

**Sheyenne Tooling & Mfg.**



**Sheyenne**  
**CYC ONE**

**Ditcher**

**Owner / Operator Manual**

**& Parts Book**

701 Lenham Ave. - P.O. Box 647 – Cooperstown, ND 58425  
(701) 797-2700 – Fax (701) 797-2584 – [www.sheyennemfg.com](http://www.sheyennemfg.com)



# **ATTENTION DEALER**

The dealer has primary responsibility for warranty registration of the Cyclone Ditcher. The dealer and the purchaser should jointly record the information on page 2 and the warranty pages that follow that page. Both parties need to keep their respective copies. It is advisable for the purchaser to share the name of the insurance company that is covering his or her equipment. This is helpful in the event of loss or theft.

**Be sure the OWNERS MANUAL remains with the ditcher when sold. It contains important procedures for safe operation of the Cyclone Ditcher.**





## SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Cylone Ditcher when ordering parts, requesting service or for information.

The serial number plate is located where indicated. Please mark this number and other information in the spaces provided. It will be useful for future reference.



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

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

Production Year \_\_\_\_\_



Please enter information below and **SAVE FOR FUTURE REFERENCE**

## DITCHER WARRANTY

SHEYENNE TOOLING & MANUFACTURING warrants each new product to be free from defects in material and workmanship. This warranty is applicable only for the normal service life expectancy of the machine or components, not to exceed **twelve consecutive months** from the date of delivery of the new SHEYENNE TOOLING & MANUFACTURING product to the original purchaser.

Genuine SHEYENNE TOOLING & MANUFACTURING replacement parts and components will be warranted for 90 days from date of purchase, or the remainder of the original equipment warranty period, whichever is longer.

Under no circumstances will it cover any merchandise or components thereof, which in the opinion of the company, has been subject to negligent handling, misuse, alteration, an accident, or if repairs have been made with parts other than those obtainable through SHEYENNE TOOLING & MANUFACTURING.

Our obligation under this warranty shall be limited to repairing or replacing, free of charge to the original purchaser, any part that in our judgment shall show evidence of such defect, provided further that such part shall be returned within thirty (30) days from date of failure to SHEYENNE TOOLING & MANUFACTURING.

This warranty shall not be interpreted to render us liable for injury or damages of any kind or nature to person or property.

Except as set forth above, **SHEYENNE TOOLING & MANUFACTURING shall have no obligation of liability of any kind on account of any of its equipment and shall not be liable for special or consequential damage. SHEYENNE TOOLING & MANUFACTURING makes no other warranty, express or implied, and, specifically, SHEYENNE TOOLING & MANUFACTURING disclaims any implied warranty of merchantability of fitness for a particular purpose. Some states or provinces do not permit limitations or exclusions of implied warranties of incidental or consequential damages, so the limitations or exclusions in this warranty may not apply.**

This warranty is subject to any existing conditions of supply, which may directly affect our ability to obtain materials or manufacture replacement parts.

SHEYENNE TOOLING & MANUFACTURING reserves the right to make improvements in design or changes in specifications at any time, without incurring any obligations to owners of units previously sold.

No one is authorized to alter, modify or enlarge neither this warranty nor the exclusions, limitations and reservations.

I have read and understand the above instructions and warranty. **Warranty is invalid until all three copies are completed and signed. Customer copy retained, dealer copy in dealer's possession and manufacturer's copy returned.**

---

Date Purchased \_\_\_\_\_

Dealership \_\_\_\_\_

Ditcher Serial Number \_\_\_\_\_

Customer Signature \_\_\_\_\_

Date \_\_\_\_\_

Dealer Signature \_\_\_\_\_

Date \_\_\_\_\_

**Customer Copy**

(Keep in this book)



Please enter information below and **SAVE FOR FUTURE REFERENCE**

## DITCHER WARRANTY

SHEYENNE TOOLING & MANUFACTURING warrants each new product to be free from defects in material and workmanship. This warranty is applicable only for the normal service life expectancy of the machine or components, not to exceed **twelve consecutive months** from the date of delivery of the new SHEYENNE TOOLING & MANUFACTURING product to the original purchaser.

Genuine SHEYENNE TOOLING & MANUFACTURING replacement parts and components will be warranted for 90 days from date of purchase, or the remainder of the original equipment warranty period, whichever is longer.

Under no circumstances will it cover any merchandise or components thereof, which in the opinion of the company, has been subject to negligent handling, misuse, alteration, an accident, or if repairs have been made with parts other than those obtainable through SHEYENNE TOOLING & MANUFACTURING.

Our obligation under this warranty shall be limited to repairing or replacing, free of charge to the original purchaser, any part that in our judgment shall show evidence of such defect, provided further that such part shall be returned within thirty (30) days from date of failure to SHEYENNE TOOLING & MANUFACTURING.

This warranty shall not be interpreted to render us liable for injury or damages of any kind or nature to person or property.

Except as set forth above, **SHEYENNE TOOLING & MANUFACTURING shall have no obligation of liability of any kind on account of any of its equipment and shall not be liable for special or consequential damage. SHEYENNE TOOLING & MANUFACTURING makes no other warranty, express or implied, and, specifically, SHEYENNE TOOLING & MANUFACTURING disclaims any implied warranty of merchantability of fitness for a particular purpose. Some states or provinces do not permit limitations or exclusions of implied warranties of incidental or consequential damages, so the limitations or exclusions in this warranty may not apply.**

This warranty is subject to any existing conditions of supply, which may directly affect our ability to obtain materials or manufacture replacement parts.

SHEYENNE TOOLING & MANUFACTURING reserves the right to make improvements in design or changes in specifications at any time, without incurring any obligations to owners of units previously sold.

No one is authorized to alter, modify or enlarge neither this warranty nor the exclusions, limitations and reservations.

I have read and understand the above instructions and warranty. **Warranty is invalid until all three copies are completed and signed. Customer copy retained, dealer copy in dealer's possession and manufacturer's copy returned.**

---

Date Purchased \_\_\_\_\_

Dealership \_\_\_\_\_

Ditcher Serial Number \_\_\_\_\_

Customer Signature \_\_\_\_\_

Date \_\_\_\_\_

Dealer Signature \_\_\_\_\_

Date \_\_\_\_\_

**Dealer Copy**





**Manufacturer Copy**

**PLEASE ENTER INFORMATION BELOW AND RETURN TO SHEYENNE TOOLING AND MANUFACTURING**

## DITCHER WARRANTY

**SHEYENNE TOOLING & MANUFACTURING warrants each new product to be free from defects in material and workmanship. This warranty is applicable only for the normal service life expectancy of the machine or components, not to exceed twelve consecutive months from the date of delivery of the new SHEYENNE TOOLING & MANUFACTURING product to the original purchaser.**

Genuine SHEYENNE TOOLING & MANUFACTURING replacement parts and components will be warranted for 90 days from date of purchase, or the remainder of the original equipment warranty period, whichever is longer. Warranty is not applicable for normal wear and usage.

Under no circumstances will it cover any merchandise or components thereof, which in the opinion of the company, has been subject to negligent handling, misuse, alteration, an accident, or if repairs have been made with parts other than those obtainable through SHEYENNE TOOLING & MANUFACTURING.

Our obligation under this warranty shall be limited to repairing or replacing, free of charge to the original purchaser, any part that in our judgement shall show evidence of such defect, provided further that such part shall be returned within thirty (30) days from date of failure to SHEYENNE TOOLING & MANUFACTURING.

This warranty shall not be interpreted to render us liable for injury or damages of any kind or nature to person or property.

Except as set forth above, SHEYENNE TOOLING & MANUFACTURING shall have no obligation of liability of any kind on account of any of its equipment and shall not be liable for special or consequential damage. SHEYENNE TOOLING & MANUFACTURING makes no other warranty, express or implied, and, specifically, SHEYENNE TOOLING & MANUFACTURING disclaims any implied warranty of merchantability of fitness for a particular purpose. Some states or provinces do not permit limitations or exclusions of implied warranties of incidental or consequential damages, so the limitations or exclusions in this warranty may not apply.

This warranty is subject to any existing conditions of supply, which may directly affect our ability to obtain materials or manufacture replacement parts.

SHEYENNE TOOLING & MANUFACTURING reserves the right to make improvements in design or changes in specifications at any time, without incurring any obligations to owners of units previously sold.

No one is authorized to alter, modify or enlarge neither this warranty nor the exclusions, limitations and reservations.

I have read and understand the above instructions and warranty. I have also read the owner's manual and understand all safety precautions. **Warranty is invalid until all three copies are completed and signed. Customer copy retained, dealer copy in the dealer's possession and the manufacturer's copy returned.**

Date Purchased \_\_\_\_\_ Dealership \_\_\_\_\_

Ditcher Serial Number \_\_\_\_\_

Customer Information: Name (Please Print) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_, State \_\_\_\_\_, Zip Code \_\_\_\_\_

E-Mail (If Applicable) \_\_\_\_\_

Signature \_\_\_\_\_, Date \_\_\_\_\_

Dealer Signature \_\_\_\_\_

Date \_\_\_\_\_

*Please return via; fax, regular mail or e-mail; to:*  
*fax number – (701) 797-2584*  
*address --*  
**Sheyenne Tooling and Manufacturing**  
**PO Box 647**  
**Cooperstown, ND 58425**  
*e-mail – warranty@sheyennemfg.com*





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- Note: The isometric/exploded view on these three pages is common. The view and balloons are coordinated with pages 29 – 32 and with the index pages 33 & 34.

## Glossary of Terms

### Cyclone Ditcher

Seq	Page	Chosen Term	vs	Undesired
1	24	Kicker Drum		Beater
2	24	Paddles		Blades, Knives
	24	a. Side Prongs, b. Double Pointed, c. Solid		“ “
3	24	Cutting Edges		Plates
4	24	Rotor		Speader, Slinger, Fly Wheel, Wheel
5	24	Wear Bits, Inner and Outer		Plates
6	17, 29	Gate, Change Over		Spreader Gate
7	18, 16, 29	Chute, Left Hand and Right Hand		Gate (used previously)
8	29	Plastic Liners, different kinds		Outlets
9	11	Hydraulic Manifold		Block

# 1 INTRODUCTION

Congratulations on your choice of a Cyclone Ditcher. This newly designed and innovative machine boasts the following features: sixty inch wide replaceable cutting edge, zero to six inch cutting depth, adjustable angle control on the cutting edge, left or right, angle is hydraulically controlled from the tractor seat with visual plumb line indicator for the operator to see, dirt discharge to the right or left, mounting base for laser pole or GPS, coulters for trash conditions, PTO powered, recommended horse power range of the tractor – 200 to 350.

Safe, efficient and trouble free operation of your Ditcher requires that you and anyone else who will be operating or maintaining it, read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within this Operator's Manual.



## CYCLONE DITCHER

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Sheyenne Manufacturing dealer if you need assistance, information or additional copies of this manual.

**DIRECTION ORIENTATION** - The directions left and right, as mentioned in this manual, are looking forward while standing **behind** the ditcher. Example; the ditcher and tractor tires seen in the above photo are the right hand.



**THE SYMBOL SHOWN BELOW IS USED TO  
CALL YOUR ATTENTION TO INSTRUCTIONS  
CONCERNING YOUR PERSONAL SAFETY**



**BE ALERT!**

**Your Safety is involved**





## SAFETY ALERT SYMBOL



Why is **SAFETY** so important to you?

### 3 Big Reasons

**Accidents Can Be Avoided**

**Accidents Disable And Kill**

**Accidents Are Costly**

This safety alert symbol appears in this manual and on many of the decals on the Ditcher. It is used to draw your attention to the possibility of personal injury or loss of life. We **urge** you to follow all safety instructions. Be alert to safety issues at **all** times!

In addition you will see the use of **signal words** with the safety messages. The appropriate signal word for each message has been selected using the following guide-lines:



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



**WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



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

**IMPORTANT:** Indicates that equipment or property damage could result if instructions are not followed.

**NOTE:** Gives helpful information.

The Cyclone Ditcher is designed to give safe, dependable service if operated and maintained according to instructions. Read and understand this manual before operating. It is the owner's responsibility to be certain anyone operating this product reads this manual, and other applicable manuals, (including tractor) to become familiar with this equipment and all safety precautions. Failure to do so could result in serious personal injury or equipment damage. If you have any questions, consult your dealer.

## 2 SAFETY

You, the owner/operator, have primary responsibility for the safe operation and maintenance of the Cyclone Ditcher. We at Sheyenne Tooling and Manufacturing want to do our part to make safety happen. This manual is part of that effort.

### 2.1 TRAINING

Whenever possible we will arrange an initial demonstration and training for new owners. This may be done by your dealer, a sales representative or via video. Anyone else who is going to operate, maintain or work around the ditcher will need training from the person who was trained initially. Everyone who operates this machine needs to be trained, to read and to understand this manual. Good safety practices not only protect you but also the people around you. Almost all accidents can be prevented. Do not risk injury or death by ignoring good safety practices. **Safety Is Important!**

### 2.2 DISCHARGE CHUTE SAFETY

The Cyclone Ditcher is a heavy duty machine which requires significant horsepower to operate. This together with the nature of its function make it doubly important to always be safety conscious. The number one concern is the danger of flying debris. Dirt is thrown from the discharge chute at a high rate of speed and to great distances. Stones and rocks can also be thrown with the dirt. These heavier objects will travel farther than the dirt. We strongly recommend that the ditcher is powered by a tractor with a cab. The cab provides protection from dust and dirt. Avoid being down wind from the discharge chute. It is recommended that the only person in the area during operation should be the operator who is inside the tractor cab. Stay away from the discharge chute when the machine is operating. Keep others away. If observing is necessary that person or persons should be 500 or more feet away. Obviously the most dangerous place is out from the discharge chute; however, stray dirt or debris can be thrown in other directions.

### 2.3 GENERAL SAFETY

1. Read and understand the Operators Manual before operating, maintaining or adjusting the Cyclone Ditcher.



2. Only trained competent persons shall operate the ditcher. An untrained operator is not qualified to operate this machine. An untrained operator exposes himself and anyone in the area to possible serious injury or death.

3. Never operate this or any other machine while under the influence of alcohol or illegal drugs or while taking prescription drugs that carry a warning against operating machinery or driving with their use.

4. Do not allow children anywhere in the area of the ditcher! Spectators and bystanders should not be in the area either. Only persons having 'reason to be' in the area may be there, and they should be well outside of the hazard area.

5. Have a first-aid kit available for use should the need arise and know how to use it.



6. Wear appropriate protective gear when working around the ditcher.

7. Do not modify this machine in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment, or void the warranty.

8. Never attempt to make any adjustments to the ditcher while the tractor engine is running. Turn off the ignition, wait for machine rotation to come to a complete stop, remove the ignition key, then proceed to make adjustments. The same measures of shut down are required to perform inspection, servicing, repair or unplugging.

9. Be thoroughly familiar with the controls and proper use of the equipment. Know how to stop the machine and disengage the controls quickly. An alert operator and quick action may avoid an accident.

## 2.3 GENERAL SAFETY (Cont.)

10. Keep all shields and safety guards in place and verify that the hardware holding them is properly tightened.
11. Never operate the ditcher without guards and other safety protective devices in place.
12. Check for moving parts excessive wear regularly. Replace worn parts with genuine parts.
13. Replace all missing, illegible, or damaged safety and warning decals. See list or decals in this manual.
14. Keep safety decals clean of dirt and grime.
15. If the ditcher begins to vibrate abnormally, disengage the PTO drive, stop the engine immediately and check for the cause. Excessive vibration is generally a sign of trouble.
16. The ditcher has shear bolt protection for systems powered by the tractor PTO. If large rocks or other foreign objects cause these bolts to shear replace them with bolts of equal size and grade. After striking any object, the work should be stopped and the ditcher inspected for damage. Replace shields and guards. Only if no damage has occurred should work resume.
17. Owners, operators and all employees who will operate the ditcher need to review safety instructions annually.

## 2.4 OPERATING SAFETY

1. Read and understand both this operator's manual and all safety decals on the ditcher before operating.
2. Clear the area of all bystanders, especially children, before starting.
3. **Do not** allow riders on either the ditcher or the tractor.
4. Remove obstructions from the work area. This would include rocks or stones, wire, tree branches, roots or stumps.

5. Keep hands, feet and clothing away from these moving parts; PTO drivelines, the beater and the rotor.

6. **Do not** direct the discharge chute at people, pets, animals, vehicles, buildings or even shrubs or trees. Objects thrown from the chute can do damage, cause injury or death.

## 2.5 TRANSPORT - SAFETY STRAPS

1. Verify that the transport - safety straps are in place. If not, connect them. **See Figure 1.**
2. The safety chain must be properly attached and the hitch pin secured to prevent it from 'working' its way out of the draw bar.
3. Drive at a safe speed relative to road surface, weather and visibility conditions. Speed should be low enough for an emergency stop to be safe. Be aware that the ditcher weighs approximately 10,000 pounds, adding to stopping time and distance.
4. Reduce speed prior to turns. Keep speed reasonably low.
5. Make sure the SMV (Slow Moving Vehicle) emblem and all the lights and reflectors that are required by local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.
6. Again, no riders.
7. Keep to the right and yield the right-of-way to allow faster traffic to pass.
8. Use hazard warning flashers on tractor when transporting unless prohibited by law.



**Fig. 1 TRANSPORT - SAFETY STRAPS (Transport Position Shown)**

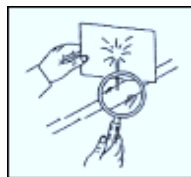
## 2.6 HYDRAULIC SAFETY

1. Always place all tractor hydraulic controls in neutral before disconnecting from tractor or working on hydraulic system.
2. Make sure that all components in the hydraulic system are kept in good condition and are clean.
3. Replace any worn, cut, abraded, flattened or crimped hoses.
4. Do not attempt any makeshift repairs to the hydraulic fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.

5. Wear proper hand and eye protection when searching for high-pressure hydraulic leak.



Use a piece of paper, or cardboard, or wood as a backstop instead of hands to isolate and identify a leak.



6. If injured by a concentrated high-pressure stream of hydraulic oil, seek medical attention **immediately**. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.
7. Before applying pressure to a hydraulic system, make sure all components are tight and that hoses and couplings are in good condition.
8. Relieve pressure from hydraulic circuit before servicing or disconnecting from tractor.

## 2.7 SAFETY DECALS

1. Keep safety decals and signs clean and legible at all times.
2. Replace safety decals that are missing, damaged or have become illegible.
3. Replacement parts that once displayed a safety sign should also display the current sign.
4. Safety decals or signs are available from your Dealers Parts Department or the factory.

## 2.8 HOW TO INSTALL SAFETY DECALS

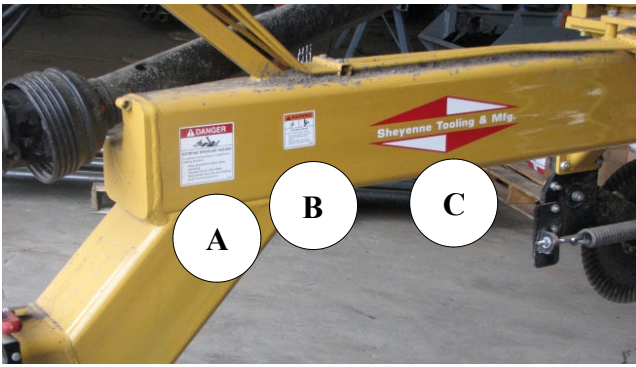
1. Be sure that the installation area is clean and dry.
2. Decide on the exact location and position before you remove the backing paper.
3. Remove the smallest portion of the split backing paper.
4. Align the decal over the specified area and carefully press the small portion with the exposed 'stickey' backing in place.
5. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
6. Small air pockets can be pierced with a pin and smoothed out using the decal backing paper.

## 2.9 SAFETY DECAL LOCATIONS

The types of decals and locations on the equipment are shown in the picture(s) on this page and the next. Good safety requires that you familiarize yourself with the various safety decals, the type of warning and the area where it applies, or particular function related to that area. This raises SAFETY AWARENESS.

**Think SAFETY !**

**Work SAFELY !**



**A**

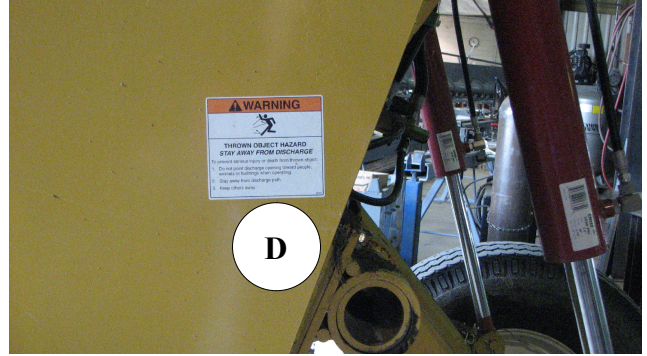
**DANGER --- Rotating Driveline Hazard / 1000 RPM – PTO**  
Decal Part Number - 46005

**B**

**WARNING --- Crushing Hazard (Hitch)**  
Decal Part Number - 46008

**C**

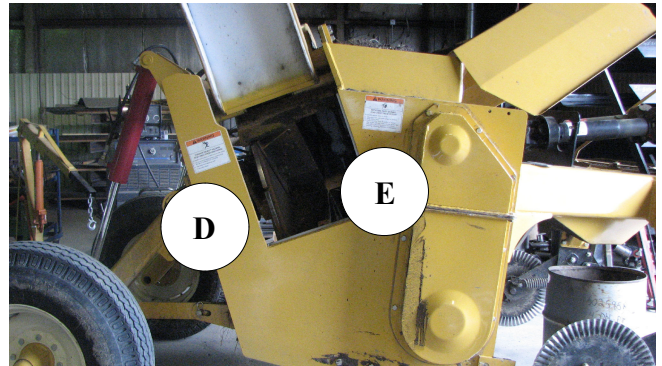
**(LOGO) --- Sheyenne Tooling & Mfg**  
Decal Part Number - 100-3-4460



**D**

**D**

**WARNING --- Thrown Object Hazard---*Stay Away From Discharge***  
Decal Part Number – 46004



**D**

**E**

**D**

**(See Definition and Part Number Above )**

**E**

**WARNING --- ROTATING PART HAZARD - *Keep Away From Rotor***  
Decal Part Number – 46003



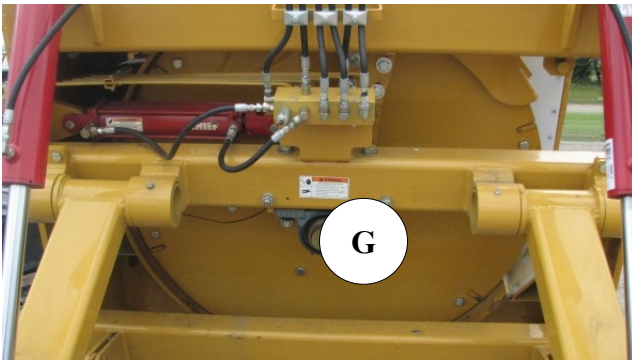
## 2.9 SAFETY DECAL LOCATIONS (Cont)



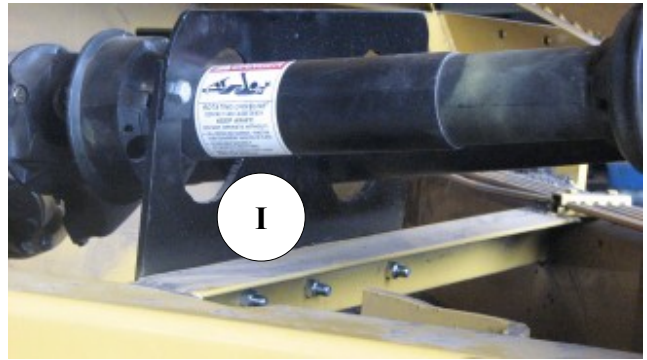
**F** CAUTION --- (13 Safety Items)  
Decal Part Number - 46002



**H** CYCLONE LOGO  
Decal Part Number - 46000



**G** WARNING --- High Pressure Fluid  
Hazard  
Decal Part Number - 46007



**I** DANGER --- ROTATING  
DRIVELINE / Contact can Cause  
Death

**NOTE:** This decal comes applied by our PTO vendor. It can be replaced by part number - 100-3-3623



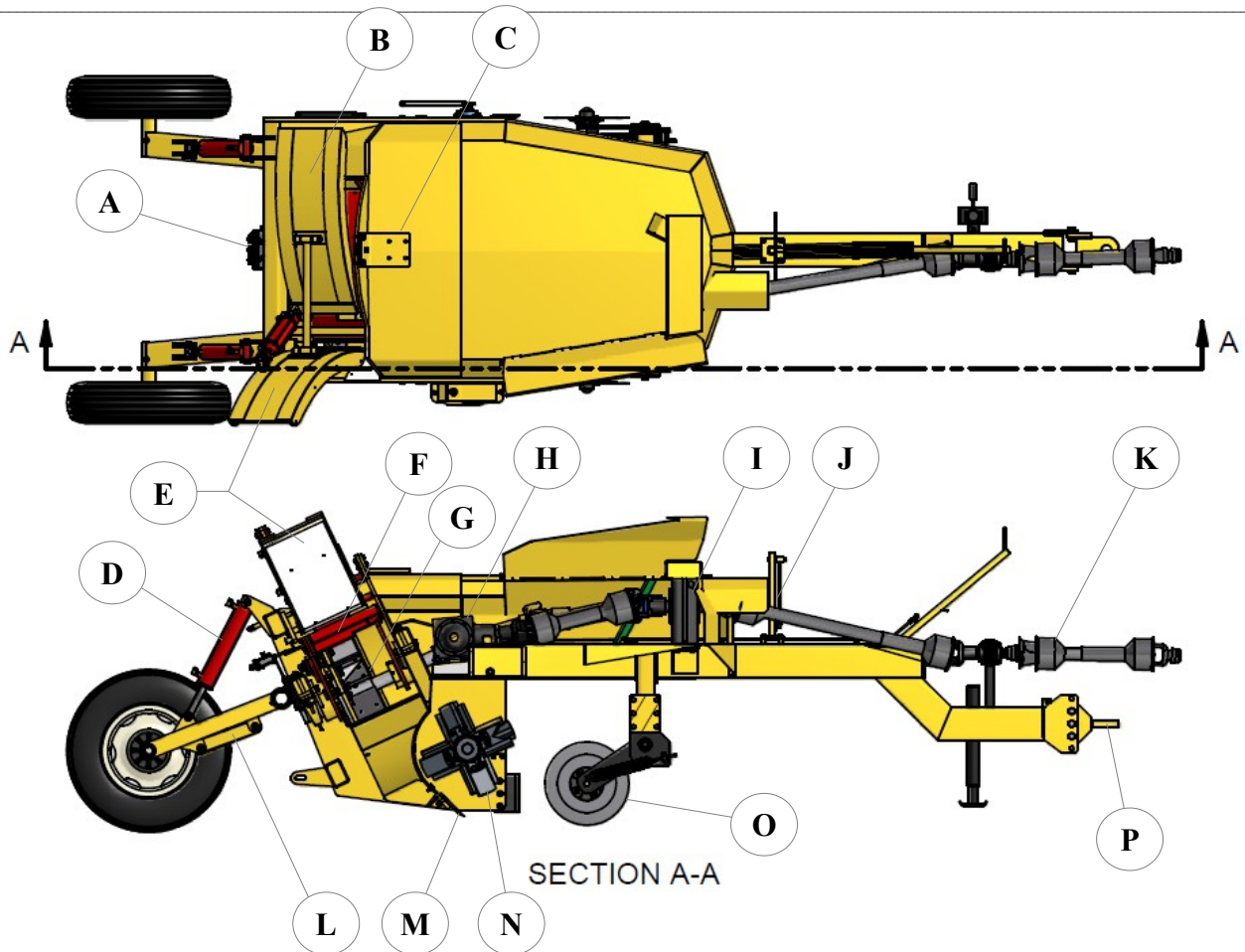


### 3 MACHINE COMPONENTS

The Cyclone Ditcher is designed and manufactured to efficiently clean existing ditches or build terraces. Several unique features coupled with state of the art technology make this ditcher a leader in the industry. The machine is engineered to be tough and durable.

Power is provided to the ditcher from the tractor

PTO. Controls are actuated by three hydraulic circuits. One controls cutting edge depth by extending or retracting the rear or lift cylinders to the wheels. The second controls the lift cylinders independently to provide tilt or angle cut capability. The third controls the chutes or doors, which direct dirt left or right.



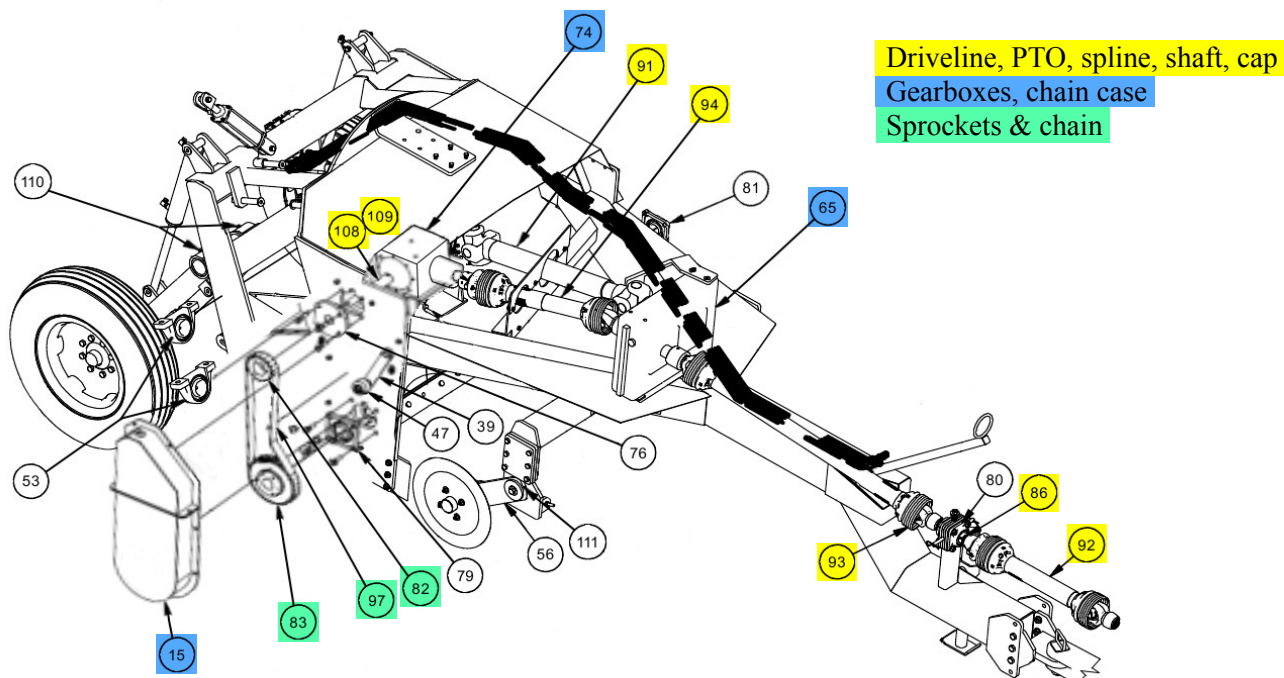
**Fig. 2 MACHINE COMPONENTS**

A	Hydraulic Manifold
B	Chute, Left
C	Laser Pole Base
D	Hydraulic Lift Cylinders
E	Chute, Right
F	Change-Over Gate
G	Rotor with (6) Blades / (12) Wear Bits*
H	90 Degree Reduction Gearbox – 1 to 2/3

I	Reduction Gearbox / Straight & 3 to 1
J	Leveling Gauge
K	PTO Driveline – from Tractor
L	Transport Safety Straps
M	Cutting Edges, Various*
N	Kicker Drum with Various Paddles*
O	Coulters
P	Hitch

\* **G** - Bits, **M** – Edges, & **N** – Paddles are detailed on page 24.

## DRIVE LINE COMPONENTS and Their Functions



**Fig. 3**

**Note:** All balloon numbers above are coordinated with the exploded views and parts lists on pages 29 through 32 in this manual. That's also true of the index pages.

- Item **92** is the large 1000 RPM power take off (PTO) shaft to the tractor. To be specific it is 1-3/4 inch diameter – 20 spline. It has two shear bolts or shear pins in the second set of U – Joints which protect the whole machine. It has two grease fittings, one in each U – Joint and a third grease fitting on the telescoping center slide.
- Item **93** is the long PTO shaft to the gear box. It has three grease fittings in the same locations as the PTO shaft described above.
- Item **65** is a combination gear box with two output shafts. The first shaft is straight through with no reduction. The second is reduced 3 to 1 or down to 333 RPM. It drives the rotor.
- Item **91** is the rotor drive shaft (333 RPM). It has two shear bolts in the second set of U – joints which are a second or back-up protection for the kicker drum. It also has the same three grease fittings as mentioned on the preceding shafts.
- Item **94** is the short PTO shaft to the 90 degree gear box. It too, has the same three grease fittings as the other shafts.
- Item **74** is a 90 degree, 1-1/2 to 1 reduction gear box. Output speed is 666 RPM.
- Item **82** is a double, number 80, 19 tooth sprocket. It is driven at 666 RPM.
- Item **83** is a double, number 80, 32 tooth sprocket. It's output speed to the kicker drum is 395 RPM. The #80 double chain that runs over these sprockets is item **97**.

**Note:** Balloons **92, 93, 91 & 94** have grease fittings and are mentioned again on page 22. Balloons **65 & 74** are gearboxes that require oil for lubrication and are covered on page 21 & 22. Balloons **82, 83 and 97** run in an oil bath chain case (**15**) and are covered on page 23.

## 4 OPERATING

### 4.1 MACHINE BREAK-IN

Although there are no operational restrictions on the ditcher when used for the first time, it is recommended that the following mechanical items be checked:

A. After operating for 1/2 hour:

1. Re-torque all the wheel bolts.
2. Re-torque fasteners and hardware.
3. Check that all safety decals are installed and legible. Apply new decals if required.
4. Check that no hoses are pinched or being crimped. Re-align as required.
5. Check that all guards are installed and working as intended.
6. Check oil level in gearboxes. Add as required.
7. Check drive chain and tension and alignment. Adjust as required.
8. Lubricate all grease fittings.

B. After operating for 5 hours and 10 hours:

1. Re-torque all wheel bolts, fasteners and hardware.
2. Check hose routing.
3. Check that all guards are installed and working properly.
4. Check safety decals. Install new ones if required.
5. Check gearbox oil level. Add as required.
6. Check drive chain tension and alignment.
7. Then go to the normal servicing and maintenance schedule as defined in the Maintenance Section.

### 4.2 PRE-OPERATION CHECKLIST

Efficient and safe operation of the Cyclone Ditcher requires that each operator reads and

understands the operating procedures and all related safety precautions outlined in this section. A pre-operation checklist is provided for the operator. It is important for both the personal safety and maintaining the good mechanical condition of the ditcher that this checklist is followed.

Before operating the ditcher and each time thereafter, the following area should be checked off:

1. Lubricate the machine per the schedule outlined in Section 5, Service and Maintenance.
2. Use only a tractor of adequate power to operate the ditcher. See paragraph 4.4.
3. Ensure that the machine is properly attached to the tractor drawbar. Use proper sized draw pin and the gap shown on page 17, Figure 10.
4. It is **very important** that the drawbar pin location be properly adjusted in relation to the end of the PTO shaft. Dimension "T" in the ASAE (American Society of Agricultural Engineers) diagram below needs to be **correct**.

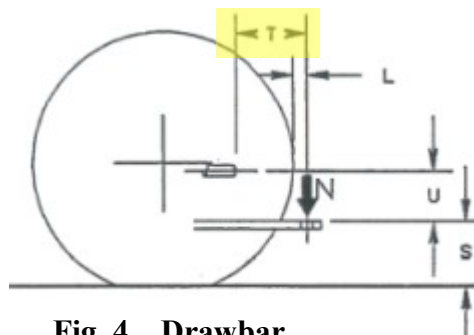


Fig. 4 Drawbar

Most tractors have drawbar adjustment, forward and back. It is best to consult your tractor manual for proper "T" dimension when doing PTO work. The PTO must telescope within designed limits. Costly repairs result if the PTO "bottoms-out" or separates during operation. Paragraph 4.4 on page 17 gives PTO size requirements and a warning about use of an adapter, read both.

5. Check that all guards and shields are installed, secured and functioning as intended. Do not operate with these missing or damaged.
6. Check work-site.



### 4.3 OPTIMUM OPERATING

Field testing, field demonstrations and the experience of our customers have produced several very helpful hints that we want to pass along.

1. Matching the tractor to the Cyclone ditcher is the most important step toward optimum operation. Tractors vary in PTO horsepower, engine horsepower, traction capability, transmissions and speeds. Being able to maintain and adjust speeds to the job is critical to the performance of the ditcher. A creeper gear or a variable speed transmission (IVT/CVT) capable of speeds as low as .5 mph to 1.5 mph provide for optimal operation of the ditcher.
2. Consider material flow through the ditcher to be much like that of a combine. The ditcher will not work efficiently when too much or too little material is being handled.

Pushing a big pile of dirt in front of the kicker drum is the most common sign of too much material. Tractor ground speed, depth of cut and field conditions are the controlling factors for this problem. Reduce cutting depth and/or ground speed. *Side note:* when the beater paddles are working in a large dirt pile, they wear down much faster!



Fig. 5

Inversely, too little material will not make efficient use of the ditcher, your fuel or your time.

3. The Cyclone ditcher is designed to work in a variety of conditions, but there are limitations. Extremely wet conditions is one of those. The first pass may work, but subsequent passes may cause plugging. Waiting a day or two to allow the open ground to dry may be a good option. Tilling the area a couple of days prior to ditching also

aids in drying. If you do get into muddy conditions and ditcher begins to plug, lift immediately, go to an area with dry dirt and operate the ditcher there. Moderate plugging can be cleared this way. A 'full blown plug' is both time consuming and difficult to clean out.

4. The ditcher gearboxes are designed to run at full PTO RPM. Gearbox manufacture warns of possible damage if rated RPM is lowered appreciably under load conditions.
5. Both your tractor and the ditcher will give you indications of how efficiently they are working together. The tractor will lug down when too large a load is applied or is traveling too fast. Also the ditcher will tend to push a pile of dirt in front of the kicker drum. A combination of slowing ground speed and/or lifting the ditcher cutting edge usually solves this problem. You need to find that "sweet spot" where field conditions, ground speed and cutting depth are optimum.
6. Watch and listen for abnormal vibration while operating. Sharp cornering or quick changes in grade (ditches or ridges) while under load are **not** recommended. Avoid damage to the drive-line, gear boxes, chain drives, bearings or even your tractor. If you experience abnormal vibration, **stop**, check the machine, pinpoint the cause and fix it. If you have questions, call your dealer or the engineering department at Sheyenne Mfg.

### 4.4 TRACTOR REQUIREMENTS

The recommended tractor horse power (HP) range to operate the Cyclone Ditcher is 200 to 350. Traction is another variable. A tractor with four wheel drive, two wheel with mechanical front wheel assist or one with tracks are probably good choices. See Figure 6.



Fig. 6 MATCHING TRACTOR SIZE TO THE DITCHER

#### 4.4 TRACTOR REQUIREMENTS (cont)

The Cyclone Ditcher is designed and equipped to be powered by a tractor with 1000 RPM, and a PTO shaft of 1-3/4" and 20 spline. **Do not use an adapter to any other size.** Also read paragraph 4.2, item 4. It covers an important hook-up dimension that will help prevent damage to the ditcher PTO, the tractor PTO shaft or tractor drive.

#### 4.5 HYDRAULIC HOOK UP

The ditcher requires three hydraulic circuits to operate. On this page you will find a more detailed function of each circuit. In summary, one controls depth, one the V-cut and the other, the dirt discharge gate, and left/right chutes.



Fig. 7

1, 2, 3, 4, 5

Five metal hydraulic lines come forward from the manifold on the back of the ditcher. A "Tee" in the line splits the 5<sup>th</sup> line. From here forward we have (6) rubber hydraulic lines. Obviously these need to be paired.

Gates	Lift	Tilt
(A,B)	(C,D-from 5)	(E,F)

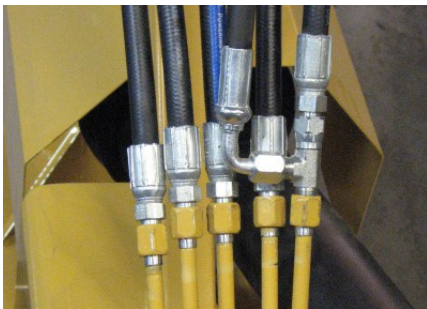


Fig. 8

Connect the six hydraulic hoses properly as to pairing and the control lever you wish to use for each function. Operate the hydraulic control levers to determine if hoses are paired by circuits and that forward on the depth lever lowers the

ditcher. The lever controlling the V-cut should lower the right side when forward. The hydraulic lever controlling the dirt chute discharge is your choice. **NOTE:** Switching the dirt discharge from left to right (or vice versa) is **not** to be done on the go and under load. There is a short time during the change over that dirt can not go out either chute. **See Figure 9**

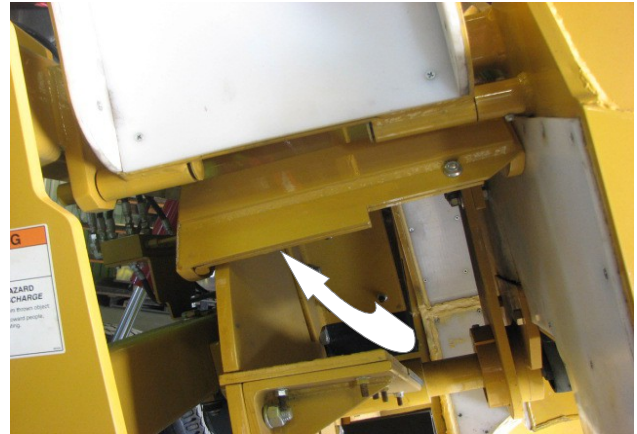


Fig. 9 CHANGE OVER GATE

#### 4.6 HITCH HOOK UP

The decal lettered "B" on page 10 warns of the safety concern when hooking up to large machines with large tractors. Please review the information on that decal and observe it's instruction. Use an appropriate size draw pin.

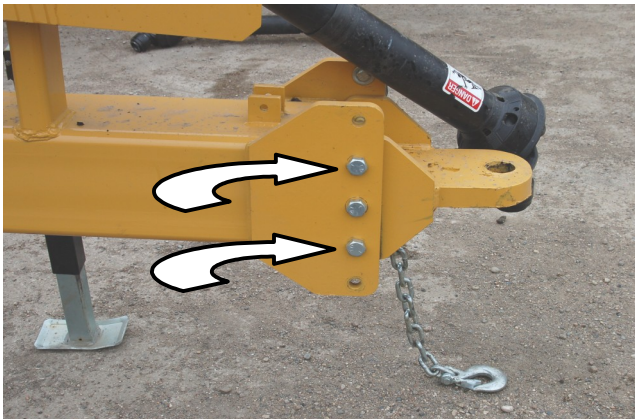
The ditcher hitch is rigid to maintain consistent depth of cut. The tractor needs to have approximately 1-1/2" of extra space between the ditcher tongue and the under side of the hammer strap for flexibility. **See Figure 10.** Attach the safety chain.



Fig. 10 DRAW BAR GAP



Connect the PTO shaft, making certain it locks into place. The Cyclone Ditcher has a three position (high, middle, low) height adjustment feature built into the hitch. **See Fig 11.** Using this adjustment the owner /operator can keep the first section of PTO shaft more level with the tractor PTO. This reduces vibration and extends the life of the universal joints. **Do not** hook up to the ditcher with a Quick Attach hitch on the three point arms. Remove the Quick Attach hitch, it can damage the ditcher on turns or damage the PTO shaft if it is lowered. Keep all PTO shields in place.



**Fig. 11 HITCH HEIGHT ADJUSTMENT**  
(Middle Position Shown)

**Figure 12** shows proper hook up of hitch, safety chain, PTO and hydraulic hoses. Hoses need to have enough slack to make turns without stretching, but not too slack causing pinching, rubbing or binding.



**Fig. 12 PROPER HOOK UP**

#### 4.7 OPERATING

1. Review the six operating safety items in section 2.4 on page 8. The fourth item mentions

rocks and stones. The ditcher should not be used on rocky land. Rocks are both dangerous, as stated earlier, and they cause damage to the machine.

2. Before beginning work in the field relieve pressure from the transport safety straps by lifting the ditcher with the cylinders on the rear wheels.

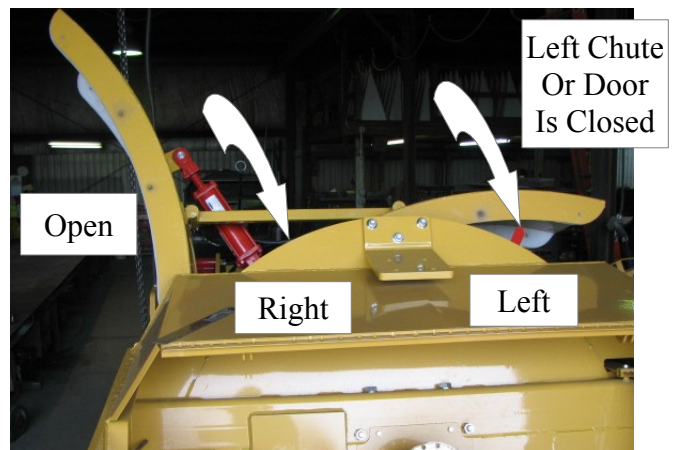
3. Change both transport safety straps from transport position to field position and pin them in place.

4. Operate all three hydraulic circuits to check their function and to familiarize yourself with what control lever causes a corresponding machine action. Quick response time on the controls may prevent an accident or damage to the ditcher.

5. Hydraulic Settings. Operator experience has shown that to properly control the depth of cut during operation, it is best to set the tractor hydraulics at 20% to 30%. This will allow the operator (or automatic depth control) to make smooth even changes in the depth of cut or slope on the go.

6. When all of the previously mentioned operating safety requirements have been met you would be ready to begin work.

7. Check the red arrow, it indicates which chute or door is closed. **See Figure 13.** If it's not the chute you want, change to the opposite. Whether left or right be sure that the gate and the arrow are fully one way or the other. (Cont.)



**Fig. 13 CHUTE INDICATOR ARROW**  
(Left Chute Closed – This looks reversed, but it's not viewed from behind, as is standard)

Again, **do not** switch the change over gate on the go and under load. There is a short time during the change over that dirt can not go out either chute.

7. It is quite likely that you will use the lowest gear available in your tractor while ditching. Start in low gear and move up if conditions merit.

8. The Cyclone Ditcher will prove to be a heavy pull. The tractor engine should be warmed up and ready for the load. It's recommended to engage the PTO, throttle up to the engine RPM that produces 1000 RPM on the PTO and begin moving forward.

9. Gradually lower the cutting edge and begin ditching. Depth of cut is variable, down to six inches. Soil conditions, traction, the load you wish to put on the tractor and other factors will determine the depth you choose.

10. Avoid sharp or even moderate corners while under load. Stress on drive train universal joints is greatly increased during cornering.

11. A reminder; be extra careful about the material thrown from the discharge chute. No injury's – No damage.

#### 4.8 LEVEL CUTTING

The Cyclone Ditcher can easily clean ditches with level bottom cuts. **See Figure 14.** Only two or three cuts can be made before the tractor and ditcher wheels carry the cutting edge too high to contact the ground. This method works well for most ditch clean out work.



**Fig. 14 LEVEL CUTS**

#### 4.8 V CUTTING

The Second hydraulic circuit provides the operator with the ability to control rear lift cylinders independently. This feature places the cutting edge at an angle. Left or right angle cutting is conveniently controlled from the tractor cab and can be done on the go. **See Figure 15.** V cutting is easiest if you travel 'up'



**Fig. 15 ANGLE OR V CUTTING**

one side of the ditch and 'down' the other. If all of the cutting, or the majority of it, needs to be done on one side you can push the right hand cylinder longer than the left and get the opposite angle cut and travel 'up' and 'down' on the same side of the ditch. This hydraulic leveling capability makes the Cyclone Ditcher more versatile than most other ditchers on the market. The ditcher has a 'pendulum' leveling gauge visible from the tractor seat to tell the operator the angle of cut. **See Figure 16.** This feature is particularly useful when making multiple cuts in the same ditch.



**Fig. 16 LEVELING GAUGE**





**Fig 17 TERRACING**

#### **4.10 TERRACE MAINTENANCE**

Terrace maintenance can easily be done with the Cyclone Ditcher. Smooth angles are cut and the dirt is spread evenly, no dirt piles. The left or right discharge feature is particularly useful while terracing. The ditcher out preforms dozers and/or scrapers. See Figure 17.

#### **4.11 HIGH RESIDUE OR TRASH**

The Cyclone ditcher is equipped with coulters and factory pre-set tension springs. Tough stover or sod may require additional spring tension. The cutting edge angle, the beater design and the coulters allow this ditcher to operate in a considerable amount of crop residue. Obviously, excessive residue will cause problems.



**Fig 18**

#### **4.12 STOPPING, REPAIRING, SHUT DOWN**

1. Run the ditcher until all dirt has cleared the discharge chute. If night time temperatures drop below freezing, it is important to clean out any damp dirt or mud from the ditcher. Avoid costly repairs caused by frozen dirt the next morning.
2. Slow tractor engine speed to idle.
3. Disengage the PTO.

4. Tractor cool down and engine shut down is owner/operator's discretion, particularly at the end of the work or end of the day. However; when anyone inspects, adjusts, services, repairs, unplugs or cleans the ditcher the tractor engine should be shut down and the ignition key removed for safety reasons.

5. If any work is being done on the ditcher that involves a persons or any persons limbs being under the machine, be sure to put the transport safety straps in position to avoid hydraulic failure, settling or accidental lowering.

6. The transport safety straps should be put in place if work is stopped and road transport is the next activity.

#### **4.13 OPERATING HINTS**

1. The Cyclone Ditcher is designed to operate at 1000 RPM. Any time work is being done the tractor PTO should be rotating at that speed.

2. Soil conditions and tractor horse power will determine depth of cut and rate of travel. The tractor operator will get the right feel for how these factors work together for optimum efficiency and productivity.

3. Listen for any unusual sounds or noises. If any are heard, stop the machine and determine the source. Correct the problem before resuming work.

#### **4.14 TRANSPORTING**

Reread all eight items on Transport Safety, paragraph 2.5, right hand column on page 8 of this manual. The safety instructions contain the proper or practical side of transporting this compact but heavy machine.

#### **4.15 STORAGE**

After the season's use, the machine should be thoroughly inspected and prepared for storage. Repair or replace any worn or damaged components to prevent and unnecessary down time at the start of the next season. To insure a long, trouble free life, this procedure should be followed when preparing the unit for storage each year.

#### 4.15 STORAGE (cont)

1. Wash the entire machine thoroughly using a water hose or pressure washer to remove all dirt, mud or debris.
2. Inspect all moving or rotating parts to see if anything has become entangled in them. Remove entangled material.
3. Lubricate all grease fittings to remove any moisture in the bearings.
4. Run the machine slowly for 1 minute to distribute lubricant to all surfaces.
5. Inspect all hydraulic hoses, fittings, lines, couplers and valves. Tighten any loose fittings. Replace any hose that is cut, nicked, abraded or is separating from the crimped end or the fitting.
6. Touch up all paint nicks and scratches to prevent rusting.
7. Indoor storage is preferred, if it's available, outdoor is OK.

## 5 MAINTENANCE AND SERVICE

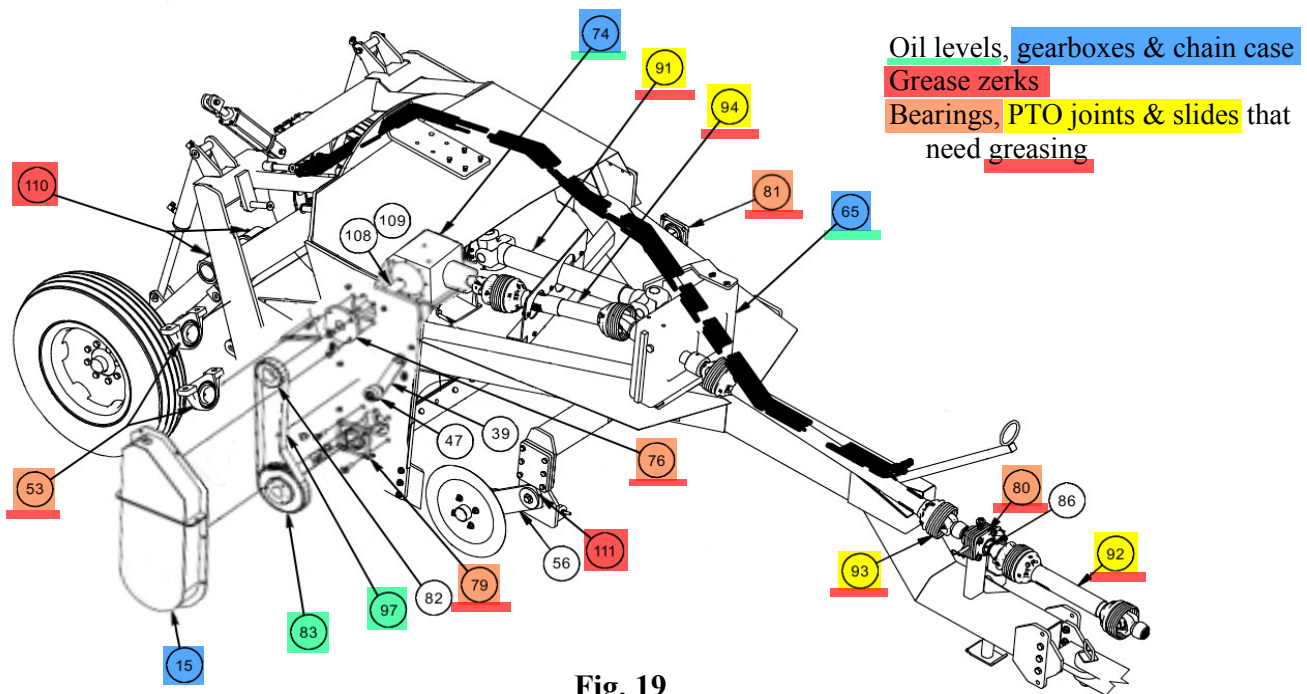
All of section two in this manual dealt with safety. A fair portion of that section applies to maintenance and servicing too. Particularly applicable are the 17 items in 2.3 (General Safety) on pages 7 & 8 as well as the 6 items in 2.6 (Hydraulic Safety) on page 9. Rather than repeat all of these items here, we strongly encourage you to review both of those sections before doing maintenance or servicing. Be very careful about high-pressure hydraulic fluid leaks. Always **replace** guards and safety shields, and secure them properly **after** performing maintenance or servicing.

### 5.1 MAINTENANCE

By following a careful service and maintenance program you will reduce down time and add to the years of service of the ditcher.

### 5.2 LUBRICATION – GEARBOX LUBE

Gearboxes (balloons **65** and **74** below) are filled to proper levels at the factory. SAE 80-90 gear lube oil is used. To check and fill oil levels see photos and narrative on the next page.



**Note:** All balloon numbers above are coordinated with the exploded views and parts lists on pages 29 through 32 in this manual. That's also true of the index pages.



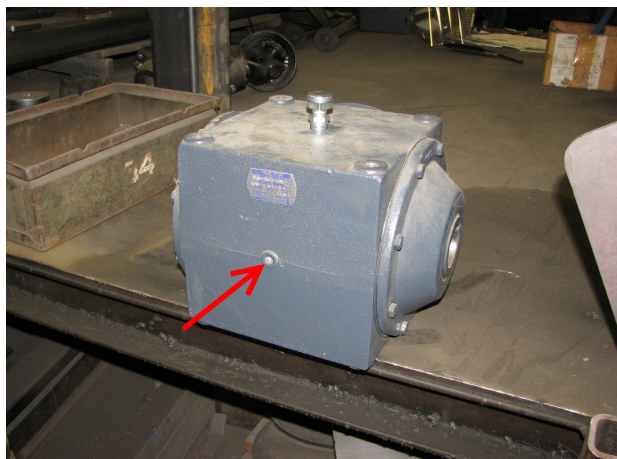
## 5.2 LUBRCATION – GEARBOXES (cont)

The gearboxes were indentified and their funtions explained on page 14. The first one in the drive-line is item [65](#), which has output shafts that serve two functions. **Figure 20** below shows the check and fill plug. Oil levels should be checked at the begining of the season and on reasonable intervals, depending on hours of use. If oil is down, refill to the level of the plug. This oil plug is very accessible.



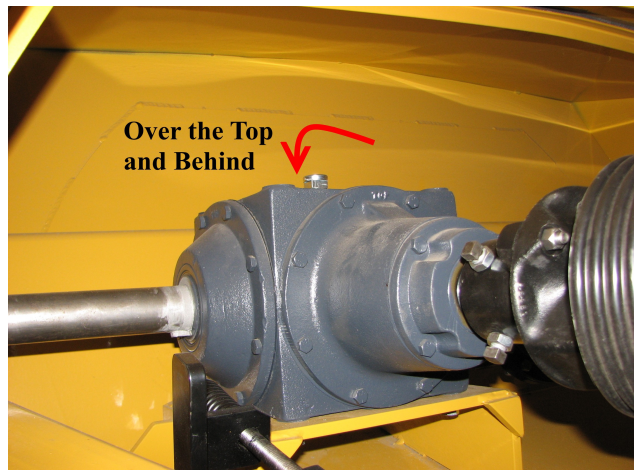
**Fig. 20 OIL PLUG, CHECK/FILL**

The second gearbox, item [74](#) also has an oil plug to check and fill, see **Figures 21 and 22**. The gearbox breather valve is located on the top. We **do not** recommend using this for checking or filling, since the gears are in the way. **Figure 21** is a photo of the gearbox on a workbench, arrow showing the oil plug.



**Fig. 21 OIL PLUG, CHECK/FILL**

When the gearbox is mounted the oil plug is to the back, see **Figure 22**. The location is not convenient, but it is accessible.



**Fig. 22 OIL PLUG, CHECK/FILL**

## 5.3 LUBRICATION-GREASING

Greasing needs to be done at least once per day and more often if usage involves long hours. Many grease fittings will not need much grease, others, such as the kicker drum and rotor bearings require more. Again, exercise all safety practices when greasing. Disengage the PTO drive, stop the tractor engine and remove the ignition key. The following is a brief description of greasing locations. See view on page 21.

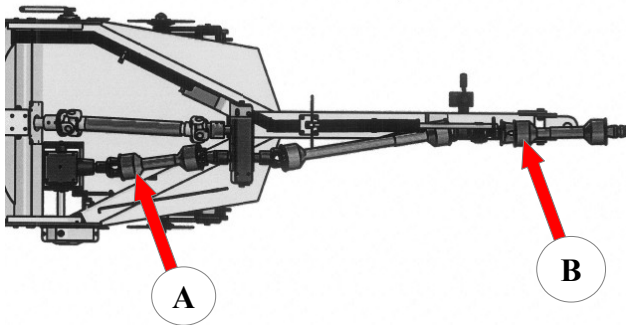
- Item or balloon [110](#) points to four grease fittings on the rear wheel pivots (two can be seen above and to the right of the tire on page 21).
- Item [53](#) points to both front and back bearings on the rotor. The back one is easy to access from the back of the machine. The front one is accessible from in front of the rotor.
- Item [79](#) (the righthand bearing of the kicker drum/lower chain drive) and [76](#) (the upper chain drive bearing) are not particulily accessible, but require greasing.
- Item 56 (2), the coultter pivots. Item [111](#) is the grease zerk itself.
- Item [81](#) is the left hand bearing on the kicker drum and is greased from the outside.
- Items [92, 93, 94 and 91](#) are all PTO shafts the have three grease fittings each. A description and the function of each PTO shaft is described on page 14 of this manual.

### 5.3 LUBRCATION – GREASING (cont)

- Item **80** are two bearings on a PTO support stand. They each have grease zerks.
- Items **53, 79, 76, 81, 80** and **47** are replaceable bearings and are further described on page 25.

### 5.4 SHEAR PINS OR BOLTS

The Cyclone Ditcher drive-line is protected by grade eight bolts as shear pins. **Figure 23** shows the two locations of the shear bolts. There are two bolts at each location. The shear bolts at location 'A' are grade 8, 3/8 x 2 inches long. The bolts at location 'B' are grade 8, 3/8 x 1 inch long. To replace shear bolts, follow this procedure

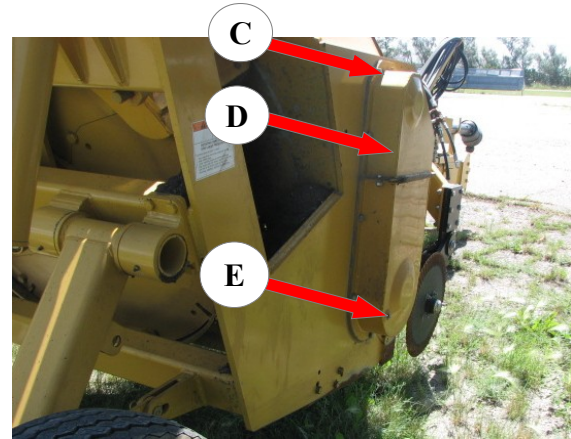


**Fig. 23 SHEAR BOLTS**

1. Disengage the PTO, stop the tractor engine, remove the ignition key, and be certain that no-one is in the tractor cab that can reverse these steps.
2. Remove the bolt part(s) remaining in the yoke.
3. Install a new bolt of equal grade, size and length. Tighten the bolt(s) enough to prevent them from loosening.

### 5.5 CHAIN CASE

The kicker drum is driven by a double #80 roller chain, item **97**. The chain and sprocket, item **83**, run in an oil bath case, item **15**. See **Figure 24** below for check and fill information.



**Fig. 24 CHAIN CASE**

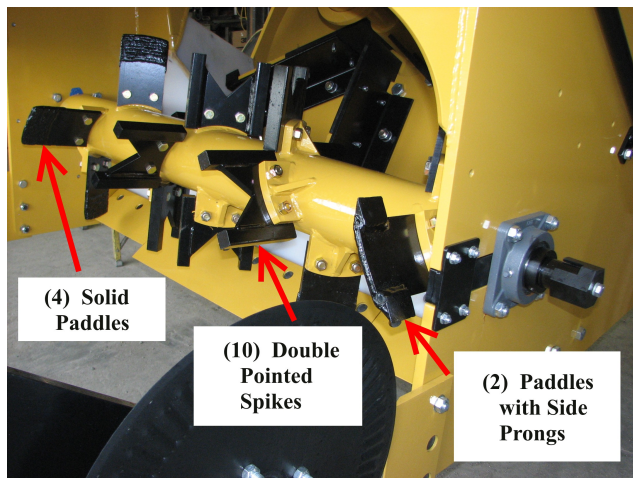
Location 'C' is the fill plug and the breather cap. The top cover 'D' can be removed to inspect or replace the chain, but resealing it requires clean surfaces, good silicone and careful workmanship to bond the case to the side panel and prevent leaking. Location 'E' is the oil level plug. Check oil level annually or after 100 hours of use. Fill to oil plug level with SAE 80-90 gear lube.



## 5.6 KICKER DRUM REPLACEMENT PARTS AND HARD SURFACING

The kicker drum has 16 replaceable parts on it. See **Fig. 25** below. All of these parts are made of AR 400 hardened steel.

The first paddle at each end are the ones with side prongs. These are interchangeable. One prong will wear faster than the other. Remove and switch them to double their wear life.



**Fig. 25 KICKER PADDLES & SPIKES**

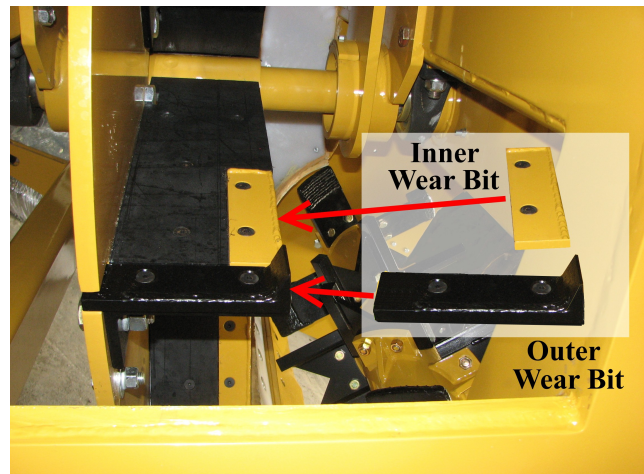
Next are (4) flat or rectangular paddles which are hard surfaced from the factory. Last, there are (10) double pointed spikes in the center.

In spite of the new harder material these parts will wear. Different soil types effect the wear rate considerably. A few days of use may be enough to show wear. Some owner/operators have maintained these by building them up and hard surfaced them again, which is time consuming. Having replacement parts is recommended.

We at Sheyenne Tooling & Mfg strongly recommend that you keep a close eye on the leading edges of these paddles. Do not allow them to wear down to the mounts. Having a second set of paddles and spikes on hand is a good idea. Replacement parts are available from your local dealer.

## 5.7 ROTOR REPLACEMENT PARTS AND HARD SURFACING

The rotor has 6 blades and 12 replaceable wear bits. Six flat bits and six bits with a triangular tip.

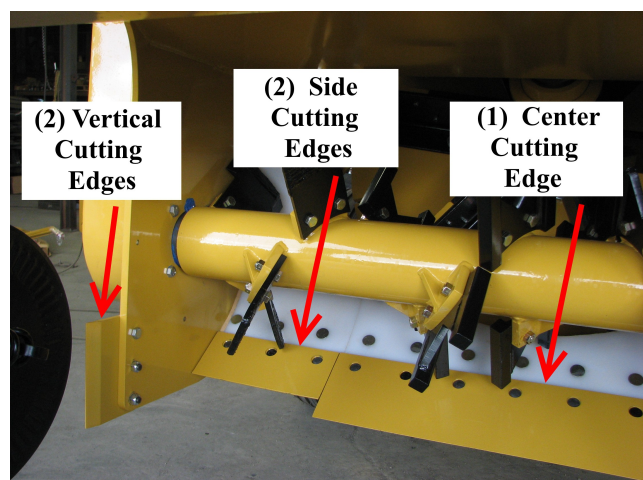


**Fig. 26 ROTOR WEAR BITS**

They are made of AR400 hardened steel, but still subject to wear. These require the same close monitoring and maintenance as the kicker drum paddles. Bits are replaceable and available from your dealer.

## 5.8 CUTTING EDGES

The Cylone Ditcher has three different replaceable cutting edges. The three pieces are;

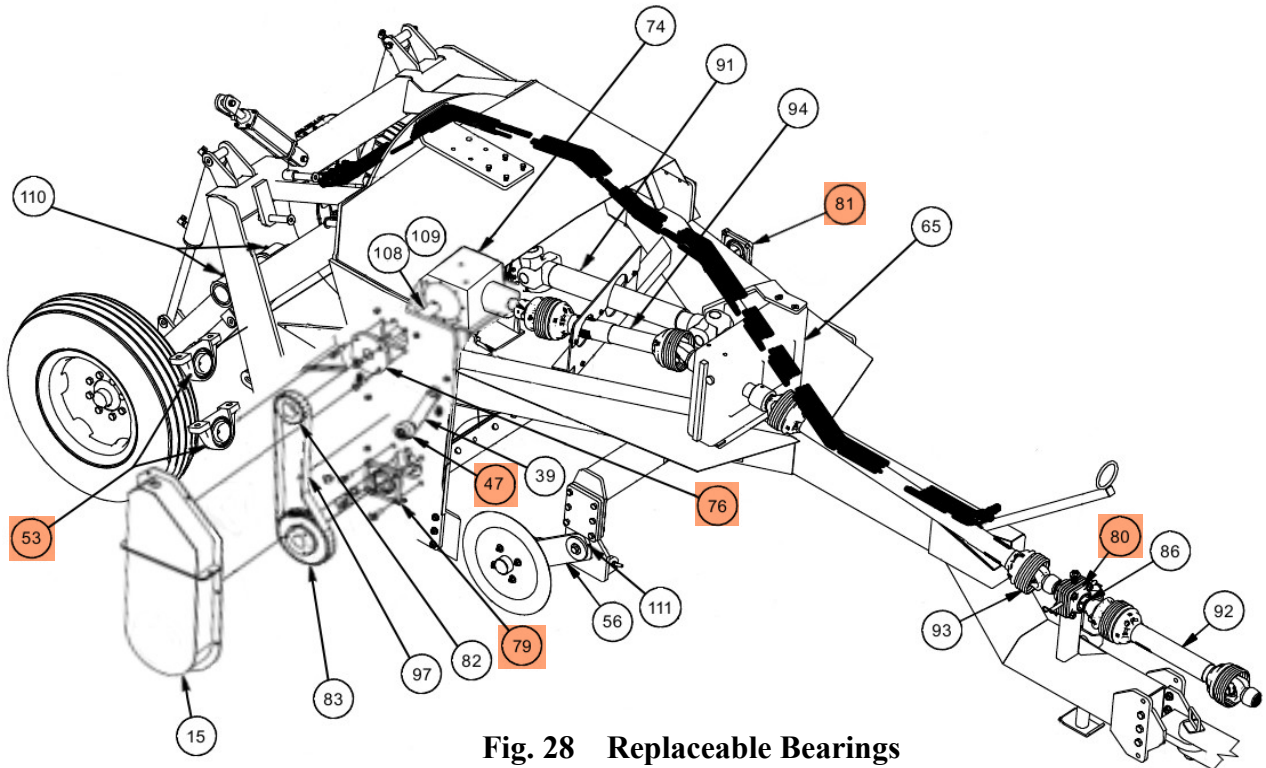


**Fig. 27 CUTTING EDGES**

one larger center section, two side sections and two vertically mounted edges.

## 5.9 DRIVE LINE BEARING REPLACEMENT

The Cyclone Ditcher has (9) replaceable bearings on the drive line. Some are quite accessible, others are not and will require a well equipped shop to do the job. See **Figure 28** and the associated parts list.



**Fig. 28 Replaceable Bearings**

**Note:** All balloon numbers above are coordinated with the exploded views and parts lists on pages 29 through 32 in this manual. That's also true of the index pages.

Parts List				
Item	Qty	Part Number	Description	Remarks
76	1	40044	Bearing, Top Chain Drive	Was 40025
47	1	30058	Idler Assy, Chain Tightener – Roller & Bearings *	
79	1	40126	Bearing, Right Hand Kicker Drum – F4B-SXR-207	
80	2	40127	Bearing, PTO Drive – SKF-UCF 209-112	
81	1	40129	Bearing, Left Hand Kicker Drum – F4B-SXR-200L	
53	2	40140	Bearing, Rotor – AMCAN-UCP 215-48	

\* Item 47 is an idler assembly (roller type) with (2) bearings. Roller part number is 20205. Sealed ball bearing part number is 40026. The assembly is inside the chain case.



# Standard Features vs. Options

(Standard feature to the left, optional to the right)

1. **Tires:** The Cyclone Ditcher can be equipped with different sets of tires. Initially they come with transport tires, made for highway conditions, speeds and wear. It is recommended that these be changed to floatation tires when delivered to the customer.



2. **Drum Reverser:** The Ditcher operates *very* well in dry to moderately wet dirt. It also does fine in water and very wet or 'soapy mud', but *not* well in sticky mud. Sticky mud, too much plant material, tree branches or rocks can cause the machine to plug and shear the bolt(s) which protect the ditcher. All of these should be avoided. However; if this happens, the kicker drum can be reversed, one of two ways, 1) the manual wrench/bar or 2) the hydraulic reverser option.



Fig. 31

Fig. 32

3. **Laser Pole/Depth Control:** The Cyclone Ditcher is equipped with hydraulic cylinders, controlled by the tractor operator, for depth of cut and angle. Optional to the operator controlled system are the laser or the GPS. The Ditcher has a mount base for either the laser pole or the GPS receiver.



Fig. 33



Fig. 34

## TROUBLE SHOOTING

In the following section, we have listed problems, causes and solutions to problems that you may encounter. In broad terms the ditcher will perform in good and not so good conditions. However, it has its limits. Rocks cause problems. Small rocks will go through, large ones will shear protection bolts. Another limitation is mud. Too muddy will cause the ditcher to plug up.

If you have a problem that is not listed or too difficult to solve, even after having read through this section, please call your local Sheyenne Cyclone Ditcher dealer. Before you call, have this operator's manual and the serial number from your machine ready.

PROBLEM	CAUSE	SOLUTION
All drive line components stop rotating including the PTO shafts	Both shear bolts in the front PTO shaft have failed <b>or</b> all four shear bolts have failed	Go through proper shut down procedure, check for the cause of the shear bolt failure, remedy the cause, remove any broken shear bolt pieces, replace the shear bolts with the proper size and grade bolt
The rotor still turns, but the beater doesn't	Both shear bolts in the third PTO shaft (to the right angle gear box) have failed	Do all of the same steps listed above
Wet dirt or mud piles up between the beater and the rotor	Conditions too wet	Either stop ditching altogether or stop, work or cultivate the ground, let it dry out a few days and do the ditching in drier conditions
The discharge chute becomes clogged with wet dirt or mud	Conditions too wet	Same as above



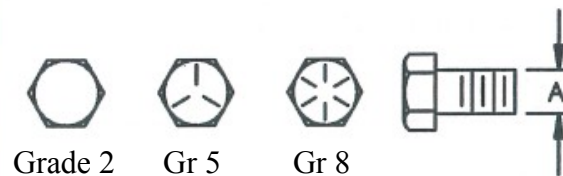
## BOLT TORQUE

### CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in the chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as guide. Replace bolts with the same hardness.

### ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*					
	SAE 2		SAE 5		SAE 8	
	N.m	(lb-ft)	N.m	(lb-ft)	N.m	(lb-ft)
1/4"	8	(6)	12	(9)	17	(12)
5/16"	13	(10)	25	(19)	36	(27)
3/8"	27	(20)	45	(33)	63	(45)
7/16"	41	(30)	72	(53)	100	(75)
1/2"	61	(45)	110	(80)	155	(115)
9/16"	95	(70)	155	(115)	220	(165)
5/8"	128	(95)	215	(160)	305	(220)
3/4"	225	(165)	390	(290)	540	(400)
7/8"	230	(170)	570	(420)	880	(650)
1"	345	(225)	850	(630)	1320	(970)



**Fig. 35 Hardness Information**

Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless specified in this manual. When using locking elements, increase torque values by 5%.

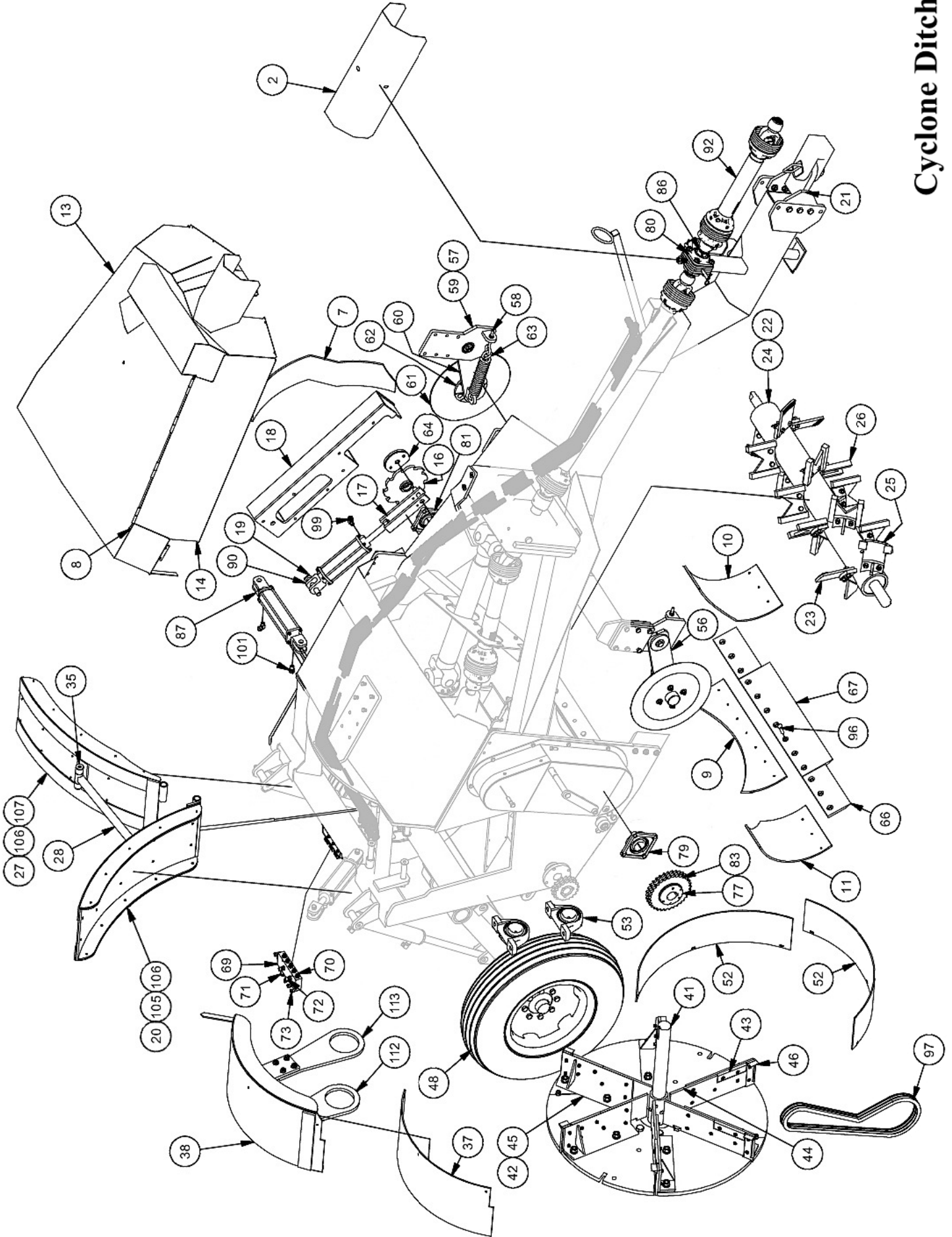
**\*Torque value for bolts and capscrews are identified by their head markings.**

**NOTE:** Pages 29 and 31 have the exploded assembly of the ditcher.

# Cyclone Ditcher

## Parts Section

Sheet 1 of 4



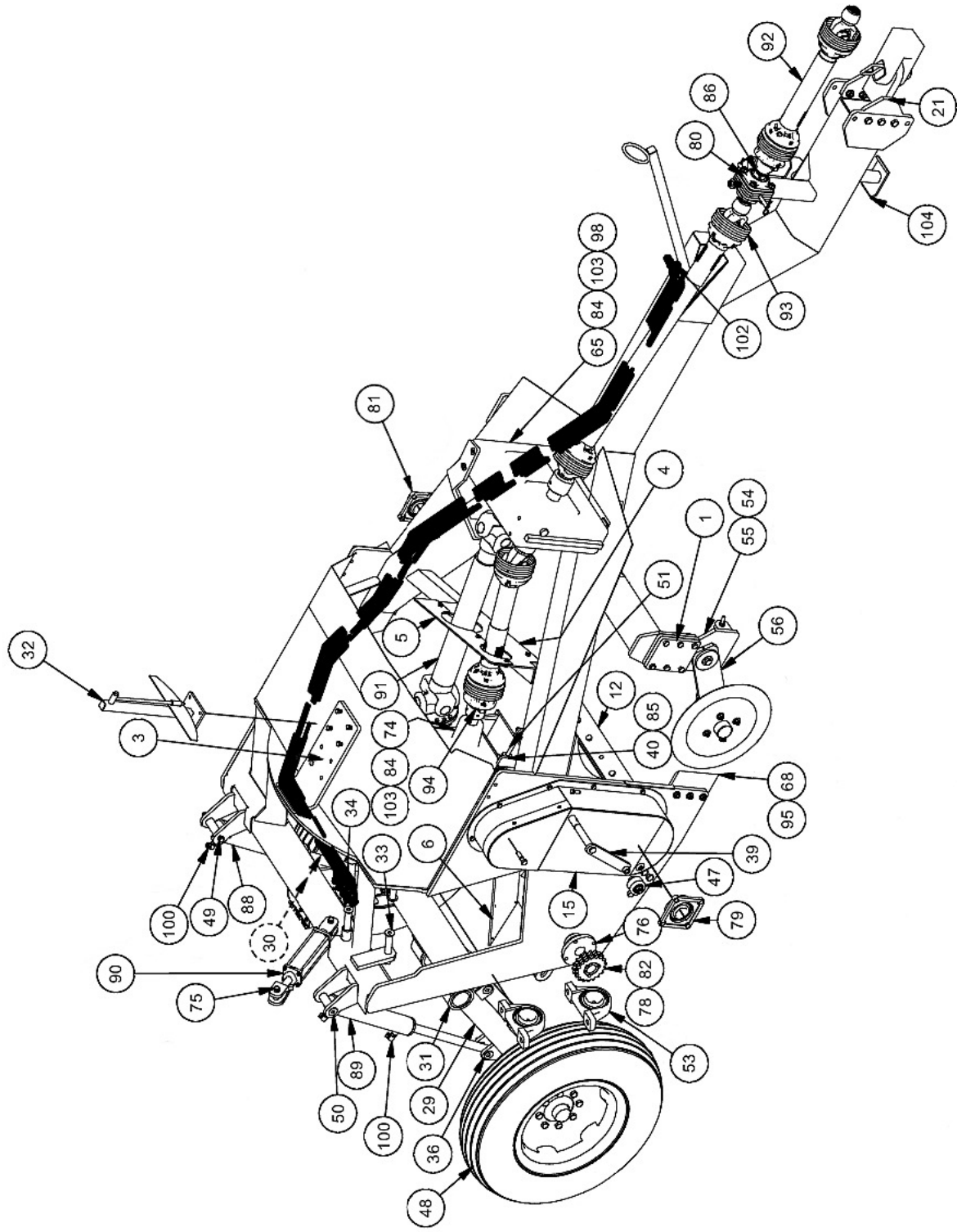
Parts List				Parts List				Parts List			
ITEM	QT	PART NUMBER	DESCRIPTION	ITEM	QT	PART NUMBER	DESCRIPTION	ITEM	QT	PART NUMBER	DESCRIPTION
1	2	10237	PLATE, COULTER MOUNTING	41	1	25022	SHAFT W/A, ROTOR	83	1	40153	SPROCKET, DOUBLE - 32T - #80
2	1	10300	SHIELD, DRIVE SHAFT	42	6	30203	PADDLE ASSY, ROTOR	84	2	40159	BREATHER VENT
3	1	10302	MOUNT PLATE, LASER - LEVEL	43	6	10410	WEAR BIT, ROTOR - INNER	85	1	40302	SPRING, 1" OD, .75" ID, .125 DIA.
4	1	10303	PLATE, SHAFT SAFETY-BOTTOM	44	6	20137	LINER, PADDLE - ROTOR - PLASTIC	86	1	40400	SPLINE, DBL SHAFT - 1-3/4"-20
5	1	10304	PLATE, SHAFT SAFETY-TOP	45	6	25037	PADDLE W/A, ROTOR	87	1	44000	CYLINDER, SPREADER GATE - 3 X 12
6	1	20201	LINER, ROTOR HOUSING - OUTLET	46	6	25048	WEAR BIT W/A, ROTOR - OUTER	88	1	44001	CYLINDER, LIFT - LH - 3.5 X 16
7	2	20224	LINER, ROTOR HOUSING - PLASTIC	47	1	30058	IDLER ASSEMBLY CHAIN TIGHTENER	89	1	44002	CYLINDER, LIFT - RH - 3 X 16
8	1	20374	ROD, ACCESS DOOR					90	2	44003	CYLINDER, REVRSR & CHUTES-3X8
9	1	20375C	LINER, CENTER - PLASTIC	48	2	30086	WHEEL ASSEMBLY, DITCHER	91	1	44004	PTO DRIVE SHAFT, MID - ROTOR
10	1	20375LH	LINER, KICKER HOUSING - LH - PLASTIC	49	1	30088	PIN, HYD CYL - UPPER- LH - 1" X 6"	92	1	44005	PTO DRIVE SHAFT, 55 SERIES
11	1	20375RH	LINER, KICKER HOUSING - RH - PLASTIC	50	1	30089	PIN, HYD CYL - UPPER- RH - 1" X 5.5	93	1	44007	PTO DRIVE SHAFT, 52"
12	1	25018	BACK PLATE W/A, CUTTING EDGE	51	1	30106	TENSIONER ROD, SPRING	94	1	44008	PTO DRIVE SHAFT, MID- DRUM-29"
13	1	25028	HOOD WELDMENT	52	2	10039	PLATE, WEAR - ROTOR HOUSING	95	6	900-03466	5/8-11 X 2 GR 5 PLOW BOLT
14	1	25033	ACCESS DOOR W/A, HOOD	53	2	40140	BEARING ASSY, ROTOR	96	13	900-03500	1/2-13 X 1-1/2 GR 5 PLOW BOLT
15	1	25035	CHAIN CASE W/A	54	1	30208	COULTER ASSY, RH	97	1	903-03143	CHAIN, #80-2 X ROLL
16	1	25050	GEAR W/A, REVERSER	55	1	25031	PLATE W/A, COULTER - RH	98	1	904-08007	ELBOW, 8MP-8FP 90
17	1	25051	LINKAGE W/A, REVERSER	56	1	25056	COULTER AXLE W/A, RH	99	5	904-08008	ELBOW, 6FPX-8MP-90
18	1	25052	MOUNT W/A, REVERSER	57	1	30209	COULTER ASSY, LH	100	4	904-08049	ELBOW, 6FPX-8MB-90
19	1	25053	PIN W/A, CYLINDER	58	2	100-3-0148	EYEBOLT, 1/2" X 6" NC	101	1	904-08106	ADAPTER, 6FPX-8MP
20	1	30002	CHUTE ASSEMBLY, RH	59	1	25032	PLATE W/A, COULTER - LH	102	1	904-08109	RUN TEE, 6FJX-6MJ-6MJ
21	1	30004	HITCH WELDMENT	60	1	25055	COULTER AXLE W/A, LH	103	2	905-01139	HEX BUSHING, 1/2MP - 3/8 FP
22	1	30022	KICKER DRUM ASSY	61	2	40021	BLADE, COULTER - 20"	104	1	905-23029	JACK, HITCH POLE - 7000#
23	4	10131	PADDLE, KICKER - RECTANGULAR	62	2	40040	HUB, COULTER	105	2	20244	LINER, CHUTE - RIGHT SIDE
24	1	25001	KICKER DRUM W/A	63	2	45014	SPRING, COULTER	106	2	20245	LINER, CHUTE - CENTER
25	2	25047	PADDLE, KICKER - SIDE PRONGED	64	1	30211	SLIDE PLATE ASSY	107	2	20246	LINER, CHUTE - LEFT SIDE
26	10	30104	PADDLE, KICKER - DOUBLE SPIKE	65	1	40002	GEARBOX, REDUCTION - MAIN	108	1	20162	SHAFT, GEARBOX - RT ANGLE
27	1	30023	CHUTE ASSEMBLY, LH	66	2	40010	CUTTING EDGE, OUTER	109	1	20283	CAP, SHAFT
28	1	30024	CONNECTING ROD, CHUTE	67	1	40011	CUTTING EDGE, CENTER	110	4	905-15001	ZERK, STR, 1/8 NPT
29	1	30025	LIFT ARM, RH	68	2	40012	CUTTING EDGE, SIDE - VERTICAL	111	2	905-15024	ZERK, STR, 1/4-28 UNF
30	1	30026	LIFT ARM, LH <small>(HIDDEN ON PAGE 31)</small>	69	1	40018	MANIFOLD, HYDRAULIC	112	1	25012	PIVOT ARM W/A, GATE
31	2	30027	BRACKET W/A, LIFT SYSTEM	70	5	904-05513	ADAPTER, 6MJ-6MB Straight	113	1	10087	PIVOT ARM, GATE - CHANGE-OVER
32	1	30037	LEVEL GUAGE W/A	71	1	904-05601	RELIEF VALVE, CR10				
33	2	30041	PIN, CHUTE - 1.25" X 7.375"	72	3	904-08107	ADAPTER, 6MORB - 6FX ST.				
34	2	30042	PIN, CHUTE - 1.25" X 7.375"	73	5	904-08108	ELBOW, 6FPX - 6MORB 90				
35	2	30044	PIN, CONNECTING ROD - 1" X 6.50"	74	1	40020	GEARBOX, 90 DEG - 1050				
36	2	30047	PIN, HYD CYL - LOWER - 1" X 4.25"	75	4	40035	PIN, CYLINDER - 1"				
37	1	10140	LINER, CHANGE-OVER GATE	76	1	40044	BEARING, TOP CHAIN DRIVE				
38	1	25011	GATE W/A, CHANGE-OVER	77	1	40100	BUSHING, MASTERDRIVE 2-7/16"				
39	1	30051	CHAIN TIGHTENER ARM W/A	78	1	40101	HUB, SPROCKET				
40	1	30052	CHAIN TIGHTENER HANDLE W/A	79	1	40126	BEARING ASSY, KICKER DRUM-RH				
				80	2	40127	BEARING ASSY, DRIVE SHAFT				
				81	1	40129	BEARING ASSY, KICKER DRUM-LH				
				82	1	40150	SPROCKET, 19T - DBL.#80				

Note: The item numbers in these left hand columns appear in balloons on one or more of the following pages; 29, 31, 14, 21 and 25.

# Cyclone Ditcher

## Parts Section

### Sheet 2 of 4



# Cyclone Ditcher

## Parts Section

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Parts List				Parts List				Parts List			
ITEM	QT	PART NUMBER	DESCRIPTION	ITEM	QT	PART NUMBER	DESCRIPTION	ITEM	QT	PART NUMBER	DESCRIPTION
1	2	10237	PLATE, COULTER MOUNTING	41	1	25022	SHAFT W/A, ROTOR	83	1	40153	SPROCKET, DOUBLE - 32T - #80
2	1	10300	SHIELD, DRIVE SHAFT	42	6	30203	PADDLE ASSY, ROTOR	84	2	40159	BREATHER VENT
3	1	10302	MOUNT PLATE, LASER - LEVEL	43	6	10410	WEAR BIT, ROTOR - INNER	85	1	40302	SPRING, 1" OD, .75" ID, .125 DIA.
4	1	10303	PLATE, SHAFT SAFETY-BOTTOM	44	6	20137	LINER, PADDLE - ROTOR - PLASTIC	86	1	40400	SPLINE, DBL SHAFT - 1-3/4"-20
5	1	10304	PLATE, SHAFT SAFETY-TOP	45	6	25037	PADDLE W/A, ROTOR	87	1	44000	CYLINDER, SPREADER GATE - 3 X 12
6	1	20201	LINER, ROTOR HOUSING - OUTLET	46	6	25048	WEAR BIT W/A, ROTOR - OUTER	88	1	44001	CYLINDER, LIFT - LH - 3.5 X 16
7	2	20224	LINER, ROTOR HOUSING - PLASTIC	47	1	30058	IDLER ASSEMBLY CHAIN TIGHTENER	89	1	44002	CYLINDER, LIFT - RH - 3 X 16
8	1	20374	ROD, ACCESS DOOR					90	2	44003	CYLINDER, REVRSR & CHUTES-3X8
9	1	20375C	LINER, CENTER - PLASTIC	48	2	30086	WHEEL ASSEMBLY, DITCHER	91	1	44004	PTO DRIVE SHAFT, MID - ROTOR
10	1	20375LH	LINER, KICKER HOUSING - LH - PLASTIC	49	1	30088	PIN, HYD CYL - UPPER- LH - 1" X 6"	92	1	44005	PTO DRIVE SHAFT, 55 SERIES
11	1	20375RH	LINER, KICKER HOUSING - RH - PLASTIC	50	1	30089	PIN, HYD CYL - UPPER- RH - 1" X 5.5	93	1	44007	PTO DRIVE SHAFT, 52"
12	1	25018	BACK PLATE W/A, CUTTING EDGE	51	1	30106	TENSIONER ROD, SPRING	94	1	44008	PTO DRIVE SHAFT, MID- DRUM-29"
13	1	25028	HOOD WELDMENT	52	2	10039	PLATE, WEAR - ROTOR HOUSING	95	6	900-03466	5/8-11 X 2 GR 5 PLOW BOLT
14	1	25033	ACCESS DOOR W/A, HOOD	53	2	40140	BEARING ASSY, ROTOR	96	13	900-03500	1/2-13 X 1-1/2 GR 5 PLOW BOLT
15	1	25035	CHAIN CASE W/A	54	1	30208	COULTER ASSY, RH	97	1	903-03143	CHAIN, #80-2 X ROLL
16	1	25050	GEAR W/A, REVERSER	55	1	25031	PLATE W/A, COULTER - RH	98	1	904-08007	ELBOW, 8MP-8FP 90
17	1	25051	LINKAGE W/A, REVERSER	56	1	25056	COULTER AXLE W/A, RH	99	5	904-08008	ELBOW, 6FPX-8MP-90
18	1	25052	MOUNT W/A, REVERSER	57	1	30209	COULTER ASSY, LH	100	4	904-08049	ELBOW, 6FPX-8MB-90
19	1	25053	PIN W/A, CYLINDER	58	2	100-3-0148	EYEBOLT, 1/2" X 6" NC	101	1	904-08106	ADAPTER, 6FPX-8MP
20	1	30002	CHUTE ASSEMBLY, RH	59	1	25032	PLATE W/A, COULTER - LH	102	1	904-08109	RUN TEE, 6FJX-6MJ-6MJ
21	1	30004	HITCH WELDMENT	60	1	25055	COULTER AXLE W/A, LH	103	2	905-01139	HEX BUSHING, 1/2MP - 3/8 FP
22	1	30022	KICKER DRUM ASSY	61	2	40021	BLADE, COULTER - 20"	104	1	905-23029	JACK, HITCH POLE - 7000#
23	4	10131	PADDLE, KICKER - RECTANGULAR	62	2	40040	HUB, COULTER	105	2	20244	LINER, CHUTE - RIGHT SIDE
24	1	25001	KICKER DRUM W/A	63	2	45014	SPRING, COULTER	106	2	20245	LINER, CHUTE - CENTER
25	2	25047	PADDLE, KICKER - SIDE PRONGED	64	1	30211	SLIDE PLATE ASSY	107	2	20246	LINER, CHUTE - LEFT SIDE
26	10	30104	PADDLE, KICKER - DOUBLE SPIKE	65	1	40002	GEARBOX, REDUCTION - MAIN	108	1	20162	SHAFT, GEARBOX - RT ANGLE
27	1	30023	CHUTE ASSEMBLY, LH	66	2	40010	CUTTING EDGE, OUTER	109	1	20283	CAP, SHAFT
28	1	30024	CONNECTING ROD, CHUTE	67	1	40011	CUTTING EDGE, CENTER	110	4	905-15001	ZERK, STR, 1/8 NPT
29	1	30025	LIFT ARM, RH	68	2	40012	CUTTING EDGE, SIDE - VERTICAL	111	2	905-15024	ZERK, STR, 1/4-28 UNF
30	1	30026	LIFT ARM, LH <small>(HIDDEN ON PAGE 31)</small>	69	1	40018	MANIFOLD, HYDRAULIC	112	1	25012	PIVOT ARM W/A, GATE
31	2	30027	BRACKET W/A, LIFT SYSTEM	70	5	904-05513	ADAPTER, 6MJ-6MB Straight	113	1	10087	PIVOT ARM, GATE - CHANGE-OVER
32	1	30037	LEVEL GAUGE W/A	71	1	904-05601	RELIEF VALVE, CR10				
33	2	30041	PIN, CHUTE - 1.25" X 7.375"	72	3	904-08107	ADAPTER, 6MORB - 6FX ST.				
34	2	30042	PIN, CHUTE - 1.25" X 7.375"	73	5	904-08108	ELBOW, 6FPX - 6MORB 90				
35	2	30044	PIN, CONNECTING ROD - 1" X 6.50"	74	1	40020	GEARBOX, 90 DEG - 1050				
36	2	30047	PIN, HYD CYL - LOWER - 1" X 4.25"	75	4	40035	PIN, CYLINDER - 1"				
37	1	10140	LINER, CHANGE-OVER GATE	76	1	40044	BEARING, TOP CHAIN DRIVE				
38	1	25011	GATE W/A, CHANGE-OVER	77	1	40100	BUSHING, MASTERDRIVE 2-7/16"				
39	1	30051	CHAIN TIGHTENER ARM W/A	78	1	40101	HUB, SPROCKET				
40	1	30052	CHAIN TIGHTENER HANDLE W/A	79	1	40126	BEARING ASSY, KICKER DRUM-RH				
				80	2	40127	BEARING ASSY, DRIVE SHAFT				
				81	1	40129	BEARING ASSY, KICKER DRUM-LH				
				82	1	40150	SPROCKET, 19T - DBL.#80				

Note: The item numbers in these left hand columns appear in balloons on one or more of the following pages; 29, 31, 14, 21 and 25.

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