

# **BEFCO<sup>®</sup>**

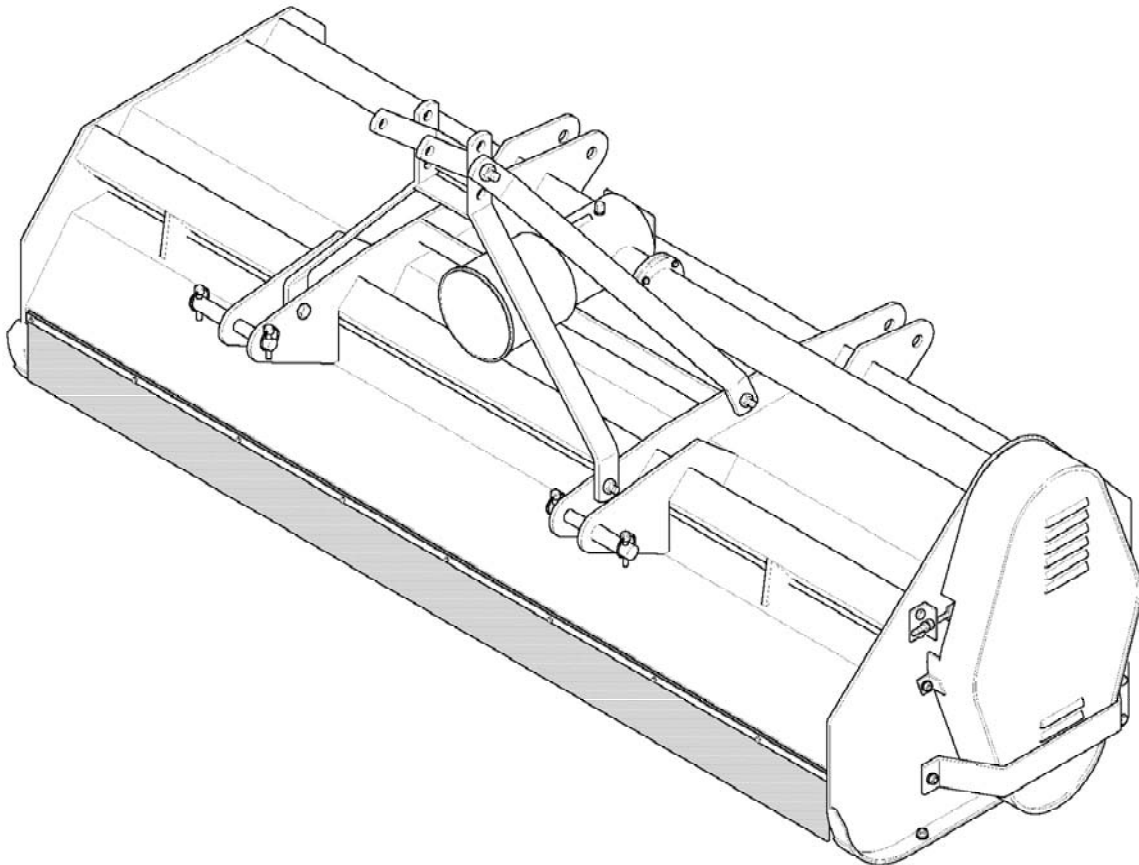
## **Operator's Manual**

### **HURRICANE**

#### **Flail Mower**

**H70-060, H70-072, H70-088**

(from serial #251882 to serial #279835)



The operator's manual is a technical service guide and must always accompany the machine.

**Manual 971-132B**

**October 2019**

# SAFETY

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!*

## Signal Words

Note the use of the signal words DANGER, WARNING and CAUTION with the safety messages. The appropriate signal words for each have been selected using the following guidelines:



**DANGER:** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



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



**CAUTION:** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

# INDEX

<b>1 - GENERAL INFORMATION</b>	4
1.01 - General	4
1.02 - Warranty Information	4
1.03 - Model and Serial Number ID	5
<b>2 - SAFETY PRECAUTIONS</b>	6
2.01 - Preparation	6
2.02 - Starting and Stopping	7
2.03 - Messages and Signs	7
<b>3 - OPERATION</b>	10
3.01 - Operational Safety	10
3.02 - Set Up	12
3.03 - Cutting Height Adjustment	13
3.04 - Gauge Wheels (Option)	14
3.05 - Pre-Operational Check	14
3.06 - Attaching to the Tractor	15
3.07 - Start Up	16
3.08 - Working Speed	17
3.09 - Operating Techniques	17
3.10 - Uneven Terrain	18
3.11 - Removing Mower from the Tractor	19
3.12 - Transport	19
<b>4 - MAINTENANCE</b>	20
4.01 - Maintenance Safety	20
4.02 - Service	21
4.03 - Blade Maintenance	23
4.04 - Blade Options	25
4.05 - Belt Tension	25
4.06 - Belt Replacement	26
4.07 - Pulley Alignment	27
4.08 - Reverse Gearbox Direction	27
4.09 - Reverse Rotor Direction	27
4.10 - Driveline	28
4.11 - Overrunning Clutch	29
<b>5 - REPAIR PROCEDURES</b>	31
5.01 - Gearbox	31
5.02 - Rotor Shaft	31
5.03 - Suggested Spare Parts	32
5.04 - Storage	32
<b>6 - TROUBLESHOOTING</b>	33
<b>7 - PRE-DELIVERY CHECKLIST</b>	34
<b>8 - WARRANTY</b>	35
<b>PARTS MANUAL</b>	39

# 1 - GENERAL INFORMATION

Thank you and congratulations for having chosen our implement. Your new flail mower is a technologically advanced machine constructed of high quality, sturdy components that will fulfill your working expectations. Read this manual carefully. It will instruct you on how to operate and service your mower safely and correctly. Failure to do so could result in personal injury and/or in equipment damage.

## 1.01 - General

The implement described in this manual is to be used with tractors with PTO at 540 rpm and clockwise rotation.



**CAUTION:** Always ensure that the coupling of the implement with the tractor is done at the same PTO speed and direction of rotation. Do not operate this implement at a PTO speed or direction of rotation other than that shown on the implement. Serious damage can occur to the machine and/or the operator.



**CAUTION:** Unless otherwise specified, all hardware is metric. Use only metric tools on metric hardware. Other tools that do not fit properly can slip and cause injury.



**CAUTION:** Right hand and left hand sides of the implement are determined by facing in the direction the implement will travel when going forward (see fig. 2).

## 1.02 - Warranty Information

Carefully read the Warranty section<sup>1</sup>, detailing coverage and limitations of this warranty. **Warranty** is provided for customers who operate and maintain their equipment as described in this manual. Warranty registration is accomplished by the dealer by completing and forwarding the **Warranty Registration** form to the Company, along with a copy of the dealer's invoice. It is in your best interest to ensure that this has been done.

Warranty does not cover the following:

1. Cleaning, transporting, mailing and service call charges.

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<sup>1</sup> See Chapter 8 - Warranty.

2. Normal wear items such as belts, blades, bearings, drivelines, shear pins, slip clutches, etc.
3. Depreciation or damage caused by normal wear, accidents, improper maintenance, improper protection or improper use.
4. The use of non-original spare parts and accessories.

Your Authorized Company Dealer has genuine parts in stock. Only these approved replacement parts should be used.

This limited warranty covers defective material and workmanship. The cost of normal maintenance or repairs for accidents or improper use and related labor will be borne by the owner.

### 1.03 - Model and Serial Number ID

Attached to the frame is an ID plate showing the model and the serial number. Record your implement model and serial number in the space provided below. Your dealer needs this information to give you prompt, efficient service when you order parts.

<b>BEFCO</b>	1781 S. Wesleyan Blvd. – P.O. Box 6036 Rocky Mount, N.C. 27802 – U.S.A. Tel: 1.252.977.9920 Fax: 1.252.977.9718
<b>MODEL:</b>	<input type="text"/>
<b>SERIAL:</b>	<input type="text"/>
<b>VERSION:</b>	<input type="text"/>

## 2 - SAFETY PRECAUTIONS

Safety is the primary concern in the design and manufacture of our products. Unfortunately our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of 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 equipment. It is the operator's responsibility to read and understand all safety and operating instructions in the manual and to follow these.

Allow only properly trained personnel to operate the mower. Working with unfamiliar equipment can lead to careless injuries. Read this manual, and the manual for your tractor, before assembly or operation, to acquaint yourself with the machines. It is the mower owner's responsibility, if this machine is used by any person other than yourself, is loaned or rented, to make certain that the operator, prior to operating, reads and understands the operator's manuals and is instructed in safe and proper use.

### 2.01 - Preparation



1. Before operating equipment read and understand the operator's manual and the safety signs (**see fig. 2**).
2. Thoroughly inspect the implement before initial operation to assure that all packaging materials, i.e. wires, bands, and tape have been removed.
3. Personal protection equipment including hard hat, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintaining and/or repairing the implement.
4. Operate the mower only with a tractor equipped with an approved Roll-Over-Protective-System (ROPS). Always wear your seat belt. Serious injury or even death could result from falling off the tractor.
5. Clear area to be cut of stones, branches or other debris that might be thrown, causing injury or damage.
6. Operate only in daylight or good artificial light.
7. Ensure mower is properly mounted, adjusted and in good operating condition.
8. Ensure that all safety shielding and safety signs are properly installed and in good condition.

## 2.02 - Starting and Stopping



1. Be sure that no one is near the machine prior to engaging or while the machine is working.
2. Be sure the tractor is in "Neutral" before starting engine.
3. Mower operating power is supplied from tractor PTO. Refer to your tractor manual for PTO engagement and disengagement instructions. Always operate PTO at 540 rpm. Know how to stop the tractor and mower quickly in case of an emergency.
4. When engaging PTO, the engine rpm should always be low. Once engaged and ready to start cutting, raise PTO speed to 540 rpm and maintain throughout cutting operation.
5. Check the tractor master shield over the PTO stub shaft. Make sure it is in good condition and fastened securely to the tractor. Purchase a new shield if old shield is damaged or missing.
6. After striking an obstacle, disengage the PTO, shut the tractor down, wait for all moving parts to come to a complete stop and thoroughly inspect for damage before restarting.
7. Never engage the PTO until the mower is in the down position and resting on the ground. Never raise the mower until all blades have come to a complete stop.
8. To park the vehicle safely, stop vehicle on a level surface (not on a slope), disengage PTO, engage the parking brake, stop the engine, remove the key, and wait for engine and all moving parts to stop before leaving the operator's seat.
9. Stay clear of rotating drivelines. Entanglement in rotating driveline can cause serious injury or death. Wear close fitting clothing. Stop the engine and be sure PTO driveline is stopped before getting near it.

## 2.03 - Messages and Signs





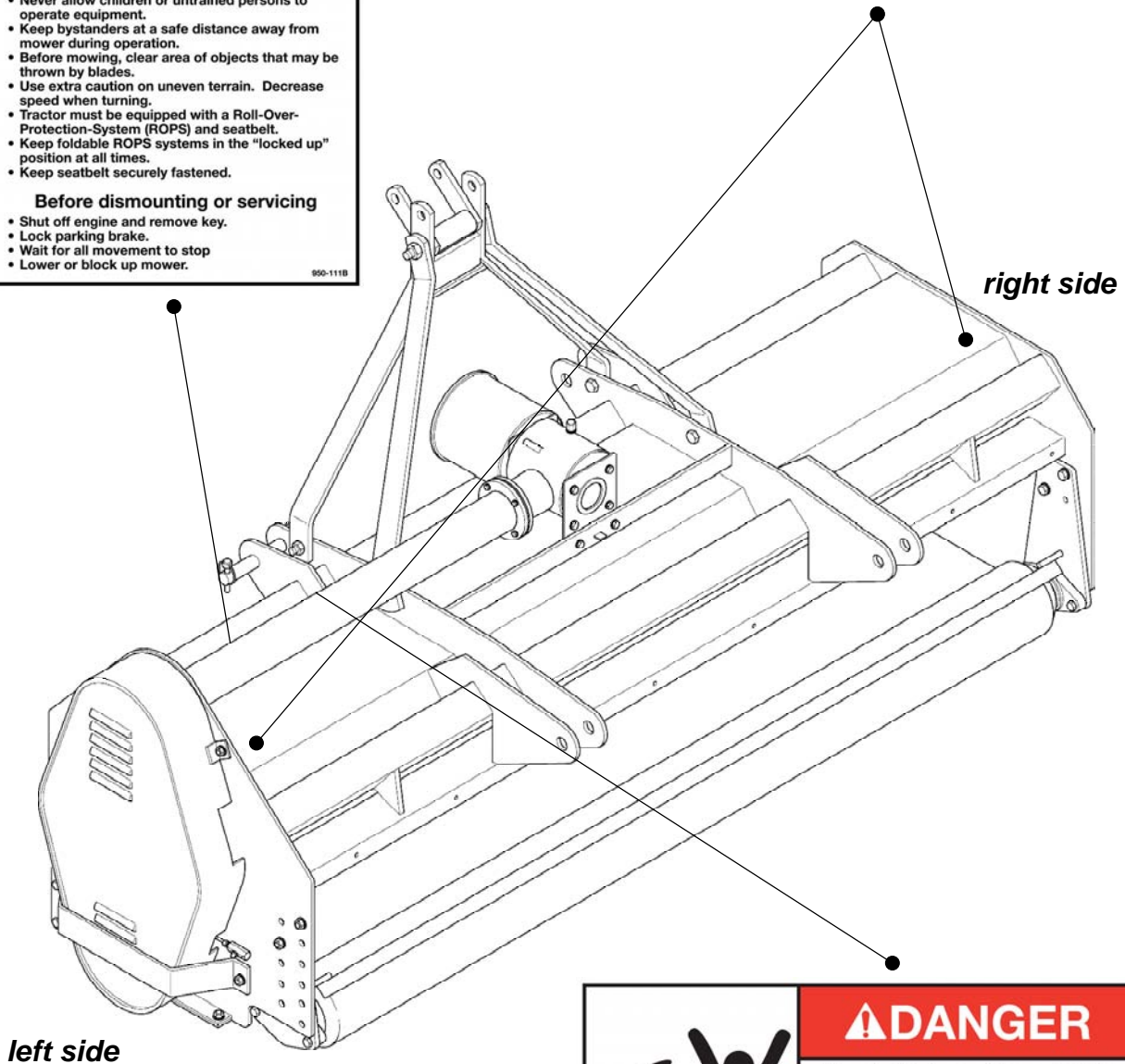
1. Read and adhere to all safety and operating decals on this machine (**see fig. 2**).
2. Before dismounting tractor: Allow moving parts to stop, stop engine, set brake and remove the key of unattended equipment.
3. Keep away from rotating blades and driveline.
4. Keep guards and shields in place and in good condition.
5. Do not mow with bystanders in area.
6. Allow no riders on tractor or mower.
7. Allow moving parts to stop before repair.
8. Securely support mower before working underneath.

Additional warning and operating decals are available at no extra charge. Please specify model and serial number when ordering.

Fig. 2 - Safety decals; replace immediately if damaged.

<h2>⚠ CAUTION</h2>
<p><b>To avoid serious injury:</b></p> <ul style="list-style-type: none"> <li>• Read Operator's Manual before operating, servicing or repairing equipment. Follow all safety rules and instructions. (Manuals are available from your selling dealer).</li> <li>• Know location and function of controls.</li> <li>• Keep all shields in place and in good condition.</li> <li>• Stay clear of power driven parts.</li> <li>• Never allow riders.</li> <li>• Never allow children or untrained persons to operate equipment.</li> <li>• Keep bystanders at a safe distance away from mower during operation.</li> <li>• Before mowing, clear area of objects that may be thrown by blades.</li> <li>• Use extra caution on uneven terrain. Decrease speed when turning.</li> <li>• Tractor must be equipped with a Roll-Over-Protection-System (ROPS) and seatbelt.</li> <li>• Keep foldable ROPS systems in the "locked up" position at all times.</li> <li>• Keep seatbelt securely fastened.</li> </ul> <p><b>Before dismounting or servicing</b></p> <ul style="list-style-type: none"> <li>• Shut off engine and remove key.</li> <li>• Lock parking brake.</li> <li>• Wait for all movement to stop</li> <li>• Lower or block up mower.</li> </ul> <p style="text-align: right; font-size: small;">950-1118</p>

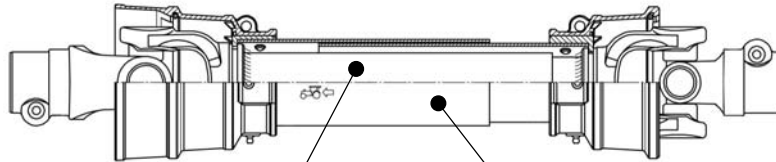
	<h2>⚠ DANGER</h2>
	<p><b>Rotating blades hazard</b> To prevent serious injury or death:</p> <ul style="list-style-type: none"> <li>• Keep hands, feet, hair and clothing away from moving parts.</li> <li>• Do not go under frame when blades are turning or engine is running. Keep others away.</li> <li>• Disconnect and lockout power source before adjusting or servicing.</li> </ul> <p><b>Blade contact can cause serious injury or death</b></p> <p style="text-align: right; font-size: x-small;">950-2098</p>



	<h2>⚠ DANGER</h2>
	<p><b>Avoid injury from PTO</b></p> <ul style="list-style-type: none"> <li>• Entanglement can cause serious injury or death.</li> <li>• Keep driveline shields in place &amp; in good condition.</li> <li>• Keep hands, feet and clothing away.</li> <li>• Operate only with 540 RPM.</li> </ul> <p style="text-align: right; font-size: x-small;">950-1098</p>



**Safety decals; replace immediately if damaged.**



*placed on outer tube*



*placed on outer shield*

## 3 - OPERATION

The Hurricane is a sturdy and easy to use flail mower. It is especially designed to offer the best performance wherever professional, highly accurate, safe mowing are required. The Hurricane H70 is engineered to be used with tractors from 30 to 70 HP and 540 rpm. It is produced in three mowing sizes of 60", 72" and 88".

The tractor PTO power is transferred via a driveline to the gearbox on the mower. From this, the power is sent along an horizontal drive shaft to a side pulley connected to a second pulley by two belts which are attached to an horizontal rotor.

This rotor, which must be perfectly balanced due to its high rotation speed, carries wide overlapping blades which are mounted on double pivot blade carriers.

The blades turn in a clockwise direction, going against the direction of travel. This cutting motion from bottom to top allows for a much cleaner finish. It is also possible to change the direction of rotation by simply inverting the position of the crown inside the gearbox<sup>2</sup>.

Our flail mower can be either front or rear tractor mounted. The gearbox can be turned 180 degrees and the three point hitch is reversible (see fig. 3).

The cutting height is controlled by the rear roller<sup>3</sup>.

### 3.01 - Operational Safety



**CAUTION:** Our mowers are designed considering safety as the most important aspect and are the safest available in today's market. Unfortunately, human carelessness can override the safety features built into our machines. Injury prevention and work safety, aside from the features on our mowers, are very much due to the responsible use of the equipment. It must always be operated prudently following with great care, the safety instructions laid out in this manual.



1. The use of this equipment is subject to certain hazards which cannot be prevented by mechanical means or product design. All operators of this equipment must read and understand this entire manual, paying particular attention to safety and operating instructions, prior to using.
2. Do not operate the tractor and mower when you are tired, sick or when using medication.
3. Keep all helpers and bystanders at least 100 yards from a flail mower. Only properly trained people should operate this machine.

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<sup>2</sup> See Section 4.09 - Reverse Rotor Direction.

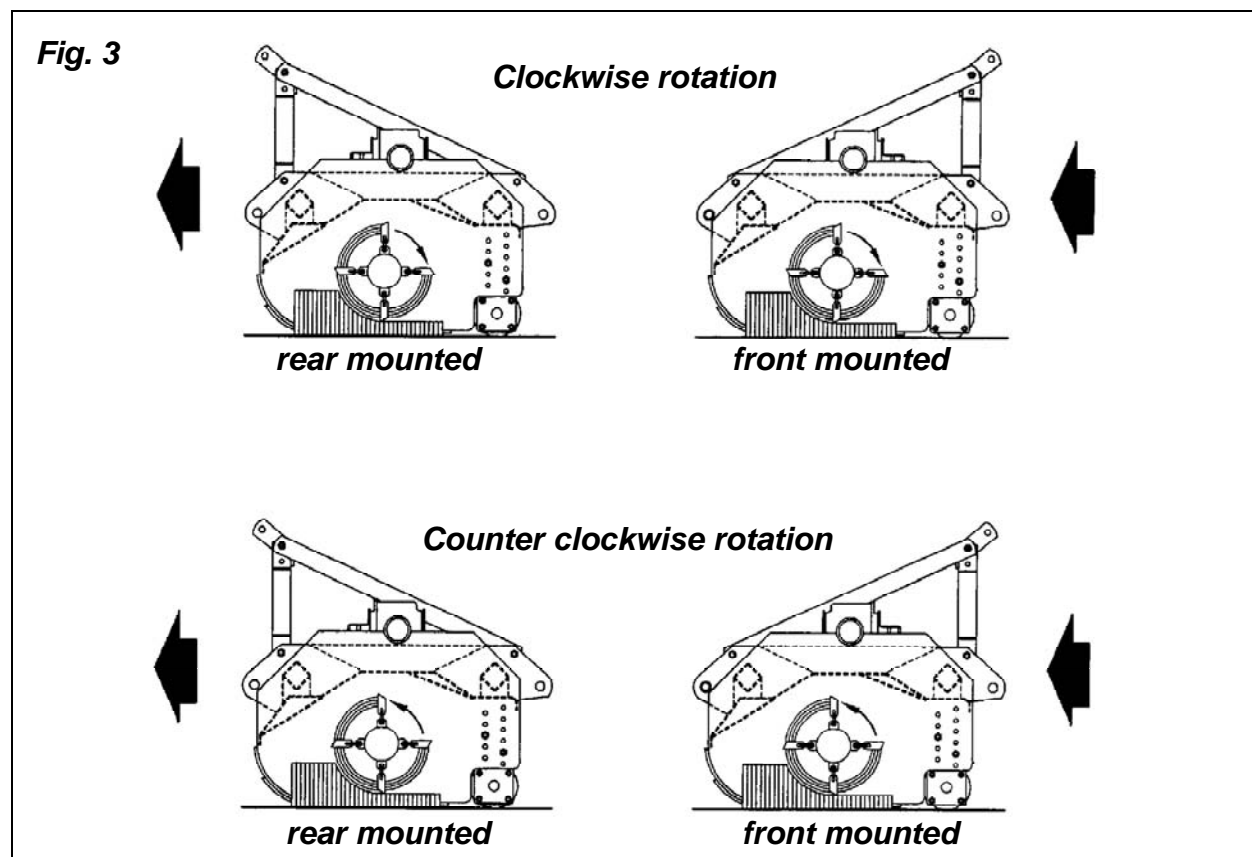
<sup>3</sup> See Section 3.03 - Cutting Height Adjustment.

4. When this machine is operated in populated areas where thrown objects could injure persons or property, a standard equipment front rubber strip (which is designed to reduce the possibility of thrown objects) must be installed.
5. The majority of accidents involve entanglements on the driveline, injury of bystanders by objects thrown by the rotating blades, and operators being knocked off the tractor by low hanging limbs and then being run over by the mower. Accidents are most likely to occur with machines that are loaned or rented to someone who has not read the operator's manual and is not familiar with a flail mower.
6. Always stop the tractor, set brake, shut off the tractor engine, remove the ignition key, lower implement to the ground and allow mower blades to come to a complete stop before dismounting tractor. Never leave equipment unattended with the tractor running.
7. Never place hands or feet under mower with tractor engine running or before you are sure all motion has stopped. Stay clear of all moving parts.
8. Do not allow riders on the mower or tractor at any time. There is no safe place for riders.
9. Do not operate unless all personnel, livestock and pets are at least 100 yards away to prevent injury by thrown objects.
10. Before backing up, disengage the mower and look behind carefully.
11. Install and secure all guards and shields before starting or operating.
12. Keep hands, feet, hair and clothing away from moving parts.
13. This flail mower is designed for use only on tractors with 540 rpm power take off.
14. Never operate tractor and mower under trees with low hanging limbs. Operators can be knocked off the tractor and then run over by the rotating blades.
15. The rotating parts of this machine have been designed and tested for rugged use. However, they could fail upon impact with heavy, solid objects such as steel guard rails and concrete abutments. Such impact could cause the broken objects to be thrown outward at very high velocities. To reduce the possibility of property damage, serious injury, or even death, never allow the cutting blades to contact such obstacles.
16. Frequently check mower blades. They should be sharp, free of nicks and cracks and securely fastened.
17. Stop mower immediately upon striking an obstruction. Turn engine off, remove key, inspect and repair any damage before resuming operation.
18. Stay alert for holes, rocks and roots in the terrain and other hidden hazards. Keep away from drop-offs.
19. Use extreme care and maintain minimum ground speed when transporting on hillside, over rough ground and when operating close to ditches or fences. Be careful when turning sharp corners.
20. Reduce speed on slopes and sharp turns to minimize tipping or loss of control. Be careful when changing directions on slopes. Do not start or stop suddenly on slopes. Avoid operation on steep slopes.
21. When using a unit, a minimum 20% of tractor and equipment weight must be on tractor front wheels. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a front end loader, front wheel weights, ballast in tires or front tractor weights. When attaining a minimum 20% of

- tractor and equipment weight on the front wheels, you must not exceed the ROPS weight certification. Weigh the tractor and equipment. Do not guess or estimate!
22. Inspect the entire machine periodically<sup>4</sup>. Look for loose fasteners, worn or broken parts, and leaky or loose fittings.
  23. Use only the driveline supplied with the mower. Do not use it if it is missing any shield or safety protection.
  24. Pass diagonally through sharp dips and avoid sharp drops to prevent "hanging up" tractor and mower.
  25. Avoid sudden starts and stops while traveling up or downhill.
  26. Always cut down slopes; never across the face. Avoid operation on steep slopes. Slow down on sharp turns and slopes to prevent tipping and/or loss of control.

### 3.02 - Set Up

**Notice to dealer:** Pre-delivery setup and service including lubrication is the responsibility of the authorized dealer. It is up to him to assure that the machine is in perfect condition and ready to be used. It is his responsibility to ensure that the customer is aware of all safety aspects and operational procedures for the mower. He must also fill out the Pre-Delivery Checklist<sup>5</sup> prior to delivering the mower.



<sup>4</sup> See Chapter 4 - Maintenance.

<sup>5</sup> See Chapter 7 - Pre-Delivery Checklist.



**CAUTION:** Stand clear of bands when cutting as they could be under sufficient tension to cause them to fly loose. Take care in removing bands and wire, they often have extremely sharp edges and cut very easily.

As mentioned above all our flail mowers may be either tractor front or rear mounted. This can easily be done at our authorized dealerships. In fact, this is accomplished by simply turning the three point hitch and the gearbox 180 degrees (see fig. 3).

### 3.03 - Cutting Height Adjustment

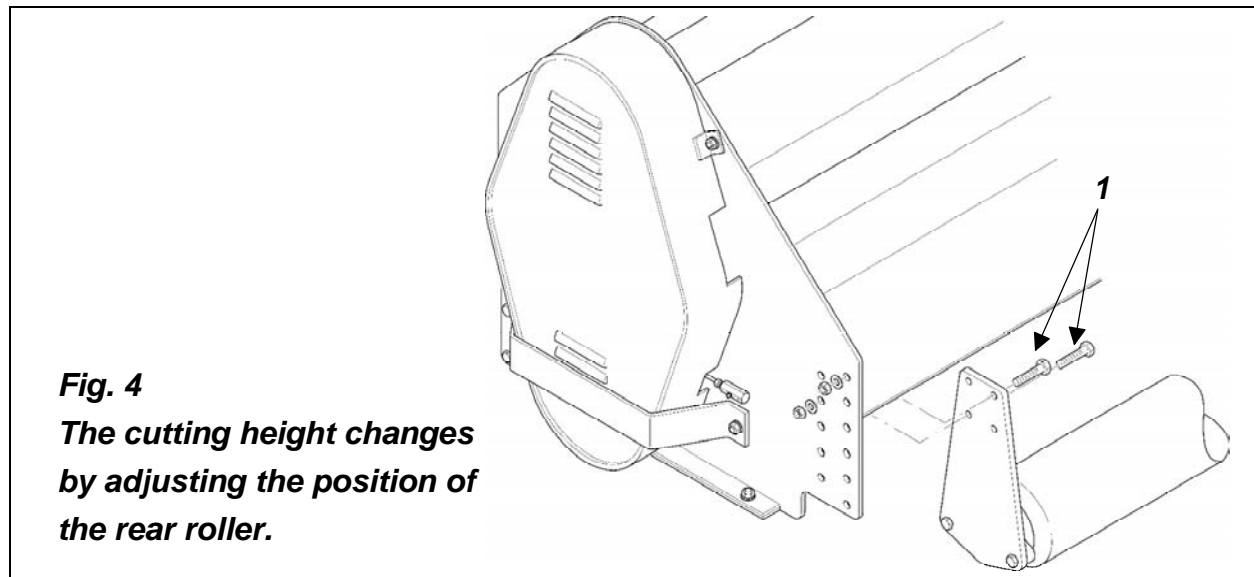


**WARNING:** Keep hands and feet away from moving blades.

Be sure tractor engine is off, parking brake is locked, and key is removed before making any adjustments.

Never rely on the tractor lift system. Install blocks or stands under the mower deck to prevent it from falling.

The cutting height is the distance from the blades to the ground. It is changed by adjusting the position of the rear roller (see fig. 4).



The machine has 8 different cutting height positions. The cutting height is adjustable from  $\frac{3}{4}$ " to 6". Cutting lower than 2" under most circumstances should be avoided.

To change the cutting height do the following (see fig. 4):

1. Unbolt and remove the 4 bolts, 2 on each side, (see #1, fig. 4) that secure the roller height position.
2. Swivel the roller into its desired position and insert the bolts into two of the available holes. Tighten all 4 bolts.
3. Ensure the left and right roller brackets are in the same hole position in order to maintain a level roller which is parallel to the ground. Be sure the mower is level and lock the tractor arms so they will not float down or up when cutting.

**IMPORTANT: Very low cutting heights should be avoided. Damaging shock loads occur when the blades strike the ground repeatedly. This can cause damage to the flail mower.**

### 3.04 - Gauge Wheels (Option)

Upon request, an optional set consisting of two height control wheels is available. These are mounted to the rear support bar. When using these wheels, the height is adjusted by removing the two bolts that hold the wheel support. Position the wheel support in the desired height using two of the available holes in the attachment plate. Insert the bolts and tighten them to the proper torque. Be sure that the same holes are used for the left and right wheel to maintain a level cut. Be sure the mower is level and lock the tractor arms so they will not float down or up when cutting.

### 3.05 - Pre-Operational Check

**IMPORTANT:** Check each of the following, carefully, prior to engaging the equipment:

1. The rotor and roller bearings have been greased.
2. The oil in the gearbox.
3. The driveline cross and bearings have been greased.
4. No wrappings or foreign objects are around the blades, belts or driveline.
5. The blades are properly installed and the blade bolts properly torqued<sup>6</sup>.
6. All hardware is tight.
7. The tractor, to ensure correct direction of PTO and rpm speed.
8. All safety shields and guards are in place and tightly attached.
9. No people or animals are in the work area.
10. When working, make sure the tractor hitch is locked in position so the front of the flail mower will not float down while mowing.



**DANGER: Stay clear of rotating driveline. Entanglement in rotating driveline can cause serious injury. Disengage PTO, wait for all moving parts to come to a complete stop, engage parking brake or place transmission in "Park", shut off the**

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<sup>6</sup> See Table 1, page 30.

tractor and remove the key before working around hitch, attaching or detaching driveline, making adjustments, servicing or cleaning the machine.

### 3.06 - Attaching to the Tractor

Unit may be used on tractors ranging from 30 to 70 HP equipped with a standard PTO and category 1 three point hitch<sup>7</sup>. **Never use this mower with tractors over 70 HP.**



**CAUTION:** Check the tractor PTO rpm to ensure it is set at 540 and turns clockwise.



**CAUTION:** Never attempt to attach the mower to the tractor or make any adjustments to it without first turning the tractor off.



**DANGER:** Failure to ensure a secure coupling of the implement to the tractor can cause injury and damage to the implement or tractor. If necessary, wheel weights, front tractor weights and/or tire ballast should be used to improve stability. Be sure that the tractor tire pressure is correct. It is important to strictly follow the safety guidelines and instructions laid out in the tractor's operator's manual.

**To attach the mower to the tractor do the following:**

1. Back the tractor up to the mower in order to slip the tractor hitch arms over the hitch pins on the mower hitch arms. **Turn off the tractor engine.** Secure them in place with the lynch pins.
2. Adjust the tractor sway blocks or chains to remove all side movement.
3. Attach the top link. Adjust tractor top link to allow the mower, in the working position, to remain as level as possible with respect to the ground.
4. Install the shielded driveline to the tractor by first lining up the splines and depressing the snap pin. Push the yoke onto the PTO shaft as far as it will go. Release the pin and pull back slowly until the pin clicks in place. Repeat this operation on the implement end. Be sure to install the overrunning clutch side of the PTO shaft on the implement.
5. Attach the driveline chains to the tractor and to the mower to keep the driveline protection from turning. The chains should not be too tight.
6. Ensure the driveline has at least 2" from bottoming out in its shortest working position and has the minimum 6" overlap in its longest working position. Refer to **Section 4.10<sup>8</sup>** of this manual, if it is determined that the driveline is too long and

<sup>7</sup> See Table 2, page 30.

<sup>8</sup> See Section 4.10 - Driveline, for instructions on how to determine correct driveline length and procedures for shortening the driveline.

needs to be shortened. Contact your local Authorized Company Dealer if it is determined that the driveline is too short for your tractor.

### 3.07 - Start Up



**DANGER: The mower must always be lowered to the ground before starting tractor engine or engaging PTO lever.**

Lower mower to the ground with the tractor rock shaft control lever until the roller is on the ground and the mower frame is parallel to the ground. Lock the tractor rock shaft control lever in this position. With the engine idling, slowly engage the PTO drive. Move the throttle lever gradually until the PTO speed indicated on the mower is obtained.

The mower is normally set for a PTO speed of 540 rpm.

Shift the transmission to a slow speed gear and start forward, increase the ground speed by shifting upward until the desired speed is obtained. Do not mow in reverse unless absolutely necessary and only after careful observation of the area behind the mower.



**CAUTION: Do not operate this mower at a PTO speed or direction of rotation other than that shown on the mower. Serious damage can occur to the machine and/or the operator.**

Before starting to mow, never forget that the **operator is responsible** for the following:

1. Safe and correct driving of the tractor and mower.
2. To learn precise safe operating procedures for both the tractor and the mower.
3. To ensure all maintenance and lubrication has been performed on the mower.
4. To have read and understood all safety aspects for the mower in the operator's manual.
5. To have read and understood all safety decals on the mower.
6. Checking the condition of the blades. Worn or damaged blades should be changed before starting<sup>9</sup>.
7. Checking to ensure that the cutting edge is the leading edge of the blade<sup>10</sup>.
8. Checking that there is no wire, weed, grass or other material wrapped around blades.
9. Checking to see if front weights need to be added to the tractor in order to maintain balance.
10. Checking the tractor tires for the proper pressure in accordance with the tractor's operator's manual.
- 11. Checking that the PTO shield, belt shield, front rubber strip and all other shielding are on the machine and securely in place.**

<sup>9</sup> See Section 4.03 - Blade Maintenance.

<sup>10</sup> See Section 4.03 - Blade Maintenance.



12. Making sure the proper attire is worn. Avoiding loose fitting clothing which can become entangled. Wearing sturdy, tough-soled work shoes and protective equipment for eyes, hands, ears and head. Never operate tractor or implements in bare feet, sandals or sneakers.
13. Checking area for stones, branches and other debris that might be thrown.
14. Ensuring proper lighting is available, sunlight or good artificial lighting.

### **3.08 - Working Speed**

The mowing speed depends on ground conditions, tractor HP, mowing height, and grass thickness. Only a test run will enable you to gauge the optimal working speed for your conditions.

Under most conditions a 1 to 4 mph ground speed is best. As a rule of thumb, and if the conditions permit, grass dispersion is increased by higher ground speeds.

In order to obtain the best cut possible, always keep the tractor rpm up to the speed indicated on the mower. When increasing or decreasing mowing ground speed, always use gear selection, not engine speed. This will maintain the constant maximum blade speed necessary for a clean cut.

### **3.09 - Operating Techniques**

All of the following factors are important in selecting the proper forward speed:

1. Height of grass.
2. Type of grass.
3. Density of grass.
4. Type of terrain.
5. Grass condition, wet or dry.

This mower has been designed to cut grass with heights from 4" to 8". It is recommended to avoid cutting grass taller than 10".

For the best results, try cutting the grass at least once per week during growing season. Tall, dense grass should be cut at low speed, while thin medium grass can be cut at a faster ground speed.

Always operate PTO at 540 rpm. This is necessary to maintain proper blade speed and obtain a clean cut.

Under certain conditions, tractor tires may roll some grass down and prevent it from being cut at the same height as the surrounding area. If this occurs reduce the tractor ground speed but maintain a 540 rpm engine speed. The lower ground speed will permit the grass to at least partially rebound. Under some conditions grass will not rebound enough to be cut even, resulting in an uneven appearance. In general, lower cutting height gives a more even cut with less tendency to leave tire tracks. If cut is still not satisfactory, cut the area twice.

Mow extremely tall grass twice. On the first pass use a high cutting height. On the second pass, position the mower at the desired height and, when practical, mow at a right angle of travel to the first pass.

Plan your pattern to travel straight forward whenever possible.

It is better to cut grass more often, than too short. Short grass deteriorates rapidly in hot weather and invites weed growth during growing season.

If at any time the mower should jam resulting in belt slippage of 2 or more seconds, raise the mower and continue for 2-3 minutes. This will allow the pulleys to cool and prolong belt life.



**DANGER:** Never operate the mower without first ensuring that all protective devices are properly installed. The mower blades can throw objects 100 yards or more which could result in personal or property damage.

Pick up all rocks and other debris before mowing. Enter new areas carefully. Cut grass higher at first, allowing mower to clear hidden objects.



**CAUTION:** For emergency reasons learn how to stop the tractor and mower quickly. On the flail mowers always disengage the PTO, lock parking brake, stop engine and allow the mower blades to come to a complete stop before dismounting the tractor.

### 3.10 - Uneven Terrain



**DANGER:** Be careful of rollover when operating tractor and mower over uneven ground.

The following precautions should always be observed when working on uneven terrain:

1. In extremely uneven terrain rear wheel weights, front tractor weights, and/or tire ballast should be used to improve stability.
2. Observe the type of terrain and develop a safe working pattern.
3. Whenever traction or stability is doubtful, first test drive over the terrain with the PTO disengaged.
4. Operate the implement up and down steep slopes, not across slopes, to prevent the tractor from tipping. Avoid sudden stops and starts, and slow down before changing directions on a slope.
5. Pass diagonally through sharp dips and avoid sharp drops to prevent hanging up the tractor and implement.
6. Slow down on sharp turns and slopes to prevent tipping or loss of control.
7. Avoid tipping the mower while cutting.
8. Watch for holes, roots or other hidden objects. Do not use near the edge of a gully, ditch or stream bank.

### 3.11 - Removing Mower from the Tractor



**CAUTION:** Disengage tractor PTO. Set parking brake. Stop engine and remove key from ignition. Disconnect mower driveline from tractor PTO shaft. Collapse driveline and store in appropriate place. Disconnect three point linkage and carefully drive tractor away from mower.

### 3.12 - Transport



**CAUTION:** Make sure PTO is disengaged and blades have stopped turning before raising mower to full transport position. Do not tow tractor and mower behind other vehicles. Use a properly equipped trailer with heavy tie-downs for towing operations.

Before transporting:

1. Always select a safe ground speed that is appropriate for the terrain.
2. Beware of traffic on public roads. Install a SMV (Slow Moving Vehicle) sign when traveling on roads or streets. Comply with all federal, state and local laws.
3. Reduce ground speed when turning and take care that the implement does not strike obstacles such as trees, fences or buildings.
4. Always disengage PTO before raising the implement to transport position.
5. When raising the mower be sure the PTO driveline does not hit either the mower or the tractor.
6. During transport the mower should not be lifted over 14"-16" from the ground.

## 4 - MAINTENANCE



**DANGER: Stop engine, lock parking brake and remove key before performing any service or maintenance.**

**Never rely on the tractor lift system. Install blocks or stands under the mower to prevent it from falling.**

**Always use personal protection devices, such as glasses or gloves when performing maintenance.**

**Keep fingers out of slots to prevent injury.**

### 4.01 - Maintenance Safety



1. Good maintenance is your responsibility.
2. Keep service area clean and dry. Be sure electrical outlets and tools are properly grounded. Use adequate light for the job at hand.
3. Make sure there is plenty of ventilation. Never operate the engine of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
4. Make no repair or adjustments with the tractor engine running. Before working on the machine, disengage the PTO, shut off the engine, set the brakes, and remove the ignition key.
5. Be certain all moving parts on attachment have come to a complete stop before attempting to perform maintenance.
6. Never work under equipment unless it is blocked securely.
7. Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance.
8. Frequently check mower blades. They should be sharp, free of nicks and cracks and securely fastened.
9. Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe condition.
10. When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.
11. After servicing, be sure all tools, parts and service equipment are removed.
12. Never replace hex bolts with less than grade five bolts unless otherwise specified, i.e. shear bolts<sup>11</sup>.
13. Where replacement parts are necessary for periodic maintenance and servicing, genuine replacement parts must be used to restore your equipment to original

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<sup>11</sup> Refer to Table 1 - Torque Specifications, page 30.

specifications. The company will not claim responsibility for use of unapproved parts and/or accessories and any other damages as a result of their use.

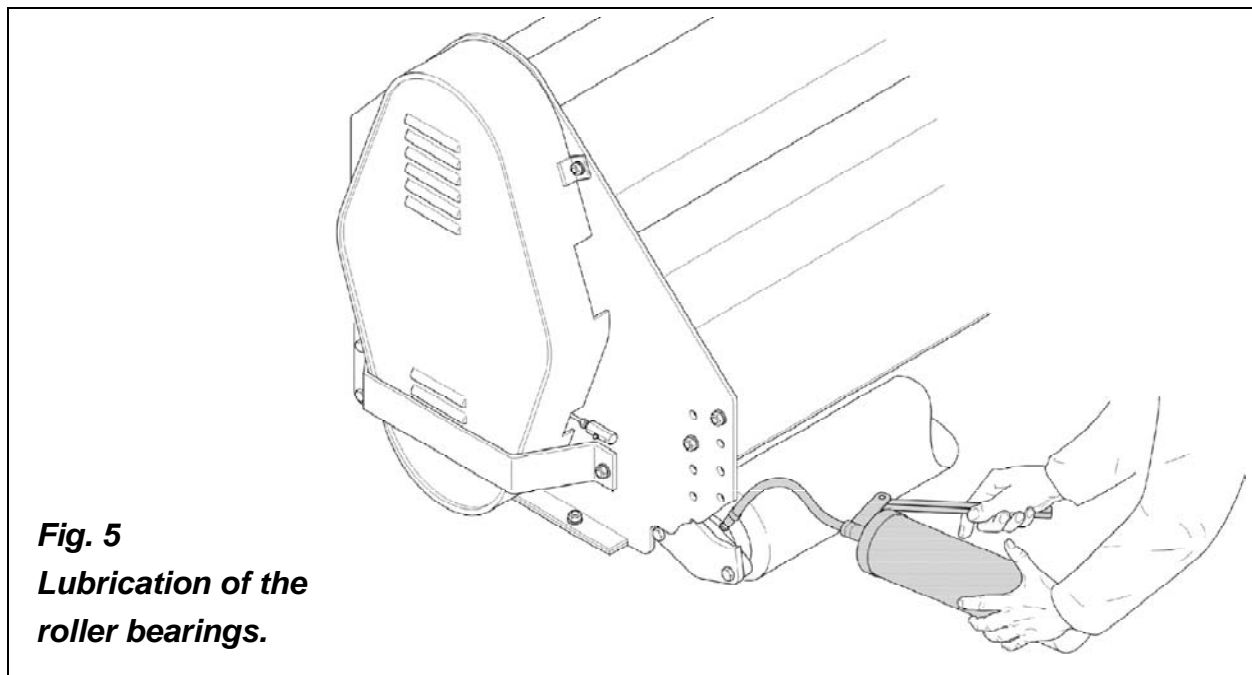
14. Unauthorized modifications to the machine may impair the function and/or safety of the machine and reduce its life. If equipment has been altered in any way from original design, the manufacturer does not accept any liability for injury or warranty.

## 4.02 - Service

The accompanying illustrations show lubrication points. The chart gives the frequency of lubrication in hours, based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

Use a good quality SAE multipurpose type grease for all locations shown. Be sure to clean fittings thoroughly before using grease gun.

Use 90 wt. or 140 wt. gear oil in gearbox.



**Fig. 5**  
**Lubrication of the**  
**roller bearings.**

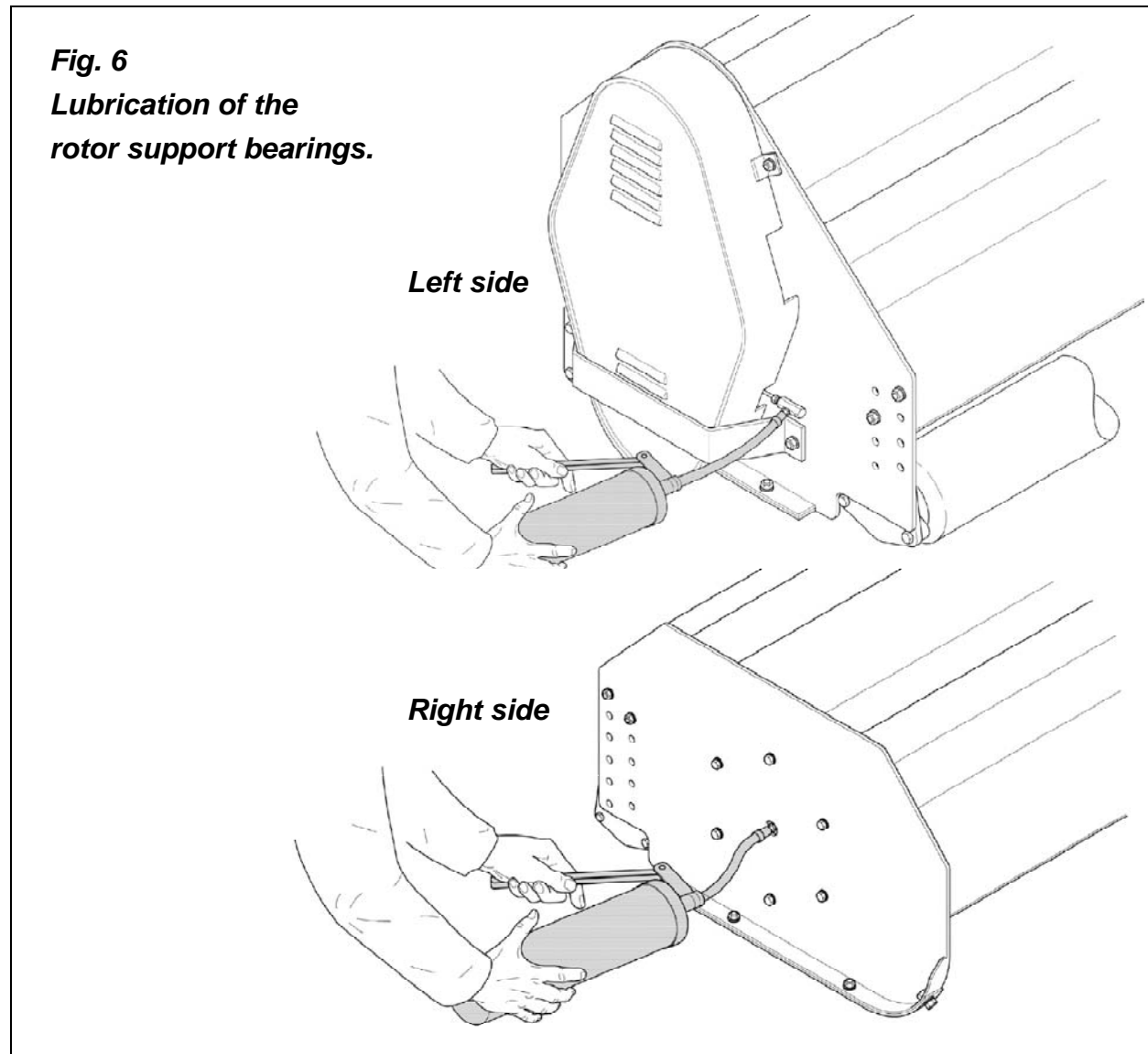
### Hourly or whenever an obstacle is hit:

1. Check the conditions of the blades, double pivot rings, blade carrier brackets welded to the rotor, proper blade mountings or broken or missing blades. **Even a single missing or broken blade can unbalance the rotor and create serious damage to the mower or grave danger to nearby persons.**
2. **Do not continue mowing if even one blade is broken or missing. Broken or missing blades must be replaced immediately<sup>12</sup>. Heavily worn blades should be replaced as a complete set in order to maintain a balanced rotor.**
3. Remove any wrappings, weeds, paper, wire, etc., from the blades and rotor.

<sup>12</sup> See Section 4.03 - Blade Maintenance.

**Every 8 hours:**

1. **Lubricate driveline:** Apply two or three shots of grease to the driveline cross and bearings and the telescoping shafts. See the driveline manufacturer operator's manual for further information on the driveline.
2. **Lubricate roller bearings (see fig. 5) and rotor support bearings (see fig. 6):** Apply two three shots of grease to the roller bearings and to the rotor bearings on each side of the machine.
3. **Check gearbox oil level:** It should be between  $\frac{1}{2}$  and  $\frac{2}{3}$  full. If needed add either SAE 90 wt. or SAE 140 wt. gear oil.

**Every 25 hours:**

1. **Check hardware tightness;** mower vibration can loosen bolts<sup>13</sup>. Check tightness of the hardware periodically.

<sup>13</sup> See Table 1, page 30.

2. Check belt tension<sup>14</sup>.



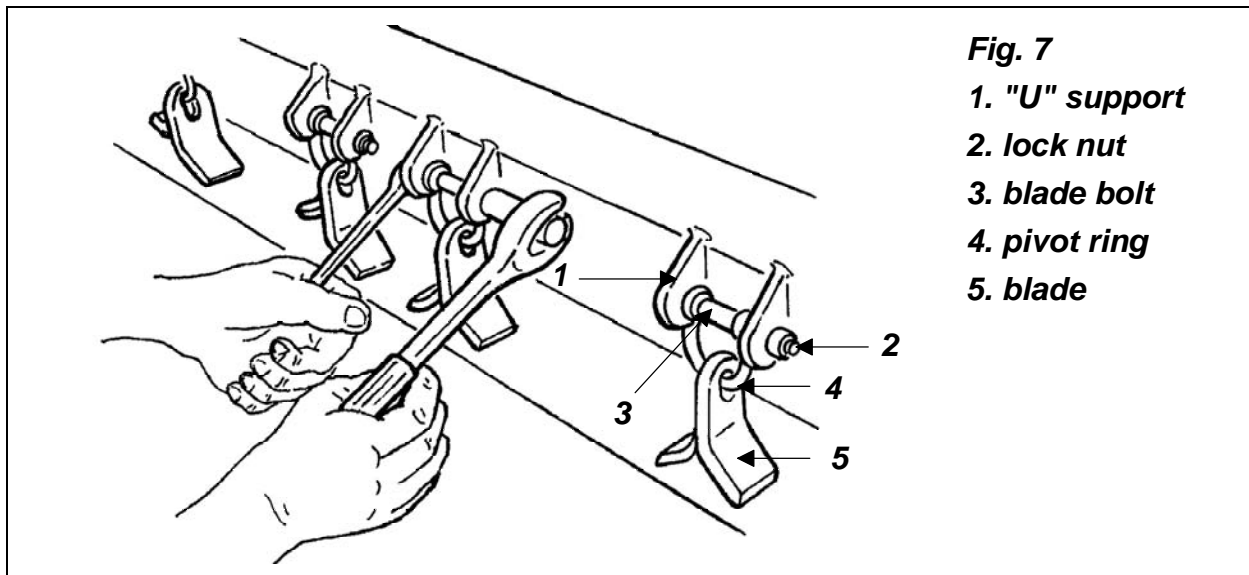
**DANGER:** The beginning of abnormal vibrations from the rotor may mean it is out of balance. A single broken or missing blade is enough to cause this. An unbalanced rotor, due to its high rotation speed, can dislodge itself from the side bearing supports thus damaging the mower and cause serious injury to persons nearby. Always find the source of the vibration. Bring the rotor back in balance by replacing blades, removing wrappings, etc. If this does not remove the vibrations, the rotor may have to be rebalanced at one of our Authorized Company Dealerships.

### 4.03 - Blade Maintenance



**WARNING:** To avoid possible injury always wear proper eye and hand protection when servicing mower blade.

In order for the mower to work properly, and to always obtain a precision cut with lower HP requirements thus keeping cost down, proper blade maintenance is important. Blades must be kept sharp, at their original length and corners maintained. A blade must be replaced if, due to wear or damage, its original shape has been distorted.



**Fig. 7**

1. "U" support
2. lock nut
3. blade bolt
4. pivot ring
5. blade

#### Installing or removing blades

If the mower blades need to be installed, do the following (see. fig. 7):

1. Loosen and remove the lock nuts.

<sup>14</sup> See Section 4.05 - Belt Tension.

2. Remove the double pivot ring bolt.
3. Remove the worn blades and double pivot ring from the blade carrier welded onto the rotor. Replace with new blades and possibly a new double pivot ring.
4. Ensure the cutting edge of the blades is the leading edge in the direction of rotation.
5. Replace the bolt and torque the nut to 95 N.m. (70 lb.ft).



**DANGER:** Always remember the rotor must remain well balanced at all times to avoid dangerous vibrations which can damage the overall structure of the mower and cause serious injury to any nearby persons. It is therefore recommended that whenever worn blades are changed, the entire set be changed to avoid unbalancing the rotor with blades of different weights. If a single blade or set in a certain area is replaced, it is best to also replace the blade or set of blades opposite to maintain balance.

If after replacing some of the blades, the vibration remains or increases, it is best to then replace the entire set.

If this still does not remove the vibrations, the mower should be taken to an Authorized Company Dealership to determine if it is necessary to rebalance the rotor.



**CAUTION:** When the blades are replaced, it is important that all the blades are of the same type and weight. A rotor unbalanced by different blades can damage the mower.



**CAUTION:** Do not substitute blades or any bolt for the blade retaining bolt. Company blades and blade retaining bolts are specially made for this application. Using non original parts can effect the quality of cut and may also cause damage to the mower.

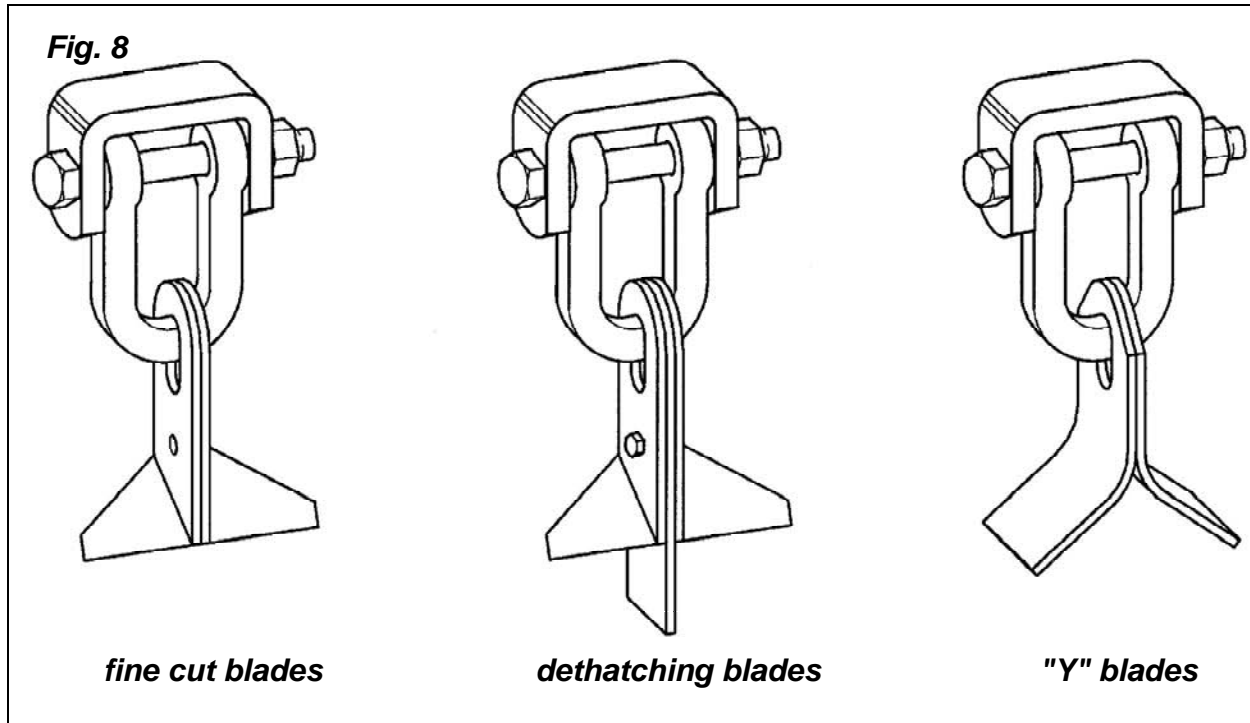


**DANGER:** Proper torque must be used when tightening the blade retaining bolt. If these safety precautions are not followed, the blade could come off during operation and be thrown 100 yards or more from the mower. Ensure that once the bolts are tight, the blades are able to pivot freely with the double pivot ring. This is imperative to not cause damage to the mower.



## 4.04 - Blade Options

On every double pivot ring there are two blades mounted, one left and one right. The mowers are sent with the standard “**fine cut**” blade with a 90 degree angle. This blade leaves the grass perfectly level. A “**standard cut**” blade in the shape of a “Y” is also available. This leaves the grass with a rippled cut. Also available is a straight “**dethatching**” blade which is used in unison with either of the other two. This blade cuts into grass roots and brings the dead thatch to the top (see fig. 8).



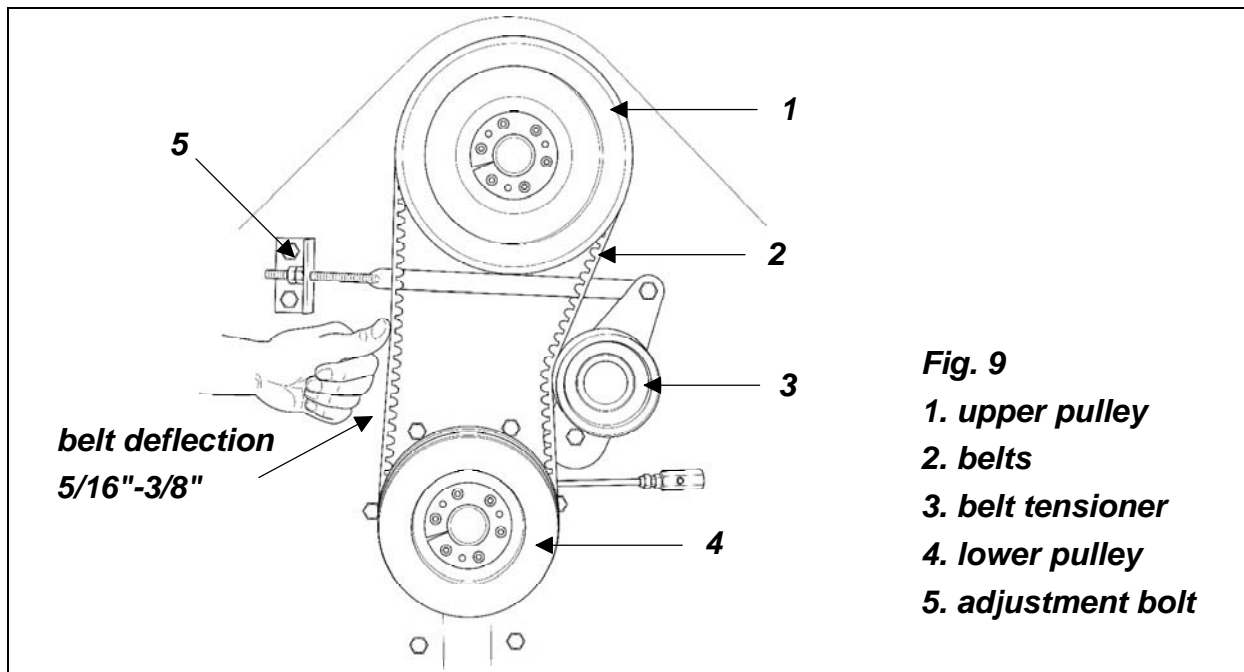
## 4.05 - Belt Tension

### Belt tension control

Check the tension of both belts (see fig. 9) by applying a force of 12-15 lb. pushing against each belt halfway between the pulleys. The belt deflection should be between  $\frac{5}{16}$ "- $\frac{3}{8}$ ".

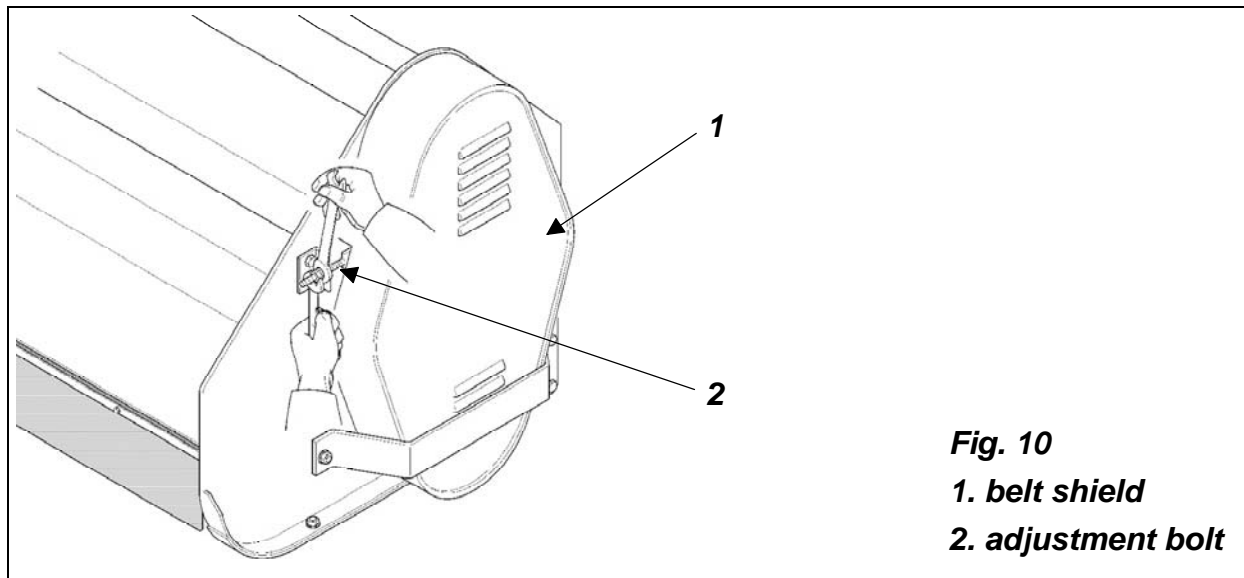
### Belt tension adjustment

The Hurricane H70 flail mower is supplied with a side double belt transmission with a manually loaded belt tensioner. The belt tension is applied by a compression spring and is regulated with an adjustment bolt (see #5, fig. 9) which protrudes from the belt shield.



To adjust the tension do the following (**see fig. 10**):

1. Loosen the blocking nut.
2. Screw the adjustment nut until the correct belt tension is reached.
3. Tighten the blocking nut.



## 4.06 - Belt Replacement

If the belts have been stretched or damaged to the point where the proper tension can not be obtained they must be changed. Both belts must be changed at the same time.

To replace the belts do the following:

1. With the mower stopped and, if possible supported by stands, remove the belt shield. Clean the belts, pulleys, and shield of grass, dust and dirt.
2. Remove the bolt adjustment rod (**see #2, fig. 10**).
3. Remove the old belts and replace them with the new belts using a screwdriver if needed.
4. Tighten the belts with the bolt adjustment rod.
5. Ensure that the belts are at the proper tension (**see fig. 9**).
6. Replace the belt shield.

### 4.07 - Pulley Alignment

For proper operation and extended belt life the upper and lower pulley of the flail mower need to always work aligned to one another. After replacing the belts, place a straight edge over two sides of each pulley to check their alignment. If the pulleys are aligned the straight edge should lay evenly across the surface of both pulleys. If the pulleys don't line up properly then it will be necessary to loosen the split lock bushings inside the pulleys and add or remove shims to align them to one another.

### 4.08 - Reverse Gearbox Direction

The H70 flail mower in its standard configuration is to be used with a tractor that has a PTO that turns clockwise (right turning).

Occasionally a tractor will have a counter clockwise (left turning) PTO (this is more common when the tractor has a PTO in the front). In this case, in order to properly operate the flail mower, the direction of rotation of the H70 input shaft must be reversed to obtain a counter clockwise rotation.

To reverse the direction it is necessary to move the ring gear to the other side of the input shaft. This operation entails opening the gearbox. We recommend this be done only at an Authorized Company Dealership.

**Note:** The flail mower comes with a driveline equipped with a clockwise (right) turning overrunning clutch. **IMPORTANT:** Always check the direction of rotation on the tractor's PTO to be sure it is the same as the overrunning clutch. If the tractor comes with a counter-clockwise (left) turning PTO, the overrunning clutch mounted on the driveline must be replaced with a counter-clockwise clutch.

### 4.09 - Reverse Rotor Direction

The flail mower is normally supplied with a clockwise rotor rotation in order to obtain an against the grain cut. It is possible to reverse the direction of cut and obtain a counter clockwise rotation.

To reverse the direction do the following:

1. Move the ring gear to the other side of the PTO shaft.

2. Move the belt tensioner to the front side of the lateral panel. Fix it in the appropriate location and adjust the belt tension.
3. Ensure that the blades are mounted correctly. Most blades are single edge and will need to be turned around in order to cut in the new direction.

This operation entails opening the drive transmission. We recommend this be done only at an Authorized Company Dealership.

## 4.10 - Driveline



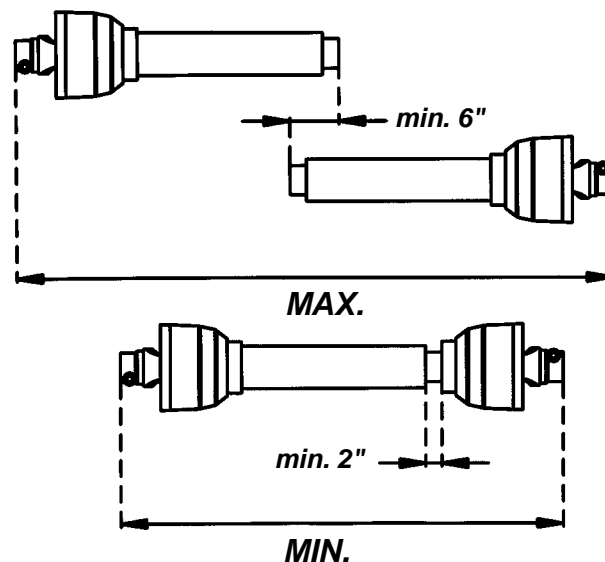
**DANGER:** Only use the original driveline supplied with this mower and always with the safety shielding.

Carefully read and file away the driveline operator's manual supplied by the manufacturer. The following does not substitute the information found in the driveline manual.

**IMPORTANT:** Always check driveline length during initial setup and when connecting to a different tractor.

In the collapsed position the driveline should be approximately 2" from bottoming out to prevent possible damage to the tractor or implement. When the driveline is in the maximum extended position, the ideal minimum overlap of the two halves should be approximately 6" (see fig. 11).

Fig. 11



If determined that the driveline is too long, follow these procedures to adjust the length:

1. Separate the two driveline halves. Connect one half to the tractor PTO and the other half to the mower.

2. Raise and lower the mower with the 3 point hitch to find the position where the driveline is shortest. Hold the half shafts side by side and mark the desired length on the outer female tube guard leaving a 1½" gap between the end of the guard tube and bell guard.
3. Cut off both guard tubes the same amount as marked in step 2.
4. Shorten both drive tubes the same amount as guard tubes.
5. De-burr and clean filings from drive tubes and apply grease to outside of inner telescoping tube.
6. Reassemble the driveline halves and connect to tractor and mower. Raise and lower mower again to be sure driveline does not bottom out in its shortest position and has a minimum overlap of 6" in the longest position.
7. Install both driveline safety chains. One should be hooked in a hole on the outer driveline yoke shield and to the tractor to restrict outer shield rotation. The second one should be hooked in a hole on the inner driveline yoke shield and to the implement to restrict inner shield rotation.

If determined that the driveline is too short for your tractor, contact your Authorized Company Dealer.



**CAUTION:** Always work with the driveline as straight as possible. This will prolong its life and that of its components. It is advised not to work at an angle greater than 15 degrees.

## 4.11 - Overrunning Clutch

The mower is supplied with a PTO driveline that comes equipped with an overrunning clutch. The PTO yoke end is attached to the tractor's PTO, while the end with the overrunning clutch is attached to the mower. The purpose of the overrunning clutch is to transmit power in one direction only.







The overrunning clutch is indispensable for use on very fast operating machines, because when the rotation is suddenly halted, the inertia reverses the direction of rotation which could cause implement or tractor damage and put the operator or bystander in danger.

**IMPORANT:** Always check the direction of rotation on the tractor's PTO to be sure it is the same as the overrunning clutch<sup>15</sup>.

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<sup>15</sup> See Section 4.08 - Reverse gearbox direction, for further information.

**TABLE 1 - TORQUE SPECIFICATIONS**

Metric (ISO) treaded bolts head marking							Inch (SAE) treaded bolts head marking								
	Class 5.8		Class 8.8		Class 10.9			Grade 2		Grade 5		Grade 8			
Bolt size mm	Thread mm	N.m	ft-lb	N.m	ft-lb	N.m	ft-lb	Bolt size inch	Thread inch tpi	N.m	ft-lb	N.m	ft-lb	N.m	ft-lb
M5	0.8	4	3	6	4	9	7	1/4"	20	7	5	11	8	16	12
M6	1	6	4	10	7	15	11	1/4"	28	8	6	13	10	19	14
M8	1.25	16	12	25	18	36	27	5/16"	18	15	11	24	17	33	25
M8	1	17	13	26	19	38	28	5/16"	24	17	13	26	19	37	27
M10	1.5	31	23	48	35	71	52	3/8"	16	27	20	42	31	59	44
M10	1.25	33	24	51	38	75	55	3/8"	24	31	23	47	35	67	49
M10	1	35	26	53	39	78	58	7/16"	14	43	32	67	49	95	70
M12	1.75	54	40	84	62	123	91	7/16"	20	48	36	75	55	106	78
M12	1.5	56	41	87	64	128	94	1/2"	13	66	48	102	75	144	106
M12	1.25	59	44	90	66	133	98	1/2"	20	75	55	115	85	163	120
M14	2	84	62	133	98	195	144	9/16"	12	95	70	147	109	208	154
M14	1.5	94	69	142	105	209	154	9/16"	18	106	79	164	121	232	171
M16	2	131	97	206	152	302	223	5/8"	11	132	97	203	150	287	212
M16	1.5	141	104	218	161	320	236	5/8"	18	149	110	230	170	325	240
M18	2.5	181	133	295	218	421	310	3/4"	10	233	172	361	266	509	376
M18	2	196	145	311	229	443	327	3/4"	16	261	192	403	297	569	420
M18	1.5	203	150	327	241	465	343	7/8"	9	226	167	582	430	822	606
M20	2.5	256	189	415	306	592	437	7/8"	14	249	184	642	473	906	668
M20	1.5	288	212	454	335	646	476	1"	8	339	250	873	644	1232	909
M22	2.5	344	254	567	418	807	595	1"	12	371	273	955	704	1348	995
M22	1.5	381	281	613	452	873	644	1-1/8"	7	480	354	1077	794	1746	1288
M24	3	444	327	714	526	1017	750	1-1/8"	12	539	397	1208	891	1958	1445
M24	2	488	360	769	567	1095	808	1-1/4"	7	677	500	1519	1120	2463	1817
M27	3	656	484	1050	774	1496	1103	1-1/4"	12	750	553	1682	1241	2728	2012
M27	2	719	530	1119	825	1594	1176	1-3/8"	6	888	655	1992	1469	3230	2382
M30	3.5	906	668	1420	1047	2033	1499	1-3/8"	12	1011	746	2268	1673	3677	2712
M30	2	1000	738	1600	1180	2250	1659	1-1/2"	6	1179	869	2643	1949	4286	3161
M36	4	1534	1131	2482	1830	3535	2607	1-1/2"	12	1326	978	2974	2194	4823	3557

When using lock washers with nuts, increase torque values by 5%.

**TABLE 2 - HURRICANE H70 FLAIL MOWER - TECHNICAL FEATURES**

Series H70, for tractors up to 70 HP, PTO 540 rpm, 3 point hitch cat. 1										
Model	HP	Working width	Overall width	Weight lb.	Rotor rpm/min	Blades tip speed ft/min	# Blades	Cutting height	# Belts & Type	Driveline w/overrunning clutch 1 3/8"
H70-060	30-70	60"	71"	869	2080	8464	64	3/4" - 6"	2 CX	ASAE 4 <sup>th</sup> . cat
H70-072	35-70	72"	85"	955	2080	8464	80	3/4" - 6"	2 CX	ASAE 4 <sup>th</sup> . cat
H70-088	40-70	88"	99"	1078	2080	8464	96	3/4" - 6"	2 CX	ASAE 4 <sup>th</sup> . cat

## 5 - REPAIR PROCEDURES



**CAUTION:** All repair procedures must be done by authorized dealerships. It is not recommended that untrained individuals perform any repair work. The following operations are detailed for qualified personnel only.

### 5.01 - Gearbox

To remove the gearbox from the frame do the following:

1. Disengage the belt tensioner pulley by releasing the adjustment bolt (see #2, fig. 10)<sup>16</sup>.
2. Remove the belts<sup>17</sup>.
3. Unbolt the bolts holding the gearbox to the frame.
4. Unbolt the nuts which hold the gearbox to the drive tube.

If it is necessary to replace any part on the inside of the gearbox, it is important to replace oil seals or gaskets to ensure a tight fit when reassembling.

To replace the gearbox, follow the above instructions in reverse order.

### 5.02 - Rotor Shaft

To remove the rotor do the following:

1. Disengage the belt tensioner pulley by releasing the adjustment bolt (see #2, fig. 10)<sup>18</sup>.
2. Remove the belts<sup>19</sup>.
3. Remove the pulley from the left side of the rotor.
4. Unbolt the bolts that hold the locking plate (situated under the pulley) and remove it.
5. Remove the grease fitting on the left side of the rotor and the grease fitting tube.
6. Remove the grease fitting on the right side of the rotor.
7. Unbolt the bolts that attach the right and left rotor supports to the frame.
8. Slide the rotor from the side panels.
9. Remove the snap ring that holds the right rotor support bearing to the rotor.
10. Remove the snap ring that holds the pulley to the left side of the rotor.
11. Remove the left and right rotor supports from the rotor.

To replace the rotor, follow the above instructions in reverse order.

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<sup>16</sup> See Section 4.05 - Belt Tension.

<sup>17</sup> See Section 4.06 - Belt Replacement.

<sup>18</sup> See Section 4.05 - Belt Tension.

<sup>19</sup> See Section 4.06 - Belt Replacement.

### 5.03 - Suggested Spare Parts

It is suggested that the following spare parts be kept on hand for the mower at all times to prevent a minor problem from delaying work.

Description	Quantity
Blades	1 set
Blade bolts and nuts	1 set
Double pivot ring	1 set
Belts	2

### 5.04 - Storage

After seasonal use it is important to perform the following for prolonged storage:

1. Wash the mower carefully.
2. Inspect the mower and replace worn or damaged parts.
3. Tighten all hardware.
4. Grease all areas indicated under Maintenance<sup>20</sup>.
5. Loosen the belts if the mower is to be stored for an extended length of time.
6. Cover the mower from the elements in order to have it in perfect condition for the start of the next season.



**WARNING:** Be sure to store the implement on a hard level surface and away from people especially children.

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<sup>20</sup> See Chapter 4 - Maintenance.



## 6 - TROUBLESHOOTING



**WARNING:** Be sure tractor engine is off, parking brake is locked, and key is removed before making any adjustments.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Uneven cutting.	Machine not parallel to the ground.  Blades are worn or bent. Loose belts.	Roller is not in the same adjustment hole pattern. The tractor lift arms are not lifting equally. Change blades. Adjust belt tension.
Grass not cut and/or bent over.	Wrappings around rotor. Wet grass. Grass too high.  Tractor rpm too slow.	Remove wrappings. Allow grass to dry. Raise mower, shift to lower gear, make two passes over grass. Mow grass high 1 <sup>st</sup> . pass, 2 <sup>nd</sup> . pass cut to desired height. Increase tractor rpm, check engine and PTO speeds.
Belts squeal.	Belts slipping due to loose belts. Belts slipping due to high grass.	Tighten belts. Raise mower, shift to lower gear, make two passes over grass. Mow grass high 1 <sup>st</sup> . pass, 2 <sup>nd</sup> . pass cut to desired height.
Excessive blade wear.	The cutting height is too low.	Raise the cutting height.
Mower vibrates.	Worn, broken or bent blades. Mower not running at proper PTO speed. Object wrapped around rotor. Rotor out of balance.	Replace blades. Set tractor throttle for 540 rpm.  Remove object. Balance rotor.
Noisy mower.	Loose components. Excessive rpm. Low oil in gearbox.	Tighten hardware. Back off tractor rpm to 540. Fill to proper level.
Striping or windrowing.	Worn, broken or bent blades. Grass not being picked up after tractor tires tracks. Mower not running at rated PTO rpm. Mower not level. Wrapping or material buildup.	Replace blades. Grass is too high. Cut in two passes at a slower ground speed. Set tractor throttle for 540 rpm.  Level mower with tractor hitch arms. Clean rotor.

## 7 - PRE-DELIVERY CHECKLIST

**To the dealer: Inspect the machine thoroughly after assembly to assure it is functioning properly before delivering it to the customer. The following checklist is a reminder of points to cover. Check off each item as it is found satisfactory or after proper adjustment is made.**

- Gearbox oil level.
- Guards and shield properly fastened.
- Lubrication of grease fittings.
- All hardware properly tightened.
- All decals properly located and readable (**see fig. 2**).
- Blades properly installed, blade bolts and nuts tightened.
- Overall condition (touch up scratches, clean and polish).
- Test run, check for excessive vibration or overheating of bearings.
- Operator's Manual.

**Review the Operator's Manual with the customer. Explain the following:**

- Warranty.
- Safe operation and service.
- Correct machine installation and operation.
- Daily and periodic lubrication, maintenance and inspections.
- Troubleshooting.
- Operational procedures and storage.
- Parts and service.
- Fill out the Pre-Delivery Checklist and Warranty Registration form.
- Give customer the Operator's Manual and encourage the customer to read the manual carefully.

**IMPORTANT: Warranty is not valid unless Pre-Delivery Checklist and Warranty Registration form in Operator's Manual is completed in detail and mailed to the Company.**

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Delivery Date: \_\_\_\_\_

Dealer's Signature: \_\_\_\_\_

## 8 - WARRANTY

BEFCO's responsibility will be limited to substitution of the acknowledged defective merchandise to the same place of delivery as the previous one was supplied.

### 1. LIMITED WARRANTY

BEFCO, Inc. herein referred to as the Company, warrants its machines and related accessories, hereafter referred to as the Machine, to be free from defects in material and workmanship, for a period of twelve (12) months from the date of invoice to the first registered owner; this limited warranty does not apply to common wear items and excludes belts, shear pins, oil, grease, tires, tubes, hydraulic hoses, knives and PTO shafts.

Labor will be reimbursed at \$40.00 per hour based on BEFCO's time schedule.

Cost of transport to the servicing dealer is the responsibility of the customer.

Warranty coverage shall not be transferable from the first owner to any subsequent owner.

### 2. DISCLAIMER OF ALL OTHER WARRANTIES AND REMEDIES

Neither the Company nor any company affiliated with the Company makes any warranties, representations or promises, expressed or implied, as to the quality, performance or application of its products other than those set forth herein and does not make any implied warranty of merchantability or fitness.

The only remedies the purchaser has in connection with the breach, or performance of any warranty on the Company's Machine are those set forth herein. In no event will the dealer, the Company, or any company affiliated with the Company, be liable for:

- a. Injuries or damages of any kind or nature, direct, consequential or contingent to person or property.
- b. Any expenses incurred by the owner to repair, replace or rework any allegedly defective item.
- c. Any loss, cost, forfeiture or damages (including loss of profits; loss of crops; loss because of delay in field operations; any expenses or loss incurred for labor, supplies, substitute machine rental; liabilities of the owner to its customers or third persons; and all other consequential damages, losses, liabilities or damages for any other reasons) whether direct or indirect, and whether or not resulting from or contributed to by the default or negligence of the Company, its agents, employees and subcontractors which might be claimed as a result of the use or failure of the equipment delivered.

The Company's liability based on this limited warranty or any other applicable laws shall be limited to replacement or refund of the purchase price of the product.

The limited warranty extended herein gives you specific rights and you may also have other rights which vary from state to state. Neither the dealer nor the Company personnel has the authority to make any representation or to modify the terms and limitations of this warranty in any way.

**Other than the limited warranty extended hereby there is no other expressed warranty in connection with the design, safety or use of any of the Company's products except as to title. All implied warranties are expressly disclaimed pursuant to the terms of this warranty.**

### **3. CUSTOM WORK**

If the Machine is used for commercial purposes such as custom work, the period warranted for the Machine is limited to six (6) months from the date of delivery to the first registered owner and does not cover any labor charges incurred.

### **4. RENTAL**

If the Machine is used for rental purposes the period warranted for the Machine is limited to thirty (30) days from the date of delivery to the first registered owner and does not cover any labor charges incurred.

### **5. REGISTRATION**

In order to qualify for coverage on this limited warranty, the product and name of the original purchaser must be registered with the Company by a completed Machine Pre-Delivery Checklist and Warranty Registration along with a copy of the dealer's invoice to the first registered owner to the Company within fourteen (14) days after the date of delivery to the original purchaser.

### **6. WARRANTY SERVICE**

Warranty Service must be performed by a dealer authorized by BEFCO. If the warranty service requested is approved, the owner shall pay only for labor beyond the rate allowed, for overtime labor, and for any mileage charge for transporting the equipment to and from the dealer's shop. It is assumed that the dealer has the appropriate general and special tools to service the Machine. Time required for replacement of knives, oil, grease and to remove excessive dirt from the Machine is not subject to reimbursement by the Company. The owner is required to clean the Machine before presenting it to the dealer for service work. The Machine must be delivered within thirty (30) days after failure date by the owner to the dealer to be eligible for warranty consideration.

### **7. UNAPPROVED SERVICE OR MODIFICATION**

All obligations of the Company under this limited warranty shall be terminated if:

- a. Proper service and operation instructions as outlined in the Operator's Manual and on the instruction sticker on the Machine, are not followed.
- b. The Machine is modified or altered in any way not approved by the Company.
- c. The Company does not receive a copy of the dealers invoice to the first registered owner within fourteen (14) days from the date of delivery.
- d. The Company has not been paid in full, by the dealer, for the Machine.

### **8. ACCIDENTS AND NORMAL MAINTENANCE**

This limited warranty covers defective material and workmanship. It does not cover depreciation or damage caused by normal wear, accidents, improper maintenance, improper protection or improper use. The costs of normal maintenance or repairs for accidents or improper use, and related labor will be borne by the owner.

### **9. REPLACEMENT PARTS**

BEFCO, Inc. warrants replacement parts to be free from defect in material and workmanship for a period of thirty (30) days from the date of delivery to the original purchaser.

# WARRANTY REGISTRATION

**BEFCO, Inc.**  
**P.O. Box 6036**  
**Rocky Mount, NC 27802-6036**

**Tel: (252) 977.9920 - Fax: (252) 977.9718**

Dealer _____ Acct. # _____	Retail Customer _____
Street _____ Country _____	Street _____
Town _____ State _____ Zip _____	Town _____ State _____ Zip _____
Date of delivery _____ Invoice # _____	Phone _____
Model # _____ Serial # _____	
<p>Pre-Delivery Checklist:</p> <p><input type="checkbox"/> Oil in gearbox.</p> <p><input type="checkbox"/> Greased fittings.</p> <p><input type="checkbox"/> Safety guards in place.</p> <p><input type="checkbox"/> All hardware tight.</p> <p><input type="checkbox"/> Bolts torqued correctly.</p> <p><input type="checkbox"/> Attached unit to tractor. Yes/No.</p> <p><input type="checkbox"/> Field adjusted. Yes/No.</p> <p><input type="checkbox"/> Test run. Dry/Infield.</p> <p><input type="checkbox"/> Safety decals.</p> <p><input type="checkbox"/> Operator's Manual.</p> <p>The machine described above, has been prepared for delivery according to the Pre-Delivery Checklist and the Customer has been instructed in its care and operation and the condition of warranty.</p>	<p>Tractor make: _____</p> <p>Model: _____; HP _____</p> <p>Type of operation: Private homeowner, Landscaping, Commercial maintenance, Golf Course, Municipality, Turf Farm, others: _____</p> <p>Approximate number of acres machine will be used on annually: _____</p> <p>I hereby acknowledge that:  I have received and accepted delivery of the machine described.  The equipment was checked thoroughly for loose or missing parts and has been adjusted in accordance with the Pre-Delivery Checklist.  I have read and understand the nature and extent of the warranty and understand clearly that there were and are no other representations of warranties either expressed or implied, made by anyone. I have been advised on proper operation, maintenance and lubrication procedure of this equipment.  I have been instructed on and do understand the application, limitation and capacities this equipment was designed and recommended for, all as described in the Operator's Manual and literature published by the Company.</p>
Inspected by: _____	
Date: _____	Date: _____
Dealer's Signature: _____	Customer's Signature: _____

**This registration along with a copy of the invoice must be sent to BEFCO, Inc. within 14 days of date of purchase.**

*Sender:*

*Fold here*

---

*Place stamp  
here*

**BEFCO, Inc.**

Warranty Department

P.O. Box 6036

Rocky Mount, NC 27802-6036

*Cut along this line*



# BEFCO®

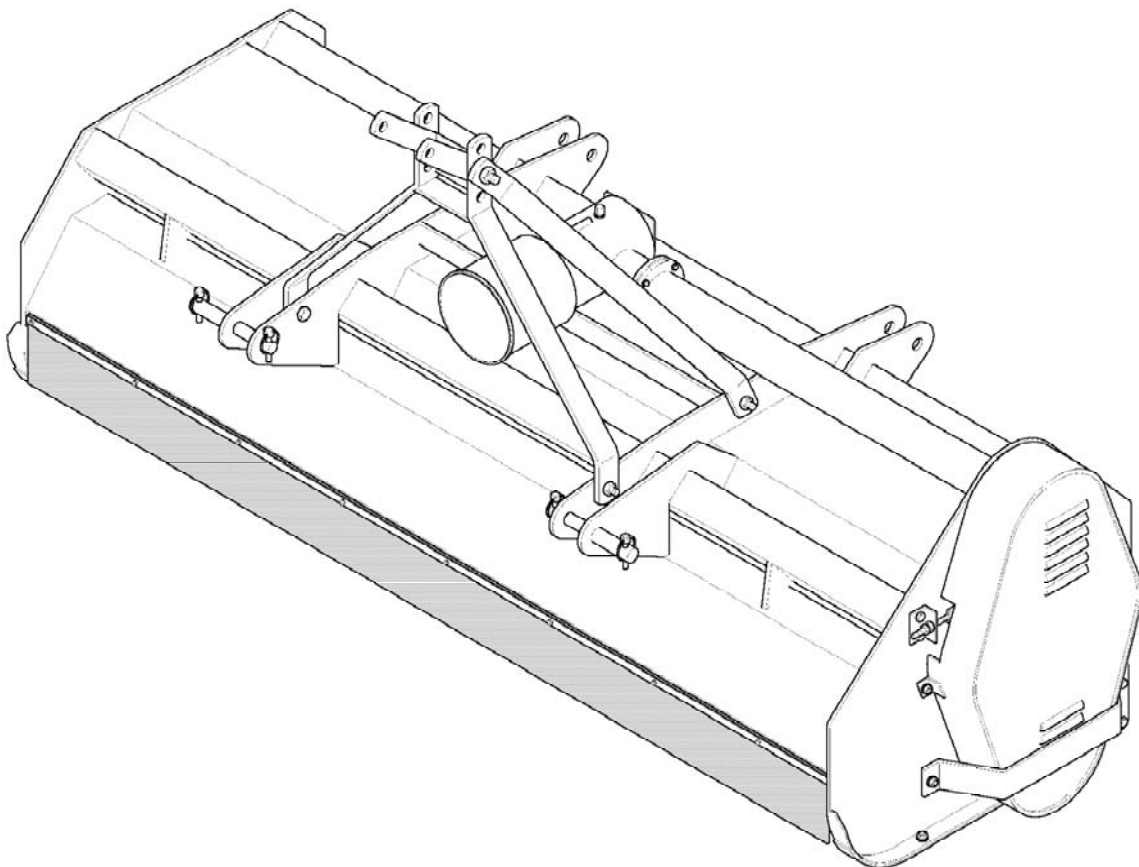
## Parts Manual

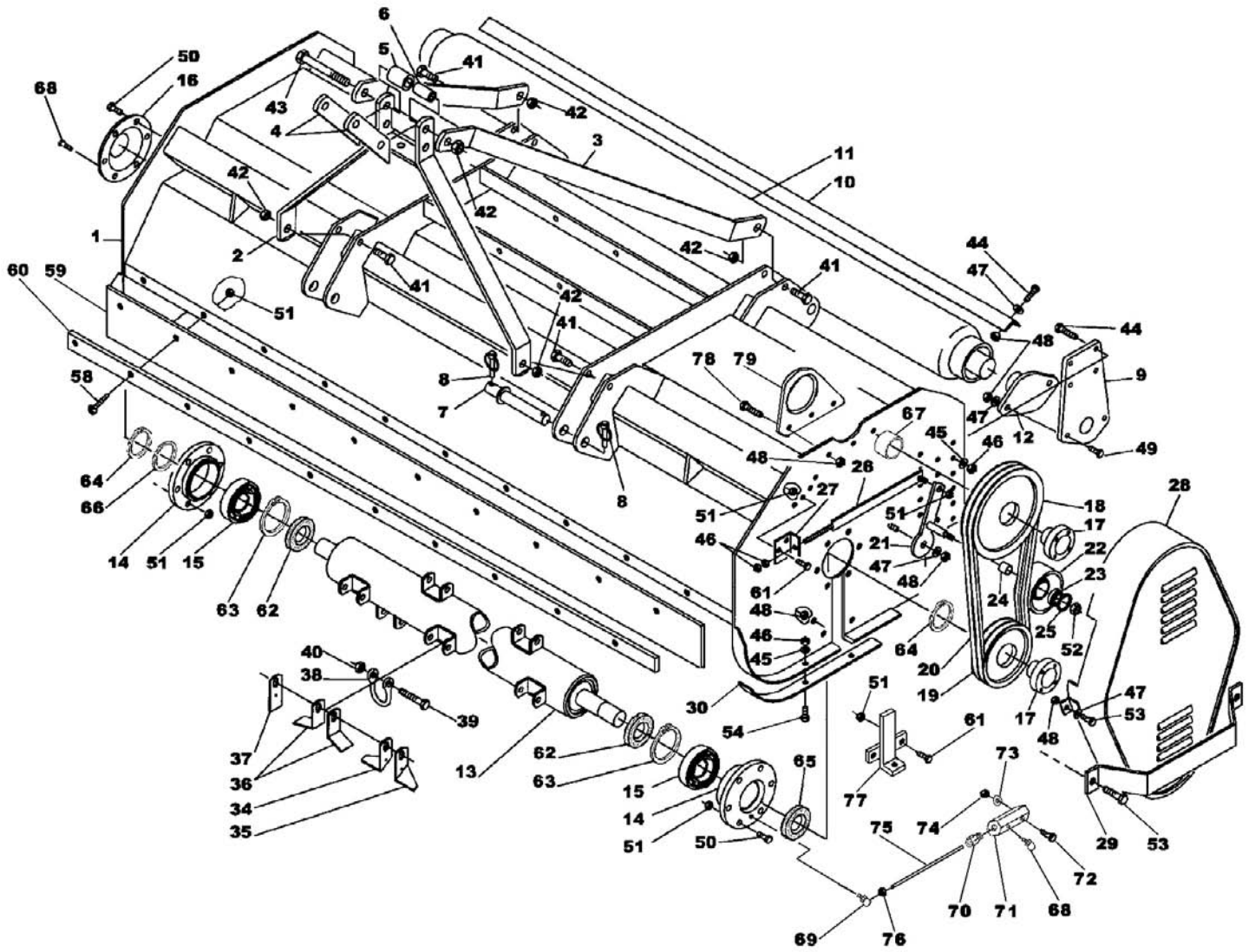
# HURRICANE

## Flail Mower

**H70-060, H70-072, H70-088**

(from serial #251882 to serial #279835)

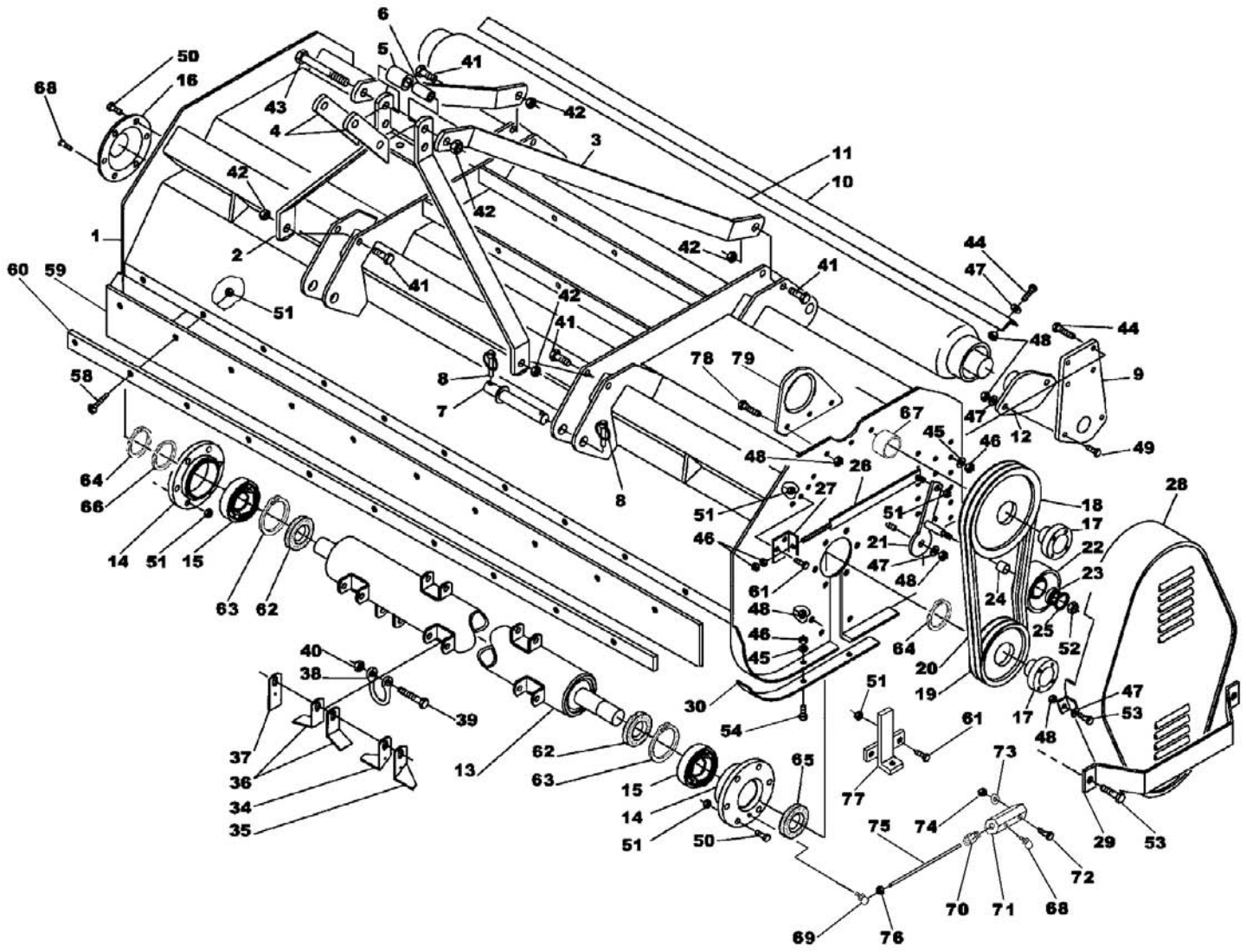






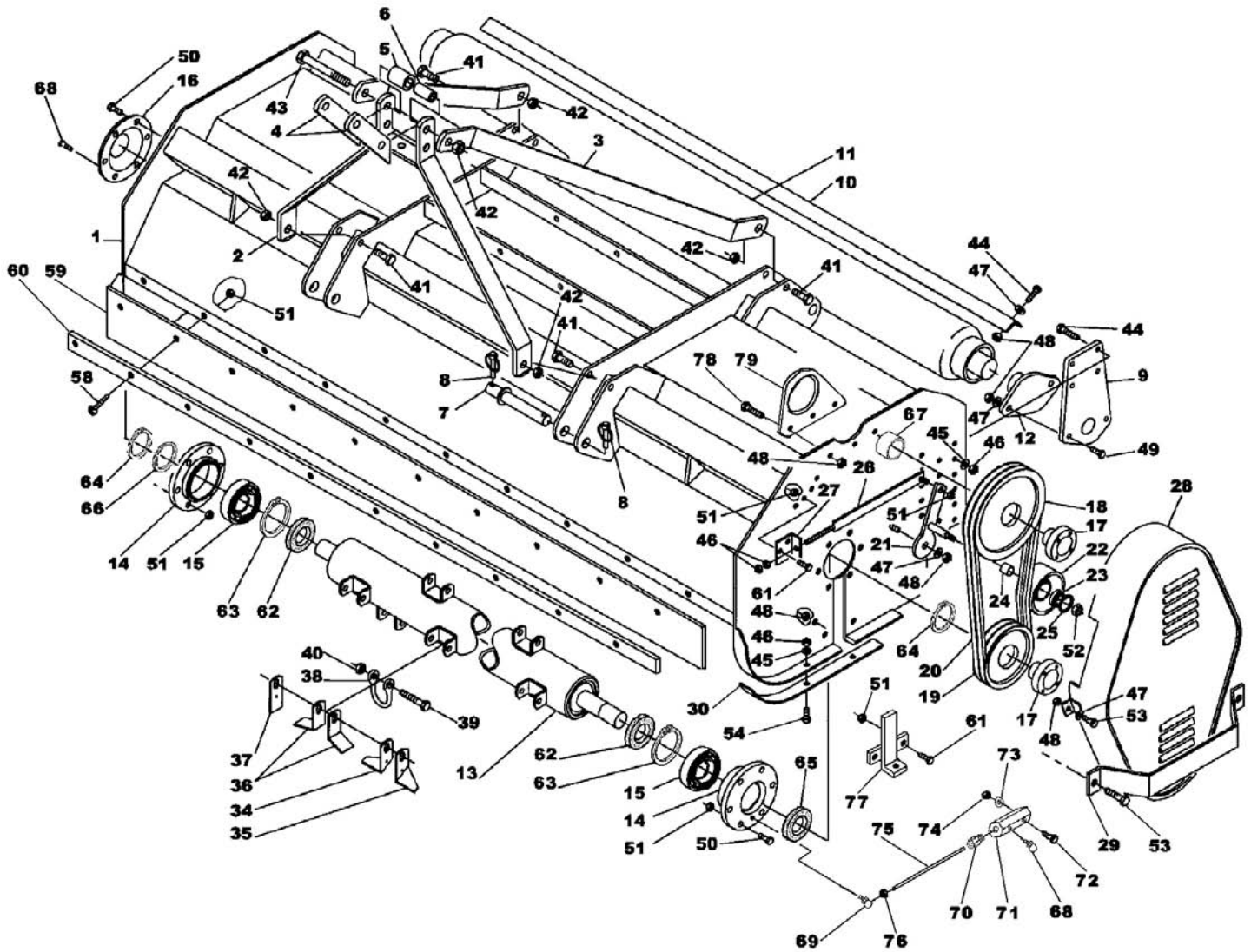
## H70-060, 072, 088 - FROM SERIAL #251882 TO SERIAL #279835

Ref.	Part #	Description	Qty.
1	015-3472	Frame H70-060; #268309 & below	1
	015-3480	Frame H70-060; from #268310 to #279835	1
	025-3472	Frame H70-072; #268309 & below	1
	025-3480	Frame H70-072; from #268310 to #279835	1
	035-3472	Frame H70-088; from #251882 to #268309	1
	035-3480	Frame H70-088; from #268310 to #279835	1
2	005-3501	Three point hitch	1
3	005-3508	Top hitch arm	2
4	005-3512	Upper plate	2
5	000-6558	Outer spacer	1
6	000-6898	Inner spacer	1
7	005-3532	Hitch pin	2
8	001-8266	Lynch pin Ø11x45	4
9	015-3542	Right roller arm	1
	025-3542	Left roller arm	1
10	015-3546	Roller scraper H70-060	1
	025-3546	Roller scraper H70-072	1
	035-3546	Roller scraper H70-088; #251882 & above	1
11	015-3561	Roller H70-060	1
	025-3561	Roller H70-072	1
	035-3561	Roller H70-088; #251882 & above	1
12	003-7514	Support UCFL 206 TF	2
13	015-3584	Rotor H70-060; #268309 & below	1
	015-3594	Rotor H70-060; from #268310 to #279835	1
	025-3584	Rotor H70-072; #268309 & below	1
	025-3594	Rotor H70-072; from #268310 to #279835	1
	035-3584	Rotor H70-088; from #251882 to #268309	1
	035-3594	Rotor H70-088; from #268310 to #279835	1
14	005-3153	Rotor support; #268309 & below	2
	005-3611	Rotor support; from #268310 to #279835	2
15	005-3156	Bearing YAR 209-2RF; #268309 & below	2
	006-1161	Bearing 22208E; #268310 & above	2
16	005-3160	Protection; #268309 & below	1
17	005-3621	Split lock bushing Ø40x80; #268309 & below	2
	005-3630	Split lock bushing Ø40x80; #268310 & above	2
18	005-3622	Pulley SPC 225x2	1
19	005-3626	Pulley SPC 180x2	1
20	005-9136	Belt CX 54	2
21	005-9146	Pulley support; #279835 & below	1
22	005-9151	Belt tensioner pulley	1
23	005-0142	Bearing 6204-2RS	1
24	005-9155	Spacer	1
25	005-0144	Inner snap ring Ø47	1
26	005-9161	Complete tie rod	1
27	005-3661	Fixing angle bar	1
28	005-3671	Belt case cover; #279835 & below	1
29	005-9187	Belt case cover protection	1
30	005-9260	Side skid; #279835 & below	2
34	015-2124	Right blade, fine cut	-
35	025-2124	Left blade, fine cut	-
36	005-1118	"Y" Blade	-



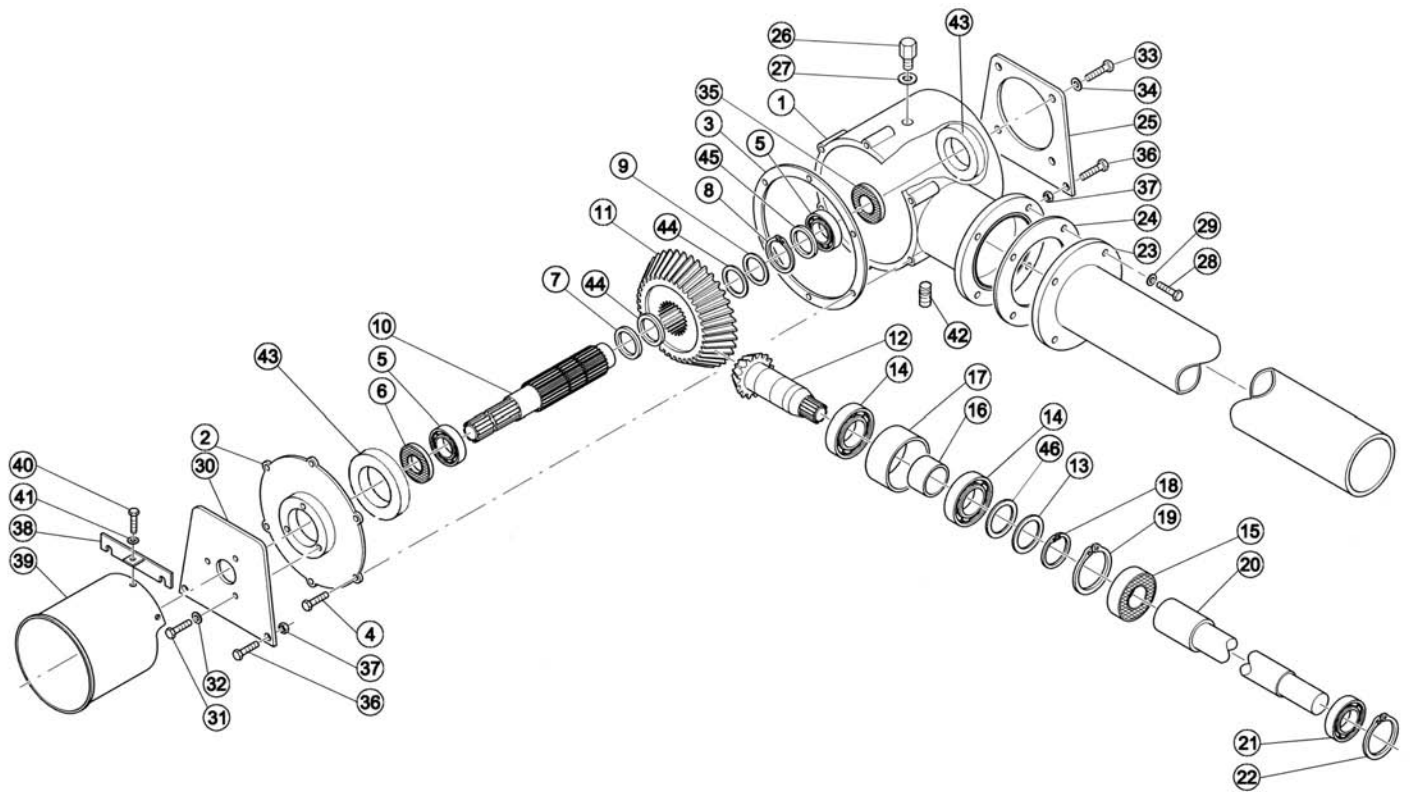
## H70-060, 072, 088 - FROM SERIAL #251882 TO SERIAL #279835

Ref.	Part #	Description	Qty.
37	005-1385	Dethatching blade (option)	-
38	005-0106	U Bolt	-
39	005-0107	Hex bolt 7/16"x3¼" UNF	-
40	005-0108	Nut 7/16" UNF	-
41	007-4232	Hex bolt M14x40	4
42	003-0358	Nut M14	5
43	000-6619	Hex bolt M14x150	1
44	000-7255	Hex bolt M12x35	6
45	000-1077	Lock washer Ø12	10
46	000-1106	Nut M12	12
47	000-2265	Flat washer Ø12	9
48	003-0064	Nut M12	14
49	002-3265	Hex bolt M12x40	4
50	009-1281	Hex bolt M10x35	12
51	003-0156	Nut M10	-
52	009-2276	Nut M20	1
53	001-5255	Hex bolt M12x30	4
54	007-4183	Bolt TSPEI M12x40	6
58	003-3176	Hex bolt M10x25	-
59	015-9794	Front rubber strip H70-060	1
	025-9794	Front rubber strip H70-072	1
	035-9794	Front rubber strip H70-088	1
60	015-9792	Deflector support H70-060	1
	025-9792	Deflector support H70-072	1
	035-9792	Deflector support H70-088	1
61	000-1278	Hex bolt M10x30	4
62	000-7094	Oil seal 52.85.10	2
63	000-1154	Inner snap ring Ø80	2
64	000-8138	Outer snap ring Ø40	2
65	001-0192	Oil seal 40.68.10	1
66	005-3248	Spacer washer	1
67	005-3629	Spacer; #279835 & below	1
68	005-1129	Grease fitting	2
69	005-3155	Grease fitting	1
70	005-3615	Connector	1
71	005-3616	Grease fitting	1
72	005-3617	Bolt TSPEI 6x35	1
73	005-0166	Flat washer Ø6	1
74	005-0165	Locking nut M6	1
75	005-3618	Grease fitting tube; #279835 & below	1
76	501-603B	Nut M6	1
77	005-3457	Locking plate; #279835 & below	1
78	000-3037	Hex bolt M12x25	3
79	005-3740	Tube drive shaft support plate	1

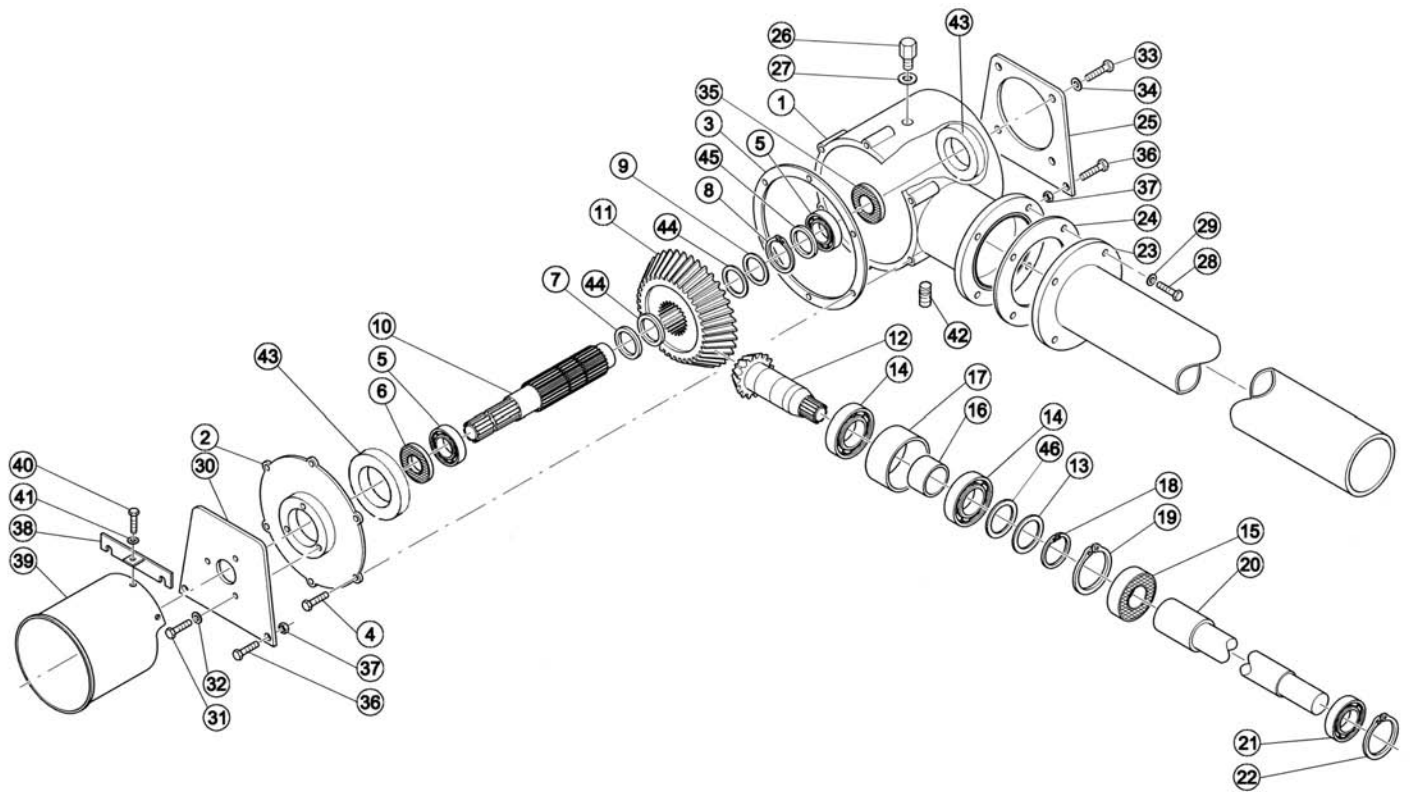


**H70-060, 072, 088 - FROM SERIAL #251882 TO SERIAL #279835**

<b>Ref.</b>	<b>Part #</b>	<b>Description</b>	<b>Qty.</b>
	950-109B	Decal "DANGER - Avoid injury from PTO"	1
	950-111B	Decal "CAUTION - To avoid serious injury"	1
	950-209B	Decal "DANGER - Rotating blades hazard"	2
	950-104B	Decal "B" medium	1
	950-107B	Decal "BEFCO" medium	1
	950-280B	Decal "H70"	1
	950-284B	Decal "060"	1
	950-285B	Decal "072"	1
	950-282B	Decal "088"	1
	950-381B	Decal "BEFCO INC" address	1
	971-132B	Operator's & Parts manual Flail mower "Hurricane H70-060, 072, 088" (from #251882 to #279835)	1

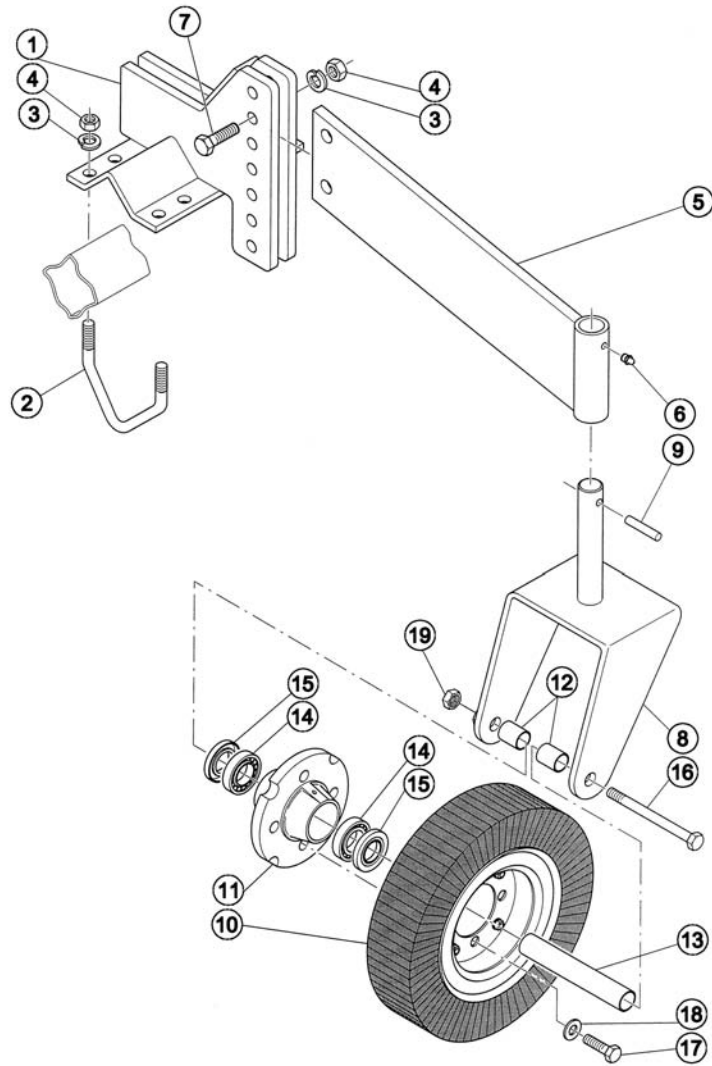


Ref.	Part #	Description	Qty.
1	005-3405	Gearbox housing	1
2	005-3409	Gear cover	1
3	018-0206	Gasket 2/10	-
	028-0206	Gasket 5/10	-
4	003-3176	Hex bolt M10x25	6
5	000-1061	Bearing 6307	2
6	003-0211	Oil seal 35.72.10	1
7	005-3241	Front spacer	1
8	001-2028	Outer snap ring Ø45	1
9	005-3240	Spacer washer	1
10	005-3244	Input shaft	1
11	005-3282	Ring gear	1
12	005-9213	Pinion gear	1
13	005-3248	Spacer washer	1
14	000-1148	Bearing 6308	2
15	005-4290	Oil seal 40.90.8 BASL	1
16	005-3253	Spacer	1
17	005-3257	Spacer	1
18	000-8138	Outer snap ring Ø40	1
19	000-8137	Inner snap ring Ø90	1
20	015-3722	Drive shaft H70-060; #279835 & below	1
	025-3722	Drive shaft H70-072; #279835 & below	1
	035-3722	Drive shaft H70-088; from #251882 to #279835	1
21	005-5358	Bearing 6208-2RS	1
22	000-1154	Inner snap ring Ø80	1
23	015-3715	Complete tube drive shaft H70-060; #279835 & below	1
	025-9220	Complete tube drive shaft H70-072; #279835 & below	1
	035-9220	Complete tube drive shaft H70-088; from #251882 to #279835	1
24	005-3259	Gasket	-
	015-3259	Gasket	-
25	005-9240	Rear plate	1
26	000-1107A	Breather cap	1
27	000-6691	Gasket	1
28	000-3037	Hex bolt M12x25	4
29	000-1077	Lock washer Ø12	4
30	005-9241	Front cover	1
31	000-6349	Hex bolt M10x20	3
32	000-1280	Lock washer Ø10	3
33	006-4648	Hex bolt M12x20	4
34	000-2265	Flat washer Ø12	4
35	005-3421	Cap	1
36	007-4232	Hex bolt M14x40	4
37	003-0358	Nut M14	4
38	005-9312	Upper hitch for input shaft protection	1
39	005-9310	PTO guard	1
40	001-1208	Hex bolt M6x12	2
41	001-1209	Flat washer Ø6	2
42	005-3446	Drain plug	1
43	005-3414	Bushing, gearbox housing	2

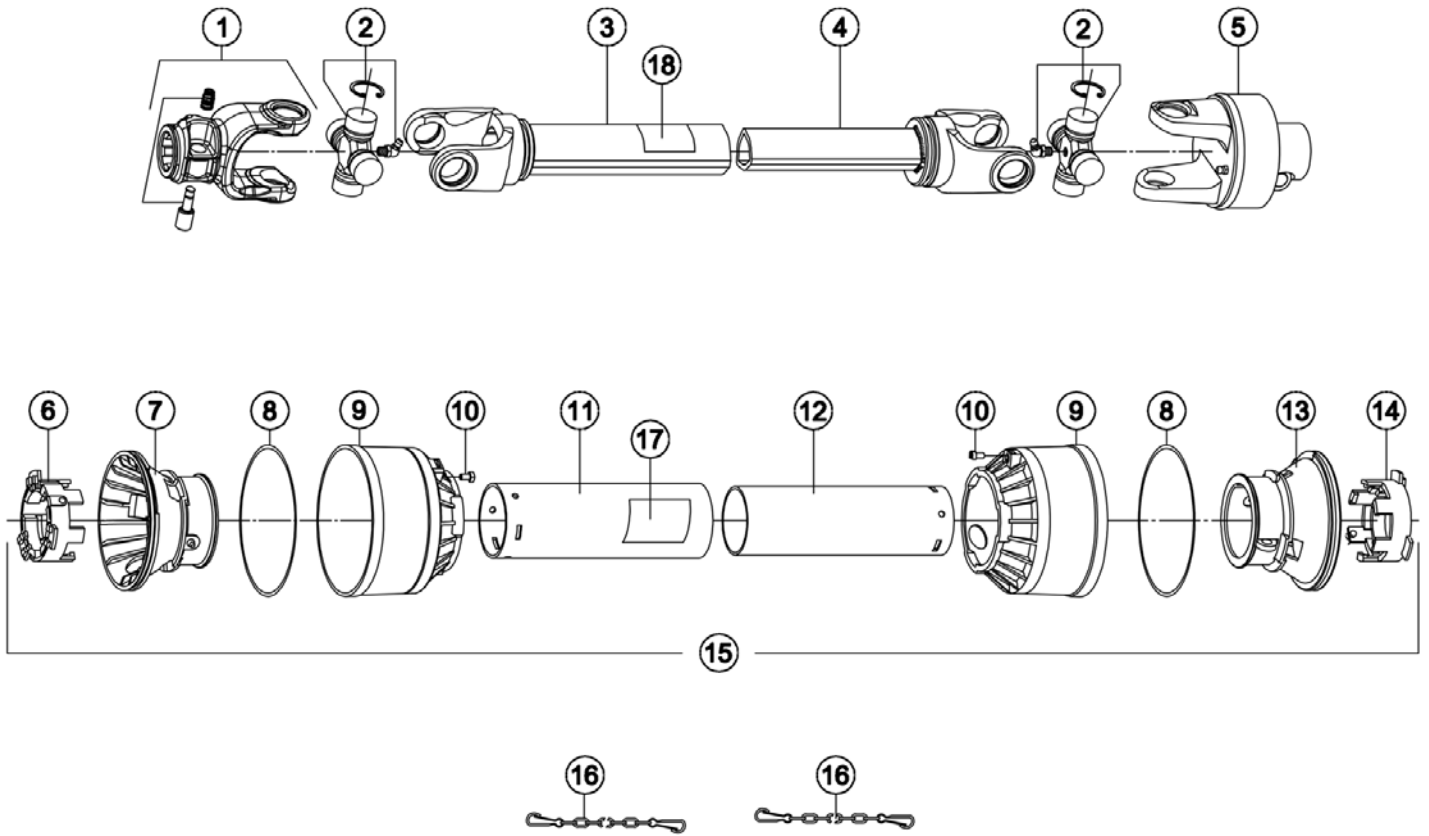




Ref.	Part #	Description	Qty.
44	015-3240	Shim Ø45x55x0.1	-
	025-3240	Shim Ø45x55x0.2	-
	035-3240	Shim Ø45x55x0.5	-
45	012-1186	Shim Ø36x45x0.1	-
	002-1186	Shim Ø36x45x0.2	-
	022-1186	Shim Ø36x45x0.5	-
46	010-6683	Shim Ø40x50x0.1	-
	000-6683	Shim Ø40x50x0.2	-
	020-6683	Shim Ø40x50x0.5	-
	050-0687	Gearbox, complete H70	-
	015-3691	Gearbox & drive shaft, complete; H70-060 #279835 & below	-
	025-3691	Gearbox & drive shaft, complete; H70-072 #279835 & below	-
	035-3691	Gearbox & drive shaft, complete; H70-088 #251882 to #279835	-



Ref.	Part #	Description	Qty.
1	005-9272	Wheel frame hitch	2
2	005-9281	U bolt	8
3	000-1020	Washer, lock Ø14 Z	20
4	000-1019	Nut HH M14-2.00 C6 Z TK	20
5	005-3801	Wheel yoke hitch H70	2
6	000-1065	Grease fitting	2
7	009-1128	Bolt HH M14-2.00x65 C8.8 Z P	4
8	000-5531	Wheel yoke	2
9	000-5521	Roll pin Ø10x45	2
10	005-2895	Laminated tire	2
11	005-2882	Hub wheel	2
12	005-2887	Outer spacer	4
13	005-2886	Inner spacer	2
14	005-2889	Bearing L44643-10	4
15	005-2888	Oil seal	4
16	000-5506	Bolt HH M20-2.50x180 C8.8 Z P	2
17	005-2891	Bolt HH ½"-20x1.00 G5 Z F	8
18	005-2892	Washer, lock ½" Z	8
19	000-5508	Nut HH M20-2.50 C6 Z MD	2



Ref.	Part #	Description	Qty.
1	1024010C	Yoke (tractor end)	1
2	1004020C	Cross & bearing	2
3	1944041NC	Outer tube	1
4	1954043NC	Inner tube	1
5	1504260C	Overrunning clutch (implement end)	1
6	1784210C	Locking ring, outer tube	1
7	1784201C	Rigid cone, outer tube	1
8	1213233C	Stiffening ring	2
9	1784203C	Standard cone	2
10	1784212C	Pin	2
11	1773039C	Shield, outer tube	1
12	1872039C	Shield, inner tube	1
13	1784202C	Rigid cone, inner tube	1
14	1784211C	Locking ring, inner tube	1
15	90SS4039C	Shield, complete	1
16	1006065C	Chain, anti-rotation	2
17	950-463B	Decal "DANGER - Rotating driveline, keep away" outer shield	1
18	950-464B	Decal "DANGER - Guard missing, do not operate" outer tube	1
	050-0483	Driveline w/overrunning clutch, complete	-



## **Use only original spare parts**

*All rights reserved. It is unlawful to copy, reprint or use any of the information or details in this manual without the expressed written permission of the Company. Technical information provided in this manual is approximate, the Company reserves the right to modify or improve the models shown for technical or commercial purposes. Pictures in this manual do not necessarily show the machine as delivered.*

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**BEFCO**<sup>®</sup>

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