

Instruction Book



Rotary Tillers



Manufactured By:
Helm Welding (1983) Limited
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PO Box 158
Lucknow, Ontario, Canada
NOG 2HO
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Warranty Information

Helm Welding (1983) Limited warrants to the original user that goods & equipment of its manufacture are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment, or where applicable from the date of installation by the dealer.

Helm Welding (1983) Limited will, at its option, repair or replace parts (f.o.b. point of shipment) that are found to be defective.

This warranty is on these further terms and conditions:

1. The equipment must be installed (when applicable), operated and maintained in accordance with Helm Welding's instructions.
2. The equipment will fulfill the function it is designed to perform but due to wide variation in soil conditions, management practices on farms and other conditions beyond the equipment manufacturer's control, no specific level of performance is guaranteed.
3. Excluded from the warranty are damages caused by late delivery, ordinary wear and tear, erosion or corrosion, lightning and other acts of God, accident or alteration, repair or attempted repair or adjustments made by persons not authorized by Helm Welding (1983) Limited, by misuse, abuse or improper handling or operation of the equipment by the purchaser or any third party or poor or no servicing of machine.
4. Helm Welding (1983) Limited shall in no event be responsible for any consequential damages of any nature whether special or general, direct or indirect.
5. Equipment, parts or accessories manufactured by others and not sold under Helm Welding (1983) Limited trademark(s) carry the warranty and remedy provided by their manufacturer only.
6. Any warranty or claim which differs from that herein set out is unauthorized by Helm Welding (1983) Limited and is the warranty solely of the party making it. Helm Welding (1983) Limited makes no other warranty express or implied and the original user's sole remedy for breach thereof is as set forth above.

The warranty registration card must be completed and mailed within thirty (30) days of delivery or installation of the equipment to validate this warranty.

Note: Credits or replacements will not be issued unless documentation is complete and correct.

Date of installation _____ Serial Number _____

Your Luck//Now Dealer _____

Name _____

Address _____

Telephone Number _____

Important Information

This manual has been prepared to provide the owner and operator with the information required to properly operate and maintain the unit. It is important that you, the owner or operator, read this manual prior to operating or performing any maintenance work on the unit. This manual is for all rotary tiller models.

Date of purchase: _____

Serial Number: _____

Information needed for ordering parts.

Model Number: _____

Special Options: _____

This Copy Must
Be Returned To
HELM WELDING (1983) LIMITED

Helm Welding (1983) Limited
P.O. Box 158
Lucknow, Ontario, Canada
N0G 2H0

Rotary Tiller Pre-Delivery Check List & Warranty Registration

- 1. Inspect machine for loosened bolts during transit.
- 2. Check oil level in centre gearbox and sidebox.
- 3. Ensure that PTO drive is fitted properly.
- 4. Grease all bearings (where applicable).
- 5. Run Machine and make sure all functions work properly before delivery to user.
- 6. Check to ensure all safety equipment is in place.

Dealer Signature: _____ Date: _____

Client Signature: _____ Date: _____

Client Address: _____

Model # _____ Serial # _____

Purchaser Retains
This Copy

Helm Welding (1983) Limited
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Dealer Signature: _____ Date: _____

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Model # _____ Serial # _____

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ATTENTION:
Technical Customer Service

Tel: (519) 529-7627 or (519) 529-7000
Fax: (519) 529-3260

Number of pages
including front-page _____

Reader's comments

Helm Welding (1983) Limited is committed to providing excellent documentation. Please, fax or write us your comments on this manual.

Your suggestions help us improve our technical information.

General

Please check appropriate square.

Agree Disagree

- | | | |
|--------------------------|--------------------------|---------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | * I can find the information I want |
| <input type="checkbox"/> | <input type="checkbox"/> | * The table of contents is thorough |
| <input type="checkbox"/> | <input type="checkbox"/> | * Instructions are complete |
| <input type="checkbox"/> | <input type="checkbox"/> | * There are enough illustrations |
| <input type="checkbox"/> | <input type="checkbox"/> | * Illustrations are clear and helpful |

Comments:

Name & Address

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1. Safety

SAFETY TIPS!

TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY AND THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH!



THIS SYMBOL MEANS

ATTENTION!

BECOME ALERT!

YOUR SAFETY IS INVOLVED!

DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. They are limited typically to hazards, which cannot be guarded for functional purposes.

WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that occur when guards are removed. Also used to alert against unsafe practices.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

If you have any questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer or

Helm Welding (1983) Limited, PO Box 158 Lucknow, Ontario Canada, N0G 2H0.

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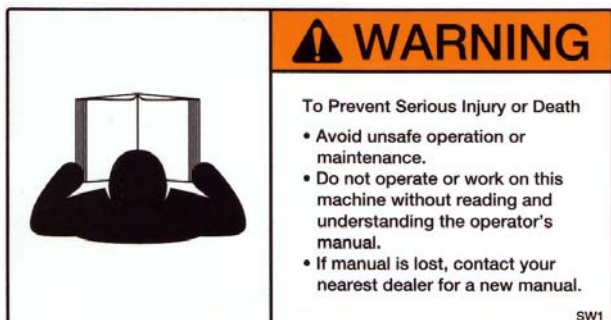
EMAIL: inquiry@lucknowproducts.com



Before operating the Luck//Now Rotary Tiller, carefully read the instructions provided in the following chapters. Proper handling of the equipment is the basis of trouble-free functioning.

SAFETY SUGGESTIONS:

- Make sure that anyone operating the Rotary Tiller has received proper instructions.
- Make sure that everyone is clear of machine before starting and during operation.
- Completely shut down Rotary Tiller and tractor before greasing, adjusting, or unclogging the tiller.
- Keep hands, feet, and clothing away from moving parts.
- Make sure that your tractor has adequate ballast for stability as prescribed in your tractor operator's manual.



SW1: Proper handling of the equipment is the basis of trouble - free functioning. The equipment **MUST** be used only for the intended application.



SW104: Observe the correct PTO speed. **DO NOT** exceed the correct PTO speed.



SW800: Tiller tines are very aggressive. NEVER operate when there is anything in front of the tiller. Completely shut down the power unit and set the brake before proceeding in front of the tiller.

- Children should not be allowed on the product. Clear the area of small children and bystanders before moving the tiller.
- Make sure you are in compliance with all local and provincial regulations regarding transporting equipment on public roads and highways. Lights and slow moving vehicle signs must be clean and visible by overtaking or oncoming traffic when the tiller is transported.
- Be especially observant of the operating area and terrain. Watch for holes, rocks or other hidden hazards. Always inspect the area prior to operation.
- Do not operate near the edge of drop-offs or banks
- Do not operate on steep slopes as overturn may result
- Operate up and down (not across) intermediate slopes. Avoid sudden starts and stops.

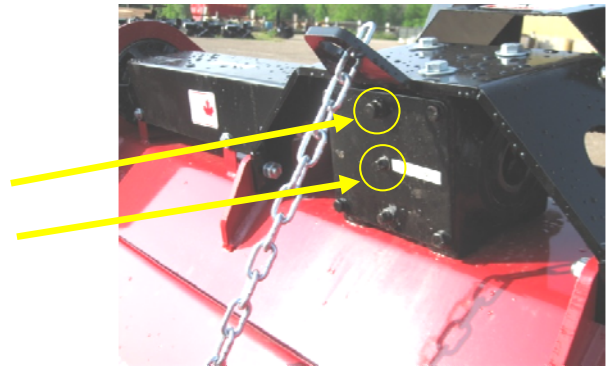
2. Assembly

See section 5 of this manual for lubrication specifications.

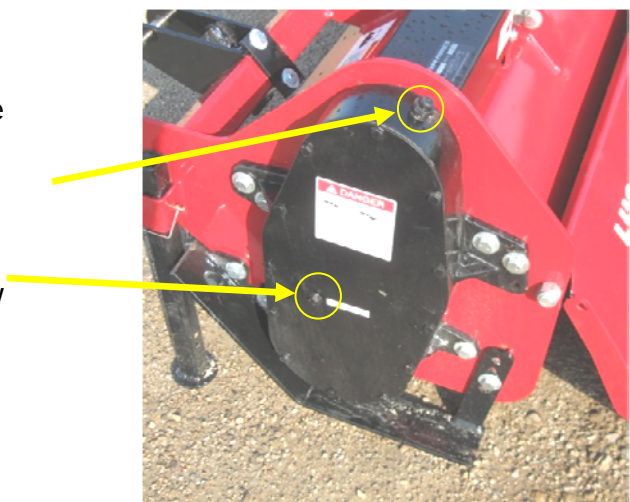
Fill the centre gearbox and side gearbox with oil according to the following instructions.

Grease the tine shaft bearings and the PTO shaft.

1. Be sure the tiller is stable and on level ground.
2. Locate fill plugs on the back of the centre gearbox. Remove the top breather plug and the centre check plug, then fill the gearbox with gear oil through the top hole until the gearbox is half full. Put both plugs tightly back in the gearbox and wipe off any spilled oil.



3. Locate 1/2" pipe plug on top of the side gearbox and the 1/8" Check Plug on the side of the side gearbox plate and remove. See if oil comes out of the Check Plug opening. If oil comes out, replace the Check Plug and go directly to Step 5. If oil does not come out, continue to step 4.



4. Pour gear oil into the top pipe plug on the side gearbox until oil begins to come out of the Check Plug opening.
5. Put the ½" Pipe Plug (on top of the side gearbox) and the 1/8" Check Plug (on the side of the side gearbox) tightly back into place and wipe off any spilled oil.
6. Put grease into the following spots:
 - a. Grease fitting on the out board hub
 - b. The two grease fittings on the universal joints on the PTO
 - c. The two grease fittings on the safety shield and the inner portion of the PTO



3. Start-Up

Tractor Requirements

Use only an adequately sized tractor that can handle the PTO and maneuverability of the unit. The PTO speed requirements of the units are 540 rpm. The PTO horsepower required to operate the units will vary according to the volume of the load, and will be determined by actual use. Recommended horsepower is shown in the chart below.

Model	Recommended Horsepower	
	Minimum	Maximum
BRT-350	15	50
BRT-358	15	50
BRT-366	30	50
BRT-374	30	50
BRT-382	30	50

Installation Instructions for Better PTO Shaft & Gearbox Operation

A proper initial installation will give you years of satisfactory service on your equipment. Please read the following instructions carefully, which have been specially made to help you maintain satisfaction with your purchase.

Danger: Tractor Too Large

It is dangerous to use a tractor, which is too big or too powerful. The tractor may be able to overload the tiller, even if the machine is already at maximum capacity. If the tractor PTO shaft is too high above the ground, extreme angles at PTO shaft universal joints will result, and the life of these u-joints will be shortened dramatically.

Danger: PTO Spline Adaptors

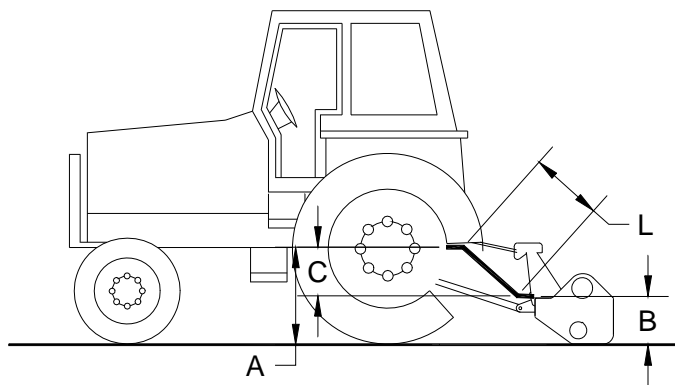
It is dangerous to use a PTO spline adaptor to change your tractor PTO shaft spline to accommodate a different implement PTO spline. Match the right tractor PTO spline and speed with the PTO driveshaft provided with the implement. *Use of a PTO spline adaptor will void the warranty on your implement PTO shaft and driveline.*

PTO Shaft Angles

PTO shafts are made to transmit power with angles at universal joints. However, these angles should be kept to a minimum, the larger the angle, the shorter the life of the PTO shaft. Take for example a tiller made for a tractor capacity of 60-75 HP, which would be attached to a 60 HP tractor, operating at maximum capacity (60 HP continuous).

HP	PTO Angles	Estimated Life in Hours
60 @ 540 rpm	5°	450 hours
	10°	195 hours
	15°	90 hours
	20°	40 hours
	25°	20 hours

How to Determine PTO Angle

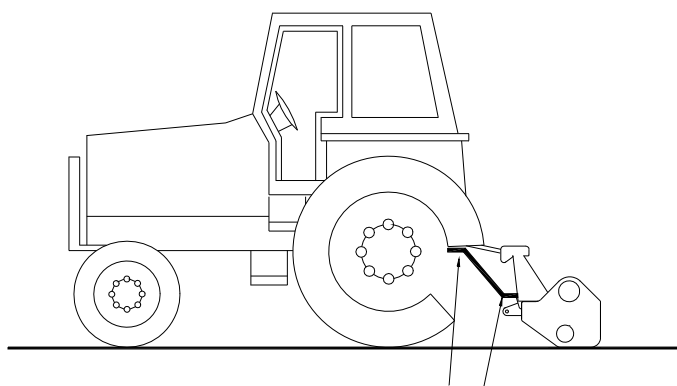


A = PTO height @ tractor
 B = PTO height @ tiller
 C = A - B
 L = Cross centre distance in working position

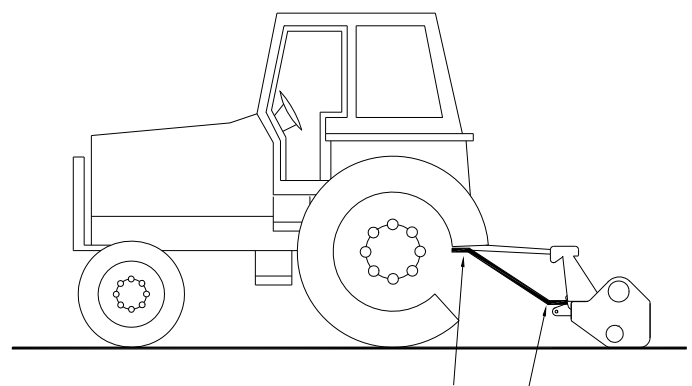
- 1) Lower tiller on ground.
- 2) Take measurements A, B & L
- 3) Subtract B from A ($A - B = C$)
- 4) Divide L by C ($L/C = F$)
- 5) Compare F Factor in table below to find PTO angle (interpolate if necessary).

F FACTOR	ANGLE
6.00	10°
3.75	15°
2.75	20°
2.15	25°
1.75	30°

Previous examples clearly demonstrate that universal joint angle is directly related with life of your PTO shaft and u-joints. In order to reduce angle, it is necessary to increase the distance between your tiller and tractor.



AVOID TOO LARGE ANGLES @ PTO JOINTS

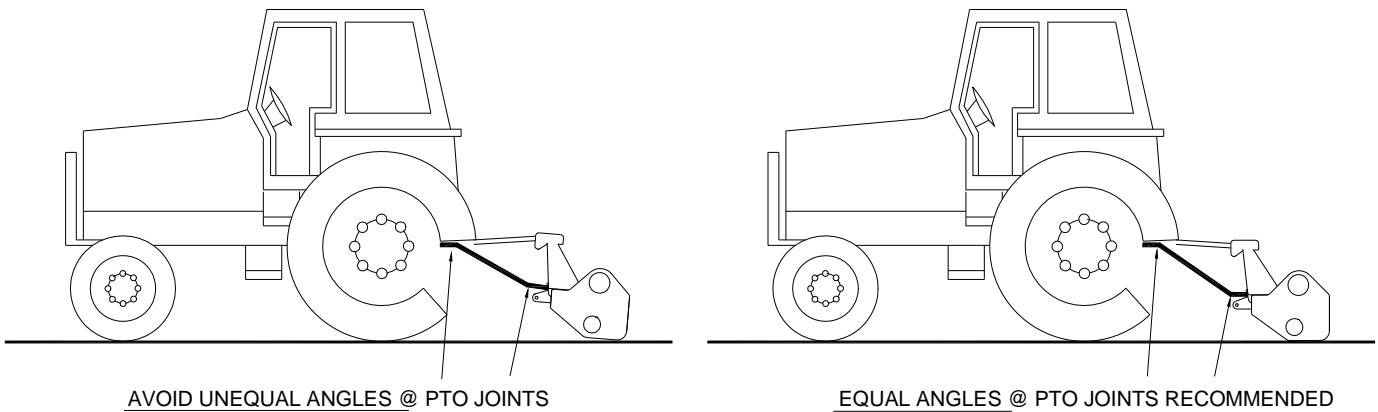


REASONABLE ANGLES @ PTO JOINTS

If it is impossible to increase the distance between tiller and tractor, in order to maintain a reasonable angle at the PTO, it is recommended to use a larger PTO, that is, a greater capacity PTO (please refer to your dealer for more details).

Equal PTO Angles

Changing the tiller angle can become harmful to the PTO. With the angle at each end being unequal, there will be drastic increase of load on cross-kit and bearings. To avoid these problems, it is recommended to keep tractor PTO shaft and tiller input shaft always parallel.



Maximum Length of PTO Shaft

WARNING- Telescopic tubes of a PTO should be set to minimum length to meet ideal conditions for power transmission.

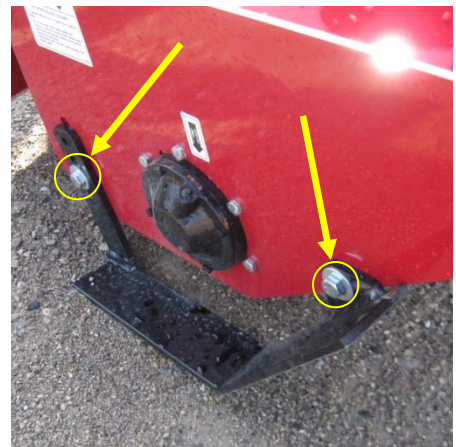
The minimum overlap between PTO tubes should be equal to 1/3 of the length of one half of the tube by itself.

Adjusting Working Depth

It is necessary to perform all maintenance work on the Rotary Tiller before every use as well as clearly understanding the safety information. Remember to NEVER make any adjustments to the Rotary Tiller while the tractor is running.

1. Once the Rotary Tiller is attached to the tractor, adjust the tractor lift arms so that the rotor of the tiller is parallel to the ground.

2. Raise the tiller and put appropriate support blocks under the tiller. Now, adjust the skids so that you have your desired till depth and the tiller can till the same depth on each side. This is achieved by loosening the nut and bolt on the front of the skid. Do not remove. Remove the bolt holding the adjustment bracket on the rear of the skid. Adjust the skid up or down in the desired position, then secure the bolt in the new position. Set the opposite skid in the same position. Re-tighten both front and rear bolts.



3. Also adjust the back gate with the chain until you have the preferred opening for your use. Next, you can raise the tiller, remove the support blocks and place the tiller onto the ground.
4. Let your tractor idle and slightly lift the tiller off the ground, engage the PTO and gradually increase the RPM to 540 (PTO RPM), the speed which the Rotary Tiller is designed to run at. Putting the tractor into a lower gear and beginning to move forward, slowly lower the tiller and allow the blades to gradually engage the soil.
5. It is highly recommended that you clean all the debris from the blades after every use, as well as replace any missing or unreadable safety decals. Store tiller in a dry environment.

Attention:

Allowing the tractor engine or rotary tiller to stall or bog down will cause unnecessary wear on both the tiller and the tractor. In the event that this happens, decrease speed and raise the tilling depth of the tiller. NEVER ATTEMPT TO REMOVE OBJECTS FROM ROTOR BLADES WHILE TRACTOR IS RUNNING AND BLADES ARE STILL MOVING.

Damage could be caused to the Rotary Tiller if the speed is too fast. Also NEVER try to turn or go in reverse with the PTO engaged and the tiller in the ground.

4. Maintenance



Note: Stop the unit, disengage PTO drive and completely shut down the tractor engine, or completely unhook from the tractor before making any adjustments or doing any service.

Grease Bearings

For the best results, the grease should be pumped into the bearings slowly until a very slight bead of grease forms around the bearing seals on the shaft. This bead, in addition to acting as an indication of adequate lubrication, provides additional protection against the entry of foreign matter. To prevent premature bearing failure, always ensure that the grease nipple, grease gun end, and the grease itself, is clean and free of any dirt, grit, paint or foreign matter.

PTO Drive Shaft

It is **important** that the owner/operator read this section and the information supplied by the PTO manufacturer. The unit incorporates a PTO coupling shaft containing several important features and warnings:

1. Safety Shields - These shields should be left in place at all times to prevent injury.
2. Slip Clutch - The PTO shaft used on current model uses a slip clutch mechanism to protect the tractor and tiller from serious damage.
3. Do not wear loose clothing when operating the PTO, or when near any rotating equipment.
4. To avoid injury, do not clean, adjust, unclog or service PTO driven equipment when tractor is running.
5. Never exceed the recommended operating speed for the particular equipment in use.
6. PTO shafts must only be used for their intended purpose and are designed for only that machine.
7. Push locking pin and simultaneously push PTO drive shaft onto PTO shaft until the locking device engages. Ensure that the PTO shaft is securely connected before use.

8. The maximum joint angles must be observed or serious injury and damage could occur.
 - a. Continuous Operation- 25 deg.
 - b. Short duration- 45-50 deg.
 - c. Non-rotating- 80 deg.
9. Avoid contact between the PTO shaft and tractor or implement.
10. The chain is intended to prevent the shield from rotating against non-moving parts, preventing shield damage. A properly installed chain will increase the service life of the shield.
11. Chains must be fitted so as to allow sufficient rotation of the shaft in all positions. Be sure that chain does not become entangled with drawbar hitch or other restrictions during operation or transport.
12. The PTO drive shaft must not be suspended from the chain.
13. Using quality grease, pump grease in the grease zerks before starting work, and every 8 operating hours. Clean and grease the PTO drive shaft before each period of prolonged non-use. The molded nipples on the shield near each bearing are intended as grease fittings and should be lubricated every 8 hours of operation. Telescoping members must have lubrication to operate successfully regardless of whether a grease fitting is provided. Those without fittings should be pulled apart and grease should be added manually. Check and grease the guard tubes in winter to prevent freezing.



Replacing Blades

Pay special attention to the bolts on the blades. The bolt head should be placed on the blade side, with the washer and the nut on the flange side, so that the bolts cannot loosen while the equipment is being used.

When several blades must be replaced, replace one blade at a time, so that the initial helical pattern is maintained.

Bolts holding the blades on should be torqued to 85 ft-lbs.

5. Maintenance Schedule

The following items are to be checked and, if necessary, corrective action taken. This schedule is designed for units operating under normal conditions. If the unit is operating in adverse or severe usage conditions, it may be necessary for the items to be checked and serviced more frequently.

It is recommended to check the torque on the blade bolts after the first initial 2 hours of operation.

Check & Inspect the Following:	8 Hrs.	25 Hrs.	100 Hrs.
PTO	X*		
Blade bolts - check tightness	X		
Gearbox Oil Level		X	
Outboard Hub Lubrication	X*		
Gearbox & Sidebox - drain & refill			X [†]

*In severe conditions these items may require more frequent service.

[†]Drain & Refill after the first 100 hours.

Off Season

During the off season, when the tiller is not to be used for a prolonged period of time, it is recommended that the bearings are filled with grease and the PTO is well greased as well.

Lubrication Specifications

Bearings
Splined Drive Line Yokes
Shear Bolt Yokes
PTO Shaft NLGI #2 or #3 Lithium Base Grease

Centre Gearbox / Sidebox 40/50 or 80/90 Gear oil