TEAR • TEAR

1. PRINT FIRMLY. 2. REMOVE WHITE COPY FOR CUSTOMER RECORDS. 3. REMOVE YELLOW COPY FOR DEALERS RECORDS. 4. MAIL LAST CARD POSTAGE FREE.

ALAMO INDUSTRIAL® WARRANTY REGISTRATION INFORMATION

Alamo Ind. Model A C _ _ Serial No. _____ Purchase Date (MONTH / DAY / YEAR) __ – __ – __

Purchaser Last Name ______________ First Name ________ M.I. _

Street & No., RFD, Box, &/or Apt. No. ______________________

City ________________ State or Province __ ZIP _____

Dealer ______________________

City ________________ State or Province __ ZIP _____

• I have informed the Purchaser of this product of Warranty terms, provisions, and procedures that are applicable, reviewed the contents of the Operator's Manual including safety equipment, safe operation, and maintenance, reviewed the Safety Signs on implement (and tractor if possible), and Purchaser's responsibility to train his operators in safe operation.

• **IMPLEMENTS**: I have explained that Deflectors, Chain Guards, or Solid Skirts must be maintained in good repair and installed except in areas where persons, vehicles, livestock, or other property will not be endangered by thrown objects and where such safety equipment would prevent the mower's reasonable performance of its assigned task.

• **DRIVELINES:** I have made certain that all driveline, gearbox, and other shields are in good repair and fastened securely in place to prevent injuries from entanglement or thrown objects.

• **HYDRAULIC MACHINES:** I have explained the necessity of using clean hydraulic oil, changing filters as instructed, stopping leaks, damage caused by operating with over-heated oil, caring for hoses, using hoses of proper rating, the necessity of maintaining the specified operating pressure, and the potential hazard of oil's penetrating the skin.

• **BOOM-TYPE or FOLDING-TYPE IMPLEMENTS:** I have explained that it is not possible to guard against thrown objects when the head is lifted off ground and that operator is responsible to watch out for persons in the area. I have explained that the lifted mower head or boom can contact overhead obstructions with damage to cables and telephone lines and possible injury. I have explained that the extended head or boom or retracted boom can contact power lines with resulting electrocution injury or death and that operator is responsible for keeping clear of such hazards.

Dealer's Signature ___________________ **Date** __________

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I understand the Implement Guarding statements above and the potential hazards of operating without such guards. I understand that the operator is responsible for the safety of others in the area. I have examined the product and accept it as being complete and in satisfactory condition with all required guards.

CUSTOMER COPY

Purchaser's Signature ___________________ **Date** __________

PRE-DELIVERY SERVICE
CHECK AND ADJUST OR LUBRICATE AS REQUIRED

See Operator's Manual for Details

Inspection Performed - Warranty and Safety Procedures Explained - Installation Complete

LUBRICATION & HYDRAULICS

- ☐ Gearbox Speed Increaser (Oil Levels)
- ☐ Hydraulic Oil Level (External. Tank)
- ☐ Tractor Hydraulic Oil Level
- ☐ Hydraulic Hoses (Not Kinked Tighten Connections)
- ☐ Front Pump Drive (Assembly Is Tight And Shaft Properly Aligned)

MOWER

- ☐ Spindle And Motor Bolts Properly Torqued
- ☐ Spindle Oil Level
- ☐ Blade Carrier Bolts Properly Torqued / Retaining Pin In Place
- ☐ Mower Cutting Height And Level Adjusted
- ☐ Belt Alignment And Tension Adjusted
- ☐ Cutting Shaft Bearings Lubricated
- ☐ All Hardware Properly Torqued
- ☐ Tire And Air Pressure / Lug Nuts (Correct Torque)
- ☐ Wheel Bearings (Check, Grease, And Preload)

ATTACHMENTS & INSTALLATION

- ☐ Deflectors Front And Rear
- ☐ Shredding Attachments
- ☐ Correct Blade Rotation Direction
- ☐ Axle Arms And Beams
- ☐ Tongue And Control Rods (Installed And Adjusted)
- ☐ All Bolts - Pins And Nuts (Proper Torque)

MOWER TO TRACTOR CONNECTION

- ☐ Draw Bar Length (Check And Set)
- ☐ A-Frame Pivot & Links
- ☐ Control Rods (Adjusted Equal)
- ☐ Axle Height (Adjusted)
- ☐ Cutting Height (Adjust)
- ☐ Mount Kit Pre-Operation Check Complete
- ☐ Mower Wing (Adjust Level With The Center)
- ☐ Mower Wing (Check For Proper Raising Operation)
- ☐ C.V. Drivelines (Check Max Turn Radius)
- ☐ Pull Type Hitch (Height Adjustment)
- ☐ Mounting Hardware Properly Torqued

SAFETY ITEMS

- ☐ Protective Shields (Operation And Installation)
- ☐ Driveline Clutch (Torque Limiter) (Adjust And Run In)
- ☐ Safety Decals (Installed)
- ☐ Operator's Manual (Supplied)
- ☐ Tractor PTO Shield (Installed)
- ☐ S.M.V. Emblem (Installed If Needed)
- ☐ Neutral Safety & Cut - Off Switches
- ☐ Safety Tow Chain (Installed)

Purchaser's Signature ______________ **Date** ________ **Dealer's Signature** ______________ **Date** ________

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DEALER COPY

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PRE-DELIVERY SERVICE
CHECK AND ADJUST OR LUBRICATE AS REQUIRED

See Operator's Manual for Details

Inspection Performed - Warranty and Safety Procedures Explained - Installation Complete

LUBRICATION & HYDRAULICS
- ☐ Gearbox Speed Increaser (Oil Levels)
- ☐ Hydraulic Oil Level (External. Tank)
- ☐ Tractor Hydraulic Oil Level
- ☐ Hydraulic Hoses (Not Kinked Tighten Connections)
- ☐ Front Pump Drive (Assembly Is Tight And Shaft Properly Aligned)

MOWER
- ☐ Spindle And Motor Bolts Properly Torqued
- ☐ Spindle Oil Level
- ☐ Blade Carrier Bolts Properly Torqued / Retaining Pin In Place
- ☐ Mower Cutting Height And Level Adjusted
- ☐ Belt Alignment And Tension Adjusted
- ☐ Cutting Shaft Bearings Lubricated
- ☐ All Hardware Properly Torqued
- ☐ Tire And Air Pressure / Lug Nuts (Correct Torque)
- ☐ Wheel Bearings (Check, Grease, And Preload)

ATTACHMENTS & INSTALLATION
- ☐ Deflectors Front And Rear
- ☐ Shredding Attachments
- ☐ Correct Blade Rotation Direction
- ☐ Axle Arms And Beams
- ☐ Tongue And Control Rods (Installed And Adjusted)
- ☐ All Bolts - Pins And Nuts (Proper Torque)

MOWER TO TRACTOR CONNECTION
- ☐ Draw Bar Length (Check And Set)
- ☐ A-Frame Pivot & Links
- ☐ Control Rods (Adjusted Equal)
- ☐ Axle Height (Adjusted)
- ☐ Cutting Height (Adjust)
- ☐ Mount Kit Pre-Operation Check Complete
- ☐ Mower Wing (Adjust Level With The Center)
- ☐ Mower Wing (Check For Proper Raising Operation)
- ☐ C.V. Drivelines (Check Max Turn Radius)
- ☐ Pull Type Hitch (Height Adjustment)
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SAFETY ITEMS
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- ☐ Driveline Clutch (Torque Limiter) (Adjust And Run In)
- ☐ Safety Decals (Installed)
- ☐ Operator's Manual (Supplied)
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- ☐ S.M.V. Emblem (Installed If Needed)
- ☐ Neutral Safety & Cut - Off Switches
- ☐ Safety Tow Chain (Installed)

Purchaser's Signature ________________ **Date** ______ **Dealer's Signature** ________________ **Date** ______

TEAR • TEAR

TEAR • TEAR

BEFORE MAILING WARRANTY CARD, MAKE SURE ALL INFORMATION IS LEGIBLE

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Do not tear. Do not tear.

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- ☐ Safety Tow Chain (Installed)

Purchaser's Signature ______________ **Date** ________ **Dealer's Signature** ______________ **Date** ________

ALAMO®
INDUSTRIAL
An **Alamo Group** Company

ALAMO INDUSTRIAL
PO BOX 549
SEGUIN TX 78156-9967

Please fold (do not tear), tape, and drop in any mailbox.

PLEASE FILL OUT OWNER WARRANTY REGISTRATION INFORMATION SIGN, AND DROP LAST COPY IN ANY MAILBOX.

IMPORTANT!
TO PLACE THIS WARRANTY IN EFFECT, THIS WARRANTY REGISTRATION MUST BE FILLED OUT, SIGNED, AND MAILED WITHIN 30 DAYS OF DELIVERY DATE OF THIS MACHINE. DEALER AND PURCHASER MUST SIGN.

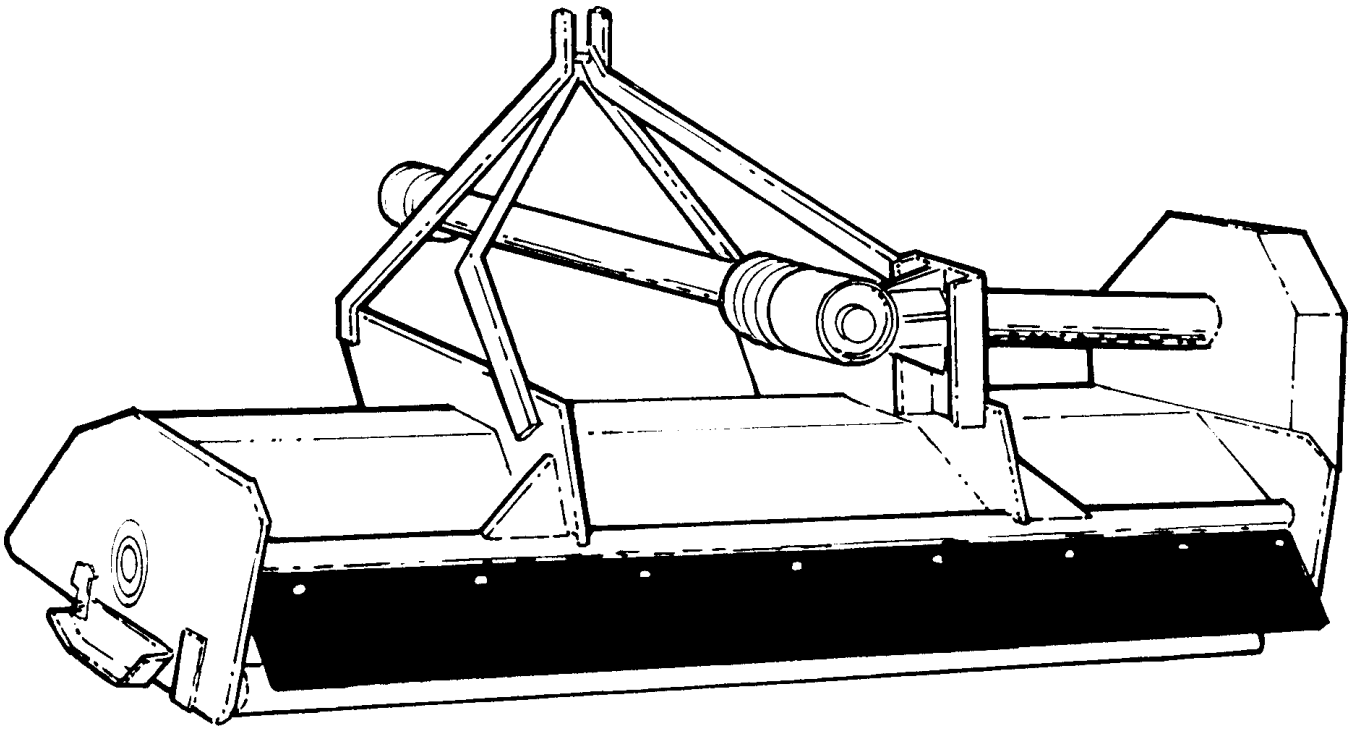
ATTENTION: ANY CLAIM SUBMITTED TO ALAMO INDUSTRIAL® WILL BE REFUSED UNTIL COMPLETED, SIGNED WARRANTY REGISTRATION CARD IS ON FILE.

AC 48/60

FLAIL MOWER

Rev 03-13

P/N 803298



OPERATOR'S MANUAL with PARTS LISTING

ALAMO INDUSTRIAL
1502 E. Walnut
Seguin, Texas 78155
830-372-9595

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TO THE OWNER/OPERATOR/DEALER

All implements with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes the potential hazards and follows reasonable safety practices. The manufacturer has designed this implement to be used with all its safety equipment properly attached to minimize the chance of accidents.

BEFORE YOU START!! Read the safety messages on the implement and shown in your manual. Observe the rules of safety and common sense!

WARRANTY INFORMATION:

Read and understand the complete Warranty Statement found in this Manual. Fill out the Warranty Registration Form in full and return it to within 30 Days. Make certain the Serial Number of the Machine is recorded on the Warranty Card and on the Warranty Form that you retain.

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SAFETY

DANGER
There are obvious and hidden potential hazards in the operation of this mower. REMEMBER! This machine is often operated in rough terrain conditions and in heavy weeds. The Blades of this mower can throw objects if shIelds are not installed and maintained. Serious injury or even death may occur unless care is taken to insure the safety of the operator, bystanders, or passersby in the area. Do not opertate this machine with anyone in the immediate area. Stop mowing for passersby.

Included here is a list of Safety Messages which should be followed. Serious injury or death may occur unless care is taken to follow these Safety Messages and use good common sense in avoiding hazards.

Read this manual carefully to acquaint yourself with the Flail Mower. Working with unfamiliar equipment can lead to accidents. Equipment should be operated only by those who are responsible and instructed to do so.

DANGER
The Deflectors, Band, Driveline Shields, Gearbox Shield, and PTO Shield should be used and maintained in good working conditions. They should be inspected carefully at least daily for missing or broken components. Missing, broken, or worn items must be replaced at once to reduce the possibility of injury from thrown objects, entanglement, or Blade Contact.

WARNING
Extreme care should be taken when operating near loose objects such as gravel, rocks, wire, and other debris. Foreign objects should be removed from the site or avoided to prevent machine damage and/or bodily injury or even death. Stop mowing immediately if flail blades strike a foreign object. Repair all damage and make certain rotor is balanced before resuming mowing carefully.

DANGER
Do not let the Blades turn when the Flail Housing is raised for turning. This exposes the Cutting Blades which creates a potentially serious hazard and could cause serious injury by objects thrown from the Blades or by contact with Blades.

WARNING
Do not modify or alter or permit anyone to modify or alter this equipment or any of its components or any equipment function without first consulting your Equipment Dealer.

WARNING
The operator and all support personnel should wear hard hats, safety shoes, and safety glasses at all times for protection from injury by falling objects and items thrown by the machine.

WARNING
Operate the mower only with a tractor equipped with an approved roll-over-protective system (ROPS). Always wear seat belts. Serious injury or even death could result from falling off the tractor--particularly during a turnover when the operator could be pinned under the ROPS for the Tractor.

DANGER
Before leaving the tractor seat, always engage the brake and/or set the tractor transmission in parking gear. Disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop.

DANGER
Be particularly careful in transport. Turn curves or go up hills only at a low speed and at a gradual steering angle. Make certain that at least 20% of the tractor's weight is on the front wheels to maintain safe steerage. Slow down on rough or uneven surfaces.

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SAFETY

WARNING Make certain that the "Slow Moving Vehicle" (SMV) sign is installed in such a way as to be clearly visible and legible. Use flashing warning lights and follow all local traffic regulations.

DANGER Periodically inspect all moving parts for wear and replace with authorized service parts if an excessive amount of wear is present. Look for loose fasteners, worn or broken parts, and leaky or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this machine in good working order.

WARNING Do not mount or dismount the tractor while the tractor is mowing. Mount the tractor only when it is completely stopped. Operate controls from the tractor seat only.

WARNING Never leave the mower in the raised transport position. Mower could fall causing injury to anyone who might inadvertently be under mower.

DANGER Never allow children to operate or ride on the tractor or mower. Never allow riders on tractor or mower. Falling off can kill.

DANGER Never work under the Mower Deck, the framework, or any lifted component unless the mower is securely supported or blocked up to prevent sudden or inadvertent falling which could cause serious injury or even death. Always turn off engine and disconnect driveline before cleaning or adjusting PTO driven equipment.

DANGER Never operate the tractor and mower until you have read and completely understand this manual, the Tractor Operator's Manual, and each of the Safety Messages found on the tractor and mower. Always maintain the safety decals in good readable condition. If a decal becomes torn, painted over, or otherwise illegible, order replacement decals immediately.

In addition to the design and configuration of this implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the Tractor and Mower Manuals. Pay close attention to the Safety Signs affixed to the Tractor and Mower.

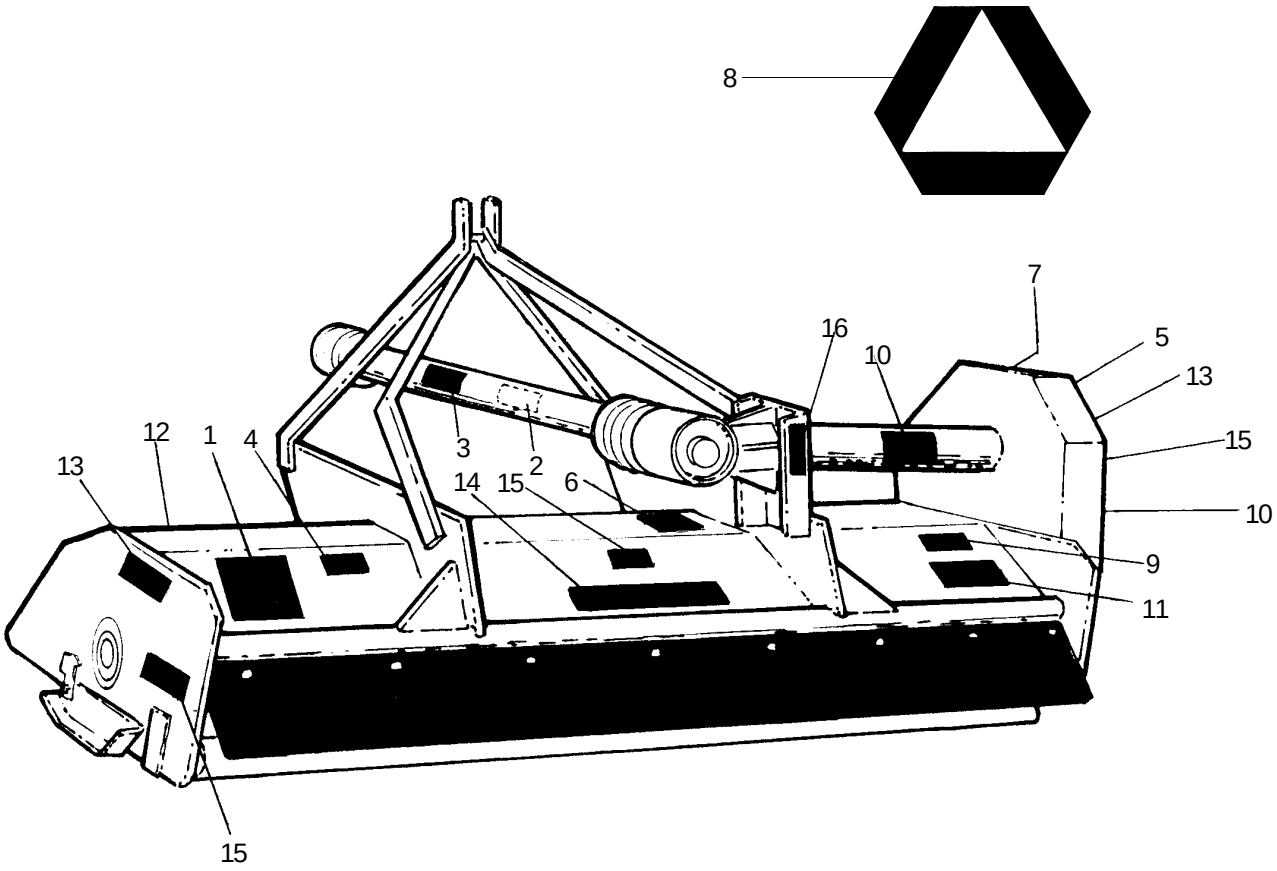
PARTS INFORMATION

ALAMO flail mowers use dynamically balanced and matched system components for cuttershafts, knives, knife hangers, rollers, drivetrain components, bearings, hydraulic pumps and motors, and oil coolers. These parts are made and tested to ALAMO specifications. Non-genuine "will fit" parts do not consistently meet these specifications. Their use may reduce mower performance, void mower warranties, and present a safety hazard. Use genuine ALAMO flail mower parts for economy and safety.

SEE YOUR ALAMO DEALER

© 1999 Alamo Group Inc.

DECAL LOCATION



ITEM	PART NO.	QTY	LEVEL	DESCRIPTION
1	002369	1	DANGER	Multi-Hazard
2	00756004	1	DANGER	D/L Shield Missing
3	00756005	1	DANGER	Rotating Driveline
4	00756007	1	WARNING	Use/Repair Shields & Guards
5	00756485	1	DANGER	Cutting Blades/Thrown Objects
6	00756494	1	DANGER	D/L Multi Haz
7	00758194	1	WARNING	Pinch Point (V-Belt/Pulley)
8	03200347	*1	REFLCTR	SMV Reflector
9	000108	1	Instruc	Flail Operation
10	000678	2	Instruc	Grease Fitting Inside
11	001830	1	Instruc	Lubrication Chart
12	03200432	1	Instruc	Genuine Parts, Flail
13	02960766	2	Logo	Alamo 4 x 5
14	001651	1	Logo	Alamo (Mott Flail) 5 x 17
15	002368	3	Name	AC (Name Only)
16	nfs	1	Ser Plt	Serial Number Plate

* Furnished by tractor manufacturer

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DECAL INFORMATION

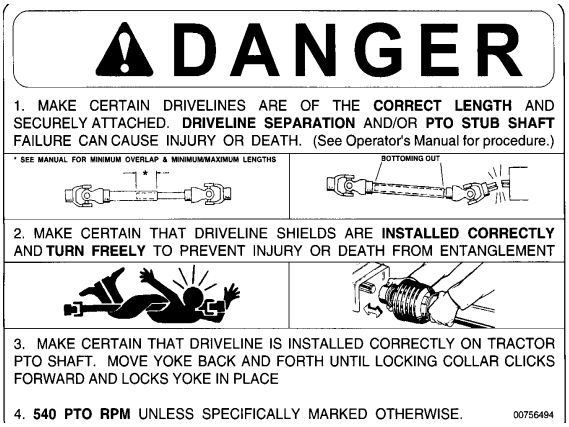
10 - 000678

3 - 00756005

13 - 02960766

15 - 002368

2 - 00756004



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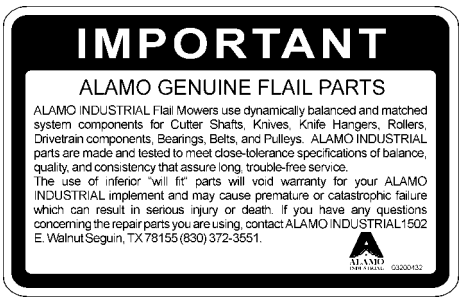

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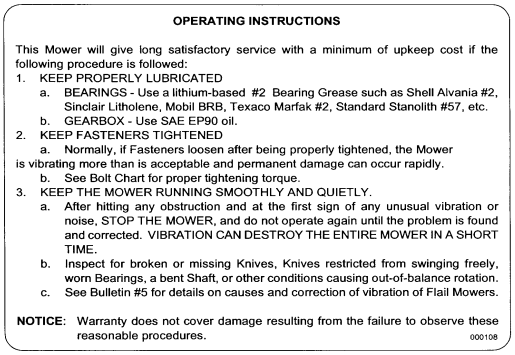

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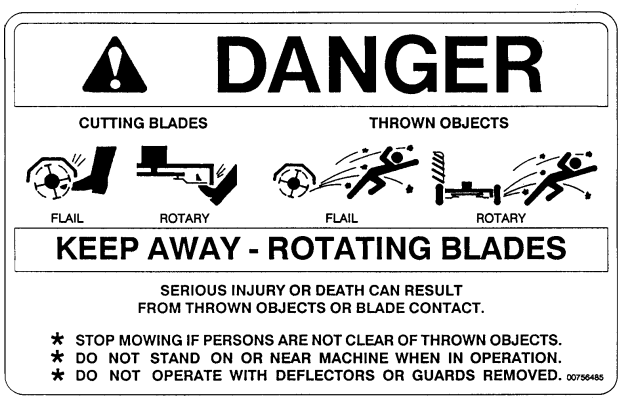

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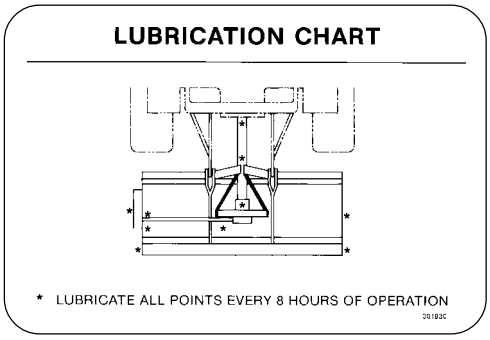

11 - 001830

7 - 00758194

1 - 002369- Not Shown
(See Inside Front Cover of Manual)
14 - Not Shown

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INTRODUCTION

A. OWNER'S RESPONSIBILITIES

1. Read the TRACTOR Owner's Manual as well as the ALAMO FLAIL Manual before attempting to install or operate the ALAMO FLAIL mower.
2. Know all the controls and how to stop quickly. Know how to operate the ALAMO FLAIL before attempting to mow with it.
3. Keep both the tractor and the mower in good operating condition. Keep all fasteners secure to help maintain equipment in safe working condition. Check knives and knife fasteners daily for damage or missing pins.
4. Keep all safety devices in place. Read, understand, and comply with safety decals located on tractor and mowers.
5. Do not allow children to operate the tractor or mower. Do not allow adults to operate the equipment without proper instruction.
6. Do not carry passengers. Keep children and pets a safe distance away.
7. When leaving the operator's position always follow good safety practices:
- **a**. Turn off power to the mower.
- **b**. Lower the mower to the ground.
- **c**. Set the parking brake.
- **d**. Stop the engine and remove the key.

8. Clear the work area of objects which might be picked up and thrown.
9. Stay alert for holes in the terrain and other hidden hazards.
10. To reduce fire hazard, keep engine free of grass, leaves, or excessive grease.
11. Thoroughly check the conditionof the ALAMO FLAIL before mowing.
12. The cuttershaft must be free to turn before starting the ALAMO FLAIL. Do not start the mower while in the cut. Allow the cuttershaft to develop full speed before mowing.
13. Disengage power to the mower when transporting or not in use. NEVER engage the power to the mower when the cutter unit is in the TRANSPORT position.
14. "In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern and prudence of the operator and requires suitable training of personnel involved in the operation, transport, maintenance and storage of equipment." - SAE J1001

B. WARNINGS

1. Remove all objects from, and stay clear of, the front of the cutter unit. Do not get near the rotating knives.
2. Disengage power to the mower before starting the engine.
3. Never allow anyone near the equipment while in operation, and watch out for traffic when crossing or working near a roadway. Make certain flashers are operating when mowing next to traffic lanes.
4. The tractor and the mower should be stopped and inspected for damage after striking an object. Repair all damage before restarting and operating the equipment.
5. Do not attempt to clear discharge, remove obstacles, adjust belts, or repair equipment before stopping the tractor engine. Never place hands or feet near knives or belts when the tractor engine is running.
6. Do not operate any ALAMO GROUP mower which is vibrating excessively. Vibration is caused by a rotating part which is out of balance. The vibration will cause additional damage to the equipment. Cuttershaft vibration could be caused by the following:
- **a**. Wire, rope, rags, etc., wound around the shaft.
- **b**. Knives missing or broken.
- **c**. Knife hanger lugs which have broken off the shaft.
- **d**. Cuttershaft bearings worn.
- **e**. Cuttershaft bent from striking an object.
- **f**. Cuttershaft not rotating at recommended speed.

7. Decrease travel speed for slopes and sharp turns to reduce the possibility of tipping or loss of control. It is suggested, depending on the amount of slope, to mow up and down rather than across the slope.
8. Do not release the clutch suddenly especially when going up a hill.
9. Never engage power to the mower when the cutter unit is in the TRANSPORT position.

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ASSEMBLY

TRACTOR PREPARATION

Each Mower is shipped as 2 major bundles: One bundle consists of the cutterhousing with attached trash deflector, roller with skid shoes, and cuttershaft assembly with attached knives. One bundle (shipping carton) contains: gearbox, gearbox mounting bracket, upper struts, front struts, outboard bearing plate, outboard bearing, idler arm, idler pulley, spring, belt, belt guard, extension shaft pulley, extension shaft, extension shaft guard, drive shaft (PTO), and a bolt bag containing fasteners and small parts.

Before attaching mower to tractor, it will be necessary to provide each tractor lower hitch arm with freedom of movement so that the mower is completely independent of tractor movement. This will allow the mower to pivot sideways as well as move vertically.

Some tractors provide this "float" by means of an optional slot in the lower end of each lift link, others by lift links which can be made telescopic by changing the position of the pins in the links. Failure to provide "float" may result in failure of the cutterhousing and bearings of the roller, thus voiding the warranty. Should your tractor not have a built in "float" option, a flexible lift chain assembly will be required. See chart on page 18.

On these mowers, two flexible lift chain assemblies will be necessary to provide "float" between each power lift arm and lower hitch arm.

Assemble the parts in the order shown according to the illustrations that follow. As you proceed, tighten fasteners only until lockwashers are slightly compressed. Secure fasteners only after all fasteners dealing with the illustration are in place. Fasteners are listed in the Parts Listing.

GEARBOX & A-FRAME ATTACHMENT (FIGURE 2)

1. Attach gearbox to gearbox mounting bracket with four each 5/8 NC x 1-3/4 Bolt, 5/8 lockwasher, and 5/8 NC hex nut. Head of bolt faces away from gearbox.

2. Attach upper struts and gearbox mounting bracket to cutterhousing overarms with 5/8 NC x 2 bolt (right rear), 5/8 NC x 1-3/4 bolt, 5/8 lockwasher, and 5/8 NC hex nut.

3. Attach front struts to cutterhousing overarms and upper struts with two each lower hitch stud and 7/8 NF hex lock nut, and one each 1/2 NC x 3-1/2 bolt, upper strut spacer, 1/2 lockwasher, and 1/2 NC hex nut.

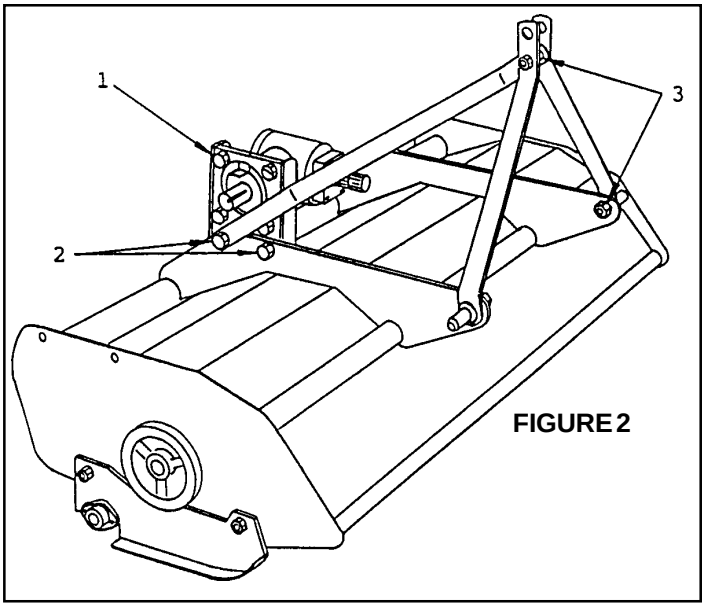

FIGURE 2

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ASSEMBLY

EXTENSION SHAFT (FIGURE 3)

1. Mount outboard bearing plate to inside edge of cutterhousing right sidesheet with two each 3/8 NC x 7/8 bolt, 3/8 lockwasher, and 1/2 NC hex nut.

2. Insert extension shaft into smaller diameter end of extension shaft coupler. Align holes in each, then secure with 1/4 x 1-5/8 split pin.

3. Insert 1-7/16 x 1/4 sq. key into gearbox output shaft keyway.

4. Slide outboard bearing onto extension shaft (bearing mounting surface faces away from coupler). Place end of extension shaft through opening in outboard bearing plate, then slide extension shaft coupler fully onto gearbox output shaft. Secure coupler and key to output shaft with 1/4-20 cup point setscrew.

5. Position outboard bearing against outboard bearing plate, with grease fitting facing downward. Place shims between gearbox mounting bracket, as necessary, to align bearing housing mounting holes with those in the bearing plate. Secure bearing with two each 5/16 NC x 1 bolt, 5/16 lockwasher, and 5/16 NC hex nut. Tighten bearing setscrews to lock bearing to extension shaft.

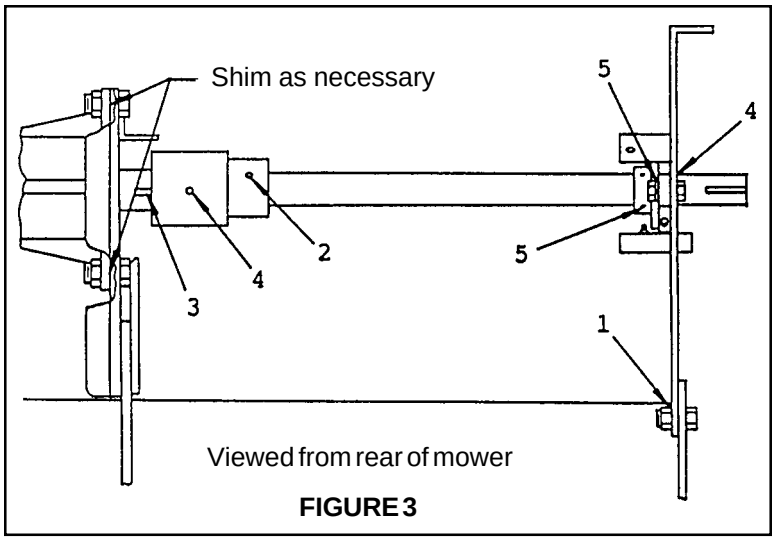

FIGURE 3

IDLER PULLEY (FIGURE 4)

1. Secure idler pulley to idler arm with one each 5/16 NF x 5/8 bolt, 5/16 lockwasher, and plain washer, then insert idler arm into sleeve on outboard bearing plate.

2. Insert 1-7/16 x 1/4 sq. key into extension shaft keyway, then slide extension shaft pulley onto extension shaft. DO NOT tighten pulley setscrew.

3. Install drive belt and idler arm spring. Spring attaches between idler arm spring arm and spring arm on outboard bearing plate.

4. Align extension shaft pulley and key with cuttershaft pulley, then tighten extension shaft pulley setscrew to lock pulley and key to extension shaft. Idler arm pulley is self aligning.

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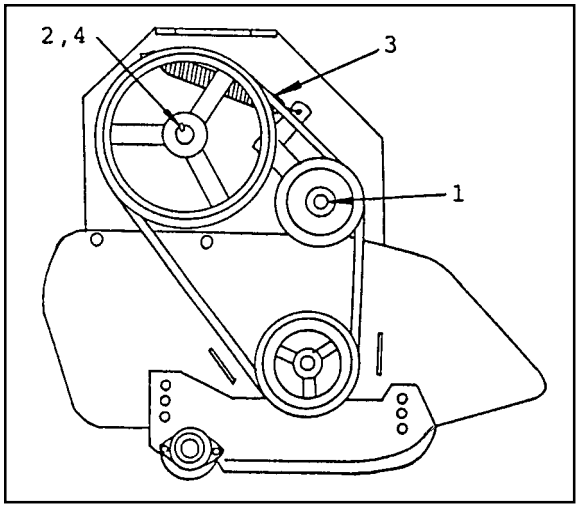

FIGURE 4

GUARD ATTACHMENT (FIGURE 5)

1. Attach extension shaft guard to outboard bearing plate with two each 1/4 NF x 1/2 bolt, 1/4 lockwasher, and plain washer; and to gearbox mounting bracket with one each #10 x 1/2 self-tapping screw and #10 lockwasher.

2. Attach belt guard with three each 3/8 NF x 3/4 bolt, 3/8 lockwasher, and plain washer.

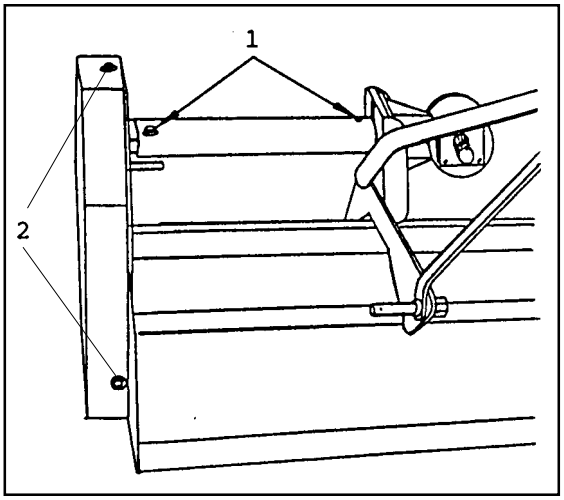

FIGURE 5

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OPERATION

OPERATING TECHNIQUES

With the tractor engine at low idle, engage PTO. Increase the engine speed until the PTO is at 540 RPM. Always start the cutter unit in the clear and allow the unit to develope full speed before starting to cut.

The models included in this manual are designed to operate with a cuttershaft speed of 2260 RPM while using a tractor power take-off speed of 540 RPM. If the mower is operated at a lower speed, trouble can develop throughout the driveline. The universal slip joint, as well as the final drive belt, can be overloaded and fail. As cuttershaft speed decreases, cutting ability also decreases and winding of the grass may occur. Tractors are designed to operate at full PTO speeds. If cutting conditions require a slower ground speed, shift the tractor into a lower gear. Maintain the proper PTO speed.

Always start mower with tractor engine at low idle and cutter unit in the clear. Increase engine speed until PTO is at 540 RPM. The cuttershaft must be at full speed before starting to cut. If cuttershaft slows down, due to heavy cutting, tractor ground speed must be reduced. If not, grass may wind around cuttershaft rather than being discharged properly. Grass wound against housing sidesheets acts as a brake, causing power loss and possibly overheating cuttershaft bearings. The drive belt also may be overloaded and fail. Give the unit time to cut. In tough mowing situations where full power can not be developed, taking a narrower cut or raising mower height is recommended.

If mower starts making an unusual noise, foreign material may have wound around the cuttershaft, or an end knife has bent and is hitting the housing. Remove material from the shaft. Use Knife Straightener Set No. 700413 to reshape bent Knives. Replace any broken or missing knives immediately. To avoid excessive vibration, a pair of knives must be mounted to each set of lugs. To do the best job of mowing, knives should be sharp. Sharp knives require less power to cut and will operate better in tougher conditions.

TRANSPORTING

Pay particularly close attention to the Safety Messages regarding Mower trnsport. Avoid unnecessary injuries and equipment damage by exercising cautious, conscientious travel procedures.

Attaching the Mower to Tractor increases the overall length of the working unit. Allow additional clearance for the Mower to swing when turning.

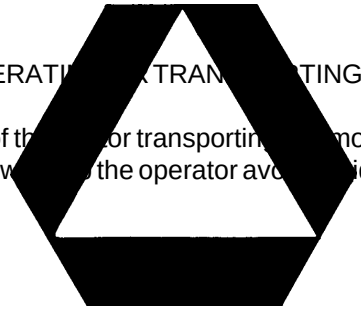
Raise the Mower as high as possible for transporting while maintaining clearance between the Driveline and Deck of the 3-Point Lift Mower.

WARNING : When transporting the Mower on a road or highway, use the tractor warning lights, SMV Sign, Reflectors, and other devices for adequate warning to the operators of other vehicles. Checkthe traffic regulations governing the locale where mowing is to be done, and work safely within theose guidelines.

CAUTION: Be sure that the tractor Lift Lever is locked into the "transport" detent before attempting to transport the Mower.

BEFORE OPERATI[illegible]R TRAN[illegible]TING THIS MOWER:

Always display this emblem in the rear of th[illegible]or transportin[illegible]mower where it is clearly visible to oncoming traffic. Prominent display of this symbol w[illegible] the operator avo[illegible]idents which could cause injury or possibly death.



SMV SYMBOL

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MAINTENANCE

LUBRICATION

1. Lubricate at the specified intervals as outlined in the lubrication diagram below. All mower grease fittings are equipped with lubricaps which snap over the grease fittings to prevent dirt from entering the fittings. Remove the cap and wipe the fitting before greasing. Wipe the outlet of the grease gun then grease the bearing. When finished, place the cap over the fitting and wipe any excess grease from around the cap. In extremely dusty conditions, it is desirable to lubricate more often than every 8 hours. Grease PTO shaft as outlined on the diagram located on PTO shaft shield. The idler pullies are equiped with a sealed ball bearing and require no further lubrication. Caster wheel bearings should be repacked at the end of each mowing season and checked before the start of the next season. The gearbox is shipped with the proper amount of SAE No. 90 extreme pressure lubricant. Check level before operating and maintain the level of this oil at the LOWER 1/8" pipe plug on the gearbox cover. LUBRICATE MOWER BEFORE INITIAL USE. **FIGURE 6.**

* NOTE: Lubricate roller bearing until lubricant can be seen coming out between roller and bearing housing.

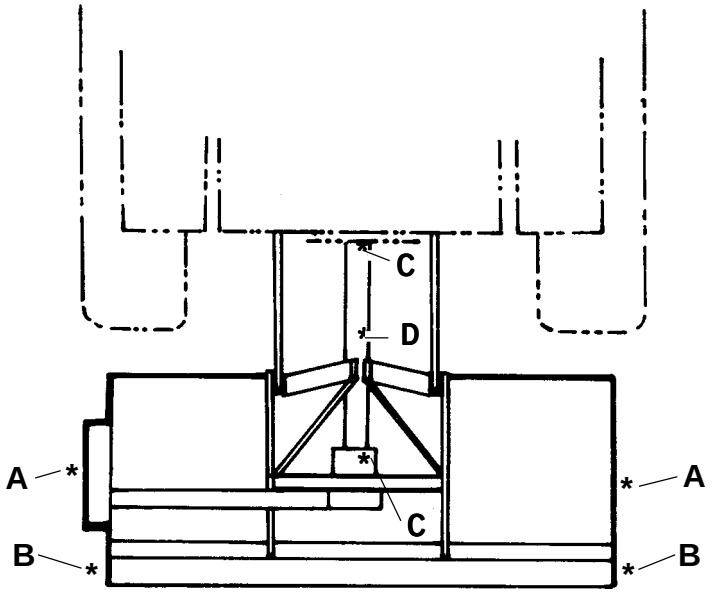
2. Before each day's use, follow this procedure:

a. Visually check the unit, and make certain all items are properly tightened.

b. Check the cuttershaft to make certain it is fully knived. Replace any missing knives or cotter pins,then run the unit at full speed to check for vibrations. Do not operate the unit in an out-of-balance condition.

DANGER! Before doing maintenance, turn off power and securely block up mower.

FIGURE 6



LUBRICATE ALL POINTS EVERY 8 HOURS OF OPERATION

A	CUTTERSHAFT BEARINGS	**C**	DRIVELINE YOKE
B	ROLLER BEARING	**D**	DRIVELINE SLIP

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TROUBLE SHOOTING GUIDE

TROUBLE SHOOTING

SYMPTOM	POSSIBLE PROBLEM	CORRECTION
DISCHARGING BUNCHES OR CLOGGING	Belt installed improperly. Blades dull. Grass too wet. Grass too long. Travel speed too fast. PTO RPM too low.	Check belt for correct set up. Check blades for sharpness. Wait for grass to dry. Mow at 3" and recut lower. Use a lower tractor gear. Mow at engine RPM to match 540 PTO RPM.
BLADES SCALPING HIGH PLACES	Mowing too low. Rough, uneven ground. Turning Tractor too fast.	Raise height of cut. Use a Slower Speed. Slow down when turning.
UNEVEN CUT	Travel speed too fast. Mower deck not level. Blades dull or unbalanced. Deck underside plugged. Grass too high	Use a slower speed. Level the mowing deck. Sharpen or balance blades Clean underside of deck. Mow 3" and recut lower.
GRASS CLIPPINGS WINDROW OR CLUMP	Grass too wet. Grass too high. Housing plugged.	Wait for grass to dry. Mow at 3" and recut lower. Clean underside of deck.
GRASS NOT BEING CUT EVENLY	Belt worn or slipping. Housing plugged. Debris around pulleys Grass too high.	Mow at full engine RPM. Clean underside of Housing. Remove deck belt shield and clean out debris. Mow at 3" and recut lower.
NOISE	Damaged Belt Shield (Rubbing on pulleys or belt) Worn Bearing or Gear	Straighten or replace Shields. Replace Bearing or Gear
VIBRATION	Blade missing or broken. Unmatched blades Bent Shaft	Replace Blade Install only Alamo Blades Replace shaft

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CUTTERSHAFT (FIGURE 7)

Disassembly
***Note**: Retain fasteners, they will be reused.*
1. Detach mower from tractor.
2. Remove Belt Guard and Idler Turnbuckle.
3. Tip Mower up to facilitate removal of cuttershaft and housing assemblies.

CAUTION Safely support Mower once it is tipped up.

4. Remove Drive Belt, Cuttershaft Pulley, and Key. Position Idler Pulley so it is out of the way.
5. Align cutout in cuttershaft anti-wrap shield with slot in non-drive side bearing and housing assembly, then loosen bearing setscrew. Remove bearing and housing assemblies from both ends of the cuttershaft. If only the bearing housing assemblies are to be replaced, proceed to Assembly step 2.
6. Remove Cuttershaft.

Assembly
1. Install new cuttershaft.
2. Install new Bearing and Housing Assemblies. Remove setscrews from bearing to be installed on drive pulley side. Each housing has a slot through the stepped down surface. This slot should point toward bottom of mower.
***Note**: To facilitate assembly, align setscrew in bearing with slot in housing, then align these with cutout in cuttershaft anti-wrap shield. Do not tighten setscrew at this time.*
3. Reinstall key, cuttershaft pulley, and drive belt.
4. Rotate cuttershaft, if necessary, to align setscrew in non-drive side bearing and cutout in anti-wrap shield with slot in housing. Tighten setscrew to lock cuttershaft to bearing. Grease both bearings and check shaft rotation.
5. Install new knives in new cuttershaft, or transfer knives from old cuttershaft to new one.
6. Lower Mower to ground then reinstall Idler Turnbuckle and Belt Guard.
7. Reattach Mower to tractor. Start tractor the engage Mower and check for vibration.

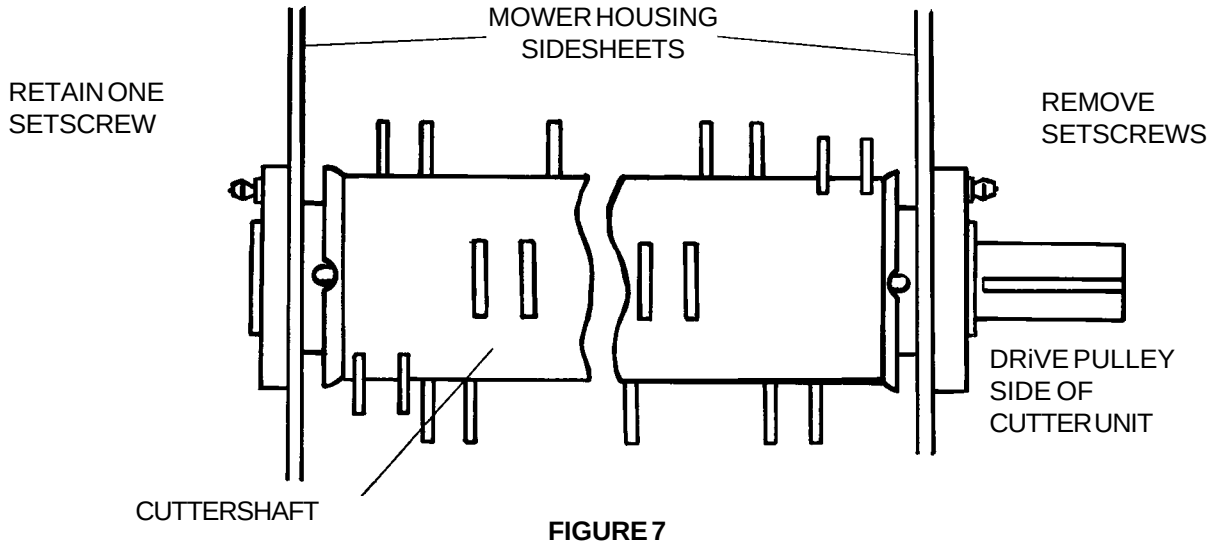

FIGURE 7

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KNIVES (FIGURE 8)

Replacing

Remove Flail Mower from tractor. Turn Housing over with a hoist. Raise and support securely at a convenient height. With one hand, hold two knives back to back so the tips are apart and the holes are in line. Insert the two knives between a pair of ears on the shaft, and with the other hand, insert a headed pin. All knife pins are installed with their heads facing away from the drive side of the Housing. This will locate cotter pins where Knives cannot reach them when flexing backward. Proceed along the shaft in like manner. Then, take a few of the special cotters in one hand, insert in the pin, hold the cotter head edgewise to the ear, and bend out about 45 degrees. Repeat on the other rows of ears.

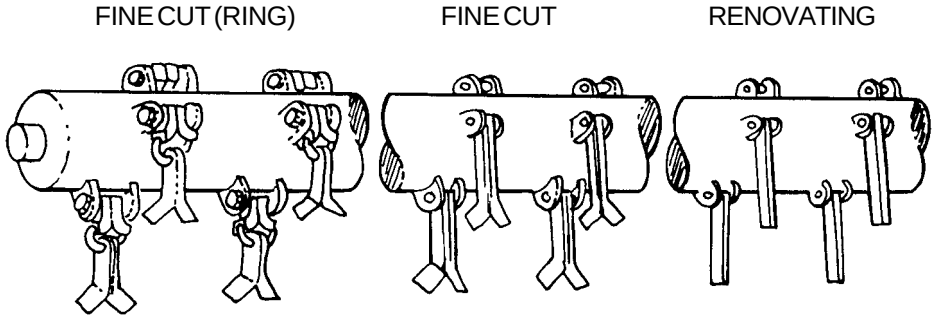

FIGURE 8

Sharpening

These Alloy Knives can be sharpened by filing or grinding. If by grinding, keep cool to maintain hardness and avoid early dulling. When sharpening, remove metal mostly at the end of the tip and not much next to the shank. This will make the cutting portion taper rather than long and weak after several sharpening. If the Alamo Electric Grinder is used, the knives can be sharpened without removing from the machine. Sharp knives require less power than dull knives. Sharp knives do a better job than dull knives. Replace broken or missing knives promptly!

Straightening

These Alloy Spring Steel Knives are tough and will bend quite far before they break, and can be straightened several times if bent slightly from hitting obstructions. Use two pairs of pliers or ViseGrips™ or Special tools. Replace any broken or cracked blade at once to prevent the knife's flying off causing imbalance and vibration or possible serious bodily injury.

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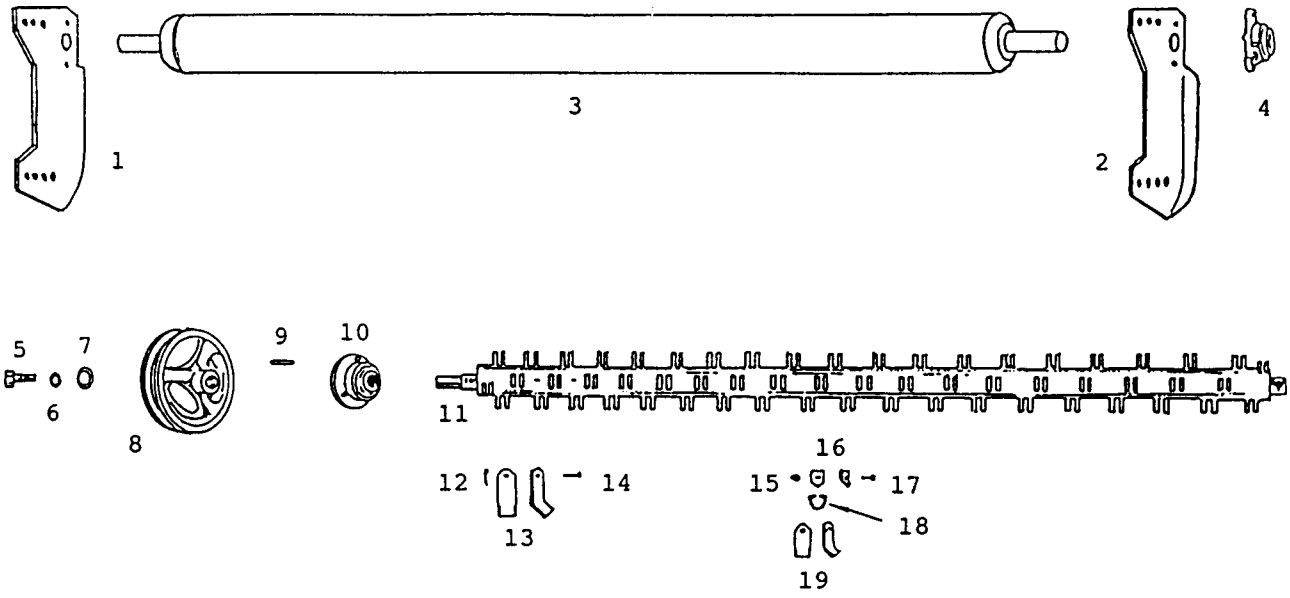
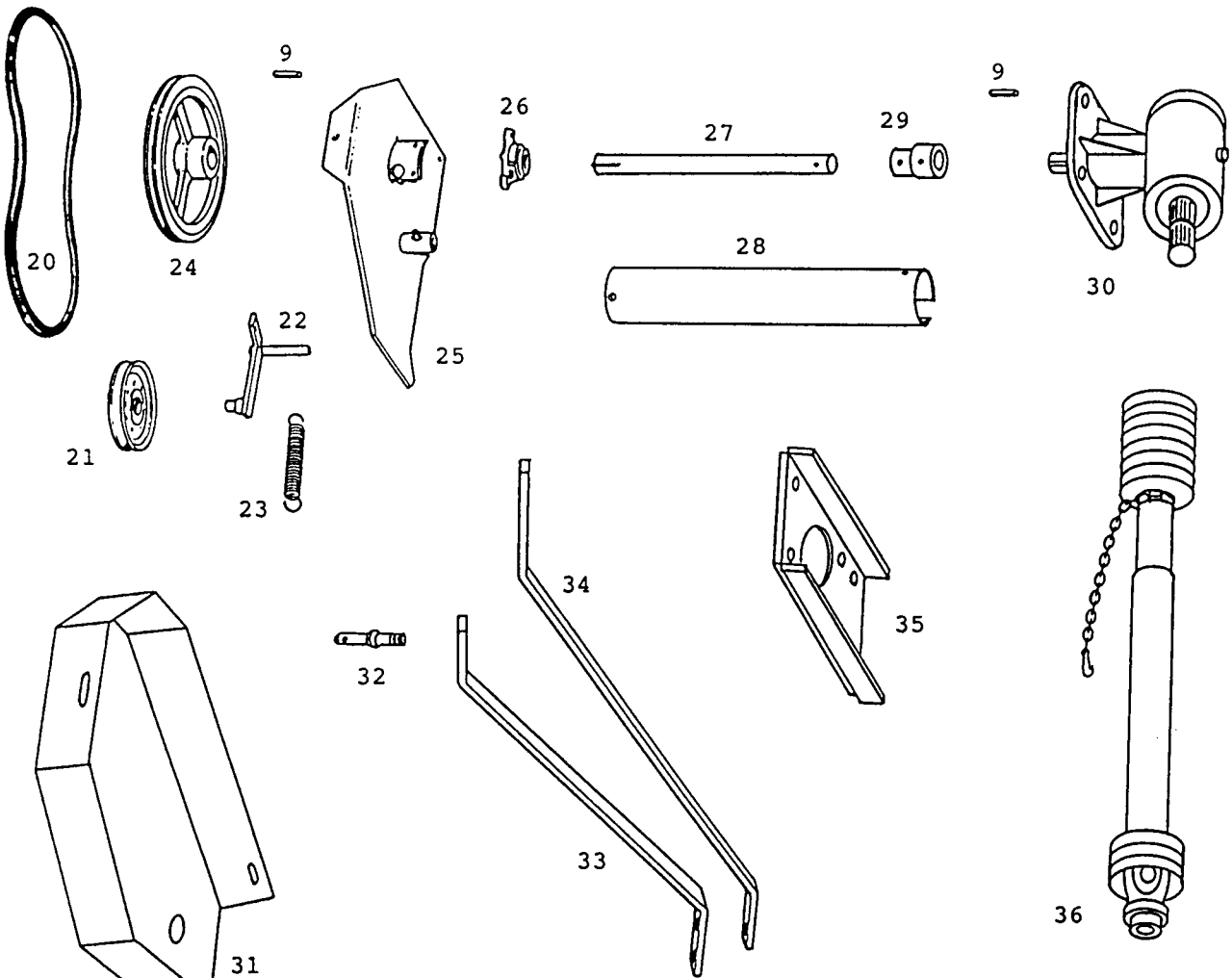
PARTS LISTING





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PARTS LISTING

ITEM	PART NO.	AC48 QTY	AC60 QTY	DESCRIPTION
1	106040	1	1	Right Skid Shoe
2	106041	1	1	Left Skid Shoe
+	000140	4	4	Bolt
+	000520	4	4	Lockwasher
+	000170	4	4	Nut
3	106036	1	-	Roller
3	106037	-	1	Roller
4	000652	2	2	Roller Bearing & Housing Assembly
@	000206	2	2	Lubricap
+	000118	4	4	Bolt
+	000018	4	4	Lockwasher
+	000172	4	4	Nut
5	000555	1	1	Bolt
6	000520	1	1	Lockwasher
7	101780	1	1	Flatwasher
8	001061	1	1	Pulley
9	101782	3	3	Key
10	702408	2	2	Cuttershaft Bearing & Housing Assy
@	000206	2	2	Lubricap
+	000130	6	6	Bolt
+	001493	6	6	Jamnut
11	106118	1	-	Cuttershaft
11	105710	-	1	Cuttershaft
12	000026	60	76	Cotter Pin
13	102086	120	152	Fine Cut Knife
14	101034	60	76	Hardened Knife Pin
--	700812	1	-	Fine Cut Knife Package (incl. 12-14)
--	701654	-	1	Fine Cut Knife Package (incl. 12-14)
15*	000210	60	76	Locknut
16*	101992	120	-	Ring Clip
16*	105746	-	152	Ring Clip
17*	000032	60	76	Bolt (Heat Treated)
18*	101991	60	76	Ring
19*	101993	120	152	Ring Knife
--	700822	1	-	Ring Knife Package (incl. 15-19)
--	702841	-	1	Ring Knife Package (incl. 15-19)
@*	000017	120	152	Flatwasher
@*	102087	60	76	Renovating Knife
--	700514	1	-	Renovating Knife Package
--	700515	-	1	Renovating Knife Package
20	001545	1	1	Drive Belt
21	103401	1	1	Idler Pulley
+	000001	1	1	Bolt
+	000018	1	1	Lockwasher
+	000017	1	1	Flatwasher
22	103932	1	1	Idler Arm
23	000539	1	1	Spring
24	000919	1	1	Extension Shaft Pulley
25	702584	1	1	Outboard Bearing Plate
@	000206	1	1	Lubricap
+	000645	2	2	Bolt
+	000019	2	2	Lockwasher
+	000171	2	2	Nut

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PARTS LISTING

ITEM	PART NO.	AC48 QTY	AC60 QTY	DESCRIPTION
26	000652	1	1	Outboard Bearing & Housing Assembly
@	000206	1	1	Lubricap
+	000653	2	2	Bolt
+	000018	2	2	Lockwasher
+	000172	2	2	Nut
27	106042	1	-	Extension Shaft
27	106034	-	1	Extension Shaft
28	106043	1	-	Extension Shaft Guard
28	106029	-	1	Extension Shaft Guard
+	000117	2	2	Bolt
+	000036	2	2	Lockwasher
+	000016	2	2	Flatwasher
+	000819	1	1	Self Tapping Screw
+	000736	1	1	Lockwasher
29	106026	1	1	Extension Shaft Coupler
+	001556	1	1	Split Pin
+	001546	1	1	Setscrew
30	001544	1	1	Gearbox
+	000716	4	4	Bolt
+	000521	4	4	Lockwasher
+	000556	4	4	Nut
+	000552	30	30	Shim (.007")
31	703880	1	1	Belt Guard
+	000009	3	3	Bolt
+	000019	3	3	Lockwasher
+	000167	3	3	Flatwasher
32	001557	2	2	Lower Hitch Stud
33	100022	2	2	Front Strut
34	106019	2	2	Upper Strut
35	106030	1	1	Gearbox Mounting Bracket
+	001568	2	2	Locknut
+	000778	1	1	Bolt
+	000716	2	2	Bolt
+	000521	3	3	Lockwasher
+	000556	3	3	Nut
+	000145	1	1	Bolt
+	102803	1	1	Upper Strut Spacer
+	000520	1	1	Lockwasher
+	000170	1	1	Nut
36	702596	1	1	PTO Shaft Complete
@	100101	1	-	Rear Trash Deflector
@	100103	-	1	Rear Trash Deflector
+	000860	7	9	Bolt
+	000016	7	9	Flatwasher
+	000036	7	9	Lockwasher
+	000173	7	9	Nut
@	106012	1	-	Cutterhousing
@	106015	-	1	Cutterhousing

+ = Fastener, not shown * = Optional @ = not shown

702321 Knife Grinder
700413 Knife Straightener
700822 Ring Knife Package (48" unit)
700514 Renovating Knife Package (48" unit)
702481 Ring Knife Package (60" unit)
700515 Renovating Knife Package (60" unit)

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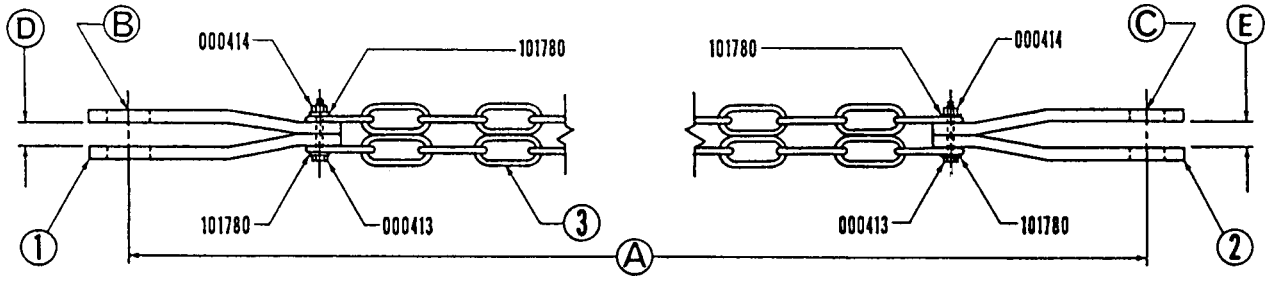
FLEXIBLE LIFT CHAIN CHART



Assembly Part No.	– A -- Length	– – – 3 -- -- -- Part No. Description	1 2	B C	D E
700497	25	100247 (13-5/8", 7 Links)	100769 100769	21/32 21/32	11/16 11/16
701150	28-5/8	103333 (17-1/2", 9 Links)	104736 104736	29/32 29/32	11/16 11/16
701780	21-9/16	104844 (10-3/16", 7 Links)	100769 100769	21/32 21/32	11/16 11/16
701781	23-3/4	100247 (13-5/8", 7 Links)	104736 104736	29/32 29/32	11/16 11/16
701836	30-1/4	103333 (17-1/2", 9 Links)	104926 104926	29/32 1-3/64	11/16 11/16
702264	29-1/2	103333 (17-1/2", 9 Links)	104926 104736	29/32 29/32	11/16 11/16

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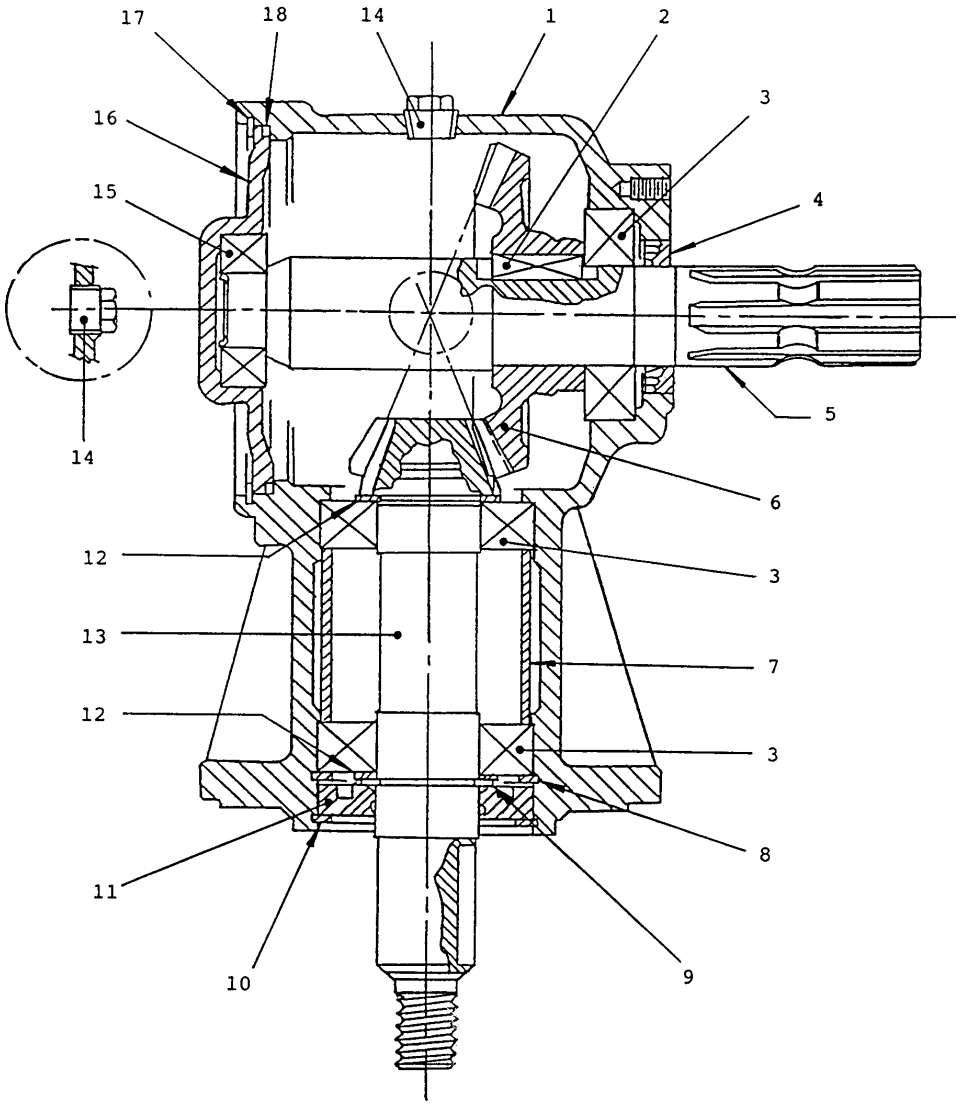

COMPLETE GEARBOX P/N 001544

ITEM	PART NO.	QTY	DESCRIPTION
1	4829	1	Casing
2	4832	1	Key
3	001726	3	Bearing
4	4834	1	Oil Seal
5	4835	1	Input Shaft
6	4836	1	Crown Gear (30 teeth)
7	4837	1	Spacer
8	001721	1	Internal Clip
9	4839	1	External Clip
10	4847	1	Shoulder Ring
11	4848	1	Dust Shield
12	001715	2	Shim
13	4850	1	Output Shaft (12 teeth)
14	001713	2	Plug
15	4852	1	Bearing
16	4853	1	Cover
17	4855	1	Shoulder Ring
18	4857	1	O-Ring

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ALAMO INDUSTRIAL
LIMITED WARRANTY

1. LIMITED WARRANTIES

1.01. Alamo Industrial warrants for one year from the purchase date to the original non-commercial, governmental, or municipal purchaser ("Purchaser") and warrants for six months to the original commercial or industrial purchaser ("Purchaser") that the goods purchased are free from defects in material or workmanship.

1.02. Manufacturer will replace for the Purchaser any part or parts found, upon examination at one of its factories, to be defective under normal use and service due to defects in material or workmanship.

1.03. This limited warranty does not apply to any part of the goods which has been subjected to improper or abnormal use, negligence, alteration, modification, or accident, damaged due to lack of maintenance or use of wrong fuel, oil, or lubricants, or which has served its normal life. This limited warranty does not apply to any part of any internal combustion engine, or expendable items such as blades, shields, guards, or pneumatic tires except as specifically found in your Operator's Manual.

1.04. Except as provided herein, no employee, agent, Dealer, or other person is authorized to give any warranties of any nature on behalf of Manufacturer.

2. REMEDIES AND PROCEDURES.

2.01. This limited warranty is not effective unless the Purchaser returns the Registration and Warranty Form to Manufacturer within 30 days of purchase.

2.02. Purchaser claims must be made in writing to the Authorized Dealer ("Dealer") from whom Purchaser purchased the goods or an approved Authorized Dealer ("Dealer") within 30 days after Purchaser learns of the facts on which the claim is based.

2.03. Purchaser is responsible for returning the goods in question to the Dealer.

2.04. If after examining the goods and/or parts in question, Manufacturer finds them to be defective under normal use and service due to defects in material or workmanship, Manufacturer will:

(a) Repair or replace the defective goods or part(s) or

(b) Reimburse Purchaser for the cost of the part(s) and reasonable labor charges (as determined by Manufacturer) if Purchaser paid for the repair and/or replacement prior to the final determination of applicability of the warranty by Manufacturer.

The choice of remedy shall belong to Manufacturer.

2.05. Purchaser is responsible for any labor charges exceeding a reasonable amount as determined by Manufacturer and for returning the goods to the Dealer, whether or not the claim is approved. Purchaser is responsible for the transportation cost for the goods or part(s) from the Dealer to the designated factory.

3. LIMITATION OF LIABILITY.

3.01. MANUFACTURER DISCLAIMS ANY EXPRESS (EXCEPT AS SET FORTH HEREIN) AND IMPLIED WARRANTIES WITH RESPECT TO THE GOODS INCLUDING, BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

3.02. MANUFACTURER MAKES NO WARRANTY AS TO THE DESIGN, CAPABILITY, CAPACITY, OR SUITABILITY FOR USE OF THE GOODS.

3.03. EXCEPT AS PROVIDED HEREIN, MANUFACTURER SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO PURCHASER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS, OR DAMAGE CAUSED OR ALLEGED TO BE CAUSED DIRECTLY OR INDIRECTLY BY THE GOODS INCLUDING, BUT NOT LIMITED TO, ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES RESULTING FROM THE USE OR OPERATION OF THE GOODS OR ANY BREACH OF THIS WARRANTY. NOT WITHSTANDING THE ABOVE LIMITATIONS AND WARRANTIES, MANUFACTURER'S LIABILITY HEREUNDER FOR DAMAGES INCURRED BY PURCHASER OR OTHERS SHALL NOT EXCEED THE PRICE OF THE GOODS.

3.04. NO ACTION ARISING OUT OF ANY CLAIMED BREACH OF THIS WARRANTY OR TRANSACTIONS UNDER THIS WARRANTY MAY BE BROUGHT MORE THAN TWO (2) YEARS AFTER THE CAUSE OF ACTION HAS OCCURRED.

4. MISCELLANEOUS.

4.01. Proper Venue for any lawsuits arising from or related to this limited warranty shall be only in Guadalupe County, Texas.

4.02. Manufacturer may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.

4.03. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.

4.04. Applicable law may provide rights and benefits to purchaser in addition to those provided herein.

KEEP FOR YOUR RECORDS

ATTENTION: Purchaser should fill in the blanks below for his reference when buying repair parts and/or for proper machine identification when applying for warranty.

Alamo Industrial Implement Model _____ Serial Number _____

Date Purchased _____ Dealer _____

ATTENTION:
READ YOUR OPERATOR'S MANUAL

ALAMO INDUSTRIAL
An **Alamo Group** Company
Post Office Drawer 549
Seguin, Texas 78156
830-379-1480

ALAMO INDUSTRIAL

In addition to the standard Limited Warranty, Rhino provides one year (12 months), (6 months for Commercial/Industrial Users) Limited Warranty on the Driveline components provided that these components have been properly maintained and lubricated that and have not been subjected to abused or mis-use

TO THE OWNER/OPERATOR/DEALER

To keep your implement running efficiently and safely, read your manual thoroughly and follow these directions and the Safety Messages in this Manual. The Table of Contents clearly identifies each section where you can easily find the information you need.

The OCCUPATIONAL SAFETY AND HEALTH ACT (1928.51 Subpart C) makes these minimum safety requirements of tractor operators:

REQUIRED OF THE OWNER:

1. Provide a Roll-Over-Protective Structure that meets the requirements of this Standard; and
2. Provide Seatbelts that meet the requirements of this paragraph of this Standard and SAE J4C; and
3. Ensure that each employee uses such Seatbelt while the tractor is moving; and
4. Ensure that each employee tightens the Seatbelt sufficiently to confine the employee to the protected area provided by the ROPS.

REQUIRED OF THE OPERATOR

1. Securely fasten seatbelt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments, and holes.
3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going - especially at row ends, on roads, and around trees.
6. Do not permit others to ride.
7. Operate the tractor smoothly - no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by the tractor manufacturer.
9. When the tractor is stopped, set brakes securely and use park lock, if available.

☑ **Keep children away from danger all day, every day…**

☑ **Equip tractors with rollover protection (ROPS) and keep all machinery guards in place…**

☑ **Please work, drive, play and live each day with care and concern for your safety and that of your family and fellow citizens.**

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