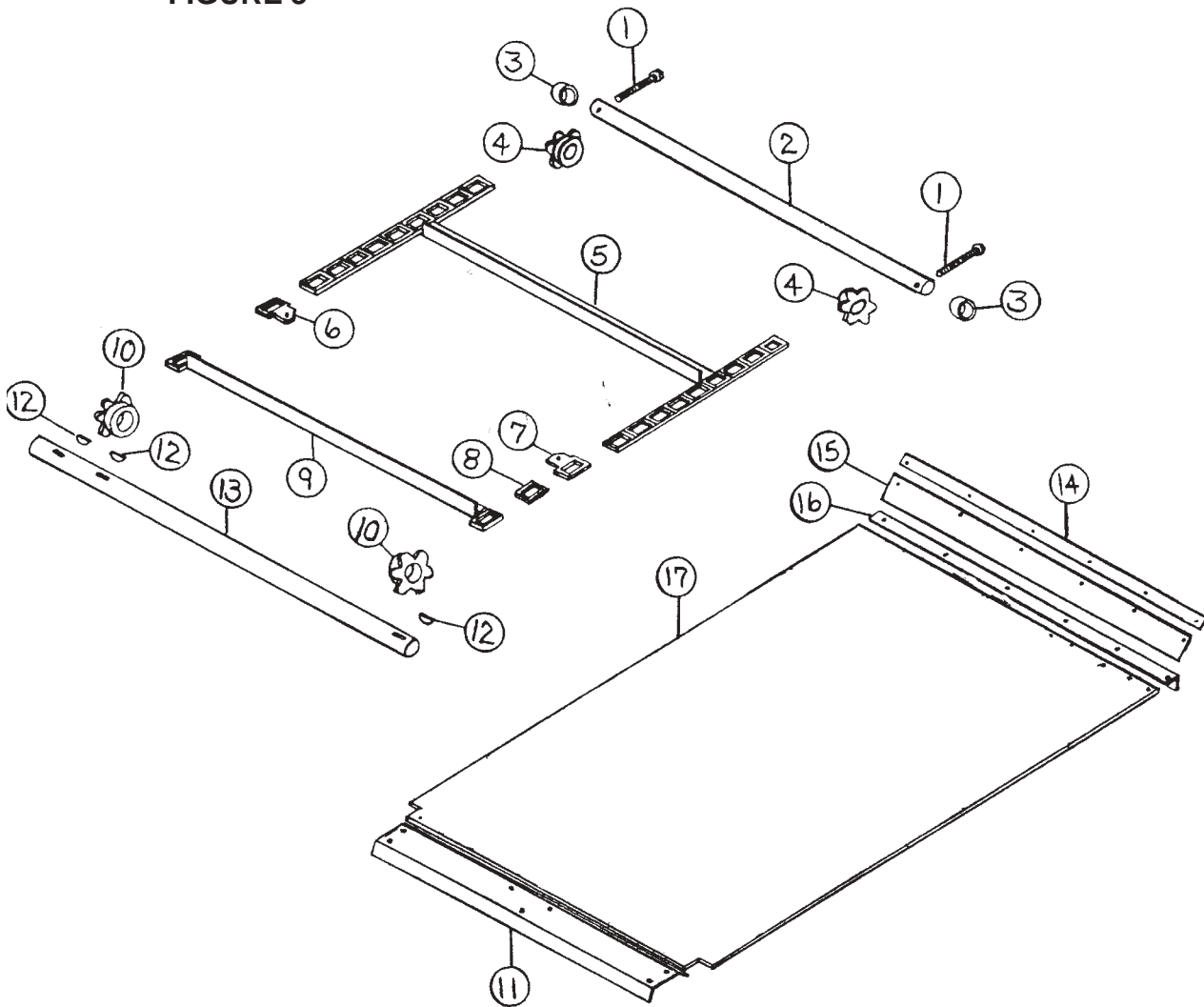


FIGURE 2
MS1108 FRAME, BEATER & SHIELDS

ITEM	PART NO.	DESCRIPTION
1.	HP80N34	Front Panel
2.	HP80N77	Right Spreader Side
3.	HP80N79	Left Spreader Side
4.	HP80N37	Side Shaft Shield
5.	HP80N38	Front Side Shield Cover
6.	HP80N80	Front Side Shield
7.	HP80N40	Side Bearing Mount
8.	HP80N41	Front Gearbox Mount
9.	HP80N42	Apron Drive Shield
10.	HP80N43	Bearbox Mounting Cover
11.	HP80N44	SMV Bracket
12.	HP80N45	Rear Gearbox Mount
13.	HP80N46	Apron Shaft Bracket LH
14.	HP80N47	Apron Shaft Bracket RH
15.	HP80N73	Beater
16.	HP80N49	Beater Insert
17.	HP80N50	Beater Blade
18.	HP80N51	Stub Shaft
19.	HP80N52	Beater Bearing Mount
20.	HP80N53	Right Side Brace
21.	HP80N54	Axle Assembly
22.	HP80N55	RH Apron Chain Tightener
*	HP80N56	LH Apron Chain Tightener
23.	HP4C7	Flange
24.	HP4C8	Bearing
25.	HP4C9	Lock Collar
26.	HP80N15	Bearing Cover
27.	HP80N32	Front PVC Guard
28.	HP80N69	Back PVC Guard
29.	HPR10	Bolt 1/2"x1-1/4" GR.5
30.	HPX111	Bolt 3/8"x1" GR.5
31.	HP80N70	Bolt 3/8"x3-1/2" Carr. Bolt GR.2
32.	HP80N71	Bolt 3/8"x5" GR.2
33.	HP80N72	Beater Bolt Spacer
34.	HPF56	Clip Pin
35.	HPF92	Angle
36.	HP80G5	Floor Braces

NOTE: * (MEANS NOT SHOWN)

FIGURE 3



**FIGURE 3
MS1108
APRON, CHAIN, SHAFTS & FLOOR**

ITEM	PART NO.	DECCRIPTION
1.	HPA7	Idler Shaft Bolt
2.	HP12N67	Idler Shaft
3.	HP12N66	Spacer
4.	HP12N65	Idler Sprocket
5.	HP80N58	Apron Chain
6.	HP11S23	Att. Link LH 67H
7.	HP11S24	Att. Link RH 67H
8.	HP11S25	Connector Link 67H
9.	HP80N62	Slat w/Att. Link
10.	HP80N63	Apron Drive Sprocket 6T
11.	HP80N78	Rear Floor Brace
12.	HPG12	Key
13.	HP80N65	Apron Drive Shaft
14.	HP80N66	Front Rubber Strap
15.	HP12N69	Front Rubber
16.	HP80N67	Front Floor Brace
17.	HP80N81	Floor (Poly Bonded)

FIGURE 4

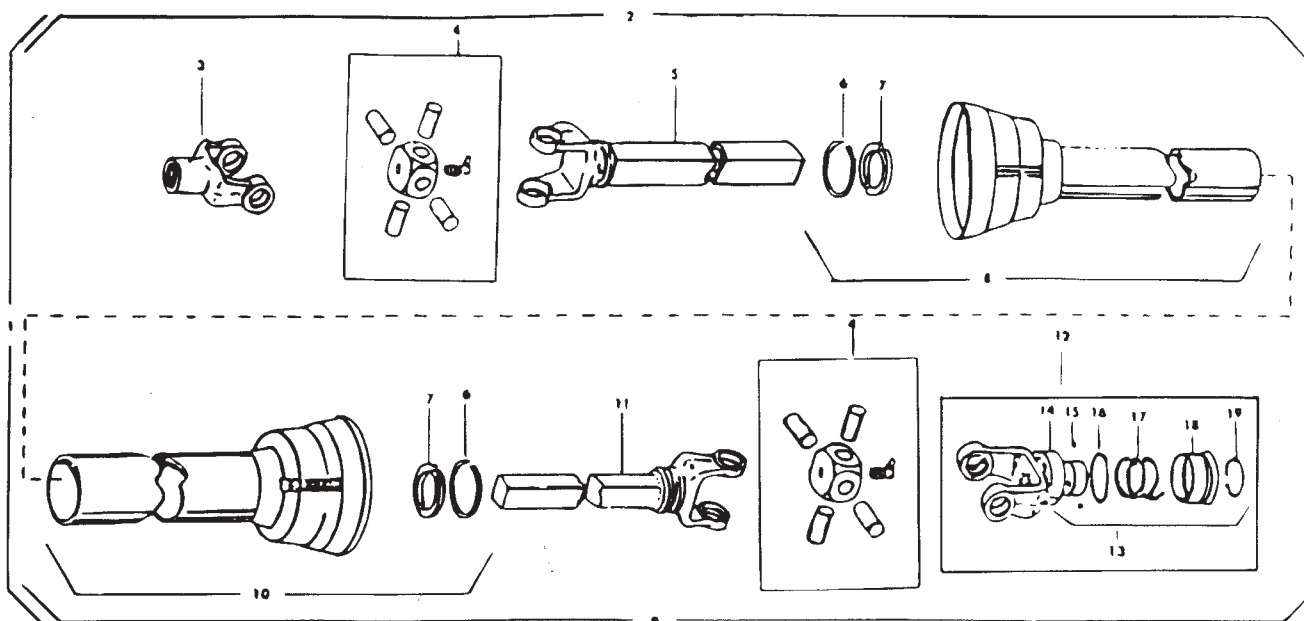


FIGURE 4
MS1108 PTO PARTS
SERIAL #700359 AND BELOW

ITEM	PART NO.	DESCRIPTION
1.	HPT189	"W" Universal Joint
2.	HPT190	Telescoping
3.	HP31WX198	PTO Assembly with Guard
4.	HPWKIT	Machine Half PTO
5.	5HP7D426W1N1	End Yoke
6.	HP24N26	Repair Kit
7.	HPS206	Yoke and Tube
8.	HPT191	Bearing Retainer
9.	HPS208	Nylon Bearing
10.	HPS209	Inner Guard Inc. Item #6 & #7
11.	5HPW1N19D440	Joint & Shaft Half with Guard
12.	HPS224	Outer Guard Inc. Item #6 & #7
13.	HPS225	Yoke and Shaft
14.	HPS226	Lock Yoke Assembly
15.	HPS212	Spring Lock Repair Kit
16.	HPS227	Cover
17.	HPS228	Stainless Ball
18.	HPS229	Washer
19.	HPS215	Spring
Not Shown	HPS402	Collar Assembly
		Retaining Ring
		PTO Safety Manual

FIGURE 5

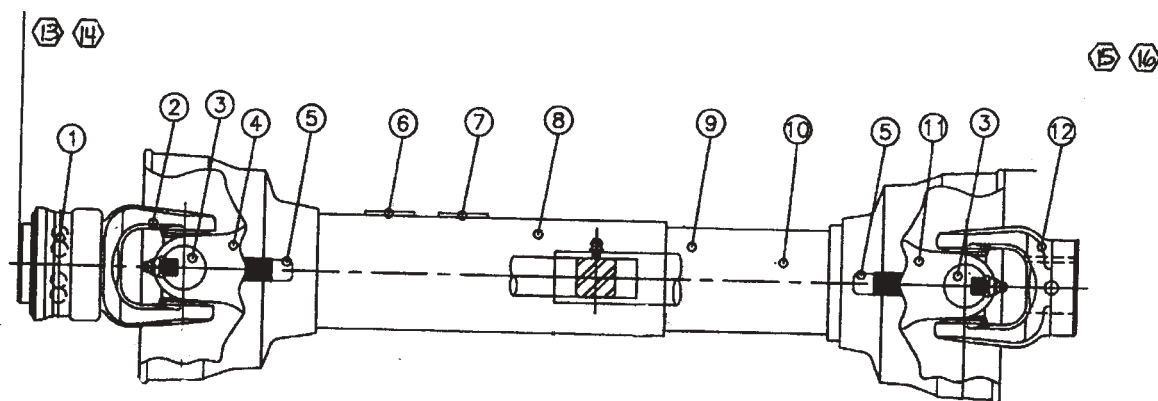
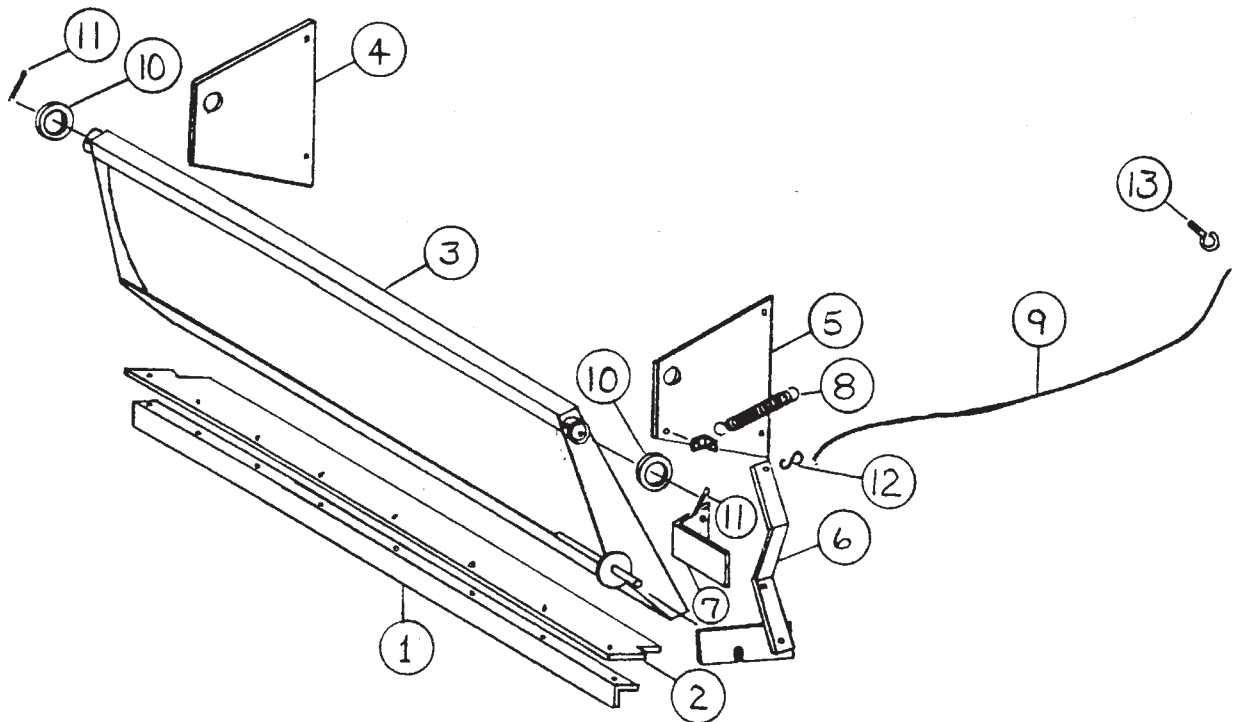


FIGURE 5
MS1108 PTO PARTS
SERIAL #700360 AND ABOVE

ITEM	PART NO.	DESCRIPTION
1.	HPS225	Spring-Lok Repair Kit
2.	HPS379	Spring-Lok Yoke Assembly
3.	HPT274	12P Cross and Bearing Kit
4.	HP80N88	Yoke and Shaft
5.	HPS206	Guard Repair Kit (Not Shown)
6.	HP16SV283	Safety Sign
7.	HP16SV384	Safety Sign (540 RPM)
8.	HP80N89	Outer Guard
9.	HP80N90	Inner Guard
10.	HP16SV388	Safety Sign (Not Shown)
11.	HP80N91	Yoke and Tube
12.	HP80N92	Yoke
13.	HP80N84	Joint & Shaft Half Assembly w/Guard
14.	HP80N85	Joint & Shaft Half Assembly
15.	HP80N86	Joint & Tube Half Assembly w/Guard
16.	HP80N87	Joint & Tube Half Assembly
17.	HP80N83	Complete PTO Assembly

FIGURE 6



**FIGURE 6
OPTIONAL PAN
MS1108 SPREADER**

ITEM	PART#	DESCRIPTION
1.	HP12N52	Pan Angle
2.	HP12N53	Pan Rubber
3.	HP80N1	Pan
4.	HP80N2	LH Pan Plate
5.	HP80N3	RH Pan Plate
6.	HP80N4	Pan Handle
7.	HP80N82	Pan Handle Stop
8.	HPR27	Pan Handle Spring
9.	HP80N6	Trip Rope
10.	HPR3	Pan Spacer
11.	HPR70	Cotter Pin
12.	HPR31	"S" Hook
13.	HP23N213	"I" Bolt

FIGURE 7

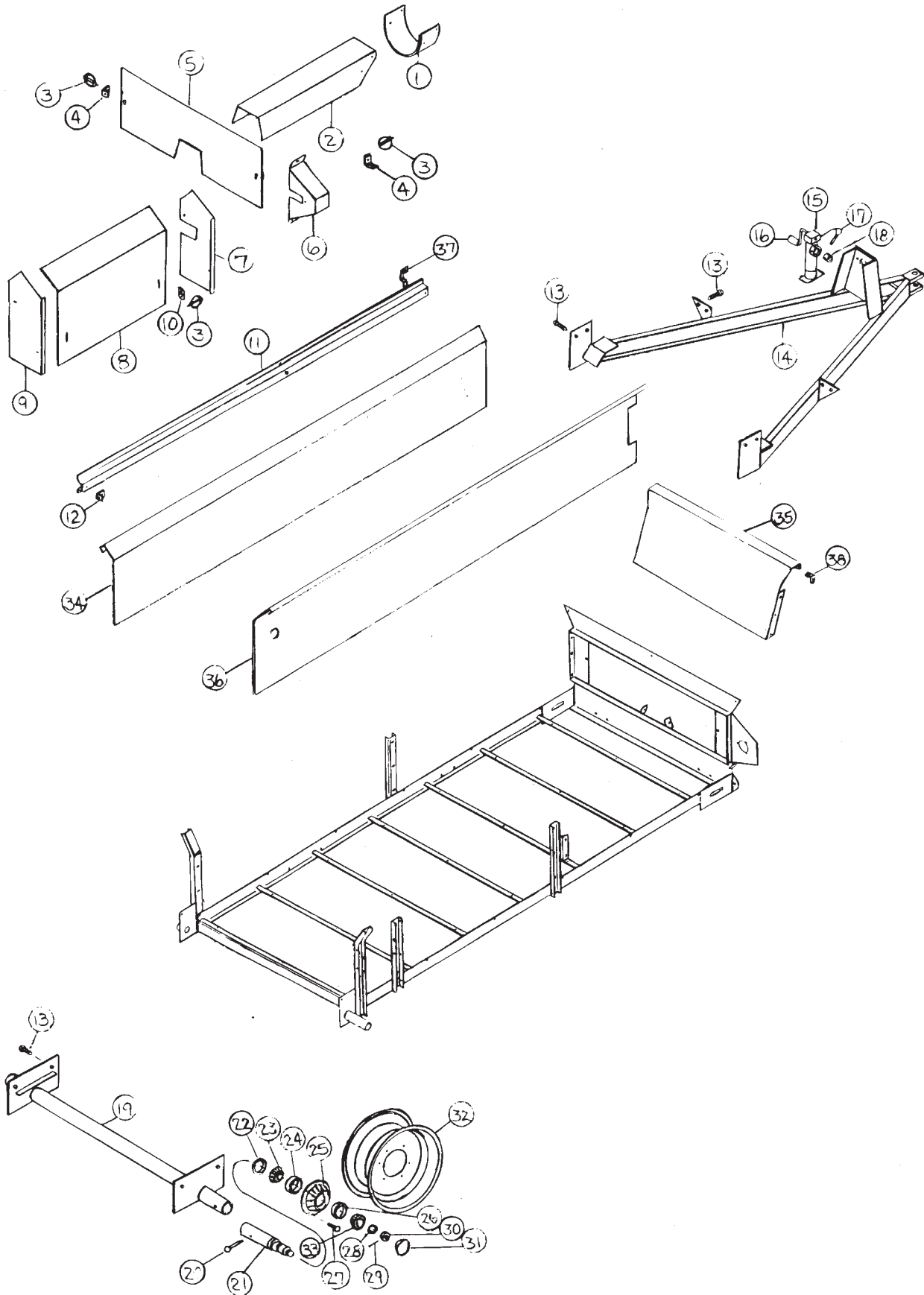


FIGURE 7
MS1112 SPREADER
SHIELDS, AXLE AND POLE ASSEMBLY

ITEM	PART NO.	DESCRIPTION
1.	HPF54	PTO Rubber Shield
2.	HP12N1	Shield
3.	HPF56	Clip Pin
4.	HPF92	Front Shield Bracket
5.	HP12N85	Front Poly Shield
6.	HP12N86	Front Side Shield
7.	HP12N4	Front Housing
8.	HP12N5	Cover
9.	HP12N6	Rear Housing
10.	HPF69	Shield Bracket
11.	HP12N87	Side Shield
12.	HP12N8	Side Shield Bracket
13.	HPR10	1/2"x1-1/4" Bolt GR. 5
14.	HP12N10	Pole Assembly
15.	HP12N11	Jack Assembly
Not Shown	HP12N9	Jack Gear Replacement Kit
16.	HP12N12	Jack Handle
17.	HP12N13	Jack Pin and Chain
18.	HP12N14	Jack Mount
19.	HP12N15	Axle Tubing
20.	HPB10	Spindle Bolt GR. 5
21.	HP12N16	Spindle
22.	HP12N17	Seal
23.	HP12N18	Inner Bearing
24.	HP12N19	Inner Race
25.	HP12N20	Hub
26.	HP12N21	Outer Race
27.	HP12N22	Hub Bolt
28.	HPB4	Washer
29.	HPB31	Cotter Pin
30.	HPB3	Nut
31.	HP12N23	Hub Cap
32.	HP12N24	Wheel
33.	HP12N25	Outer Bearing
34.	HP12N88	LH Side Panel
35.	HP12N89	Front Bolt In Panel
36.	HP12N90	RH Side Panel
37.	HP12N96	Front Side Shield Bracket
38.	HPWM135	Angle
Not Shown	HP12N79	Complete Hub Assembly

FIGURE 8

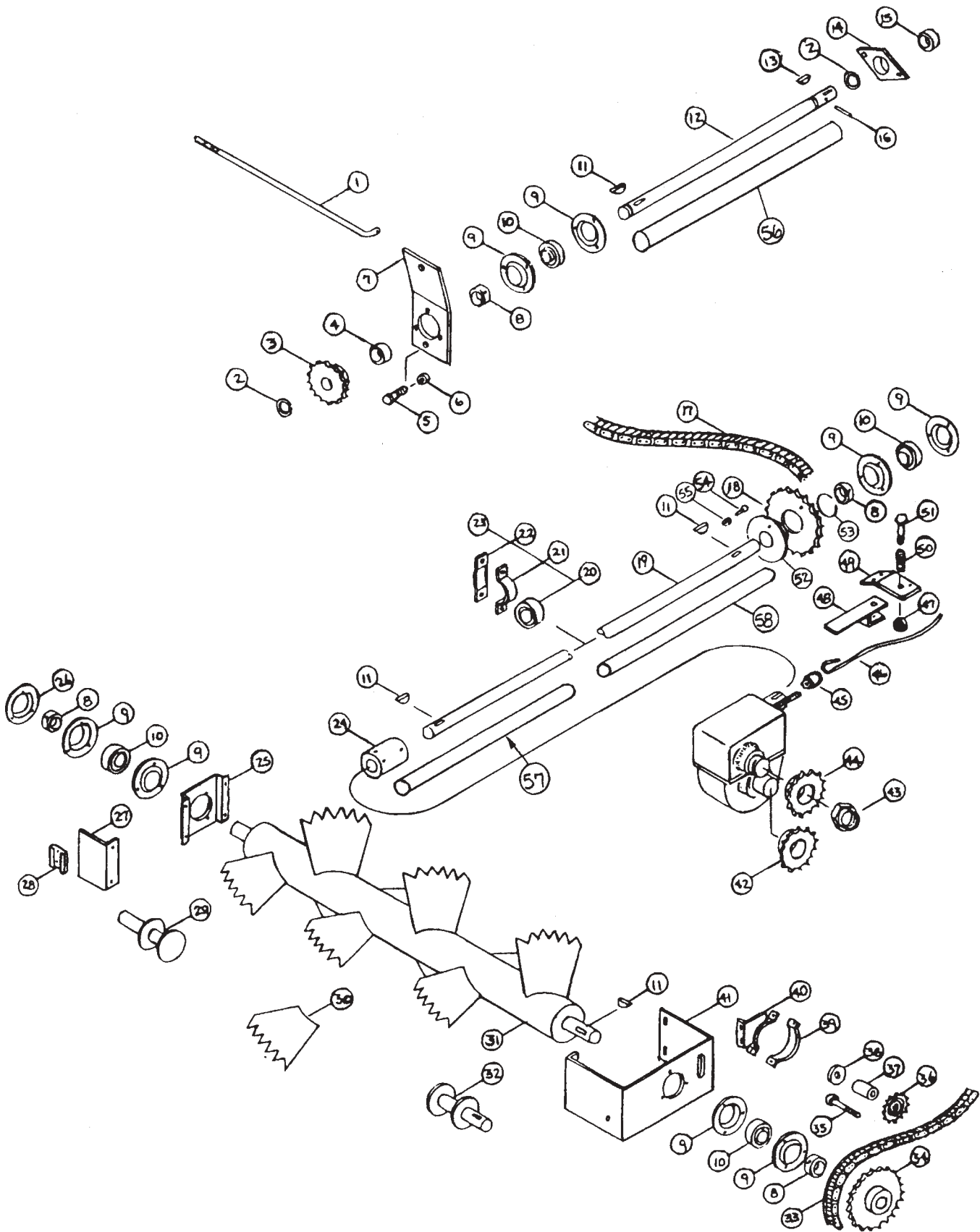


FIGURE 8
MS1112 SPREADER
FRONT SHAFT, SIDE SHAFT AND BEATER

ITEM	PART NO.	DESCRIPTION
1.	HP12N26	Tightener Rod
2.	HPF73	Snap Ring
3.	HPF13	20T Sprocket
4.	HPR12N30	Spacer
5.	HPR10	1/2"x1-1/4" Bolt GR. 5
6.	HP9S17	1/2" Lock Nut
7.	HP12N27	Front Adjustment Plate
8.	HPF16	Lock Collar
9.	HPF14	Bearing Flange
10.	HPF115	Bearing
11.	HP5B9	3/8"x1-1/4" Woodruff Key
12.	HP12N28	Front Shaft
13.	HP5B10	1/4"x1" Woodruff Key
14.	HP12N29	Pillow Block Bearing
15.	HP12N30	Spacer
16.	HPF26	5/16"x2-1/4" Roll Pin
17.	HP12N91	#60 Roller Chain 99 Pitches
18.	HP23N191	Shear Sprocket 30T
19.	HP12N92	Side Shaft
20.	HP12N33	Bearing
21.	HP12N34	Bearing Cover
22.	HP12N35	Bearing Holder
23.	HP12N36	Bearing Assembly
24.	HPD12	Connector
25.	HPR16	Shaft Support
26.	HPF95	Bearing Flange Guard
27.	HP12N37	SMV Sign Holder
28.	HPF97	SMV Holder
29.	HP12N38	LH Beater Stub Shaft
30.	HP12N39	Beater Blade
31.	HP12N40	Beater
32.	HPR34	RH Beater Stub Shaft
33.	HP12N41	#60 Chain 64 Pitches
34.	HPD26	30T Sprocket
35.	HPA19	1/2"x3-1/2" Carr. Bolt GR. 5
36.	HP12N42	Idler Sprocket
37.	HP12N43	Spacer
38.	HP12N44	Washer
39.	HPD100	Ring for Beater Brace
40.	HP12N45	Gearbox Brace
41.	HP12N46	Beater Rear Support
42.	HPD18	16T Sprocket
43.	HPG35	Stake Nut
44.	HPD23	16T Sprocket
45.	HPF31	Cable Loop
46.	HP12N47	Cable
47.	HPA14	3/8" Nylock Nut
48.	HP12N48	Shut-Off Lever
49.	HP12N49	Shut-Off Bracket
50.	HP5B6	Shut-Off Spring
51.	HP12N51	3/8"x2-3/4" Bolt GR. 5
52.	HP23N190	Shear Hub
53.	HP23N189	Snap Ring
54.	HPD31	5/16"x1-1/2" Shear Bolt GR. 5
55.	HPD81	5/16" Lock Nut
56.	HP12N82	Front Shaft Shield
57.	HP12N84	Back Side Shaft Shield
58.	HP12N83	Front Side Shaft Shield
Not Shown	HPD38	#60 Offset Link
Not Shown	HPD39	#60 Connector Link

FIGURE 9

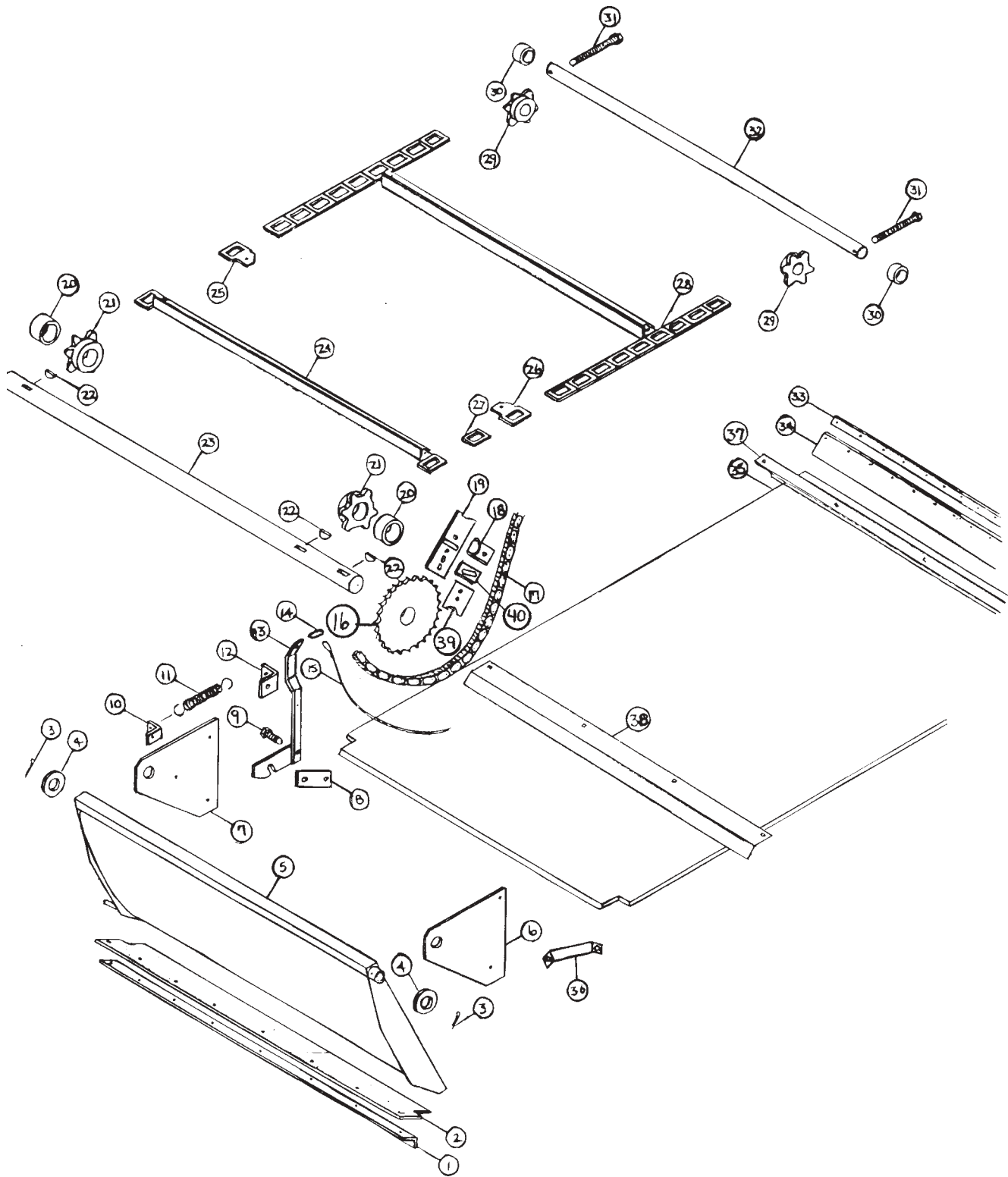


FIGURE 9
MS1112 SPREADER
APRON, CHAIN, FLOOR & PAN

ITEM	PART NO.	DESCRIPTION
1.	HP12N52	Rubber Flap Angle
2.	HP12N53	Rubber Flap
3.	HPR70	Cotter Pin
4.	HPR3	Pan Spacer
5.	HP12N54	Pan
6.	HP12N55	RH Pan Support
7.	HP12N56	LH Pan Support
8.	HP12N57	Trip Lever Plate
9.	HPR30	1/2"x2" Bolt
10.	HPR26	Spring Angle
11.	HPR27	Spring
12.	HPR60	Trip Lever Stop
13.	HP12N58	Trip Lever
14.	HPR31	Clip
15.	HP12N59	Trip Rope
16.	HP12N60	40T Sprocket
17.	HP12N41	#60 Chain 64 Pitches
18.	HP12N105	Chain Tightener
19.	HP12N103	Brace Gearbox to Drive Shaft
20.	HPA39	Spacer
21.	HPA4	Conveyor Drive Sprocket 6T
22.	HP5B9	3/8"x1-1/4" Key
23.	HP12N62	Drive Shaft
24.	HP12N63	67XH Slat with Att. Link
25.	HP11S26	67XH Att. Link LH
26.	HP11S27	67XH Att. Link RH
27.	HP11S29	67XH Connector Links
28.	HP12N64	67XH Complete Apron
29.	HP12N65	6T Idler Sprocket
30.	HP12N66	Spacer
31.	HPA7	1/2"x9-1/2" Bolt GR. 5
32.	HP12N67	Idler Shaft
33.	HP12N97	Angle for Rubber
34.	HP12N69	Front Rubber
35.	HP12N93	Floor Poly Bonded
36.	HP12N50	Brace
37.	HP12N94	Front Floor Brace
38.	HP12N95	Rear Floor Brace
39.	HP12N104	Short Drive Shaft Brace
40.	HP12N105	Wedge
Not Shown	HPD38	#60 Offset Link
Not Shown	HPD39	#60 Connector Link
Not Shown	HPD92	Apron Slow Down Sprocket 48T
Not Shown	HP12N80	Apron Speed Up Sprocket 32T

FIGURE 10

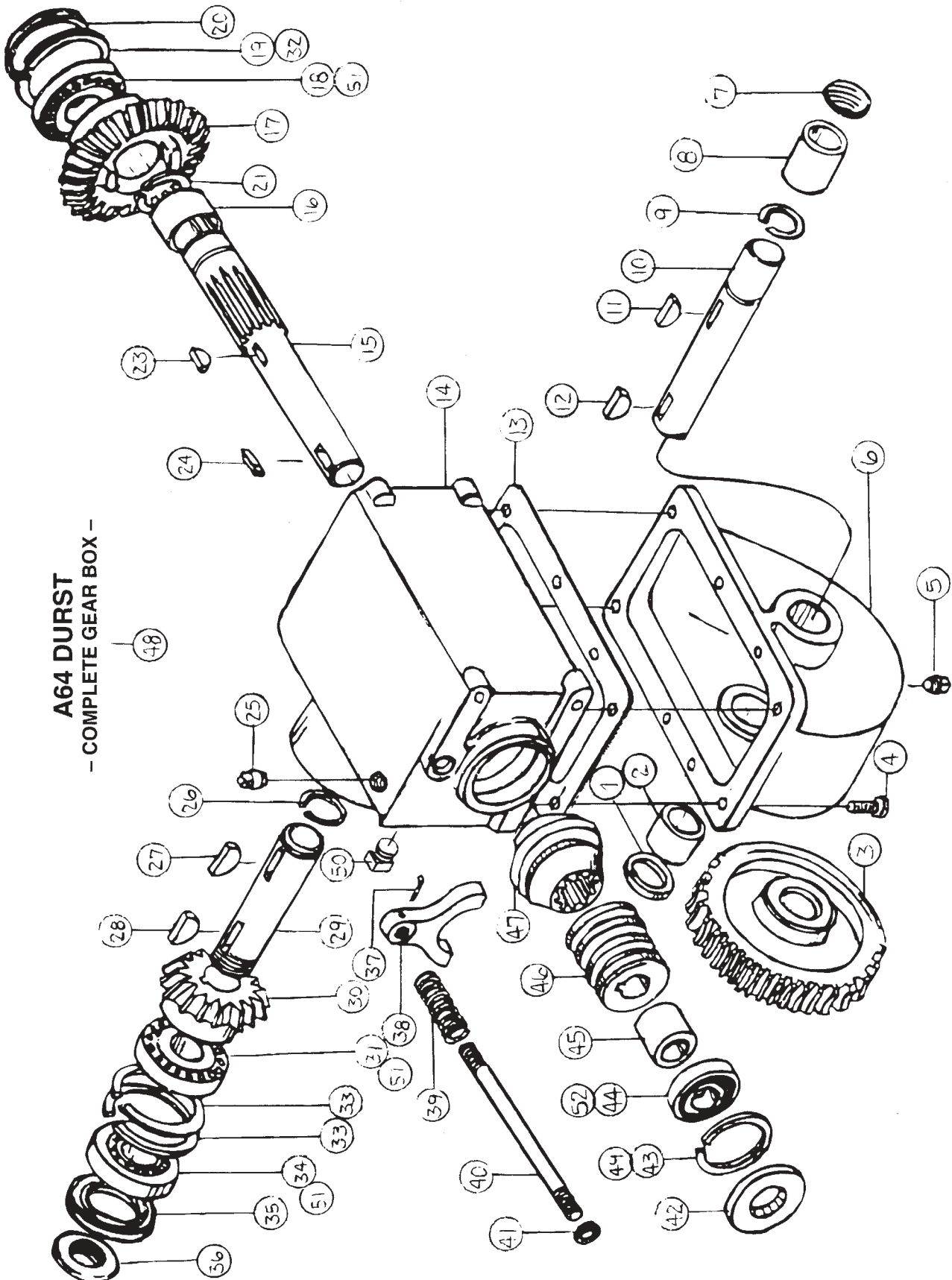
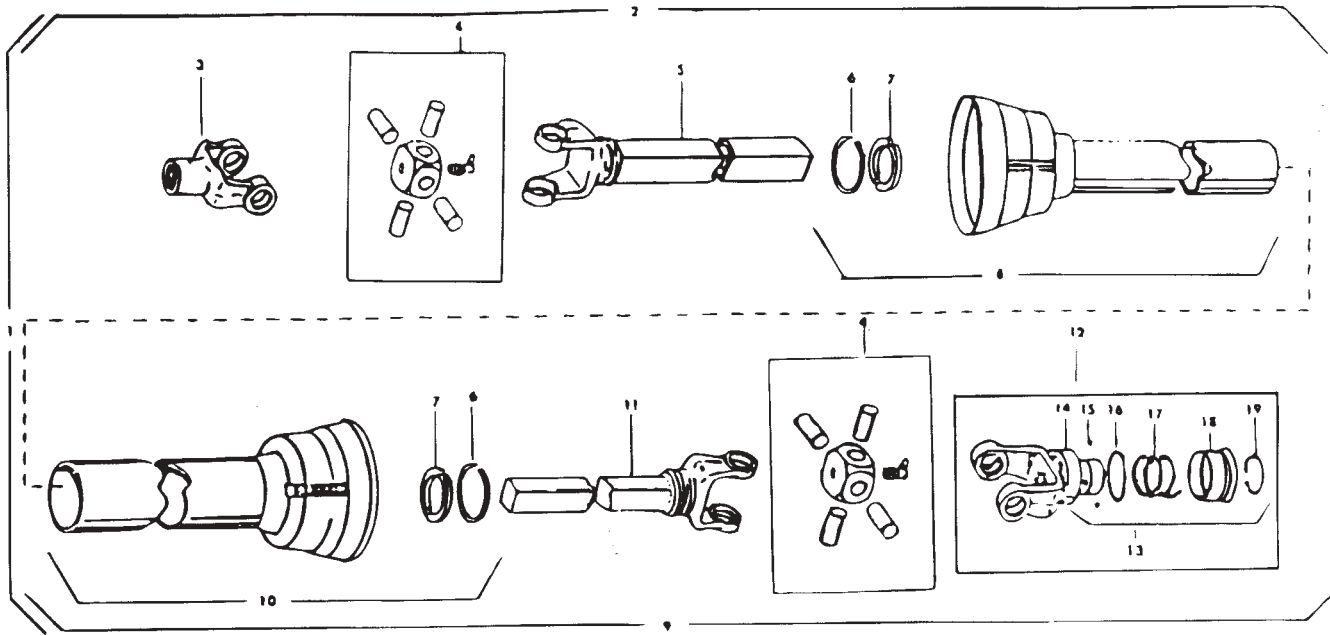


FIGURE 10
MS1108 & MS1112 SPREADER
GEAR BOX

ITEM	PART NO.	DESCRIPTION
1.	HPG1	Seal
2.	HPG2	Bushing
3.	HP12N98	36T Gear
4.	HPG4	Capscrews (8)
5.	HPG5	Drain Plug
6.	HPG6	Gear Housing - Lower
7.	HPG7	Expansion Plug
8.	HPG2	Bushing
9.	HPG9	Snap Ring
10.	HP12N99	Low Speed Output Shaft
11.	HPG11	1/4"x1-1/8" Key
12.	HPG12	5/16"x1" Key
13.	HPG13	Gasket
14.	HPG14	Gear Housing - Top
15.	HP12N100	Shaft
16.	HPG16	Bushing
17.	HPG17	24T Gear
18.	HPG18	Bearing
19.	HPG55	Snap Ring
20.	HPG20	Cap
21.	HPG9	Snap Ring
23.	HPG22	1/4"x7/8" Key
24.	HPG23A	5/16"x1-1/4" Square Key
25.	HPG24	Plug Vent
26.	HPG25	Snap Ring
27.	HPG26	3/8"x1-1/4" Key (Hardened)
28.	HP5B9	3/8"x1-1/4" Key
29.	HPG28	Hi-Speed Output Shaft
30.	HPG29	16T Gear
31.	HPG53	Bearing
32.	HPG69	Shim (When Needed)
33.	HPG55	Snap Ring (2)
34.	HPG33	Bearing
35.	HPG34	Seal
36.	HPG35	Stake Nut
37.	HPG95	1/8"x1-1/2" Cotter Key
38.	HPG37	Yoke
39.	HPG38	Spring
40.	HPG39	Clutch Rod
41.	HPG40	Seal
42.	HPG41	Seal
43.	HP3G19	Snap Ring
44.	HPL3G24	Bearing
45.	HPG44	Spacer Ring
46.	HP12N101	Worm
47.	HPG46	Clutch 18T Spline
48.	HPD7A	Gearbox Complete
49.	HPG92	Shim (When Needed)
50.	HPG87	Plug 18-27 NPT
51.	HPG54	Race
52.	HP3G18	Race

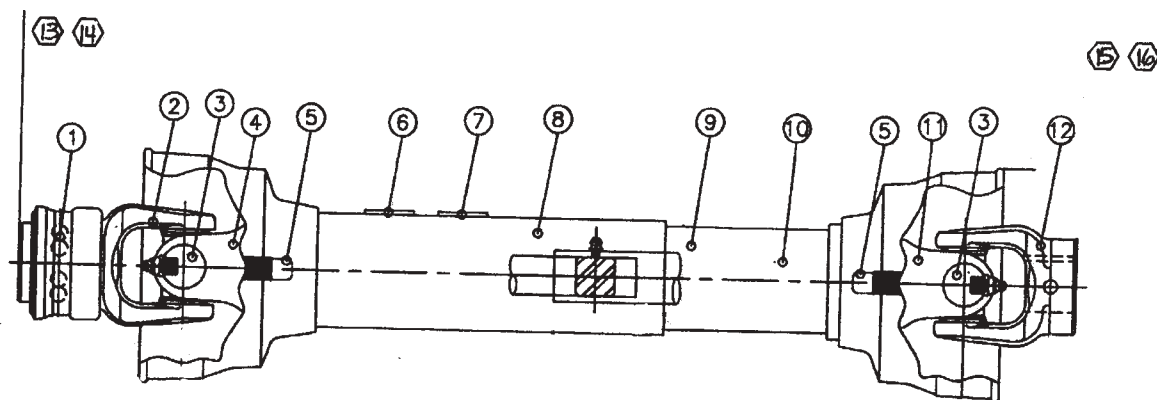
FIGURE 11



**FIGURE 11
MS1112 PTO PARTS
SERIAL #700318 AND BELOW**

ITEM	PART NO.	DESCRIPTION
1.	HP12N71	PTO Assembly Complete With Shields
2.	HP12N72	Machine Half PTO with Shield
3.	HP12N73	End Yoke Machine Half
4.	HPW KIT	W/Repair Kit
5.	HP12N74	Yoke and Tube
6.	HP24N26	Bearing Retainer
7.	HPS206	Nylon Bearing
8.	HP12N75	Inner Guard Including Item #6 & #7
9.	HP12N76	Tractor Half PTO with Shield
10.	HP12N77	Outer Guard Including Item #6 & #7
11.	HP12N78	Yoke and Shaft
12.	HPS224	Lock Yoke Assembly
13.	HPS225	Spring Lock Repair Kit
14.	HPS226	Cover
15.	HPS212	Stainless Ball
16.	HPS227	Washer
17.	HPS228	Spring
18.	HPS229	Collar Assembly
19.	HPS215	Retaining Ring
Not Shown	HPS402	PTO Safety Manual

FIGURE 12



**FIGURE 12
MS1112 PTO PARTS
SERIAL #700319 AND ABOVE**

ITEM	PART NO.	DESCRIPTION
1.	HPS225	Spring-Lok Repair Kit
2.	HPS379	Spring-Lok Yoke Assembly
3.	HPT274	12P Cross and Bearing Kit
4.	HP12N110	Yoke and Shaft
5.	HPS206	Guard Repair Kit (Not Shown)
6.	HP16SV283	Safety Sign
7.	HP16SV384	Safety Sign (540 RPM)
8.	HP12N111	Outer Guard
9.	HP12N112	Inner Guard
10.	HP16SV388	Safety Sign (Not Shown)
11.	HP12N113	Yoke and Tube
12.	HP12N115	Yoke
13.	HP12N106	Joint & Shaft Half Assembly w/Guard
14.	HP12N107	Joint & Shaft Half Assembly
15.	HP12N108	Joint & Tube Half Assembly w/Guard
16.	HP12N109	Joint & Tube Half Assembly
17.	HP12N102	Complete PTO Assembly

