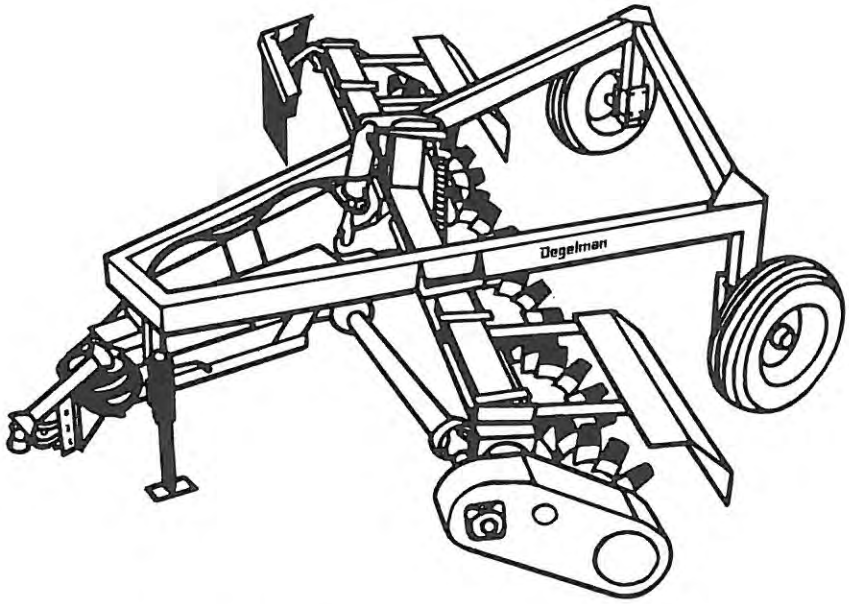
Degelman

"BEST IN THE FIELD - - - -WHERE IT COUNTS"

ROCK RAKE

LC 1400



OPERATOR'S and PARTS MANUAL

142341

JULY 88

farm implements

TO THE PURCHASER

Congratulations on the purchase of your new Degelman Product. This machine was carefully designed, professionally engineered, tested and manufactured with quality materials and skilled workmanship. It will reward you with you superior results and years of dependable service if proper Maintenance, Care and Adjustments are performed.

Carefully read and understand fully the various sections of this manual before operating machine and be sure to obey all Safety Precautions to promote the safe operation and service of implement.

This Safety Alert Symbol identifies important Safety Messages. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

"Right Hand" and "Left Hand" sides are determined by facing in the direction of forward travel.

This Operators Manual contains both Imperial Units of measure (inches - in./feet - ft.) and SI Metric Units of measure (millimetres - mm/metres - m).

Record for handy reference the machine Model No., Serial No. and Date of Purchase to assist your Dealer in providing you with prompt and efficient service. For your convenience, a space is provided for recording this information.

Model No. _____

Serial No. _____

Date of Purchase _____

If you should require information not covered in this manual, consult your local Degelman Dealer. He will be glad to answer any questions that may arise regarding the operations of your machine. Inquiries can also be directed to:

DEGELMAN INDUSTRIES LTD.
P. O. Box 830
272 Industrial Drive
Regina, Saskatchewan
Canada
S4P 3B1
Phone: (306) 543-4447
FAX: 543-2140

Degelman Industries Ltd. reserves the right to make alterations and/or improvements to its products at any time without incurring any obligations to make such changes to products previously manufactured.

Printed in Canada

CONTENTS

WARRANTY

Degelman Industries Ltd. warrants its products to the original owner for a period of one year from date of purchase. All matters related with the warranty of our products must be handled through the Authorized Selling Dealer. Warranty does not cover normal wear of the machine components or damages caused by lack of maintenance or misuses, and is subject to the following provisions:

TIRES:

Will be adjusted for warranty by the Tire Manufacturer.

REPLACEMENT PARTS:

Will be warranted for a period of ninety days.

WARRANTY ON MACHINES USED FOR CUSTOM WORK, RENTALS or INDUSTRIAL USE:

Will be warranted as stated above, with the exception that is shall be for a period of ninety days only.

LABOUR:

Any labour subject to warranty must be authorized by a Degelman Representative before work is started. Warranty labour allowance and rates will be handled according to established service warranty policy.

GOVERNMENT LEGISLATION:

Warranty terms and conditions are subject to Provincial or State Legislation.

MODIFICATIONS:

Warranty will be void if any component is altered or modified, unless written authorization is granted by **Degelman Industries Ltd.**

WARRANTY on ATTACHED EQUIPMENT:

No responsibility will be assumed for whatever damages may occur to equipment attached to this Degelman product.

SAFETY

INTRODUCTION

This Safety Alert Symbol identifies important safety messages. When you see this symbol, be alert to the possibilty of personal injury and carefully read the message that follows.

The safety of the Operator was one of the prime considerations in the minds of the engineers and technicians when this product was designed. Simple adjustments and safety features were built into the machine whenever possible, however, ordinary caution must be exercised when operating this and all machinery.

DO NOT allow anyone to operate this machine who has not been properly trained in its safe operation.

OPERATORS RESPONSIBILITY

It is your responsibility to use this machine in a safe and efficient manner to ensure the personal safety of yourself and others. Be sure to read and understand this manual before attempting any operation. Contact your local Dealer if any questions should arise.

INTENDED USE of MACHINE

This machine was designed primarily to "windrow" scattered field rock and debris to help provide a more convenient and effective way of utilizing rock picking equipment.

The Rock Rake will also help condition newly broke land to prepare it for any desired field work.

OPERATING SAFETY

Before operating the machine be sure no one is standing near.

DO NOT allow anyone to ride on equipment when it is in motion.

Maintain a safe operating speed to suit field conditions and contours.

DO NOT operate machine on steep side hills.

MAINTENANCE SAFETY

Lower Sprial Drum to ground and turn off tractor engine before attempting any maintenance work.

Always block up Frame when servicing Tires or adjusting wheel height.

Frequently check and retighten Bolts to specified torque values as shown in Maintenance Section.

DO NOT exceed recommended tire pressure. Use care and caution when servicing and inflating Tires to prevent personal injury from blow-out.

Before disconnecting Hydraulic Lines be sure to relieve all pressure to system.

Never allow anyone to work under the raised Spiral Drum.

When searching for hydraulic leaks use a piece of cardboard. **DO NOT** use your hands. Escaping fluid under pressure can have sufficient force to penetrate the skin which could cause serious infection or reaction. If injured by escaping fluid, seek medical attention at once.

Be sure to securely replace any Shields or Guards which have been removed for maintenance purposes. Replace any damaged or lost Shields and Guards.

Check that Safety Decals are legible and clean. Promptly replace any worn or damaged Decals.

TRANSPORT SAFETY

Before transporting machine on roads or highways, check the following: tire pressure, loose wheel bolts, tire cuts and wear.

Be sure to install a safety type Draw Bar Pin.

If machine is being towed by a truck or vehicle other than a farm tractor install Safety Chains in addition to Hitch Pin.

Be sure to locate the Spiral Drum Transport Pin into position. **DO NOT** rely on the Hydraulics to maintain the Spiral Drum in Transport Position.

DO NOT exceed trailing speed of 32 km/h (20 mph) or less depending on road conditions.

Check local Government Regulations regarding the use of Accessory Lights and Safety Devices to provide adequate warning to operators of other vehicles.

Maintain "Slow Moving Vehicle" sign in place at all times when transporting.

Road or highway transportation at night time is **Positively Not Recommended.**

SAFETY DECALS

The various Personal Safety Decals are shown here along with a description of their location and an explanation of their content.

Warning Decals (yellow and black) denote a specified potential hazard.

Danger Decals (red and white) denote the most serious specific potential hazard.

LOCATION: top side of Hitch Beam.

EXPLANATION: Five areas of Warning are included to prevent injury during operation or servicing of machine.

LOCATION: left hand side of Frame Beam.

EXPLANATION: A Warning to remind the operator not to exceed the safe Trailing Speed indicated, which could result in unexpected and uncontrolled machine movement.

LOCATION: back side of Spiral Drum Shields and PTO Shield.

EXPLANATION: A Warning to remind the operator and others to stay clear of the covered moving parts.

LOCATION: top side of Chain Case Housing Lid.

EXPLANATION: To prevent possible injury when exposing the internal moving components while the machine is running.

LOCATION: both Drive Line Units

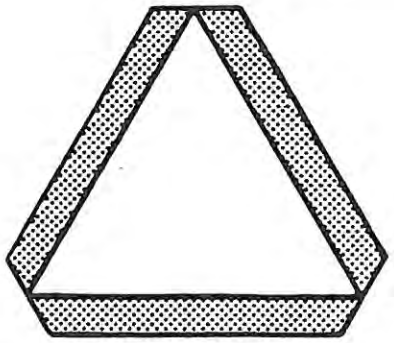
EXPLANATION: To advise of the dangers involved in working around rotating Drive Lines. Failure to obey these commands could result in severe personal injury.

LOCATION: both sides of Frame Tubing.

EXPLANATION: To alert all persons near by to the danger of flying rock or debris during operation.

LOCATION: towards back of Frame.

EXPLANATION: This is the standard Slow Moving Vehicle symbol which alerts the operators of other vehicles to the slower travelling speed of the vehicle ahead.



PREPARATION

OPERATOR PREPARATION

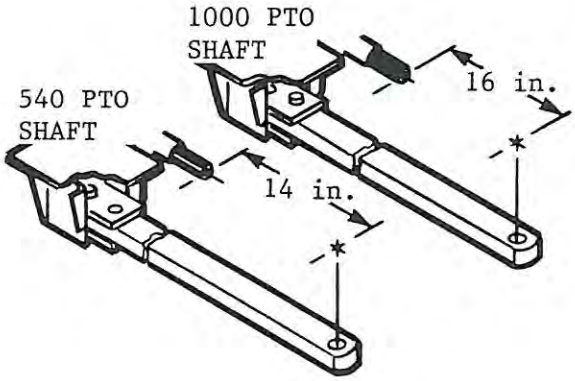
Carefully read and understand fully the various sections of this manual before operating machine. Contact your local Dealer if any questions arise related to its operation.

TRACTOR PREPARATION

Inflate front and rear Tires to proper pressure as recommended in the Tractor Operators Manual.

Check the oil level in the Tractor Hydraulic System daily. Refer to your Tractor Operators Manual for instructions. Keep the oil supply up to the proper level. Before checking oil supply, fully extend and retract Hydraulic Cylinders 3 - 4 times and return Drum to ground level.

Position Draw Bar 14 in. (356mm) for 540 PTO speed or 16 in. (406mm) for 1000 PTO speed from the centre of draw bar hole to the end of PTO Shaft as illustrated. **Important:** Be sure to pin Drawbar in central location to prevent it from swinging.



IMPLEMENT PREPARATION

Hitch machine to Tractor Draw Bar, attach PTO Drive Shaft and swing up the Jack.

NOTE: 540 PTO Shafts have 6 Spline construction while 1000 PTO Shafts have 21 Splines. Match up accordingly.

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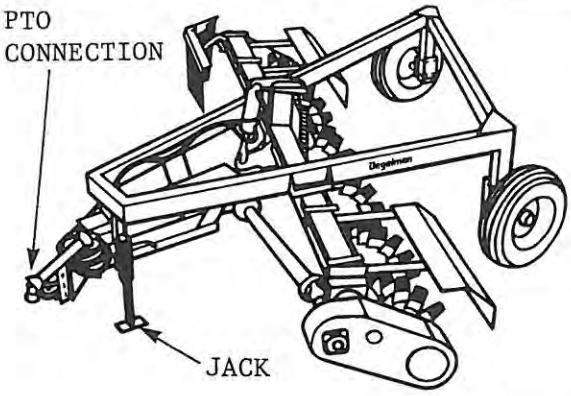

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Install the appropriate Depth Control Cylinder (3 x 8 in. recommended) as shown and route Hoses as illustrated. Secure Hoses in Brackets using Cotter Pins (not supplied).

Install four Nipple Fittings to front ends of Hoses and attach the appropriate Quick Couplers to these Fittings which mate with tractor outlets.

Activate the Hydraulics to allow the Transport Pin to be disengaged.

Check that all Safety Guards and Shields are securely in place.

Inflate Tires to 45 PSI.

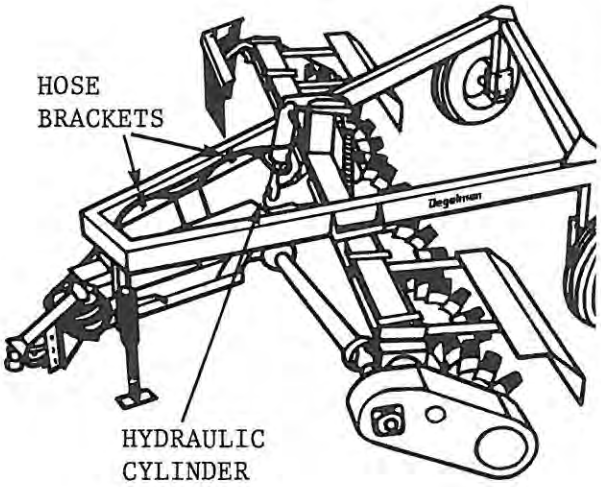
⚠ **DO NOT** exceed recommended tire pressure. Use care and caution when inflating Tires to prevent possible injury from blow-out.

Check for any hydraulic leaks in the system.

Check that the machine is properly lubricated as outlined in the Lubrication Section.

Check all Bolts and tighten if necessary to recommended torque values as outlined in Maintenance Section.

Check that all Drive Line Components are secured in place.



OPERATIONS

INTRODUCTION

The Degelman Rock Rake is a pull type implement designed primarily for "windrowing" rock and debris for easier accessibility of removing from fields.

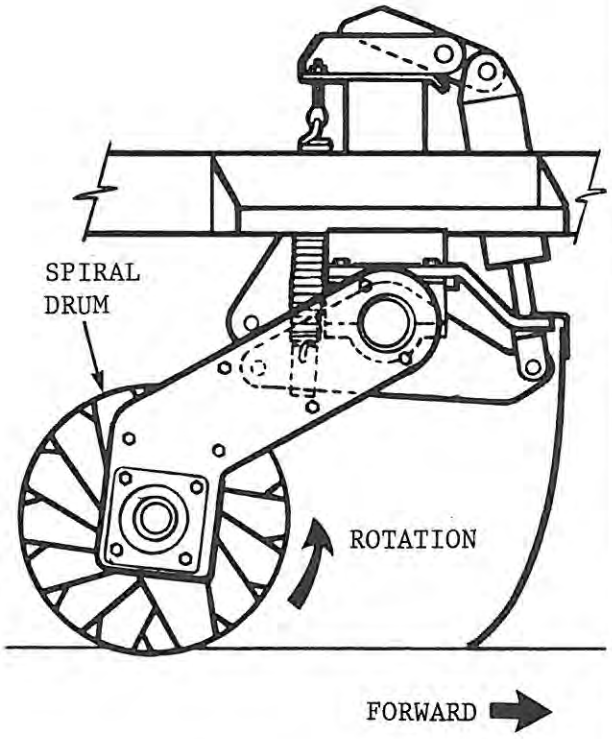
DO NOT allow anyone to operate this machine who has not been properly instructed in its safe operation.

NOTE: On new machines after the first 2 - 3 hours of operation, check and retorque Bolts to values given in the Maintenance Section.

PRINCIPLE of OPERATION

Power is transmitted from Tractor PTO through the Rock Rake Drive Line into the Gear Box where the first step of RPM reduction takes place. Next, power is transferred through a Sprocket/ Chain combination and further reduces the RPM to establish the final Drum speed.

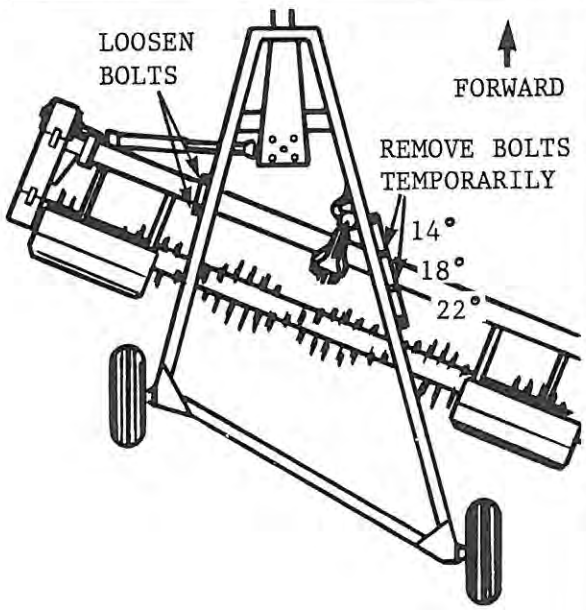
The continual rotation of the Drum combined with the appropriate forward ground speed effectively "windrow" the rock to the right hand side of machine.



WINDROW FUNCTION

The following interrelated functions determine the efficiency of the windrowing operation of the machine.

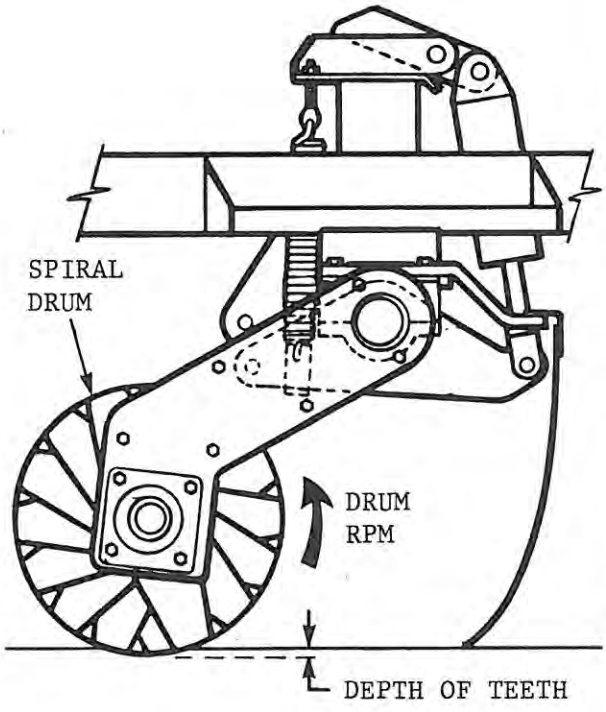
1. RAKING ANGLE is the angle to which the Rake Drum is set at from a straight forward position. To relocate, loosen the four Bolts securing the Drum. Remove the right hand side Bolts to allow the Drum to be swung over to the desired setting. Reinstall and tighten hardware.
- Set at 14° for light roto-tilling action and breaking up lumps.
- Set at 18° (normal) for medium to large rocks in medium to heavy density fields.
- Set as 22° for raking medium to small rocks and where fast augering action is desired.



2. DEPTH of TEETH is controlled hydraulically - normally a depth of 1 in. (25mm) of soil penetration is recommended.

3. DRUM RPM is approximately 143 RPM for tractors at a 540 PTO Speed and 176 PRM for tractors at a 1000 PTO Speed.

4. FORWARD SPEED is considered to be between 2-6 MPH (3-10 km/h) depending on rock size and density.



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5. ROCK DENSITY and SIZE - categorize Density as light, medium or heavy. Rock Sizes of 2-4 in. (50-100mm) small; 5-8 in. (125-200mm) - medium; 9-12 in. (225-300mm) - large.

NOTE: Rock averaging over 13 in. (330mm) should be removed from the field and not raked.

6. SOIL CONDITIONS

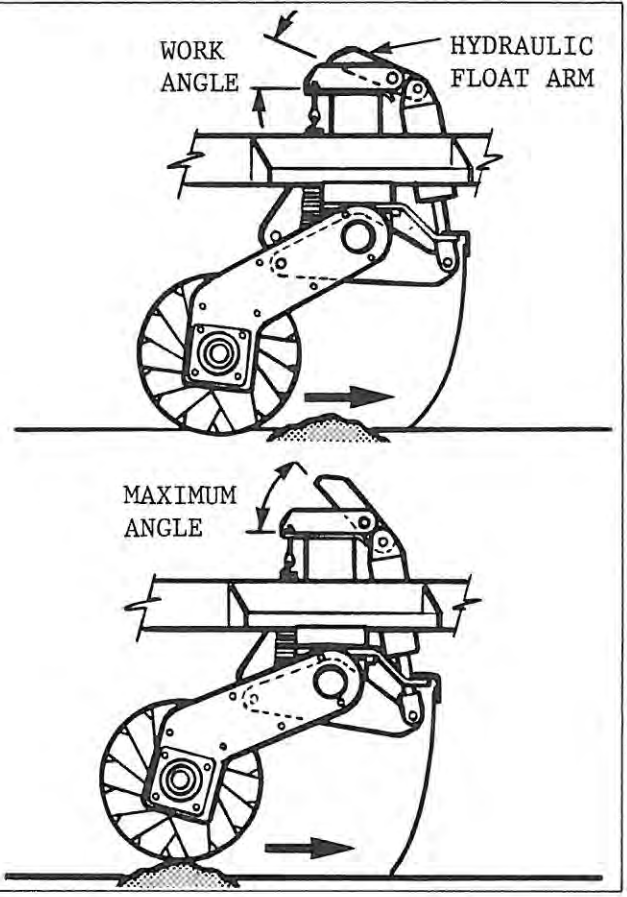
Dry, firm ground is considered ideal for raking operations.

HYDRAULIC FLOATING ARM

When operating the machine it is important to maintain the Floating Arm in the working position shown, approximately 1/2 way between the maximum angle.

This operation is done by simply extending or retracting the Hydraulic Cylinder as shown to locate Arm at this angle.

The Spiral Drum is now able to float over varying ground contours and obstacles while the rest of the machine remains level.

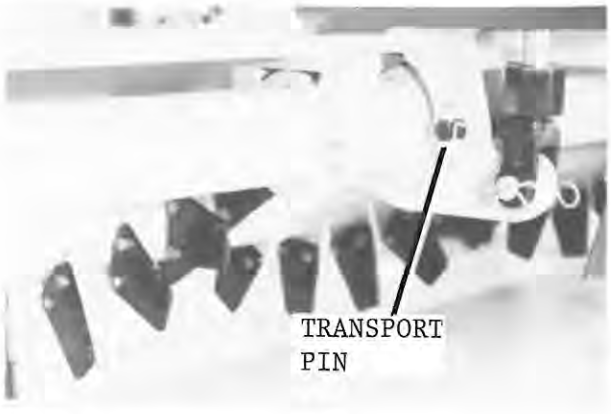


TRANSPORTING

TRANSPORT LOCK-UP

Raise Drum fully by extending the Depth Control Cylinder.

Position the Transport Pin into the location shown and secure with Hair Pin. Swing Hitch Jack upward and pin in this position.



WARNING: Be sure no one is standing near machine while raising or lowering the Drum.

The Rock Rake is now ready for transporting. Be sure to check that the Hitch Pin is in good condition and well secured.

Important: Be sure to review the Transport Safety tips as outlined on PAGE #4 before transporting machine.

WARNING: When transporting implement from location to location, **ALWAYS** engage the Lock-up Pin. **DO NOT** rely solely upon the Hydraulics for transporting as sudden line breakage or slow leak will allow the Drum to contact the ground surface which could result in severe personal injury or machine damage.

ADJUSTMENTS

The design of this machine allows for various Adjustments which will permit and maintain maximum working efficiency.

WARNING: Before attempting any adjustments be sure to lower Drum to ground and turn off Tractor Engine.

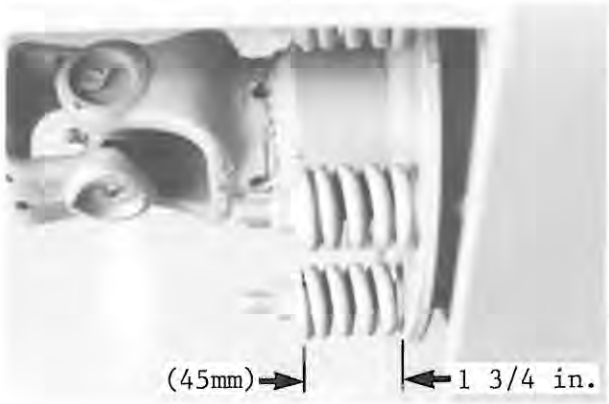
TORQUE LIMITER SLIPPAGE

The Spring Tension of this unit is preset at the factory and will allow a certain degree of slippage to provide protection from shock on drive train parts during operation. If however, excessive slippage does occur, the tension of the six Springs can be increased by tightening each Nut equally 1/2 turn.

Operate the machine at this setting and repeat only if necessary.

Important: Overtightening of the Torque Limiter will cause **serious** damage to the Gear Box.

NOTE: After prolonged storage periods, corrosion may seize Discs to Metal Plates. It is therefore recommended to back off Spring Tension to allow excessive slippage of the unit. Then briefly operate the machine in the field to break Discs free. Reset the Spring Tension by retightening Nuts to provide an initial setting of 1 3/4 in. (45mm).

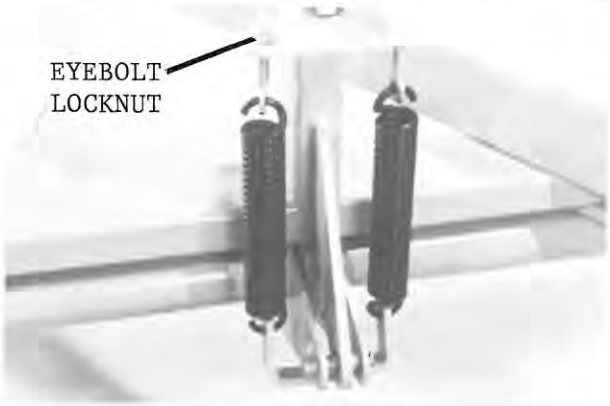


SPRING TENSION

The purpose of the Springs are to reduce the ground weight of the Spiral Drum which reduces the shock load encountered when raking.

Set the initial tension of Springs by turning the Eyebolt Nut until Spring Coils start to separate while the Drum is locked in transport.

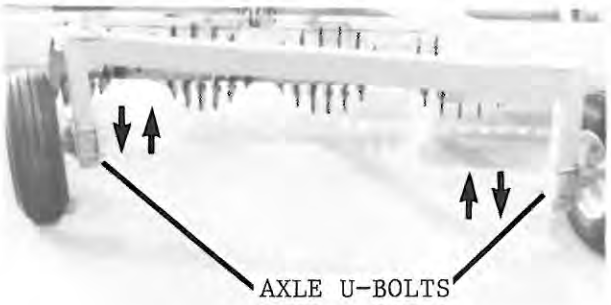
Field operating the machine will determine if any further tension is required.



WHEEL HEIGHT

Wheels can be raised or lowered to suit any special requirements.

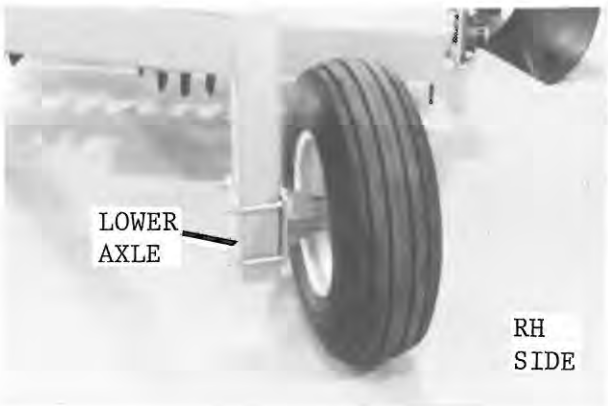
Hydraulically lower Spiral Drum to raise Wheels off the ground. Then adjust by loosening Axle U-Bolts to allow Tires to be raised or lowered as desired. Resecure hardware.



"FEATHERING" the DRUM

An adjustment that will prevent excessive dirt from being windrowed along with the rocks is accomplished by lowering the Right Hand Axle approximately 1 - 2 in. (25-50mm).

This will raise the right hand corner of the Spiral Drum slightly and cause the dirt to sift out before reaching the windrow.



LUBRICATION

INTRODUCTION

It is important to the life of the machine to keep the following designated areas properly lubricated.

WARNING: Before attempting to lubricate be sure to lower Drum to ground and Turn Off Tractor Engine.

WHEEL BEARING LUBRICATION

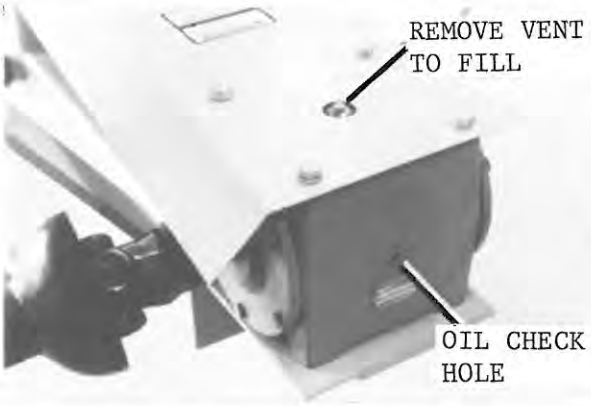
Repack Wheel Bearing seasonally with a good grade of Bearing Grease.

NOTE: Additional Grease can also be pumped in Hub through the Grease Fitting on the back side of Hub Casting.

GEAR BOX OIL LEVEL

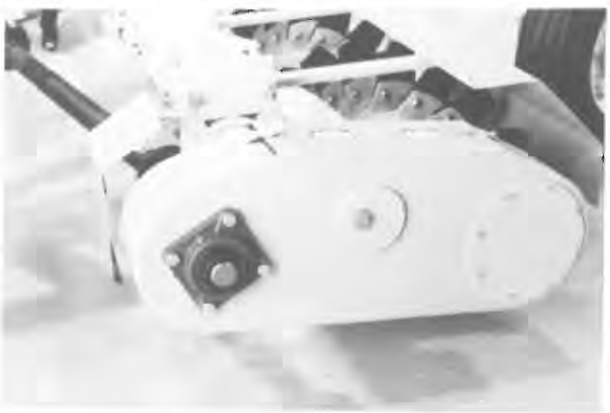
Check Oil Level every 20 hours of use by removing the threaded plug in Check Hole. Oil should be level with bottom of Hole. Use SAE #90 Gear Oil.

On new units change oil after the first 100 hours of use and every 2500 hours of use thereafter.



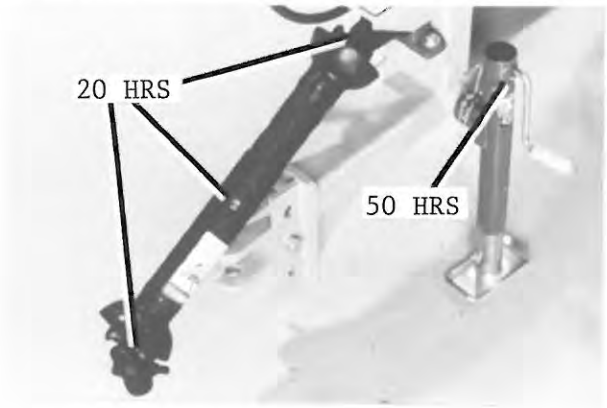
CHAIN CASE OIL LEVEL

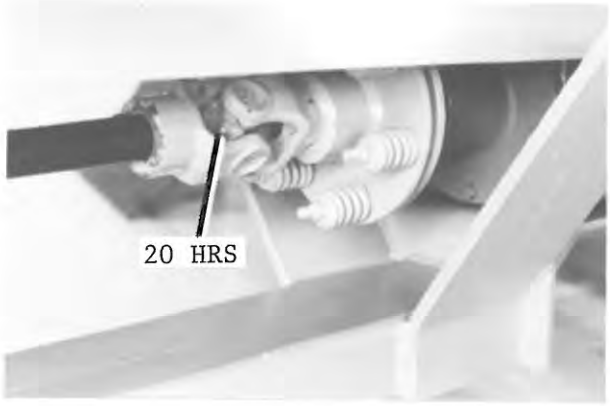
Check Oil Level every 10 hours of use. Maintain approximately 2 quarts (2 litres) in Chain Case. Use SAE #90 Gear Oil.



DRIVE LINE and JACK LUBRICATION

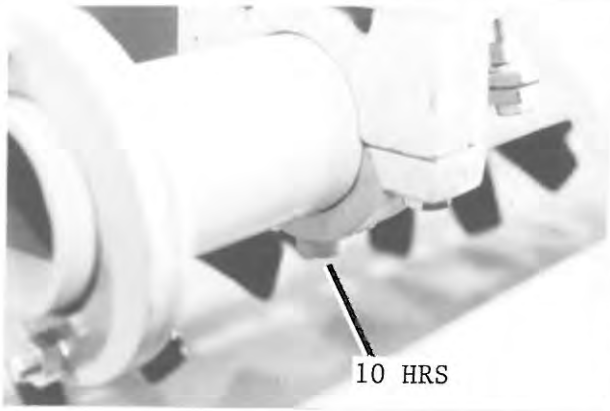
Grease each location as frequently as shown.





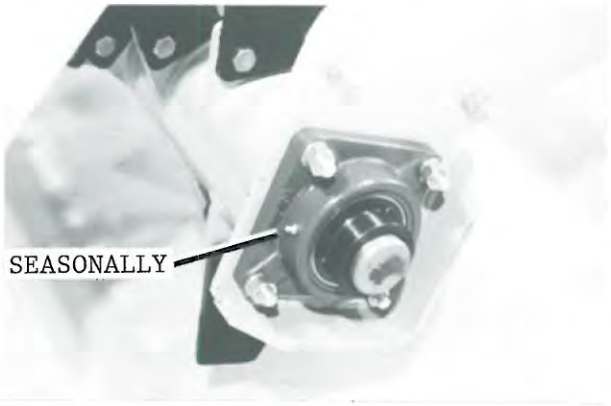
ROCK SHAFT BEARING LUBRICATION

Grease all three locations as frequently as shown.



ROLLER BEARING LUBRICATION

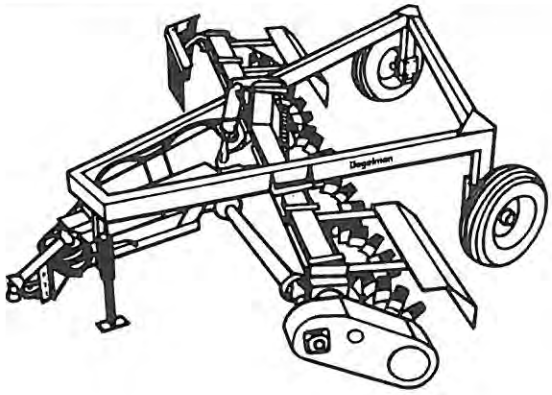
Grease each location as frequently as shown.



STORAGE

During prolonged storage periods it is recommended to:

- Clean the implement thoroughly with water to prevent dirt from drawing moisture which will cause corrosion.
- If possible, store the machine in a dry location.
- Paint all parts from which paint has worn.
- Oil the exposed portion of the Hydraulic Cylinder Rod to prevent possible corrosion.
- Review Operator's Manual before taking machine out of storage.



TROUBLESHOOTING

This section is designed to provide possible Causes and Corrections for various Conditions that may be encountered during operation.

⚠ Always use Care and Caution when performing the necessary corrective action.

CONDITION	CAUSES	CORRECTION
Drum creeps down during operation	Tractor Hydraulics leak	To verify, raise Drum, disconnect Hoses at Tractor and observe if Drum creeps down. If not repair Tractor Hydraulics.
	Damaged Hoses or Fittings	Search for leaks with a piece of paper (not by hand). Repair as necessary.
	Hydraulic Cylinder leak	Replace Seals or damaged component.
Drum raises too slowly	Low Tractor Pressure	Check pressure (1500-2500 PSI) and service as necessary.
Drum will not lift	Restriction in Hoses	Disconnect Hoses and blow out Lines.
	External leaks in Hydraulic System	Search for leaks with a piece of paper (not by hand). Repair as necessary.
Excessive Dirt windrowing on right hand side of machine	Right Hand Side of Drum too low	Correct by "Feathering" the Drum as outlined on PAGE #15.
Oil accumulation on Hydraulic Cylinder Shaft	Oil bypassing Seals	Seal Manufacturer advise that small amounts of Oil getting past Seals is desirable. If problem becomes excessive, replace Seals.

TROUBLESHOOTING

CONDITION	CAUSES	COREECTIONS
Chain jumps off Sprockets or skips over Teeth	Sprocket misalignment	Check and adjust.
	Chain overstretched	Remove Half Link. If excessive wear, replace Chain.
	Inadequate Chain tension	Check and adjust (see Service Section).

MAINTENANCE CHECK

Regular maintenance is essential to provide efficient operation while also extending the life of the machine.

This section will assist you in establishing a regular habit of maintenance checks.

MAINTENANCE CHECK	DAILY	WEEKLY	SEASONALLY START	SEASONALLY END	OTHER
Hydraulic Fluid Leaks/Cut Hoses	*		*	*	
Tire Pressure 45PSI (310 kPa)	*		*	*	
Bearing Condition		*	*	*	
Chain Condition and Wear		*	*	*	
Safety Signs Clean/Legible		*	*	*	
Teeth Wear		*	*		
Sprocket Alignment		*	*		1st10hrs
Torque Limiter Condition		*	*	*	
Drive Lines/U-Joints		*	*		
Gear Box Wear/Damage		*	*		
Spring Tension			*		
Pole Jack Condition			*	*	
Shields/Guards Secure		*	*	*	
Bolt Tightness			*		1st2-3hrs
Lubrication (see Lubrication Section)			*		

BOLT TORQUES

Frequently check and retighten Bolted Connections to values shown in chart.

If Bolts must be replaced, be certain to replace them with ones of equal strength: SAE 2 strength Bolts have a plain head; SAE 5 Bolts have 3 radial lines on the head; SAE 8 Bolts have 6 radial lines on the head.

Bolt Dia. (in.)	Bolt Torques (ft. lbs.) Grade 5		Grade 8	
	UNC	UNF	UNC	UNF
5/16	13	14	18	20
3/8	23	25	35	38
1/2	55	65	80	90
9/16	80	90	110	130
5/8	110	130	170	180
3/4	200	220	280	320
1	480	530	680	740

*Torques are for PLATED or LUBRICATED threads.

SERVICE and REPAIR

INTRODUCTION

This section of the manual is designed to aid and assist you in performing service and repair on worn or damaged components.

CAUTION: Always use care and caution when working with components to prevent personal injury.

CONTENTS

BEARING REPLACEMENT

When Bearing Noise becomes evident, replacement of the Bearing is necessary. Whether the complete Bearing Unit or just the Bearing Insert was purchased, proceed as follows:

WARNING: Before removing Bearing Unit be sure affected areas are securely blocked up.

1. Loosen Set Screw with allen wrench.

2. Use drift punch and hammer to loosen Lock Collar.

NOTE: Lock Collar loosens opposite the direction of rotation.

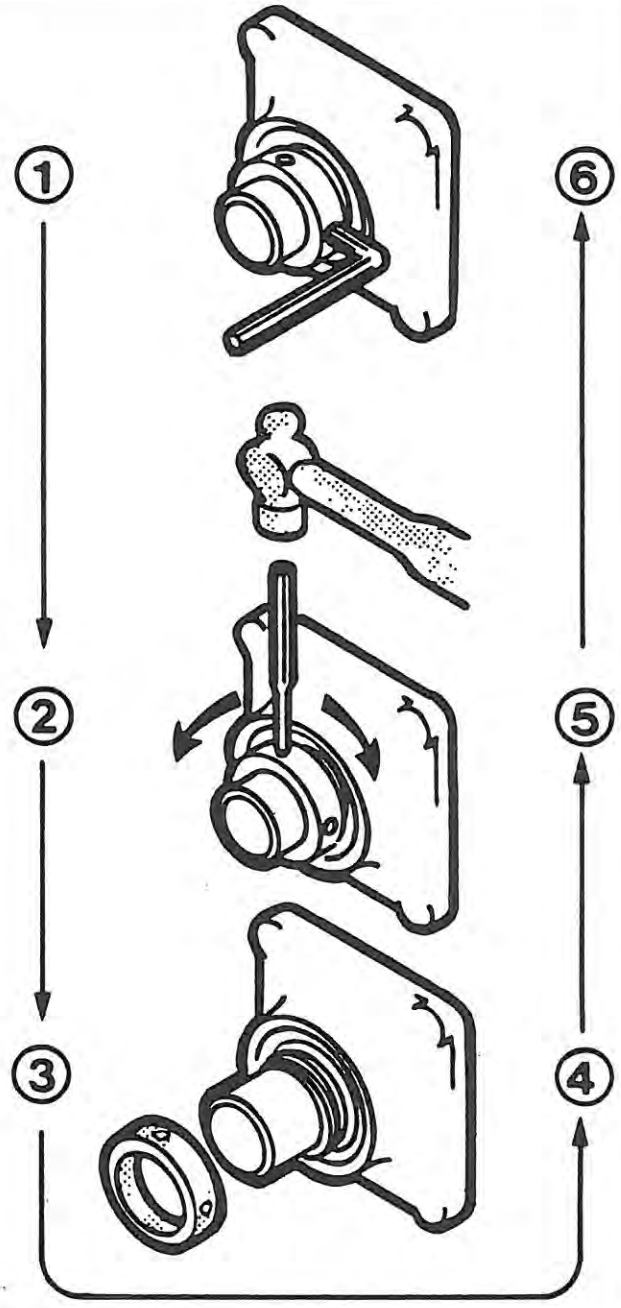
3. Remove Lock Collar and Bolts.

4. Pull Bearing Unit from Shaft and replace.

5. Relocate Lock Collar and tighten in direction of rotation.

6. Tighten Set Screw.

7. Lubricate Grease Fitting.



WHEEL HUB REPAIR

When repair work becomes necessary on this unit dismantle components as outlined below.

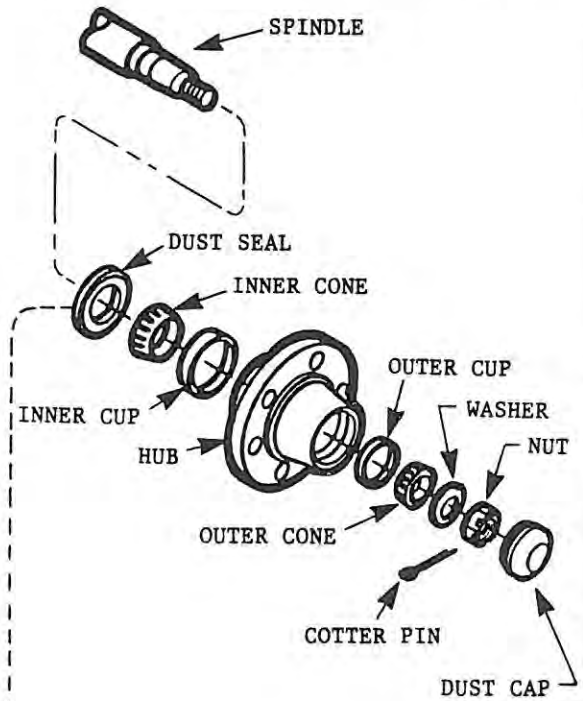
WARNING: Be sure to block up Frame Section before removing Tires.

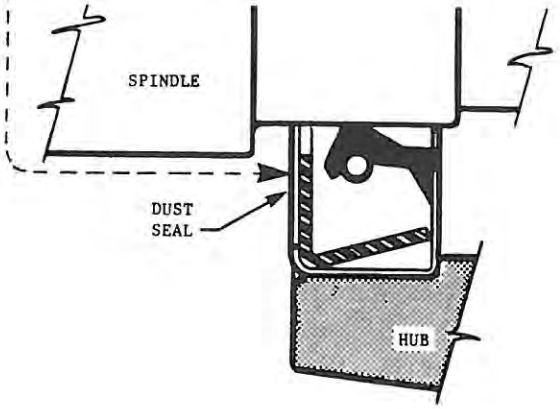
DISASSEMBLY

1. Carefully pry off Dust Cap.
2. Remove Cotter Pin from Nut.
3. Remove Nut and Washer.
4. Pull Hub off Spindle.
5. Dislodge the Inner Cone Bearing and Dust Seal.
6. Inspect Cups that are press fitted into Hub for pits or corrosion and remove if necessary.
7. Inspect and replace defective parts with new ones.

ASSEMBLY

1. If Cups need replacing be careful to install them gently and evenly into Hub until they are fully seated.
2. Apply a thick wall of Grease inside Hub. Pack Grease in Cones.
3. Install Dust Seal as illustrated, and Inner Cone.
4. Position Hub onto Spindle and fill surrounding cavity with Grease.
5. Assemble Outer Cone, Washer and Nut.
6. Tighten Nut while rotating Hub until there is a slight drag.
7. Turn Nut back approximately 1/2 turn to align Cotter Pin hole with notches on Nut.
8. Install Cotter Pin and bend legs sideways over Nut.
9. Fill Dust Cap half full of Grease and gently tap into Hub.
10. Pump Grease into Hub through Grease Fitting until lubricant can be seen from Dust Seal.





TORQUE LIMITER REPAIR

DISASSEMBLY

1. Remove unit from machine.

2. Remove Retaining Rings from U-Joint Cross and Bearings and pull worn joint apart.

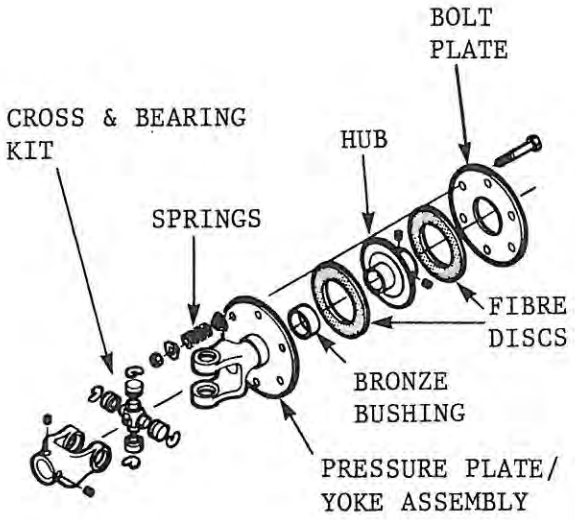
3. Hold Torque Limiter portion of unit in a vise and remove Spring Lock Nuts evenly.

4. Clean and inspect all parts for damage and wear.

NOTE: Machined surfaces contacting the Fibre Discs must be flat and free from grooves. A 32 micro in. finish is preferable.

NOTE: Replace Fibre Discs when thickness reaches 1/16 in. (1.5mm).

5. If excessive wear is evident to the Bronze Bushing, (located in the Pressure Plate/Yoke Assembly) replace with new Bushing.



ASSEMBLY

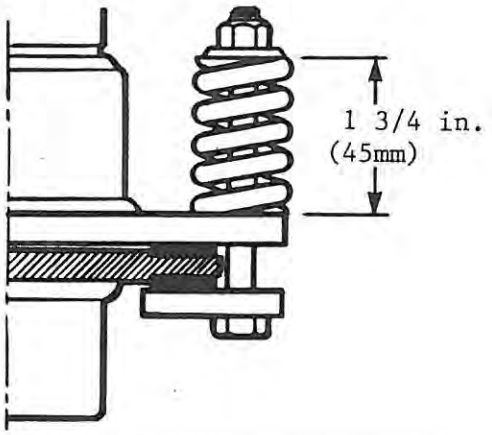
1. Position a Fibre Disc on each side of Hub and slide unit into Bronze Bushing.

2. Reassemble Bolt Plate, Bolts, and position Springs and Keepers over Bolts. Secure with Lock Nuts.

3. Tighten Lock Nuts evenly until the Springs compress to a distance of 1 3/4 in. (45mm).

4. Reassemble new U-Joint components and lubricate Grease Fitting.

5. Remount unit onto machine and secure Safety Shield.



GEAR BOX REPAIR and ADJUSTMENT

BEARING ADJUSTMENT
When adjusting the Bearings, first withdraw the Pinion Shaft and Housing Assembly from the Gear Box Case. Try not to damage or alter the Pinion Housing Shim Gaskets at location **C.**

ADJUSTING CROSS SHAFT BEARINGS
Three or four Shim Gaskets are initially installed at location **A** and **B.** Remove one at a time from location **A** only, until Bearings bind. Then add one Shim Gasket and make sure that the Gear rotates freely.

ADJUSTING PINION SHAFT BEARINGS
With Pinion Assembly removed from Case, tighten Nut (not applicable on 3:1 Box) until Pinion Bearings bind, then back off the Nut until Shaft rotates freely. The Nut is self-locking. If Pinion Housing Shim Gaskets located at **C** were altered, damaged, or if the Cross Shaft Bearings were re-adjusted, it is necessary to re-set the Gear Backlash adjustment.

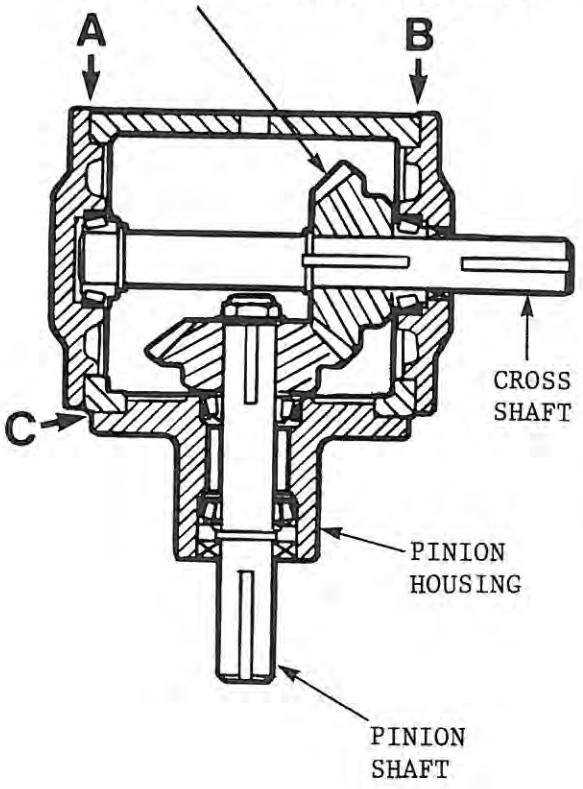
ADJUSTING CROSS SHAFT GEAR and PINION BACKLASH
Mount Pinion and Housing Assembly in Gear Case placing between them 3 or 4 Shim Gaskets at location **C.** If Gear backlash is felt, remove one Shim Gasket at a time from **C** location, until Gears rotate freely with no backlash. Then reinstall one Shim Gasket.

If no Gear backlash was felt initially, or if Gears do not rotate freely, add one Shim Gasket at a time to location **C,** until free Gear rotation is obtained without backlash. Then add one more Shim Gasket.

NOTE: When performing the above adjustment, every component must be fastened with the required Bolts evenly tightened.

OIL LEVEL
See Lubrication Section.

Important: Preheat gear to 450° F for 1/2 hour then press onto shaft.



SPACER SHIM REMOVAL - ROCKSHAFT

When excessive wear is apparent between the Rockshaft and Cast Bearings, remove the Spacer Shims on all three sets of Bearings.

Loosen Bolts and pull out Slotted Shims.

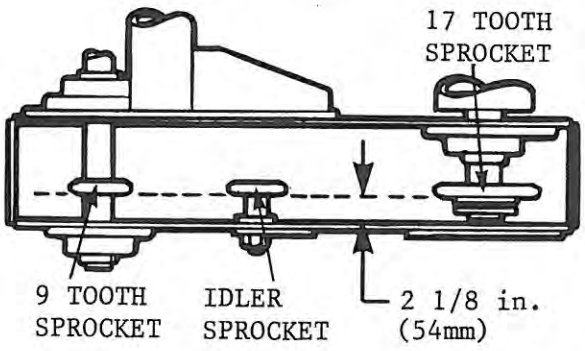
SPROCKET ALIGNMENT

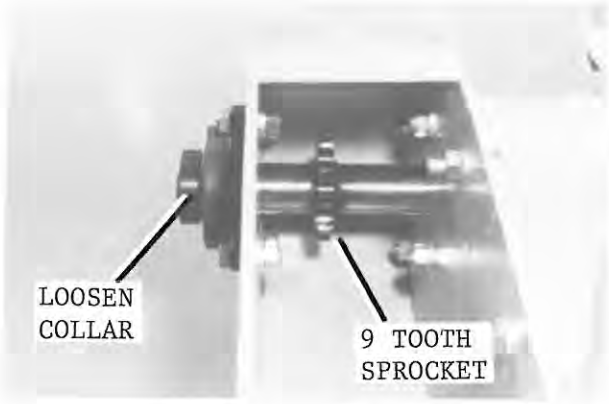
If Sprockets have become misaligned first establish which Sprocket needs realigning. Sprockets are to be 2 1/8 in. (54mm) from side of Chain Case.

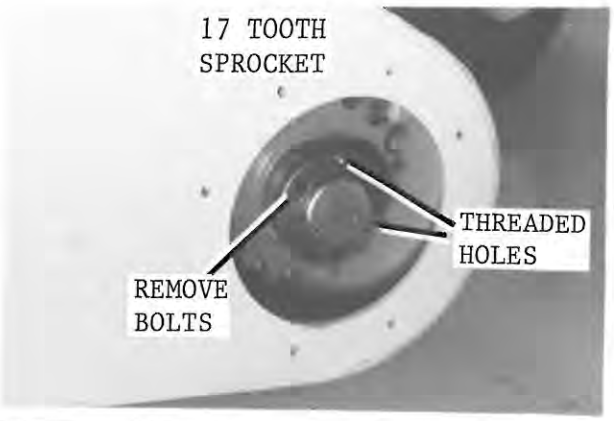
The Idler Sprocket is fixed at this dimension.

If the 9 Tooth Sprocket is misaligned, loosen both Bearing Setscrews, then Lock Collars. Tap Sprocket Unit into position. Tighten outboard Lock Collar clockwise and inboard counter clockwise. Secure Set Screws.

If the 17 Tooth Sprocket is misaligned remove the Bolts on Split Bushing and thread two of them into threaded holes. Tighten both Bolts evenly until Bushing dislodges. Reposition the Sprocket and secure by reinstalling the Split Bushing and tightening all three Bolts evenly.







TEETH MAINTENANCE

The Teeth are designed so that they can be reversed when excessive wear is present on one side.

NOTE: Locate and secure Teeth and Bolts on the correct side of Tooth Holder as shown.

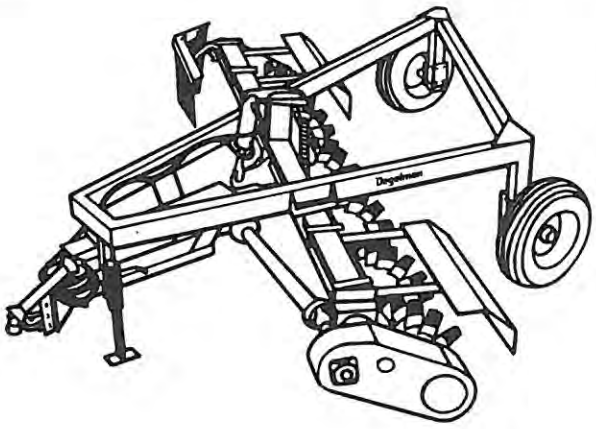
SAFETY SHIELDS, GUARDS and SAFETY DECAL REPLACEMENT

Replace any damaged or lost Safety Shields or Guards.

⚠ **WARNING: DO NOT** operate machine without Shields in place.

Frequently inspect and replace any worn or illegible Safety Decals and Signs.

SPECIFICATIONS



MODEL:
- Degelman Rock Rake LC-1400

TRACTOR REQUIREMENTS:
- Approximately 40-80 HP (30-60 kW)
- Hydraulic output pressure 1500-2500 PSI (10,300-17,300 kPa)
- 540 or 1000 RPM PTO

FRAME CONSTRUCTION:
- .250 in. (6.4) wall hollow structural steel tubing

WHEEL UNITS:
- Two 9.5 L x 15 - 6 ply tubeless type tires
- 6 bolt rim
- 2 in. (50.8mm) dia. axles
- Adjustable

DRUM SPECS:
- Reversable/replaceable teeth
- Drum/teeth dia. 20 1/2 in. (520mm)
- 90-143 RPM (540 PTO)
- 120-176 RPM (1000 PTO)
- Floating drum - spring loaded

DRIVE COMPONENTS:
- 2:1 Gear Box (540 PTO)
- 3:1 Gear Box (1000 PTO)
- Heavy duty drive lines
- #100 roller chain
- Heavy duty roller bearings

HYDRAULIC REQUIREMENTS:
- One 8 in. stroke double acting cylinder and 3/8 in. hoses

TRANSPORT:
- Drum has lock-up pin for safe transportation

WEIGHT of MACHINE:
- 3200 lbs. (1,455 Kg)

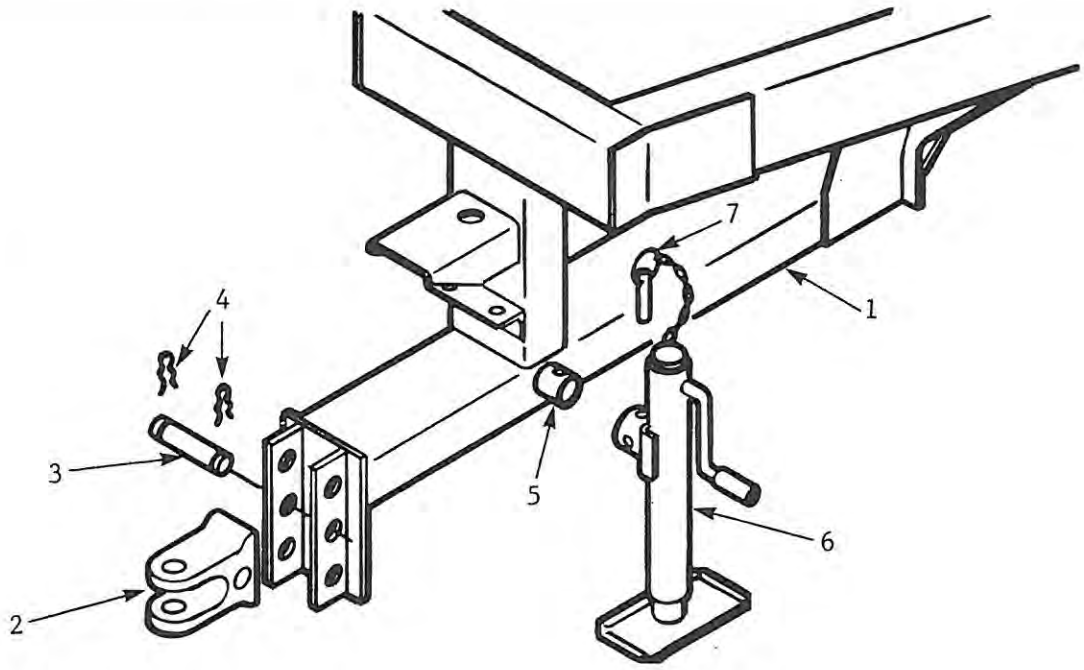
WIDTH:
- 14 ft. (4.27m)

PARTS

INTRODUCTION

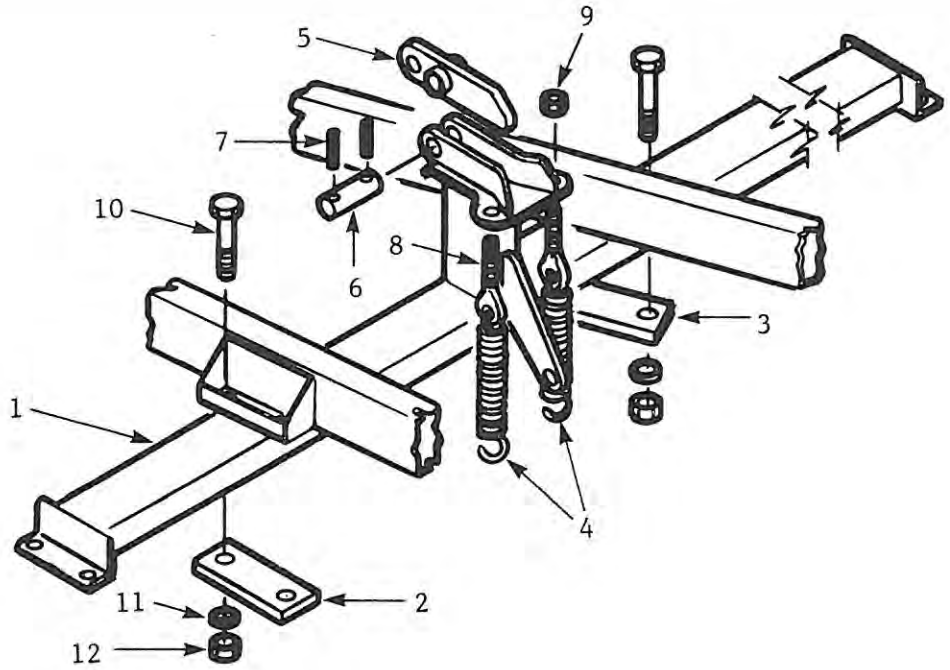
When ordering Replacement Parts be sure to include the machine MODEL NUMBER and SERIAL NUMBER along with the PART NUMBER, DESCRIPTION and QUANTITY of components required.

CONTENTS



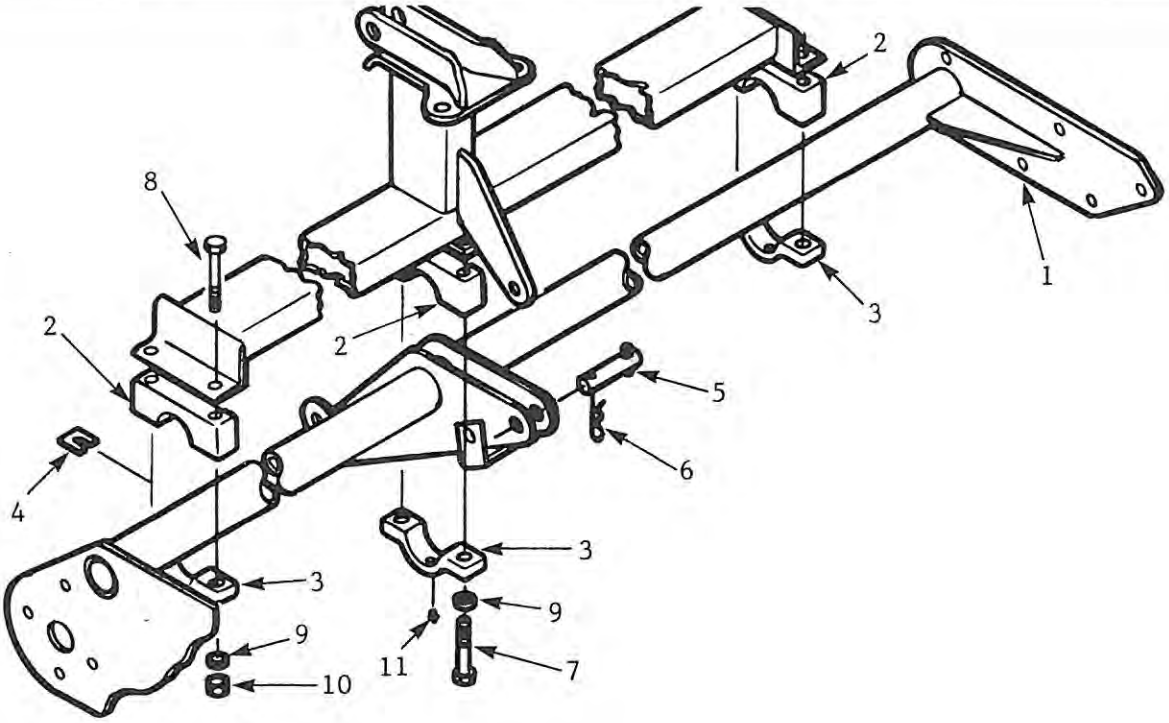
ITEM	PART No.	DESCRIPTION	QTY.
1	310310	Frame, Main - Assembly - RR	1
2	110002	Casting, Hitch Clevis	1
3	121944	Pin 25.4 x 110mm (effective) Plated-N/D	1
4	118882	Pin, Hair 3/16 x 2 3/4 in., Plated-N/D	1
5	132015	Bushing 50.8 OD x 6.4 Wall x 58mm long - Jack Bracket	1
6	132005	Jack, Side Wind - SWS-150-DTSF	1
7	118879	Pin, Hitch Jack 9/16 in. dia.	1

ROCKSHAFT SUPPORT BEAM COMPONENTS



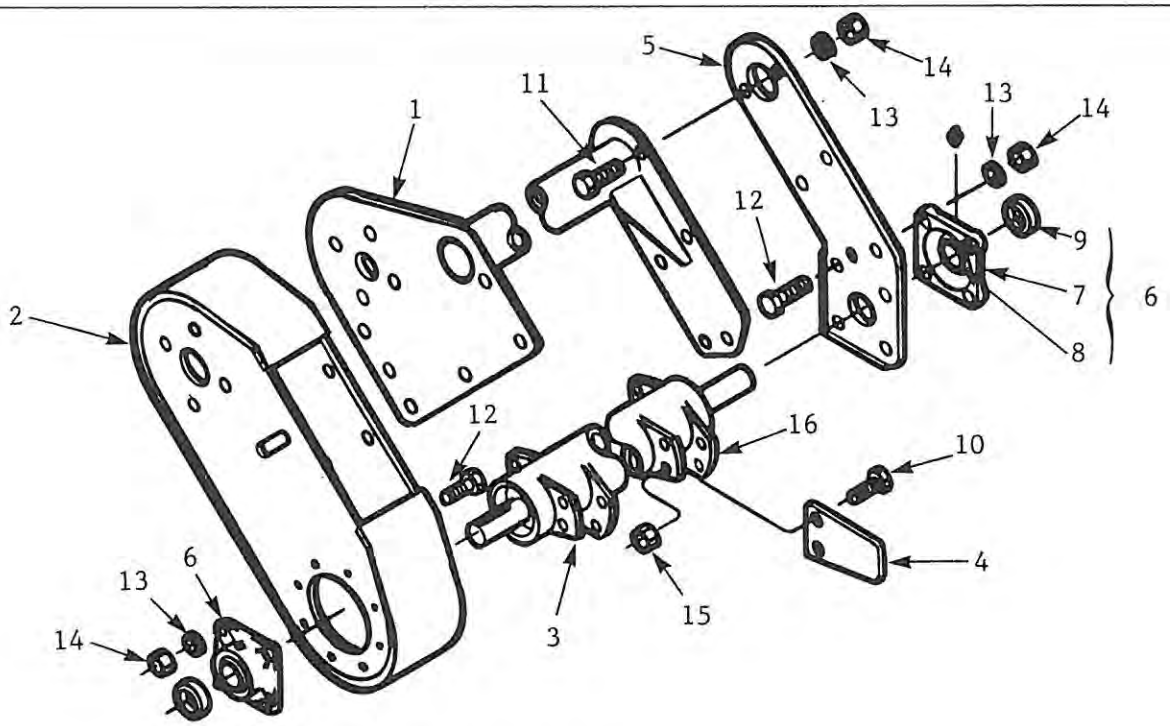
ITEM	PART No.	DESCRIPTION	QTY.
1	303000	Beam, Rockshaft Support - RR	1
2	310190	Plate, Beam Support - LH - RR	1
3	310180	Plate, Beam Support - RH - RR	1
4	143001	Spring, Tension 14 7/8 in. x 29 Coil	2
5	314000	Arm, Hydraulic Pivot - Assembly - RR	1
6	313020	Pin 1 7/16 x 3 7/16 in. (effective)	1
7	118845	Pin, Roll 5/16 x 2 1/2 in.	2
8	118240	Bolt, Eye 5/8 x 5 1/4 in., UNC Gr5, Plated	2
9	118447	Nut, Lock 5/8 in., UNC, GrC, Plated - Uni-torque	2
10	118077	Bolt, Hex 1 x 6 in., UNC, Gr5, Plated	4
11	118510	Washer, Lock 1 in., Plated	4
12	118412	Nut, Hex 1 in., UNC, Gr5, Plated	4

ROCKSHAFT COMPONENTS

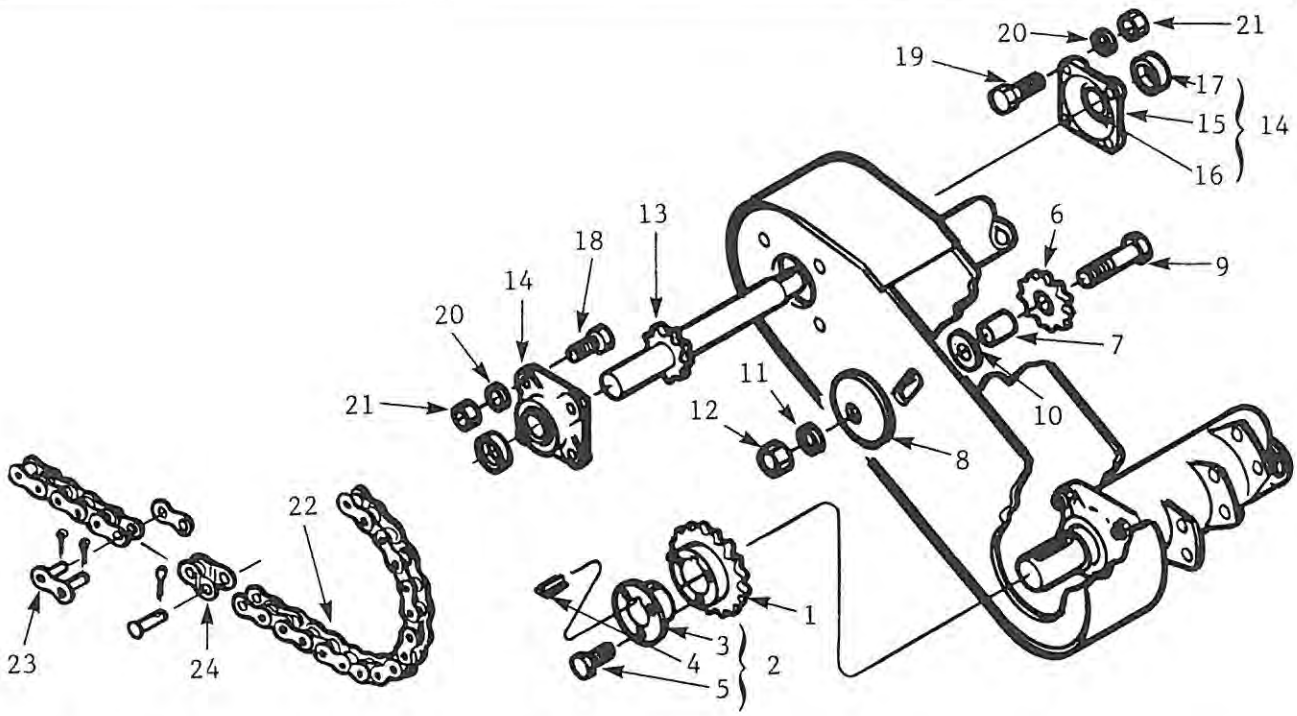


ITEM	PART No.	DESCRIPTION	QTY.
1	302001	Rockshaft Assembly - RR	1
2	110003	Casting, Bearing Base #207	3
3	110015	Casting, Bearing Cap #207 - c/w Grease Fitting	3
4	611080	Shim 2 x 2 x 14 Gage - Galvanized	6
5	118803	Pin Assembly 1 x 3 1/4 in. (effective)	1
6	118830	Pin, Hair 4.5 x 83mm, Plated	1
7	118064	Bolt, Hex 3/4 x 6 in., UNC, Gr5, Plated	2
8	118084	Bolt, Hex 3/4 x 6 1/2 in., UNC, Gr5, Plated	4
9	118509	Washer, Lock 3/4 in., Plated	6
10	118410	Nut, Hex 3/4 in., UNC, Gr5, Plated	4
11	118335	Grease Fitting 1/4-28 AMNF - Thread-Straight	3

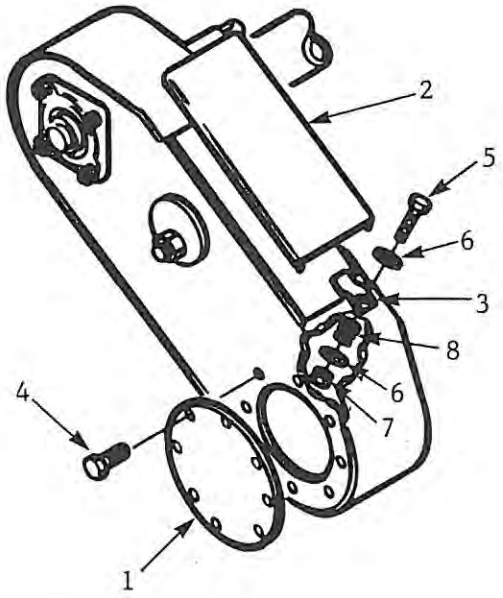
SPIRAL DRUM/CHAIN HOUSING/ROCKSHAFT COMPONENTS



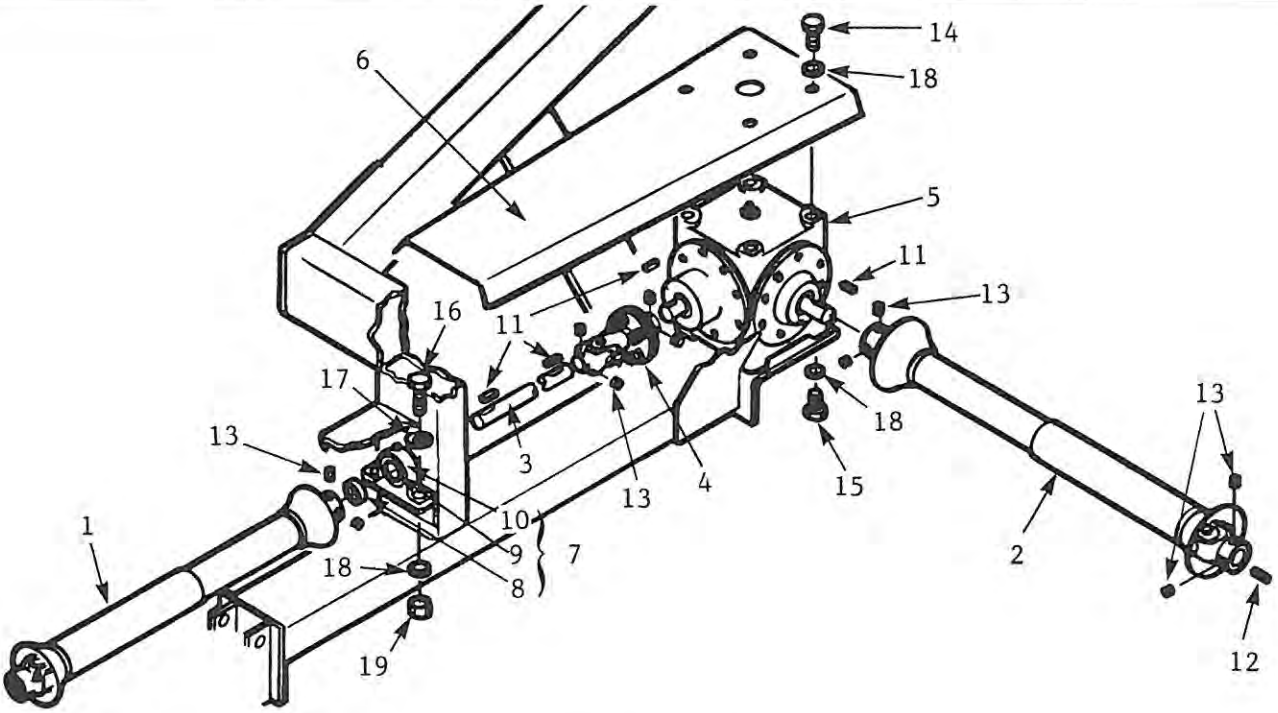
ITEM	PART No.	DESCRIPTION	QTY.
1	302001	Rockshaft Assembly - RR	1
2	304000	Housing, Chain - Assembly - RR	1
3	308000	Drum, Spiral - RR	1
4	305167	Tooth - RR - 1/2 in. thick	83
5	312000	Arm, Rockshaft - Assembly - RR	1
6	117006	Bearing Unit, Flanged - 4 hole - 2 7/16 in.-NTN	2
7	117107	Casting, Flange - 4 hole - 2 7/16 in. Bearing	1
8	117106	Insert, Bearing 2 7/16 in.	1
9	117022	Collar, Lock 2 7/16 in. Bearing	1
10	118141	Bolt, Hex 5/8 x 1 3/4 in., Gr8, Plated (special shank)	166
11	118026	Bolt, Hex 5/8 x 2 in., UNC, Gr5, Plated	12
12	118028	Bolt, Hex 5/8 x 2 1/2 in., UNC, Gr5, Plated	8
13	118508	Washer, Lock 5/8 in., Plated	20
14	118407	Nut, Hex 5/8 in., UNC, Gr5, Plated	20
15	118447	Nut, Lock 5/8 in., UNC, GrC, Plated - Uni-torque	166
16	308020	Holder, Tooth - RR - 5/8 in. thick (weld-on)	a/r



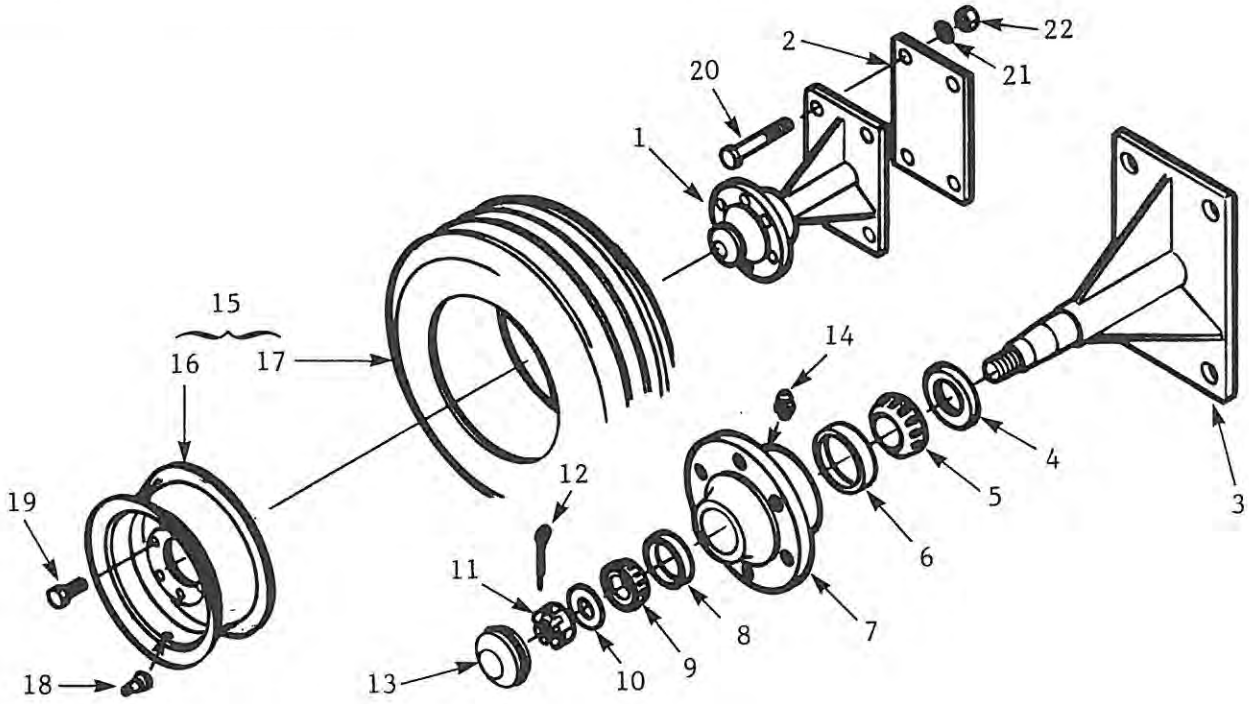
ITEM	PART No.	DESCRIPTION	QTY.
1	122018	Sprocket 100Q17 Tapered Bore	1
2	122021	Bushing 2 7/16 in. Split Taper - Kit (Items 3,4 & 5)	1
3	---	Bushing 2 71/6 in. Split Taper	1
4	122020	Key, Stepped 5/8 x 11/16 x 2 1/2 in.	1
5	118129	Bolt, Hex 3/8 x 1 1/4 in., UNC, Gr5, Plated	3
6	122006	Sprocket, Idler 100A11 c/w Bearing	1
7	304080	Bushing 1.32 OD x 1.05 ID x 2 in.	1
8	304050	Cover, Idler Support - RR	1
9	118076	Bolt, Hex 1 x 5 in., UNC, Gr5, Plated	1
10	118520	Washer, Flat 1 in., Plated	1
11	118510	Washer, Lock 1 in., Plated	1
12	118412	Nut, Hex 1 in., UNC, Gr5, Plated	1
13	305175	Shaft, Input - Assembly - RR (9 tooth)	1
14	117004	Bearing Unit, Flange - 4 hole - 2 in.	2
15	117105	Casting, Flange - 4 hole - 2 in. Bearing	1
16	117104	Insert, Bearing 2 in.	1
17	117088	Collar, Lock 2 in. Bearing - 3 in. OD	1
18	118026	Bolt, Hex 5/8 x 2 in., UNC, Gr5, Plated	4
19	118028	Bolt, Hex 5/8 x 2 1/2 in., UNC, Gr5, Plated	4
20	118508	Washer, Lock 5/8 in., Plated	8
21	118407	Nut, Hex 5/8 in., UNC, Gr5, Plated	8
22	120013	Chain, Roller #100-55 Link	1
23	120005	Link, Connector #100	1
24	120006	Link, Offset #100	1



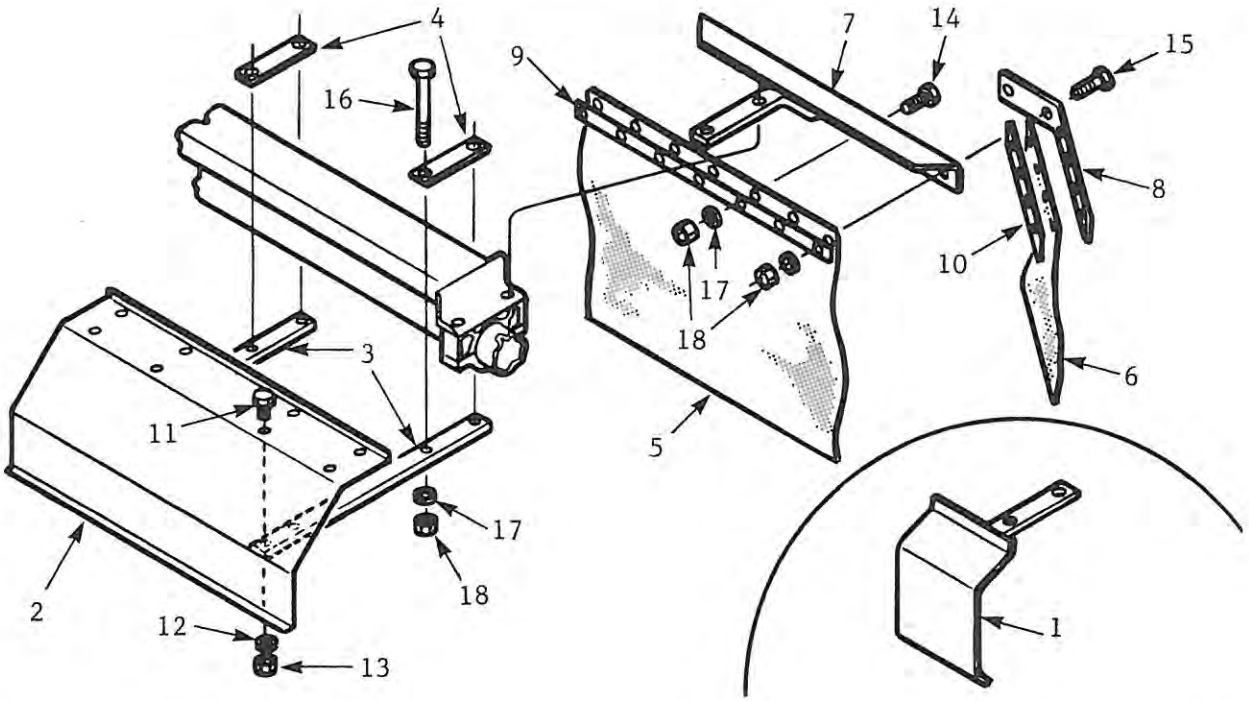
ITEM	PART No.	DESCRIPTION	QTY.
1	304060	Cover, Circular - Housing - RR	1
2	304071	Cover, Chain Housing - RR	1
3	304090	Clip, Lid - Chain Housing - RR	2
4	118302	Capscrew - Self Tap 3/8 x 1 in., Plated	8
5	118086	Bolt, Hex 3/8 x 2 1/2 in., UNC, Gr5, Plated	2
6	118511	Washer, Flat 3/8 in., Plated	4
7	118417	Nut, Lock 3/8 in., UNC, Gr5, Plated	2
8	143006	Spring, Compression 1 in. OD - RR	2



ITEM	PART No.	DESCRIPTION	QTY.
1	119103	Shaft, Slider - Hayes 1240 - 1 3/8 in. - 6 Spline Q.D. (540 PTO)	1
	119108	Shaft, Slider - Hayes 1240 - 1 3/8 in. - 21 Spline Q.D. (1000 PTO)	
2	119144	Shaft, Slider - Hayes 1340 - 1 3/8 in. dia. & 1 3/4 in. dia. Yokes	1
3	310030	Shaft, Drive 1 3/8 dia. x 22 in. long	1
4	119240	Torque Limiter Assembly - RR - DIL	1
5	119001	Gear Box - 2:1 - Hub City - Model 88 - Type F	1
	119002	Gear Box - 3:1 - Hub City - Model 88 - Type F	
6	311010	Shield, Gear Box - RR	1
7	117023	Bearing Unit, Pillow Block 1 3/8 in.	1
8	117024	Collar, Lock 1 3/8 in. Bearing	1
9	117090	Insert, Bearing 1 3/8 in.	1
10	117010	Casting, Pillow Block 1 3/8 in. Bearing	1
11	119030	Key 5/16 x 5/16 x 2 in.	4
12	119132	Key 3/8 x 3/8 x 1 1/2 in.	1
13	118301	Setscrew 3/8 x 1/2 in., UNC-Allen	10
14	118008	Bolt, Hex 1/2 x 1 in., UNC, Gr5, Plated	4
15	118011	Bolt, Hex 1/2 x 1 1/2 in., UNC, Gr5, Plated	4
16	118014	Bolt, Hex 1/2 x 2 in., UNC, Gr5, Plated	2
17	118512	Washer, Flat 1/2 in., Plated	2
18	118504	Washer, Lock 1/2 in., Plated	10
19	118405	Nut, Hex 1/2 in., UNC, Gr5, Plated	2

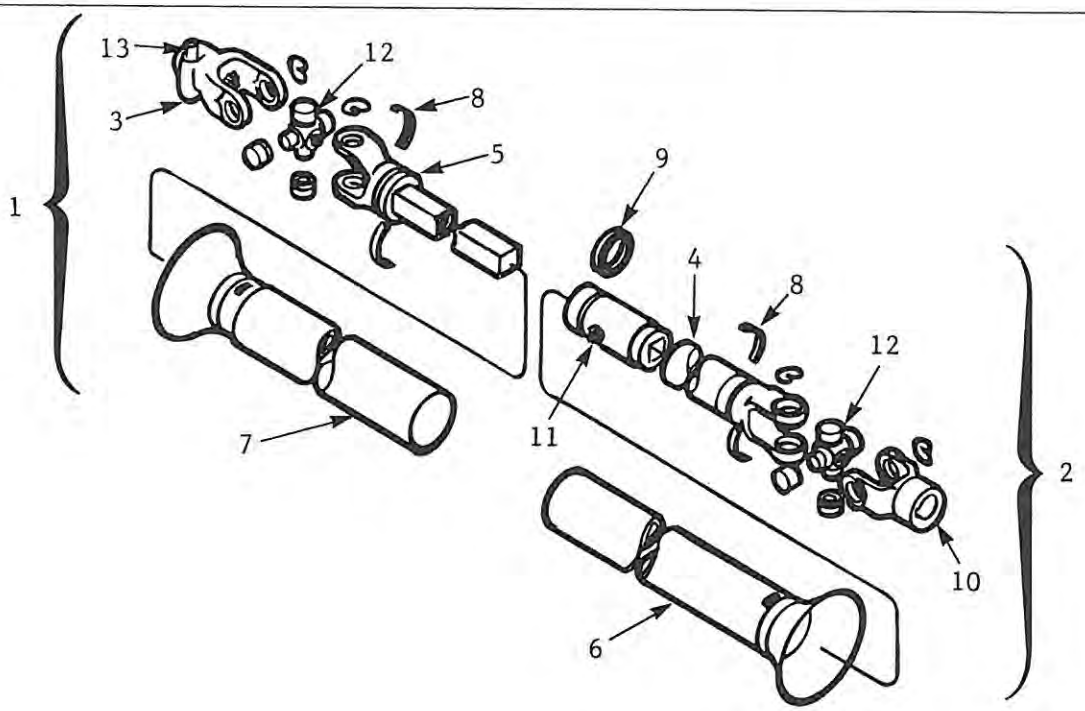


ITEM	PART No.	DESCRIPTION	QTY.
1	131050	Hub and Spindle Assembly - RR - 618	2
2	309021	Plate, Bolt, - 4 hole - 4 5/8 x 6 in. hole centres	2
3	309001	Axle Assembly - RR w/o Hub	1
4	131026	Seal, Dust CR#20140 - 2.000 in. ID	1
5	131022	Cone, Bearing #25580 - 1.750 in. ID	1
6	131023	Cup, Bearing #25520 - 3.265 in. OD	1
7	131013	Hub H618G c/w Grease Fitting	1
8	131025	Cup, Bearing #LM48510 - 2.563 in. OD	1
9	131024	Cone, Bearing #LM48548 - 1.375 in. ID	1
10	131020	Washer, Flat 1 in. SAE	1
11	118423	Nut, Slotted 1 in., UNS, Gr5	1
12	118835	Pin, Cotter 3/16 x 1 1/2 in.	1
13	131016	Cap, Hub H618 & H619 Hub	1
14	118335	Grease Fitting 1/4-28 AMNF Thread-Straight	1
15	131062	Wheel Assembly 9.5 L x 15-6 Ply	2
16	131001	Rim Wheel 15 x 8 - 6 Bolt	1
17	127003	Tire 9.5 L x 15-6 Ply Tubeless	1
18	127006	Valve Stem TR415	1
19	118313	Bolt, Wheel 9/16 x 1 1/16 in., UNF, Gr5, Plated	6
20	118037	Bolt, Hex 5/8 x 6 in., UNC, Gr5, Plated	4
21	118508	Washer, Lock 5/8 in., Plated	4
22	118407	Nut, Hex 5/8 in., UNC, Gr5, Plated	4

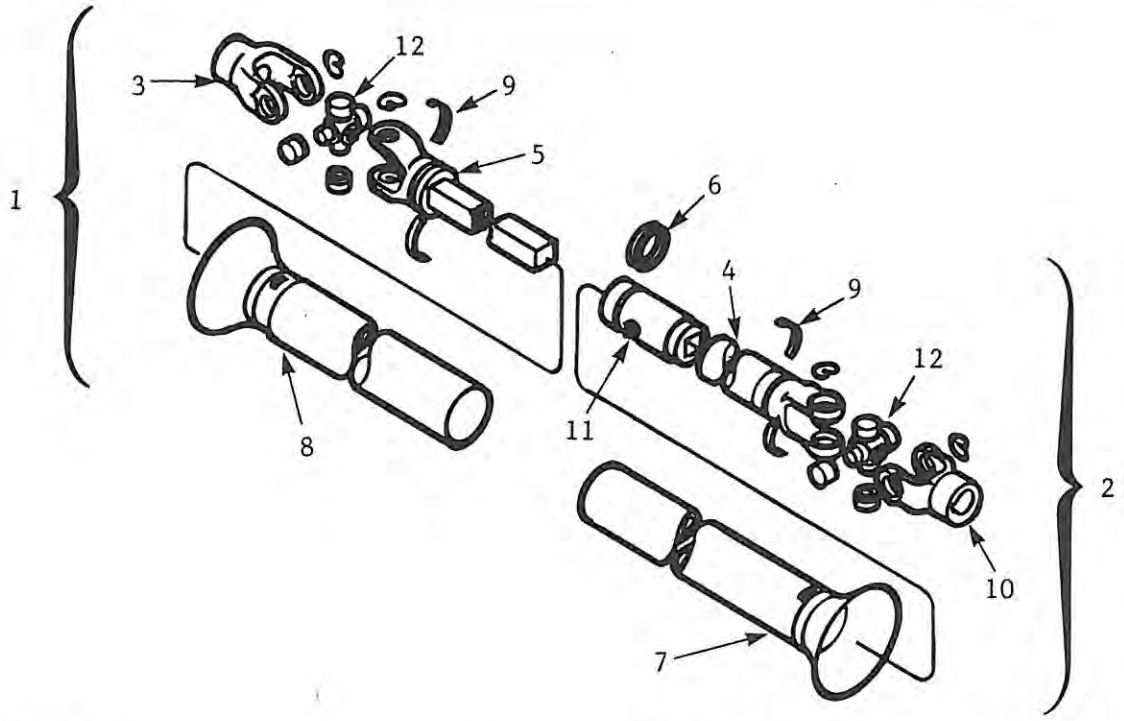


ITEM	PART No.	DESCRIPTION	QTY.
1	350000	Shield, PTO Shaft - RR	1
2	312001	Shield, Drum - RR	2
3	312003	Bar, Shield Mounting - RR	4
4	312002	Bar, Bolt - 2 hole - 6 5/8 in. hole centres	4
5	128001	Flap, Rock Guard 27 1/2 x 36 in.	1
6	128002	Flap, Rock Guard 18 x 27 1/2 in.	1
7	305010	Bracket, Flap - Assembly - RR	1
8	305013	Extension, Rockguard Bracket - RR	1
9	305015	Strap, Flap 35 in. (length overall)	1
10	305016	Strap, Flap 18 in. (length overall)	1
11	118005	Bolt, Hex 3/8 x 1 in., UNC, Gr5, Plated	8
12	118503	Washer, Lock 3/8 in., Plated	8
13	118403	Nut, Hex 3/8 in., UNC, Gr5, Plated	8
14	118011	Bolt, Hex 1/2 x 1 1/2 in., UNC, Gr5, Plated	9
15	118014	Bolt, Hex 1/2 x 2 in., UNC, Gr5, Plated	2
16	118020	Bolt, Hex 1/2 x 4 1/2 in., UNC, Gr5, Plated	8
17	118504	Washer, Lock 1/2 in., Plated	a/r
18	118405	Nut, Hex 1/2 in., Plated	a/r

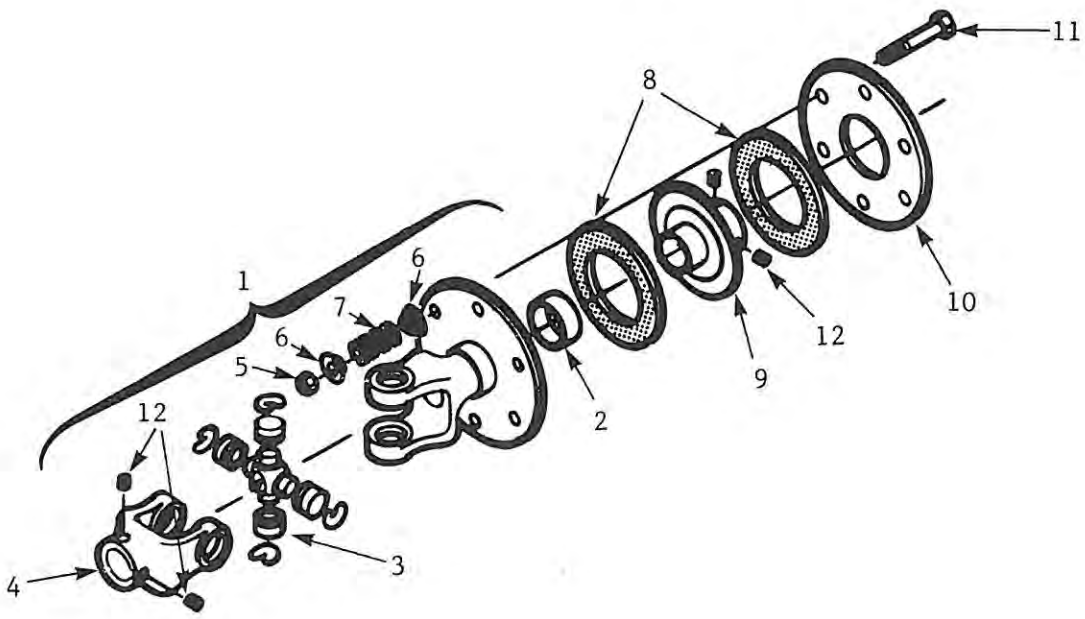
INPUT DRIVE SHAFT (540 & 1000 PTO)



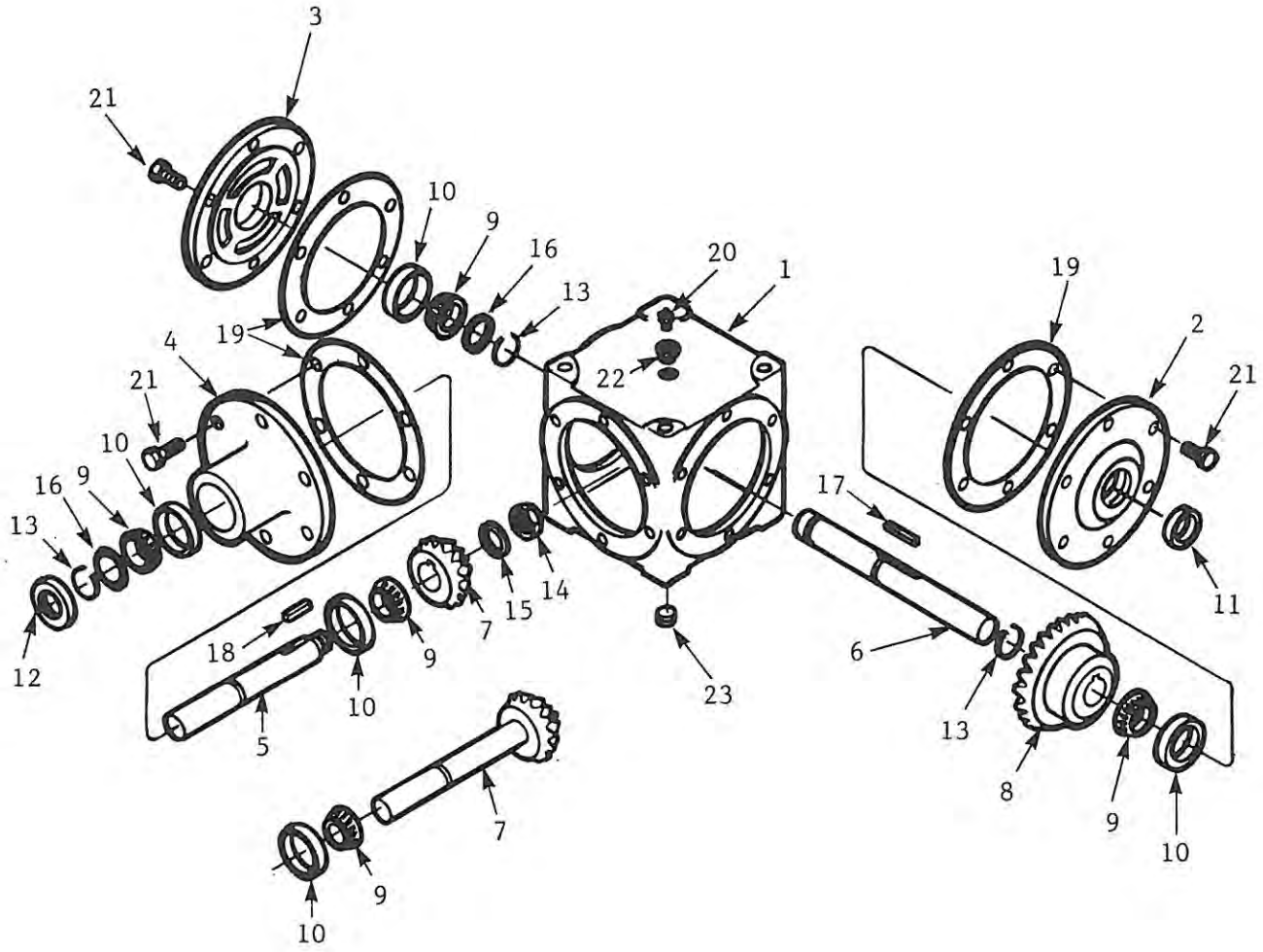
ITEM	PART No.	DESCRIPTION	QTY.
–	119103	Shaft, Slider - Hayes 1240 - 1 3/8 in. - 6 Spline Q.D. (540 PTO)	1
	119108	Shaft, Slider - Hayes 1240 - 1 3/8 in. - 21 Spline Q.D. (1000 PTO)	
1	119081	Shaft, Half-Bar - 6 Spline - Hayes 1240 (540 PTO)	1
	119160	Shaft, Half-Bar - 21 Spline - Hayes 1240 (1000 PTO)	
2	119084	Shaft, Half-Tube 1 3/8 in. Yoke - Hayes 1240	1
3	119109	Yoke 1 3/8 Q.D. - 6 Spline - Hayes 1240	1
	119119	Yoke 1 3/8 Q.D. - 21 Spline - Hayes 1240	
4	119110	Yoke/Tube 15.31 in. long - Hayes 1240	1
5	119111	Yoke/Bar 17.25 in. long - Hayes 1240	1
6	119137	Shield, Inner - PVC 14.5 in. - Hayes 1240	1
7	119138	Shield, Outer - PVC 14.5 in. - Hayes 1240	1
8	119139	Kit, Bearing - PVC Shield - Hayes 1240	1
9	119115	Bearing, Shield Support - Hayes 1240/1340	1
10	119124	Yoke 1 3/8 in. Bore - Hayes 1240	1
11	118332	Grease Fitting 1/8 NPT Thread-Straight	1
12	119118	Kit, Cross and Bearing - Hayes 1240	2
13	119135	Kit, Pin Q.D. - Hayes 1240 (Roll Pin Type)	1
	119136	Kit, Pin Q.D. - Hayes 1240 (New Design)	



ITEM	PART No.	DESCRIPTION	QTY.
-	119144	Shaft, Slider - Hayes 1340 - 1 3/8 in. dia. & 1 3/4 in. dia. Yokes	1
1	119163	Shaft, Half-Bar Side - Hayes 1340	1
2	119164	Shaft, Half-Tube Side - Hayes 1340	1
3	119130	Yoke 1 3/4 in. Bore - Hayes 1340	1
4	119145	Yoke/Tube 32 in. long - PVC - Hayes 1340	1
5	119125	Yoke/Bar 31 in. long - Hayes 1340	1
6	119115	Bearing, Shield Support - Hayes 1240/1340	1
7	119141	Shield, Inner - PVC - 31.3 in. - Hayes 1340	1
8	119142	Shield, Outer - PVC - 31.3 in. - Hayes 1340	1
9	119143	Kit, Bearing - PVC Shield - Hayes 1340	1
10	119131	Yoke 1 3/8 in. Bore - Hayes 1340	1
11	118332	Grease Fitting 1/8 NPT Thread-Straight	1
12	119129	Kit, Cross and Bearing - Hayes 1340	1



ITEM	PART No.	DESCRIPTION	QTY.
-	119240	Torque Limiter - RR - DIL (complete)	1
1	119238	Yoke/Plate Assembly - Torque Limiter - DIL	1
2	226060	Bushing, Bronze 2.5 OD x 2.01 ID x 1 1/2 in.	1
3	119118	Kit, Cross and Bearing - Hayes 1240	1
4	119124	Yoke 1 3/8 in. Bore - Hayes 1240	1
5	118417	Nut, Lock 3/8 in., UNC, Gr5, Plated	6
6	119230	Guide, Spring - Torque Limiter	12
7	119239	Spring, Compression 2 1/32 in. x 5 Coil	6
8	119217	Disc, Friction 3 3/4 in. ID - DIL	2
9	119234	Plate/Hub Assembly, Driven - Torque Limiter	1
10	119231	Plate, Pressure - Torque Limiter	1
11	118139	Bolt, Hex 3/8 x 4 in., UNC, Gr5, Plated	6
12	118301	Setscrew 3/8 x 1/2 in., UNC - Allen	4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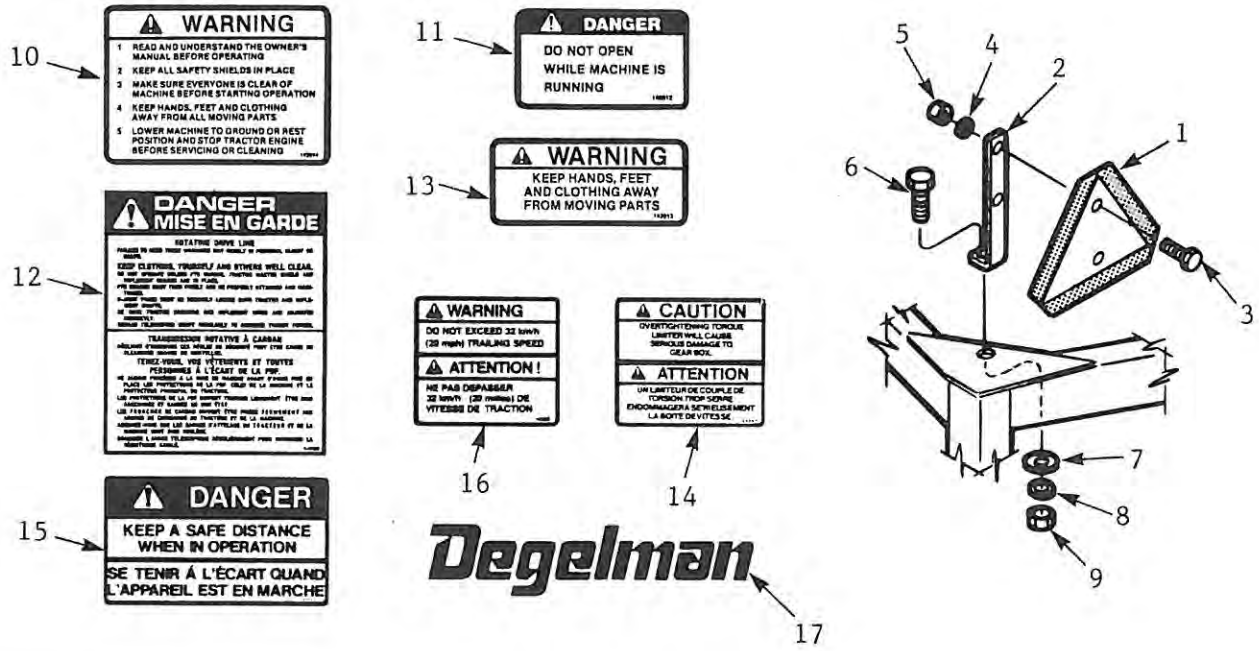
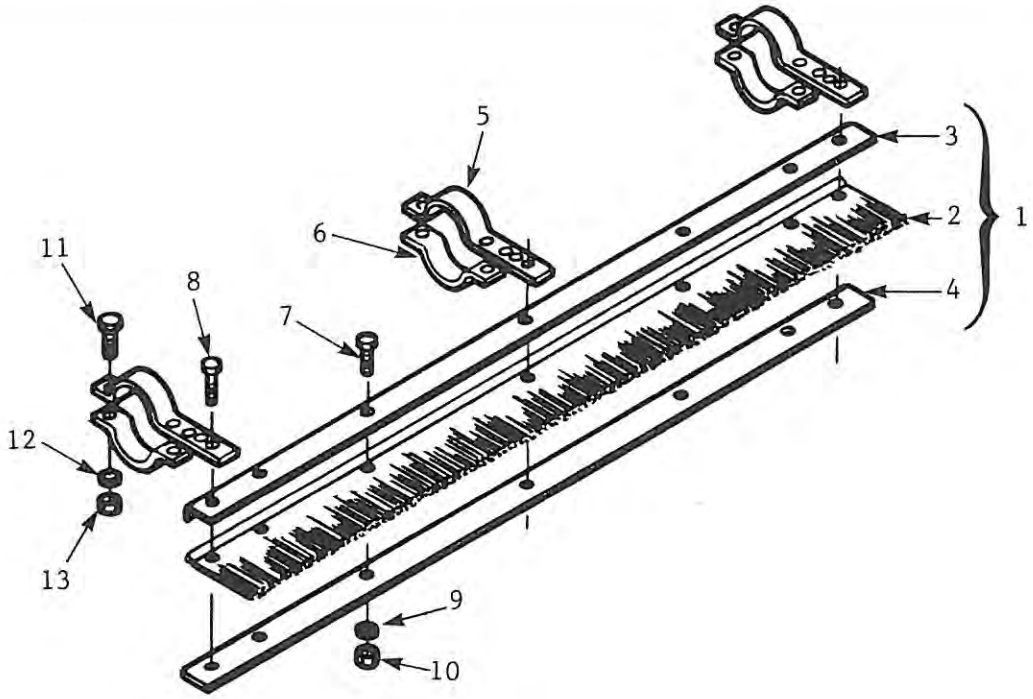
GEAR BOX - 2:1 (540 PTO) & 3:1 (1000 PTO)

ITEM	PART No.	DESCRIPTION	QTY.
-	119001	Gear Box - 2:1 - Hub City - Model 88 - Type F - Complete	1
	119002	Gear Box - 3:1 - Hub City - Model 88 - Type F - Complete	
1	119003	Housing, Gear Box - 2:1 & 3:1 - Hub City	1
2	119004	Cap, Open - 2:1 & 3:1 - Hub City	1
3	119005	Cap, Blank - 2:1 & 3:1 - Hub City	1
4	119006	Cap, Input - 2:1 & 3:1 - Hub City	1
5	119022	Shaft, Input - 2:1 - Hub City	1
6	119023	Shaft, Output - 2:1 - Hub City	1
	119008	Shaft, Output - 3:1 - Hub City	
7	119024	Gear, Pinion - 2:1 - 15 Tooth - Hub City	1
	119007	Gear, Integral Pinion - 3:1 - Hub City	
8	119025	Gear, Crown - 2:1 - 30 Tooth - Hub City	1
	119009	Gear, Crown - 3:1 - 39 Tooth - Hub City	
9	131024	Cone, Bearing #LM48548 - 1.375 in. ID	4
10	131025	Cup, Bearing #LM45810 - 2.563 in. OD	4
11	119012	Seal, Dust CR#13535 - 1.375 in. ID	1
12	119013	Seal, Dust CR#13876 - 1.375 in. ID	1
13	---	Ring, Snap	3
14	---	Nut, Input Shaft	1
15	---	Washer, Input Shaft	1
16	---	Washer, Spacer	2
17	119018	Key 5/16 x 5/16 x 1 3/4 in.	1
18	119028	Key 5/16 x 5/16 x 1 1/2 in.	1
19	---	Shim/Gasket	15
20	119020	Vent, Pressure Relief 1/8 NPT(M)	1
-	119029	Kit, Repair #88 Gear Box - Hub City **(contains Items #11-20 inclusive)**	1
21	118005	Bolt, Hex 3/8 x 1 in., UNC, Gr5, Plated	18
22	119021	Reducer 1/8 NPT(F) x 1/2 NPT(M)	1
23	119016	Plug, Port 1/2 NPT(M) - Allen Head	2



ITEM	PART No.	DESCRIPTION	QTY.
1	142135	Sign, Slow Moving Vehicle - Rigid	1
2	650259	Bracket, Sign Mtg - Slow Vehicle	1
3	118123	Bolt, Hex 1/4 x 1 in., UNC, Gr5, Plated	2
4	118533	Washer, Lock 1/4 in., Plated	2
5	118402	Nut, Hex 1/4 in., UNC, Gr5, Plated	2
6	118024	Bolt, Hex 5/8 x 1 1/2 in., UNC, Gr5, Plated	1
7	118514	Washer, Flat 5/8 in., Plated	1
8	118508	Washer, Lock 5/8 in., Plated	1
9	118407	Nut, Hex 5/8 in., UNC, Gr5, Plated	1
10	142014	Decal, WARNING - "Read and..."	1
11	142012	Decal, DANGER - "Do not open..."	1
12	142110	Decal, DANGER - "Rotating..."	1
13	142013	Decal, WARNING - "Keep hands..."	3
14	142015	Decal, CAUTION - "Overtightening..."	1
15	142109	Decal, DANGER - "Keep distance..."	2
16	142220	Decal, WARNING - "Do not exceed..."	1
17	142009	Decal, DEGELMAN 3 3/4 x 16 1/4 in.	2

OPTIONAL BRUSH ATTACHMENT



ITEM	PART No.	DESCRIPTION	QTY.
-	303108	Shipping List - RR1 - Brush Optional Unit - Complete	1
		Includes the following:	
1	303100	Brush Bundle - RR **(Includes Items #2, 3 & 4)**	2
2	303105	Brush, Nylon - RR - 77 in. long	1
3	303101	Holder, Brush - Top Bar	1
4	303102	Holder, Brush - Bottom Bar	1
5	303103	Clamp, Upper - RR - Brush	3
6	303104	Clamp, Lower - RR - Brush	3
7	118014	Bolt, Hex 1/2 x 2 in., UNC, Gr5, Plated	4
8	118017	Bolt, Hex 1/2 x 2 1/2 in., UNC, Gr5, Plated	3
9	118504	Washer, Lock 1/2 in., Plated	7
10	118405	Nut, Hex 1/2 in., UNC, Gr5, Plated	7
11	118026	Bolt, Hex 5/8 x 2 in., UNC, Gr5, Plated	6
12	118508	Washer, Lock 5/8 in., Plated	6
13	118407	Nut, Hex 5/8 in., UNC, Gr5, Plated	6

INDEX

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