Eagle Ditcher

EAGLE DITCHER

OPERATOR'S MANUAL

ERICKSON MANUFACTURING INC.

WARRANTY

Erickson Mfg. Co., Inc. warrants only to the Original Purchaser that this equipment, under normal use and service, will be free from defects in material and workmanship for one year from date of purchase providing this equipment is purchased for individual and not for commercial use. This warranty does not apply to normal wear items: wear bar, paddle, door skin on deflector door and dirt directional door, cutting edge, and shroud ring or any items which has been damaged or which has been subjected to abuse, negligence, alterations, tampering, operation beyond rated capacity (150 to 200 HP) or failure to follow operating instructions. Hoses, tube lines, hub and spindles, cylinders, gearboxes, PTO shafts and pole jacks are limited to the warranties made by the respective manufacturers of those components.

Under this warranty, the manufacturer will repair or replace any part that the manufacturer determines has failed during the period of the warranty due to defects in material or workmanship. After written approval by the manufacturer, the equipment or defective parts must be returned freight prepaid to Erickson Mfg. Co., Inc., 13946 86th St. SE, Milnor, ND 58060-9750 within (30) thirty days.

Warranty coverage and performance is expressly conditioned upon the return of the completed registration form to Erickson Mfg. Co., Inc., 13946 86th St. Milnor, ND 58060-9750.

PURCHASER'S EXCLUSIVE REMEDY FOR BREACH OF WARRANTY, OTHER DEFECT, OR CONDUCT GIVING RISE TO LIABILITY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT SOLD, AND THE MANUFACTURER UNDER NO CIRCUMSTANCES SHALL BE LIABLE FOR ECONOMIC LOSS OR INCIDENTAL CONSEQUENTIAL DAMAGES. EFFECTIVE UPON THE EXPIRATION OF THIS LIMITED WARRANTY (ONE YEAR FROM THE DATE OF PURCHASE), THE MANUFACTURER DECLAIMS ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS.

Erickson Mfg. Co., Inc. reserves the right to make improvements and changes in specifications without notice or obligation to modify previously sold units.

WARRANTY LABOR

In the event a unit does require a warranty update or replacement, Erickson Mfg. Co., Inc. will allow a warranty labor charge that is **pre-authorized** by the company. Contact your Eagle Ditcher representative or Erickson Mfg. Co., Inc. for details.

TRACTOR REQUIREMENT

The Eagle Ditcher requires a minimum of 3 remote hydraulic outlets (4 if optional deflector is ordered) with a minimum of 15 GPM and a working pressure of 2500 PSI. Valve multipliers are available from your dealer if necessary.

Tractor horsepower required is 150 minimum to 200 HP maximum. Drive lines and gear boxes can be seriously damaged if excessive horsepower is used. Use only 12 mm Grade 8.8 replacement bolts when replacing shear bolts.

WARRANTY VOID IF NOT REGISTERED

SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Erickson Manufacturing Eagle Ditcher when ordering parts or requesting service or other information.

The serial number plate is located where indicated and is stamped into the frame where indicated. Please mark the number in the space provided for easy reference.

Serial Number _____

Production Year _____

TABLE OF CONTENTS

1 INTRODUCTION

Congratulations on your choice of a new Erickson Manufacturing Eagle Ditcher to complement your farming operation. This equipment has been designed and manufactured to meet the needs of the discriminating buyer for the efficient moving of dirt and forming ditches or terraces.

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

This manual covers all the 4A Ditchers built by Erickson Manufacturing. Use the Index or Table of Contents as a guide when searching for specific information.

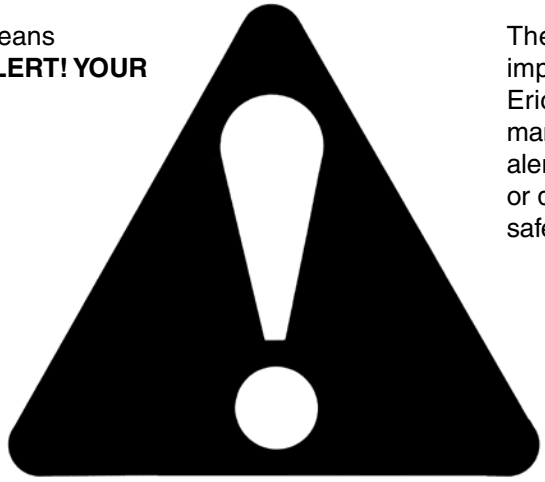
Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Eagle Ditcher distributor or dealer if you need assistance, information or additional copies of the manual.

OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout the manual, are as seen from the driver's seat and facing in the direction of travel.

2 SAFETY

SAFETY ALERT SYMBOL

This Safety Alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



The Safety Alert symbol identifies important safety messages on the Erickson Eagle Ditcher and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons

Accidents Disable and Kill
Accidents Cost
Accidents Can Be Avoided

SIGNAL WORDS:

Note the use of the signal words **DANGER, WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guide-lines:

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

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. It may also be used to alert against unsafe practices.

If you have any questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer or ERICKSON Manufacturing Co., Inc., 13946 86th Street S.E., Milnor, North Dakota, USA, 58060-9750, Phone (701) 427-5831, Toll Free 1 (888) 427-5944, Fax (701) 427-5531 or Email editcher@drtel.net

SAFETY

YOU are responsible for the **SAFE** operation and maintenance of your Erickson Manufacturing Eagle Ditcher. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Eagle Ditcher be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating the Ditcher.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Ditcher owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter.

- The most important safety device on this equipment is a **SAFE** operator. It is the operator's responsibility to read and understand **ALL** Safety and Operating instructions in the manual and to follow them. All accidents can be avoided.

- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.

- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.

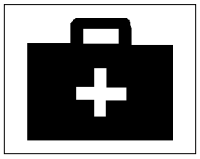
- Think SAFETY! Work SAFELY!

2.1 GENERAL SAFETY

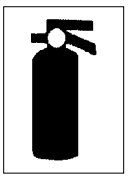
1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or unplugging the Ditcher.

2. Only trained competent persons shall operate the Ditcher. An untrained operator is not qualified to operate the machine.

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



4. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.



5. Do not allow riders.

6. Do not allow children, spectators or bystanders within hazard area of machine.

7. Wear appropriate protective gear. This list includes but is not limited to:

   - A hard hat
   - Protective shoes with slip resistant soles
   - Protective goggles
   - Neoprene gloves
   - Water repellent clothing
   - Hearing protection
   - Respirator or filter mask

8. Place all controls in neutral, stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.

9. Wear suitable ear protection for prolonged exposure to excessive noise.

10. Review safety related items annually with all personnel who will be operating or maintaining the Ditcher.

2.2 SAFETY TRAINING

1. Safety is a 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 or bystander.

2. 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 this equipment.

3. It has been said, "The best safety feature is an informed, careful operator." We ask you to be that kind of an operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Accidents can be avoided.

4. **Working with unfamiliar equipment can lead to careless injuries. Read this manual, and the manual for your auxiliary equipment, before assembly or operating, to acquaint yourself with the machines. If this machine is used by any person other than yourself. It is the machine owner's responsibility to make certain that the operator, prior to operating:**

   a. **Reads and understands the operator's manuals.**

   b. **Is instructed in safe and proper use.**

5. Know your controls and how to stop the tractor, ditcher and any other auxiliary equipment quickly in an emergency. Read this manual and the one provided with your other equipment.

6. Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will operate the machinery. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.

2.3 SAFETY SIGNS

1. Keep safety signs clean and legible at all times.

2. Replace safety signs that are missing or have become illegible.

3. Replaced parts that displayed a safety sign should also display the current sign.

4. Safety signs are available from your authorized Distributor or Dealer Parts Department or the factory.

How to Install Safety Signs:

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C).
- Determine exact position before you remove the backing paper. (See Section 3).
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

2.4 PREPARATION

1. Never operate the tractor and machine until you have read and completely understand this manual, the auxiliary equipment Operator's Manual, and each of the Safety Messages found on the safety signs on the ditcher and auxiliary equipment.

2. Personal protection equipment including hard hat, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, or moving the implement. Do not allow long hair, loose fitting clothing or jewelery to be around equipment.

3. **PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!**

Motors or equipment attached can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis if the noise in the Operator's position exceeds 80db. Noise over 85db on a long-term basis can cause severe hearing loss. Noise over 90db adjacent to the Operator over a long-term basis may cause permanent, total hearing loss. **NOTE:** Hearing loss from loud noise (from tractors, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.

4. Operate machine only with a tractor equipped with an approved Roll-Over-Protective-Structure (ROPS). Always wear your seatbelt. Serious injury or death could result from falling off the tractor - particularly during a turn-over when the operator could be pinned under the ROPS or the tractor.

5. Clear working area of debris, trash or hidden obstacles that might be hooked or snagged, causing injury, damage or tripping.

6. Do not operate ditcher where there is a chance of buried utilities. Check with local authorities on location of utilities before ditching.

7. Operate only in daylight or good artificial light.

8. Be sure machine is properly anchored, adjusted and in good operating condition.

9. Ensure that all safety shielding and safety signs are properly installed and in good condition.

2.5 OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, servicing, adjusting, repairing or unplugging.

2. Do not allow riders.

3. Install and secure all guards and shields before starting or operating.

4. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.

5. Place all controls in neutral, stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.

6. Clear the area of bystanders, especially small children, before starting.

7. Stay away from machine hazard area when tractor engine or machine are running. Keep others away.

8. Keep all hydraulic lines, fittings and couplers tight and free of leaks before using.

9. Clean reflectors, SMV and lights before transporting.

10. Use hazard flashers on tractor when transporting.

11. Do not put hands or feet under machine while tractor engine or machine are running.

12. Objects can be thrown out from under machine with sufficient force to severely injure people. Stay away from machine when it is running. Keep others away.

13. Always know the area you are ditching. Never operate ditcher in an area that has hidden obstacles. Do not operate ditcher where there is a chance of buried utilities. Check with local authorities on location of utilities before ditching.

14. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely is in question, DO NOT ATTEMPT TO DO THE JOB.

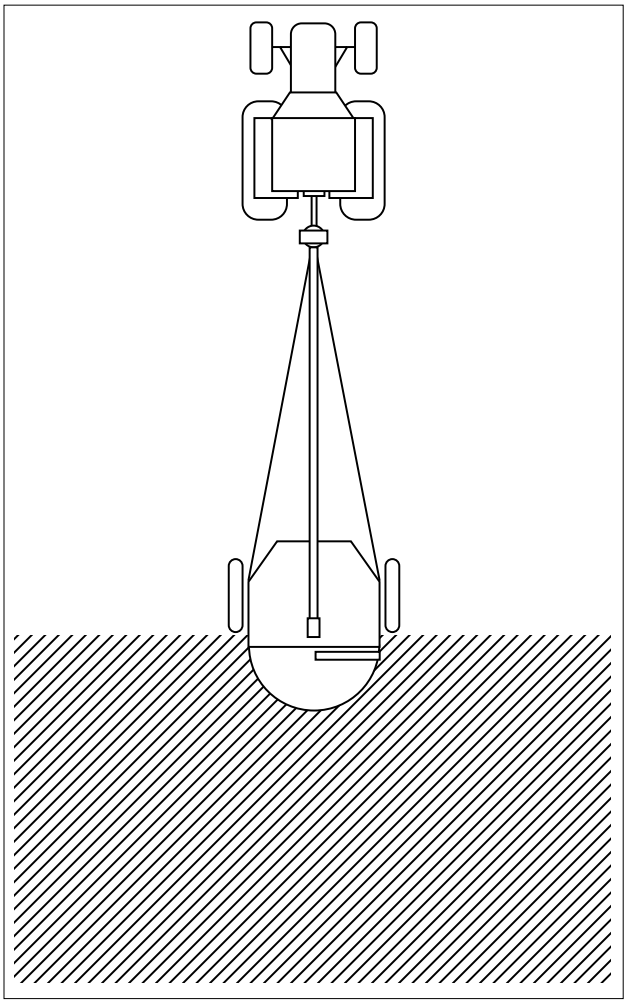
15. Review safety instructions with all operators annually.

2.6 OPERATING HAZARD AREA

1. Objects can be thrown out from under the machine with sufficient force to severely injure people. Stay away from machine when it is running. Keep others away.

2. Stay out of shaded hazard area.

3. Always know where all additional personnel are located when operating the ditcher. Never allow anyone within the hazard area.



MACHINE HAZARD AREA

2.7 MAINTENANCE SAFETY

1. Follow ALL the operating, maintenance and safety information in the manual.

2. Support the machine with blocks or safety stands when changing tires or working beneath it.

3. Follow good shop practices:

   - Keep service area clean and dry.
   - Be sure electrical outlets and tools are properly grounded.
   - Use adequate light for the job at hand.

4. Use only tools, jacks and hoists of sufficient capacity for the job.

5. Use only genuine manufacturer's replacement parts when performing servicing or maintenance work on the machine.

6. Only use 12mm by 2 1/2 inch Grade 8.8 bolts as shear bolts.

7. Never work on paddles, rotor or under the machine unless the tractor engine is off and driveline is disconnected.

8. Make sure all guards are in place and properly secured when maintenance work is completed.

9. Never wear ill-fitting, baggy or frayed clothing when working around or on any of the drive system components.

10. Before applying pressure to a hydraulic system, make sure all lines, fittings and couplers are tight and in good condition.

11. Relieve pressure from hydraulic circuit before servicing or disconnecting from tractor.

12. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.

13. Clear the area of bystanders, especially children, when carrying out any maintenance and repairs or making any adjustments.

2.8 HYDRAULIC SAFETY

1. Make sure that all components in the hydraulic system are kept in good condition and are clean.

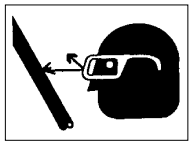
2. Replace any worn, cut, abraded, flattened or crimped hoses and metal lines.

3. Relieve pressure before working on hydraulic system.

4. Do not attempt any makeshift repairs to the hydraulic lines, 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 a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.

6. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.



7. Before applying pressure to the system, make sure all components are tight and that lines, hoses and couplings are not damaged.

2.9 TRANSPORT SAFETY

1. Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.

2. Make sure the SMV (Slow Moving Vehicle) emblem and all the lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.

3. Do not allow anyone to ride on the ditcher or tractor during transport.

4. Do not exceed 32 km/h (20 mph). Reduce speed on rough roads and surfaces.

5. Be sure that the Ditcher is hitched positively to the towing vehicle and a retainer is through the drawbar pin. Always use a safety chain between the machine and the tractor.

6. Always use hazard flashers on the tractor when transporting unless prohibited by law.

7. Plan your route to avoid heavy traffic.

8. Do not drink and drive.

9. Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc. Watch for traffic when operating near or crossing roadways.

2.10 STORAGE SAFETY

1. Store the unit in an area away from human activity.

2. Do not permit children to play on or around the stored machine.

3. Store the unit in a dry, level area. Support the frame with planks if required.

2.11 TIRE SAFETY

1. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.

2. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.

3. Have a qualified tire dealer or repair service perform required tire maintenance.

4. When replacing worn tires, make sure they meet the original tire specifications. Never undersize.

2.12 SIGN-OFF FORM

Erickson Manufacturing Co. Inc. follow the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the Ditcher must read and clearly understand ALL Safety, Operating and Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until such information has been reviewed. Annually review this information before the season start-up.

Make these periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment. We feel that an untrained operator is unqualified to operate this machine.

A sign-off sheet is provided for your record keeping to show that all personnel who will be working with the equipment have read and understand the information in the Operator's Manual and have been instructed in the operation of the equipment.

SIGN-OFF FORM

DATE	EMPLOYEE'S SIGNATURE	EMPLOYER'S SIGNATURE

3 SAFETY SIGN LOCATIONS

The types of safety signs and locations on the equipment are shown in the illustration below. Good safety requires that you familiarize yourself with the various Safety Signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!

A

B

REMEMBER - If Safety Signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

The types of safety signs and locations on the equipment are shown in the illustration below. Good safety requires that you familiarize yourself with the various Safety Signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!

C

DANGER

ROTATING DRIVELINE
CONTACT CAN CAUSE DEATH
KEEP AWAY

DO NOT OPERATE WITHOUT -

- **ALL DRIVELINE GUARDS, TRACTOR AND EQUIPMENT SHIELDS IN PLACE.**
- **DRIVELINE SECURELY ATTACHED AT BOTH ENDS.**
- **DRIVELINE GUARDS THAT TURN FREELY ON DRIVELINE.**

M200

D

CAUTION

1. Read Operator's Manual before starting.
2. Lower machine to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Install and secure all guards before operating.
4. Keep hands, feet, hair and clothing away from moving parts.
5. Do not allow riders.
6. Never exceed a safe travel speed when transporting.
7. Use hazard flashers when transporting.
8. Remove sticks, stones, wire or other objects from working area before starting.
9. Do not point discharge at people, animals or buildings. Objects in discharge can injure or kill.
10. Stay away from discharge when operating. Keep others away.
11. Keep away from rotor when engine is running.
12. Wear appropriate hearing protection for prolonged exposure to excessive noise.
11. Review safety instructions annually.

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- Think SAFETY! Work SAFELY!

E

F

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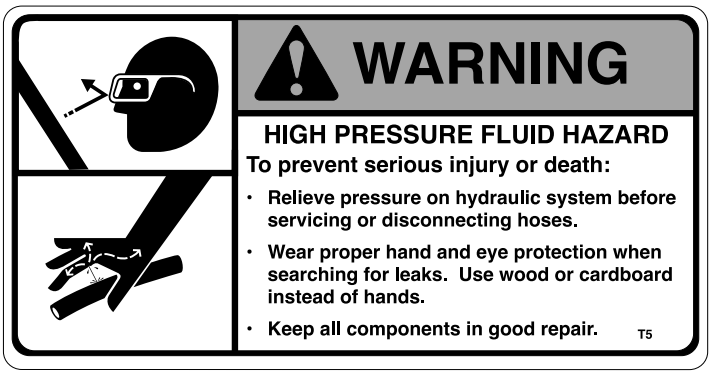
- Think SAFETY! Work SAFELY!

G



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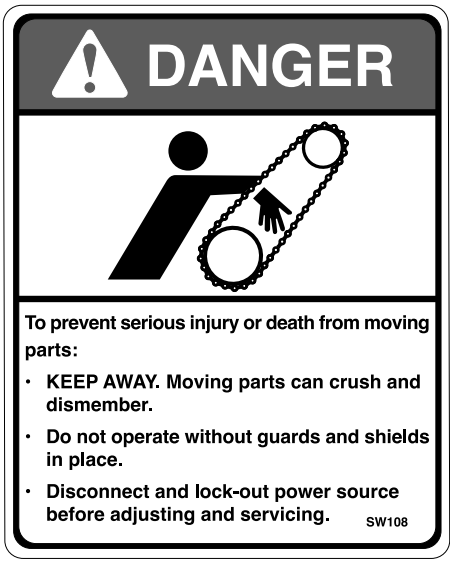


J

REMEMBER - If Safety Signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

4 OPERATION

OPERATING SAFETY

- Read and understand the Operator's Manual and all safety signs before operating, servicing, adjusting, repairing or unplugging.
- Do not allow riders.
- Install and secure all guards and shields before starting or operating.
- Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
- Place all controls in neutral, stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Clear the area of bystanders, especially small children, before starting.
- Stay away from machine hazard area when tractor engine or machine are running. Keep others away.
- Keep all hydraulic lines, fittings and couplers tight and free of leaks before using.
- Clean reflectors, SMV and lights before transporting.
- Use hazard flashers on tractor when transporting.
- Do not put hands or feet under machine while tractor engine or machine are running.
- Objects can be thrown out from under machine with sufficient force to severely injure people. Stay away from machine when it is running. Keep others away.
- Always know the area you are ditching. Never operate ditcher in an area that has hidden obstacles. Do not operate ditcher where there is a chance of buried utilities. Check with local authorities on location of utilities before ditching.
- Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely is in question, DO NOT ATTEMPT TO DO THE JOB.
- Review safety instructions with all operators annually.

4.1 TO THE NEW OPERATOR OR OWNER

The Eagle Ditcher is designed to cut a shallow ditch in the ground for the drainage of surface water or to build terraces. Rotational power to the rotor is provided by the tractor PTO. Be familiar with the machine before starting.

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 this equipment. It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine.

By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the worksite. Untrained operators are not qualified to operate the machine.

Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the machine safely and how to set it to provide maximum efficiency. By following the operating instructions in conjunction with a good maintenance program, your ditcher will provide many years of trouble-free service.

4.2 MACHINE COMPONENTS

The Eagle Ditcher consists of a large tilted rotor with 4 paddles to move the soil, water and debris. A cutting blade and slide direct the material on top of the rotor and form a shallow ditch as the machine moves through the work area. A deflector is available to direct the material for terracing. A door on the left side of the rotor opens to allow the soil to be spread on the left side of the machine or to allow soil out of the rotor if it is very wet and sticky.

Rotational power to the rotor is provided by the tractor PTO. The machine is designed with a rotating set of paddles over the cutting blade and slide to direct the soil on to the rotor. The hydraulic powered paddles can be reversed to assist in unplugging. A shear bolt in the rotor input shaft protects the drive train from overload.

FIG. 1 MACHINE COMPONENTS

A Rotor
B Rotor Paddle
C Rotor Paddle Wear Bar
D Left Hand Dirt Directional Door
E Dirt Deflector Door
F Intake Paddle
G Chain Drive
H Center Intake Cutting Blade
J Side Intake Cutting Blade
K Wing Cutting Blade
L Chain Drive Hydraulic Motor
M Shear Bolt
N Drive Shaft

4.3 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 and 5 hours, the following MUST be followed or warranty will be void:**

1. Tighten wheel bolts and other fasteners to their specified torque levels.
2. Check that the rotor and paddles are in good condition.
3. Check that the PTO driveline shield turns freely and telescopes easily.
4. Lubricate all grease points.
5. Check tension in chain drive system. Adjust as required.
6. Check for and remove all entangled material.

B. **After operating for 10 hours:**

1. Repeat items 1 through 6 of Section A.
2. Then go to the regular service schedule as defined in Section 5.

4.4 PRE-OPERATION CHECKLIST

Efficient and safe operation of the 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 areas 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 and weight to pull the machine.
3. Check that the machine is properly attached to the tractor. Be sure a retainer is used through the drawbar pin and a safety chain around the drawbar cage.
4. Check that the PTO driveline shield turns freely and that the **driveline can telescope easily.**
5. Check the tire pressure. Bring to the specified level.
6. Check the paddles. Be sure they are not damaged or broken and are securely fastened to the rotor. Tighten or replace as required.
7. Remove entangled material from rotating components. Material caught next to bearings will cause seal damage.
8. Inspect all hydraulic lines, hoses, couplers and fittings. Tighten, repair or replace any leaking or damaged components.
9. Install and secure all guards, doors and covers before starting.

4.5 EQUIPMENT MATCHING

To insure the safe and reliable operation of the Ditcher, it is necessary to use a tractor with the correct specifications. Use the following list as a guide in selecting a tractor to use on the machine.

1. **Tractor Horsepower:**
   Refer to Table 1 for the minimum recommended horsepower for your machine. Increase the power by 25% if operating in soft field or hilly conditions. It is recommended that the machine be run at rated PTO RPM when operating in sticky soil conditions.

2. **Drawbar:**
   The tractor drawbar must be set to provide 16 inches (406 mm) for 1000 RPM PTO input speed. Refer to your tractor manual for the adjustment procedure.

3. **Tire Configuration:**
   Either singles or duals can be used on the tractor. Singles are preferred when used in wet conditions.

4. **Hydraulic System:**
   The tractor hydraulic system must be capable of 15 gpm (57 lpm) at 2500 psi (17,250 kPa). Either closed-centered or open-centered systems can be used.

   Many newer tractors are equipped with "Load Sensing" hydraulics that can be used on a laser leveling system.

   The machine requires a minimum of 3 remote outlets (4 if an optional deflector is installed) with a minimum of 15 gpm (57 lpm) at 2500 psi (17,250 kPa).

5. **PTO Shaft:**
   The tractor PTO shaft must meet these specifications:

   Small 1000 RPM - 21 spline, 1 3/8" diameter
   Large 1000 RPM - 20 spline, 1 3/4" diameter

IMPORTANT

It is not recommended that shaft adaptors be used on the tractor shaft to prevent operating at the wrong RPM.

Table 1 Recommended Horspower:

Model	Horsepower
1000 RPM	200 MAX

IMPORTANT

Exceeding recommended horsepower can damage drivetrain components and void the warranty.

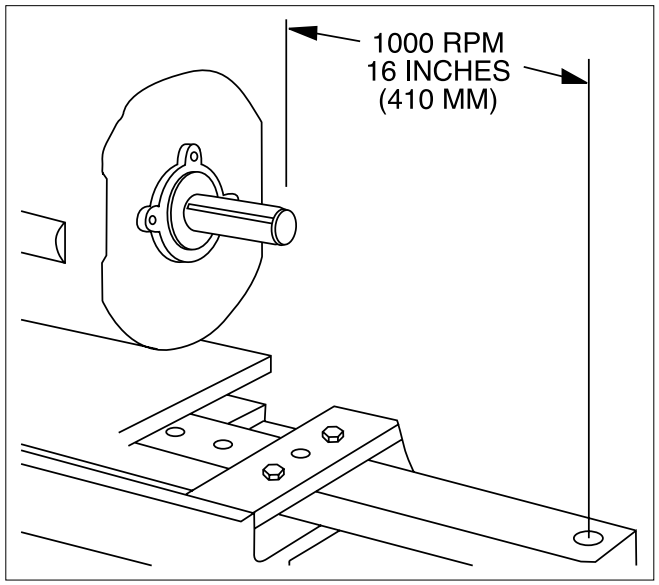


FIG. 2 DRAWBAR DIMENSION

4.6 ATTACHING/UNHOOKING

Follow this procedure when attaching the Ditcher to the tractor:

1. Make sure that all bystanders, especially small children, are clear of the working area.

2. Make sure there is enough room and clearance to safely back up to the ditcher.

3. Use the jack on the frame to raise the frame to align the hitch with the tractor drawbar.

4. Slowly back the tractor until the holes on the hitch and drawbar are aligned.

5. Install the drawbar pin and the retainer.

6. Attach the safety chain securely around the tractor drawbar cage to prevent unexpected separation.

Aligning

Pin/Retainers

Safety Chain

FIG. 3 ATTACHING

7. Raise the jack to its highest position. Remove pin, rotate 90° and lock in its transport position.

FIG. 4 STOWED JACK

8. Install input section of PTO shaft if it was removed for storage, with the grease access holes aligned.

Installed

Grease Access Hole

FIG. 5 PTO SHAFT

9. **Connect the PTO driveline:**

   a. Check that the driveline telescopes easily and that the shield rotates freely.

   b. Attach the driveline to the tractor by retracting the lock collar, slide yoke over the shaft and pushing on the yoke until the lock pin clicks into position. Be sure the yoke is locked in position.

IMPORTANT

Make sure the drawbar dimensions are set as per the instructions in Section 4.5 number 2 Drawbar.

   c. Move the tractor shaft guard down to cover the yoke.

Lock Collar

Positioned

Guard

FIG. 6 DRIVELINE

10. Attach PTO shaft anchor chains to adjacent components.

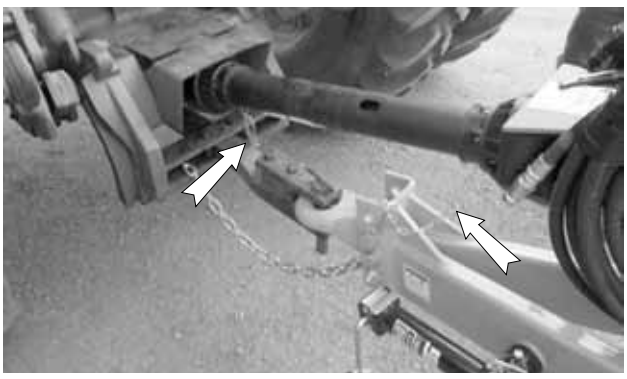


FIG. 7 ANCHOR CHAINS

11. **Connect the hydraulics:**

a. Use a clean rag or paper towel to clean the dirt from couplers on the hose ends and the tractor.

IMPORTANT

The ditcher is plumbed to provide the most convenient routing for the operator. Connect circuits to tractor per these recommendations:

i. **Left Side Hoses:**

a. Top two hoses - Frame UP and DOWN. Connect to circuit that is handiest for operator as it will be used the most.

NOTE

Remove transport lock pins through frame before raising or lowering frame.

b. Middle hose - Case drain for motor. Route into transmission so it dumps to atmosphere with no back pressure in the circuit.

c. Bottom hoses - System for hydraulic motor. Connect to circuit with a detent as this system needs to run all the time.

ii. **Right Side Hoses:**

a. Top two hoses - Circuit left hand directional deflector door. Remove two pins before using door.

b. Bottom two hoses - Circuit to right directional door.

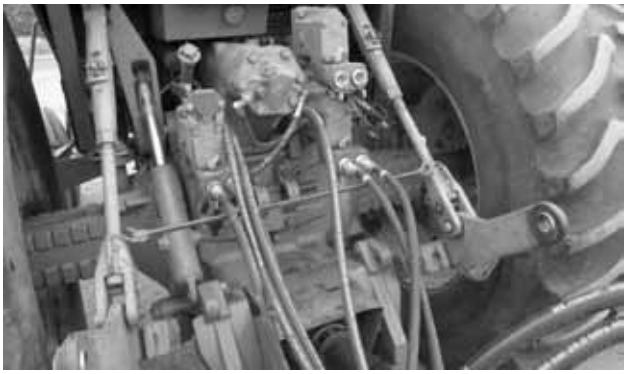
b. Connect the hoses to the tractor couplers. Be sure the couplers are securely seated.

IMPORTANT

Connect the case drain from the hydraulic motor into the transmission so it dumps to atmosphere. Do not connect into hydraulic system as the back pressure will prevent the case drain from functioning properly.

c. Route and secure the hoses along the hitch with clips, tape or plastic ties to prevent binding and pinching. Be sure to provide slack for turning.

First Set



Second Set

Third Set

FIG. 8 ATTACHED

9. Connect the wiring harness between tractor and the ditcher if so equipped. Route the harness along the hitch to prevent snagging. Be sure to provide slack for turning.

FIG. 9 FRAME LEVELING CLEVIS

10. Be sure the machine is level. Adjust the hitch clevis as required to level the frame.

11. Reverse the above procedure when unhooking tractor. Be sure to place blocks under the jack if on soft ground.

12. When attaching to a truck, follow this procedure:

    a. Install pin spacer in hitch clevis.

    b. Clear the area of bystanders, especially small children.

FIG. 10 PIN SPACER

c. Back up truck and align with hitch.

Aligning

d. Install pin and retainer.

Pin/Retainer

e. Connect safety chain.

NOTE

Cross chains under hitch to form a cradle if needed.

Safety Chain

f. Raise the jack to its highest position. Remove pin, rotate 90° and lock in its transport position.

g. Connect the wiring harness between truck and ditcher if equipped with lights. Route harness along hitch to prevent snagging. Be sure to provide slack for turning.

h. Reverse the above procedure when unhooking truck. Be sure to place blocks under the jack if on soft ground.

Jack

FIG. 11 ATTACHING TO TRUCK

4.7 FIELD OPERATION

OPERATING SAFETY

- Read and understand the Operator's Manual and all safety signs before operating, servicing, adjusting, repairing or unplugging.
- Do not allow riders.
- Install and secure all guards and shields before starting or operating.
- Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
- Place all controls in neutral, stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Clear the area of bystanders, especially small children, before starting.
- Stay away from machine hazard area when tractor engine or machine are running. Keep others away.
- Keep all hydraulic lines, fittings and couplers tight and free of leaks before using.
- Clean reflectors, SMV and lights before transporting.
- Use hazard flashers on tractor when transporting.
- Do not put hands or feet under machine while tractor engine or machine are running.
- Objects can be thrown out from under machine with sufficient force to severely injure people. Stay away from machine when it is running. Keep others away.
- Always know the area you are ditching. Never operate ditcher in an area that has hidden obstacles. Do not operate ditcher where there is a chance of buried utilities. Check with local authorities on location of utilities before ditching.
- Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely is in question, DO NOT ATTEMPT TO DO THE JOB.
- Review safety instructions with all operators annually.

Ditchers are designed to form a shallow channel in the field for the drainage of surface water or to form terraces. Before starting, the operator has the responsibility of being familiar with all operating and safety procedures and following them.

Each operator should review this section of the manual at the start of the season and as often as required to be familiar with the machine. When using, follow this procedure:

1. Review the Pre-Operation Checklist (Section 4.4) before starting.
2. Attach the tractor to the machine (see Section 4.6).
3. Before going to the field, review Section 4.9 Transporting.
4. Pull into the field and position the machine in a level area.
5. Lower into working position.

FIG. 12 TRANSPORTING

6. **Starting:**

   a. Run the engine at low idle.

   b. Slowly engage the PTO.

   c. Be sure to push to clutch lever over center to fully engage the clutch.

   d. Slowly bring the throttle up to 1/2 throttle.

   e. Start moving slowly forward and lower the machine into the ground.

   f. Increase engine speed to rated PTO RPM.

7. **Stopping:**

   a. Raise the machine out of the ground.

   b. Slowly decrease engine speed.

   c. Stop forward motion.

   d. Slowly disengage PTO clutch to allow the rotor to slow and stop.

IMPORTANT

Tractor PTO systems are designed with an internal brake that will stop the tractor shaft in less than one revolution. Stopping the rotor that fast from a high speed will break the shear bolt.

8. **Emergency Stopping:**
   Stop forward motion, disengage PTO clutch and stop engine or just stop engine if an emergency arises.

FIG. 13 STARTING

FIG. 14 STOPPING

WARNING

Place all controls in neutral, lower machine, stop engine, set park brake and wait for all moving parts to stop before dismounting.

9. **Machine Hazard Area:**
   Stay away from the side and behind the machine when it is running. Keep others away. The rotor can pick up stones, sticks, wire and other debris and throw it out with enough force to severely injure bystanders. Stay out of shaded area. Keep others out.

   Shut down machine and wait for moving parts to stop before approaching machine.

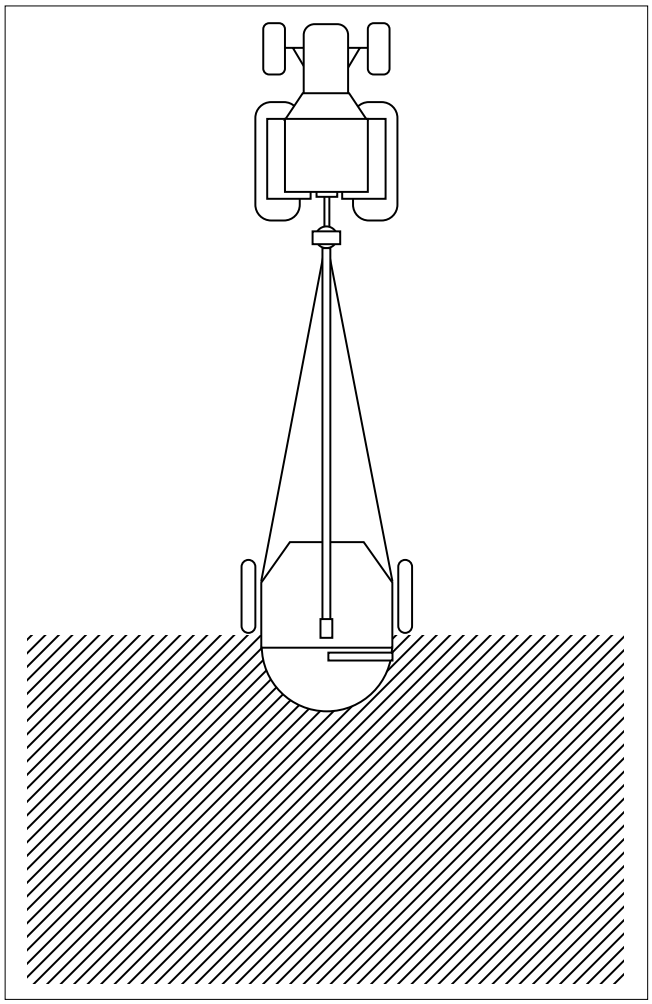


FIG. 15 MACHINE HAZARD AREA

10. **Ground Speed:**
    The machine works well when operated at 2 to 4 mph (3 to 6 kph) in most conditions. Raise or lower the blade to control the load factor.

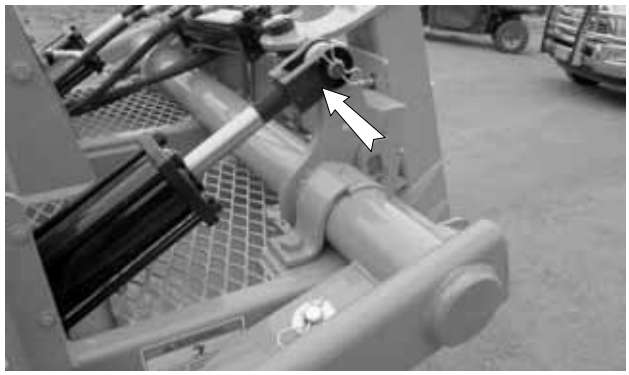
FIG. 16 FIELD

11. **Depth:**
The machine works well when set to cut 2 to 4 inches (50 to 100 mm) deep. Use in conjunction with ground speed when establishing the best operating conditions.

Although the blade can go as deep as 16 inches (400 mm), it is seldom used that deep in normal applications. Use the tractor hydraulics to set the position/depth of the cutting blade by placing the circuit in detent. Use the wheels to carry the weight of the ditcher during operation.

Use the threaded yoke on the end of the cylinder ram to adjust the depth range. Adjust the yokes on each side to the same depth (count the threads to be sure).

Blade



Threaded Yoke (Typical)

FIG. 17 DEPTH

12. **Cornering:**
The machine is designed with a standard PTO that transmits power to the rotor. Do not turn more than 15° when turning under full load. Always disengage the PTO when making a sharp turn.

13. **Deflector:**
The machine is designed with a deflector on the rear to control the distance that the material will be thrown. Set per your requirements.

Up

Middle

Down

FIG. 18 DEFLECTOR (TYPICAL)

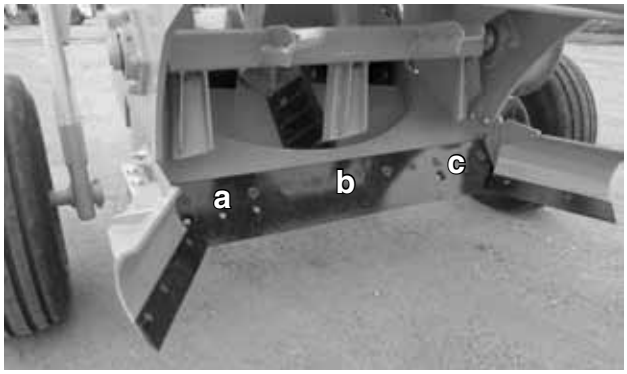
14. **Ditching:**
Use the machine to form channels for draining fields. It can be used in either wet or dry field conditions. Ditching with water standing in the field allows the operator to see the low spots and drive accordingly.

Throw Left

Throw Right

FIG. 19 DITCHING

15. **Replaceable Cutting Edges:**
The cutting edge is split into three sections. A wide center section that can be used for trenching and the two smaller side sections that can be moved up and down as required by the application. All are mounted to the frame with plow bolts and must be replaced when worn out, chipped, bent or damaged. Be sure to tighten mounting bolts to their specified torque when changing the cutting edge.



a - Right Side b - Center c - Left Side

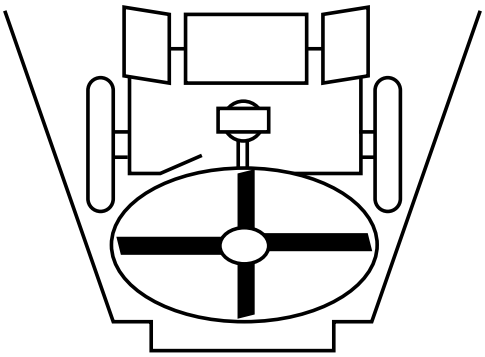
FIG. 20 CUTTING EDGES

16. **Trenching:**
The machine can be used for trenching by removing the wings, removing the side cutting blades or moving them into their UP position and moving the wheels into their fully UP position.

Standard Configuration

Wing Removed

Wheels Up



Rear View Trench Schematic

FIG. 21 TRENCHING

17. **Ditch Construction:**
Follow these steps when:

a. Making a new ditch.

b. Cleaning an existing ditch.

IMPORTANT

Always take a half swath on new and ditches.

18. **Unplugging:**
The ditcher is designed with a large capacity intake that minimizes the chance of plugging. However, if plugging occurs, follow this procedure:

a. Stop forward motion.

b. Raise cutting edge out of the ground.

c. Run rotor at rated PTO RPM to clear all the material from the rotor.

d. Reverse the intake paddles direction of rotation to remove material from the intake area.

e. Run rotor to clean out intake and rotor area.

f. Run intake paddles in their feeding direction.

g. Move ditcher slowly into area where plugging occurred and proceed with work.

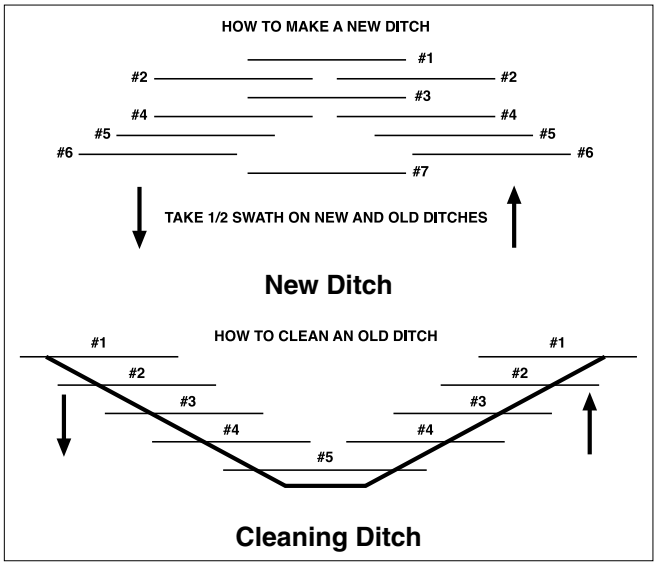


FIG. 22 DITCH CONSTRUCTION

Intake Paddles

Clearing Rotor

FIG. 23 UNPLUGGING

19. **Multiple Passes:**
In situations that require the removal or moving of a large quantity of soil for ditching, draining or terracing, multiple passes are recommended. Remove the soil a little at a time to form a smooth contour on the sides of the channel. This will allow other machinery to move over the channel without interfering with operation or damaging it. Use the deflector and gate to form terraces or let the soil fly to distribute it evenly over the adjacent field area.

Channel Building

Terrace Building

Deflector Up

Gate Up

FIG. 24 MULTIPLE PASSES

20 **Terracing:**
The deflector and rear gate allows the Ditcher to be used to form terraces. Make multiple passes to build a mound of earth along the contour of the land.

Throw Left

Throw Right

FIG. 25 TERRACING

21. **Hitch Clevis:**
The hitch is designed with an adjustable clevis that is used to level the frame and allows different tractors to be used with the machine.

FIG. 26 HITCH CLEVIS

22. **Shear Bolt:**
The machine is designed with a shear bolt in the input driveline in front of the gear box.

IMPORTANT

Increasing or decreasing PTO RPM rapidly can break the shear bolt. Change engine speed slowly to decrease driveline loading.

NOTE

This is a 12 mm x 2.5 inch Grade 8.8 shear bolt. Use only genuine Eagle Ditcher replacement parts to be sure the machine has the proper protection.

NOTE

An obstruction can overload the drive system and break the shear bolt. Be sure to remove all obstructions from the working area before starting.

23. **Transport Locks:**
The ditcher is designed with two pins through the frame to carry the weight of the machine when transporting. Raise the frame and install the pins prior to transporting. Remove the pins and stow them when transport is complete.

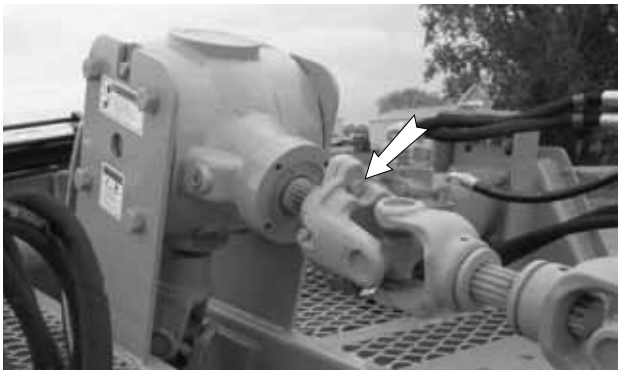
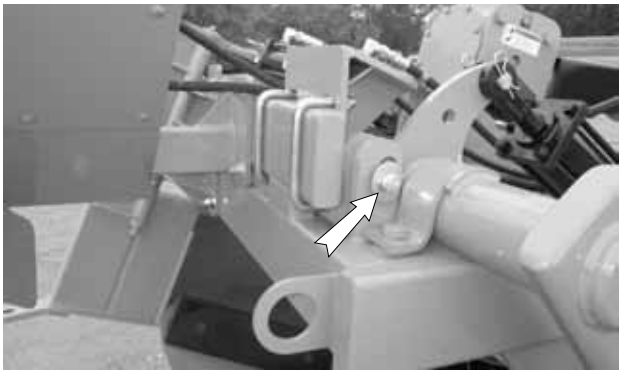
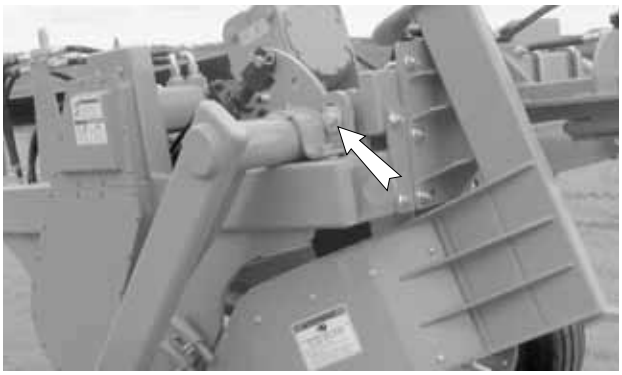


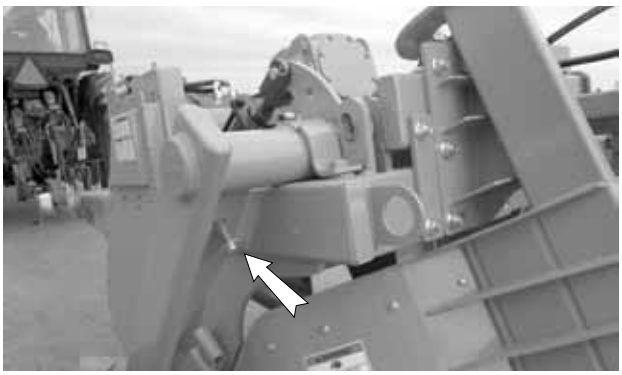
FIG. 27 SHEAR BOLT



Right Side Pin



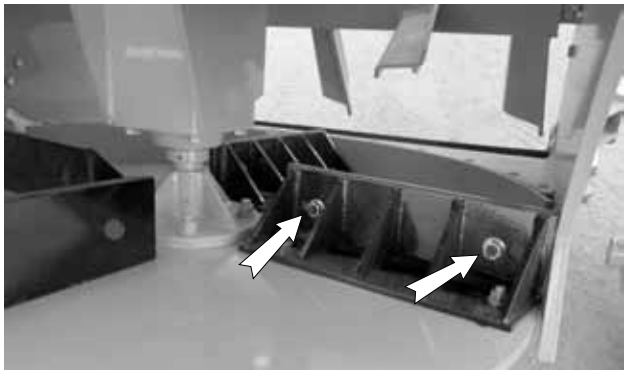
Left Side Pin



Pin Stowed (Typical)

FIG. 29 TRANSPORT LOCK PINS

24. **Paddle Wear Bars:**
Each paddle is equipped with a replaceable wear bar that wears rather than the frame paddle. Replace the wear bar whenever the wear pattern is affecting the paddle frame.



Plow Bolts

Heads

FIG. 30 PADDLE WEAR BARS

25. **Wear Plates:**
The machine is designed with replaceable wear plates to protect the frame. It is the responsibility of the customer to monitor the condition of the wear plates and replace them before the wear affects the frame.

a. **Rotor Housing.**

b. **Deflector Door.**

c. **Left Hand Dirt Directional Door.**

Rotor Housing

Deflector Door

Left Hand Dirt Directional Door

FIG. 31 WEAR PLATES

26. **Chain Drive Oil Bath:**
The intake paddle chain drive is designed to run in an oil bath to provide better lubrication and longer life. Check the oil level weekly or whenever a leak is noticed from the chain case.

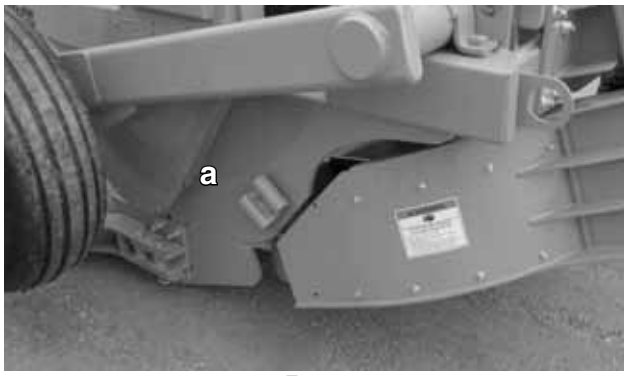
a. **Level Plug**

b. **Fill Plug**

c. **Drain Plug**

Always use SAE 80W90 oil for the oil bath.

Front

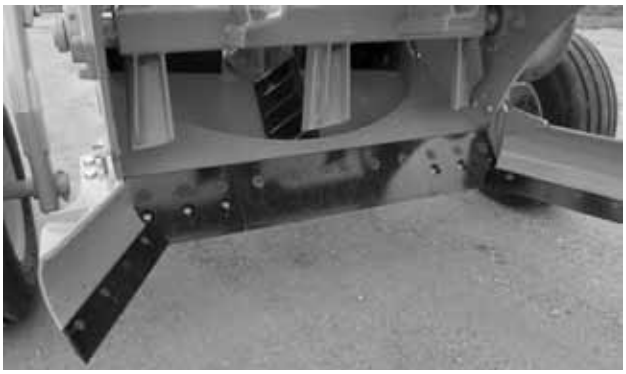


Rear

FIG. 32 CHAIN DRIVE

27. **Wings:**
Wings can be mounted to each side of the intake frame to direct the soil/material into the rotor. Generally they are used when ditching to form a smooth, even cut as the machine moves over the working area.

They can be removed for trenching when forming a deep, narrow cut. Stow on top of the frame when not being used.



Mounted

Removing

Stowed

FIG. 33 WINGS

28. **Left Hand Dirt Directional Door:**
A left hand dirt directional door is located on the left rear frame to direct the flow of material off the left side of the rotor. The door is heavily loaded when the material is directed out to the right. It is recommended that the door support pins be installed through the side frame when ditching.

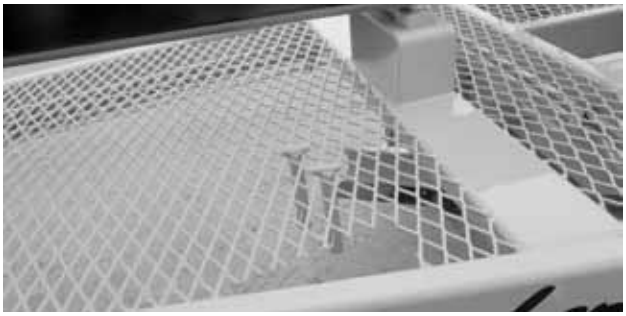
Remove the pins and stow them through the frame screen when trenching.

Door Up

Door Down

Support Pins

Support Pins Removed



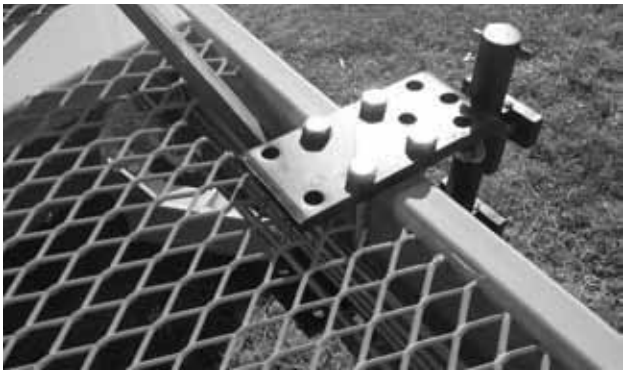
Pins Stowed

FIG. 34 DOOR

29. **Optional Coulter Attachments:**
The intake area of the machine can be equipped with coulters to cut the soil/material before it goes into the rotor.

a. **Coulters:**
Mount to the side frame member to slice through the surface trash and debris to form a clean cut. Mount along the frame at the appropriate position to form an even cut of the material going into the wings, cutting blade and rotor. Raise or lower the coulter shaft to obtain the required cutting depth.

Coulter Package Lay-Out



Mounting Hardware

Positioned

FIG. 35 COULTERS (TYPICAL)

30. **Operating Hints:**

a. The machine can be used in standing water. The water will be moved along with the mud and soil.

b. Stones up to 3 inches (75 mm) or so can be handled by the machine. Just be sure that buildings, animals or people are not in the discharge path. It is recommended that larger stones be removed before starting if they are in the working area.

c. To form a drainage system that will allow other equipment to travel across the ditch without damaging the machines, it is recommended that more than one pass be made to make a wide channel. If it needs to be deeper, make another pass down the center. In most cases, a pass with a tillage tool will smooth the ditch sides to allow other equipment to cross with minimal problems.

d. Set the ground speed and machine depth to give an 80% load factor on the engine for normal operating conditions.

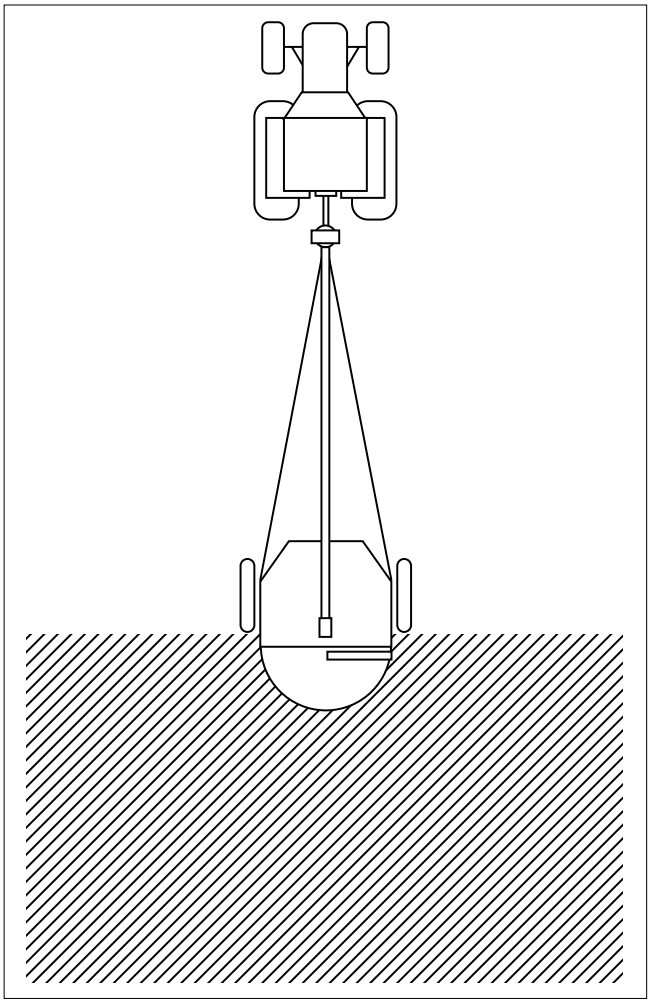
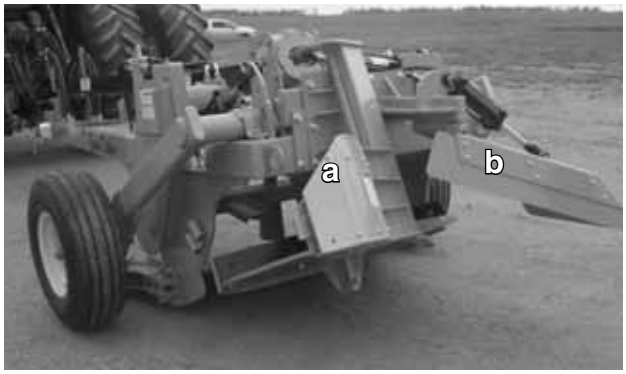


FIG. 36 MACHINE HAZARD AREA

e. Use the deflector and the rear door to direct the material to the left and right as required. Open the directional door when operating in wet muddy conditions.



a - Dirt Directional Door b - Dirt Deflector

FIG. 37 BACK OF MACHINE

4.8 TRANSPORTING

TRANSPORT SAFETY

- Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.
- Make sure the SMV (Slow Moving Vehicle) emblem and all the lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.
- Do not allow anyone to ride on the ditcher or tractor during transport.
- Do not exceed 32 kmh (20 mph). Reduce speed on rough roads and surfaces.
- Use retainers on the mounting pins before transporting.
- Always use hazard flashers on the tractor when transporting unless prohibited by law.

When transporting the machine, review and follow these instructions:

1. Be sure all bystanders are clear of the machine.
2. Be sure the rotor drive is disengaged and has stopped turning.
3. Be sure that the machine is securely attached to the tractor and a retainer pin and safety chain are installed.
4. Raise the machine, install the transport lock and secure.
5. Clean the SMV emblem, reflectors and lights and make sure they are working.
6. Be sure you are in compliance with all applicable lighting and marking regulations when transporting. Check with your local authorities.
7. Keep to the right and yield the right-of-way to allow faster traffic to pass. Drive on the road should if permitted by law.
8. Do not allow riders.
9. Always use hazard flashers on the tractor when transporting unless prohibited by law.
10. Never transport the machine faster than 20 mph (32 km/h). The ratio of the tractor weight to the Ditcher weight plays an important role in defining acceptable travel speed. Table 1 summarizes the recommended travel speed to weight ratio.

Table 2 Speed vs Weight Ratio

Road Speed	Weight of fully equipped or loaded implement(s) relative to weight of towing machine
Up to 32 kph (20 mph)	1 to 1, or less
Up to 16 kph (10 mph)	2 to 1, or less
Do not tow	More than 2 to 1

Left Door

Frame (Typical)

FIG. 38 TRANSPORT LOCK PIN (TYPICAL)

4.9 STORAGE

STORAGE SAFETY

1. Store the unit in an area away from human activity.
2. Do not permit children to play on or around the stored machine.
3. Store the unit in a dry, level area. Support the frame with planks if required.

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 any unnecessary down time at the start of next season. To insure a long, trouble free life, this procedure should be followed when preparing the unit for storage:

1. Clear the area of bystanders, especially small children.
2. Thoroughly wash the entire machine using a pressure washer to remove all dirt, mud, debris or residue.
3. Inspect the paddles and rotor for damage or entangled material. Repair or replace damaged parts. Remove all entangled material.
4. Inspect all hydraulic hoses, lines, couplers, and fittings. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded or is separating from the crimped end of a fitting.
5. Lubricate all grease fittings. Make sure that all grease cavities have been filled with grease to remove any water residue from the washing. This also protects the bearing seals.
6. Touch up all paint nicks and scratches to prevent rusting.
7. Move to storage area.
8. Select an area that is dry, level and free of debris.
9. Unhook from tractor or truck (See Section 4.6).
10. Place blocks under the stand and tires if required.
11. Store machine in an area away from human activity.
12. Do not allow children to play on or around the stored machine.

FIG. 39 STORED

5.0 SERVICE AND MAINTENANCE

MAINTENANCE SAFETY

1. Follow ALL the operating, maintenance and safety information in the manual.

2. Support the machine with blocks or safety stands when changing tires or working beneath it.

3. Follow good shop practices:

   - Keep service area clean and dry.
   - Be sure electrical outlets and tools are properly grounded.
   - Use adequate light for the job at hand.

4. Use only tools, jacks and hoists of sufficient capacity for the job.

5. Never work on paddles, rotor or under the machine unless the tractor engine is off and driveline is disconnected.

6. Make sure all guards are in place and properly secured when maintenance work is completed.

7. Never wear ill-fitting, baggy or frayed clothing when working around or on any of the drive system components.

8. Before applying pressure to a hydraulic system, make sure all lines, fittings and couplers are tight and in good condition.

9. Relieve pressure from hydraulic circuit before servicing or disconnecting from tractor.

10. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.

11. Clear the area of bystanders, especially children, when carrying out any maintenance and repairs or making any adjustments.

5.1 SERVICE

5.1.1 FLUIDS AND LUBRICANTS

1. **Grease:**
   Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance. Also acceptable is an SAE multi-purpose lithium based grease.

2. **Gear Box Oil:**
   Use an SAE 85W90 gear oil for all operating conditions.

   Capacity: 2 qts. (2 L.).

2. **Storing Lubricants:**
   Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

5.1.2 GREASING

Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.

1. Use a hand-held grease gun for all greasing.

2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.

3. Replace and repair broken fittings immediately.

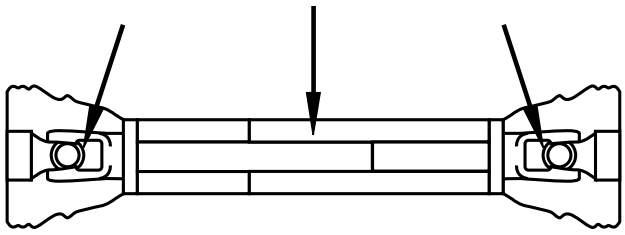
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

5.1.3 SERVICING INTERVALS

The period recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

8 Hours or Daily

1. Grease PTO driveline (3 locations).

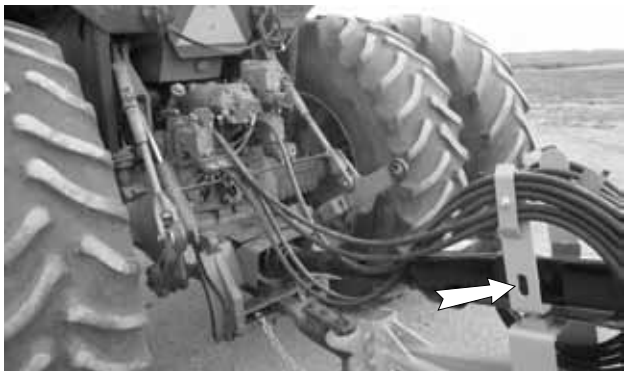


Schematic

Driveline

FIG. 40 PTO DRIVELINE

2. Grease the input drive shaft bearings (3 locations).



Front

Rear

FIG. 41 INPUT SHAFT BEARINGS

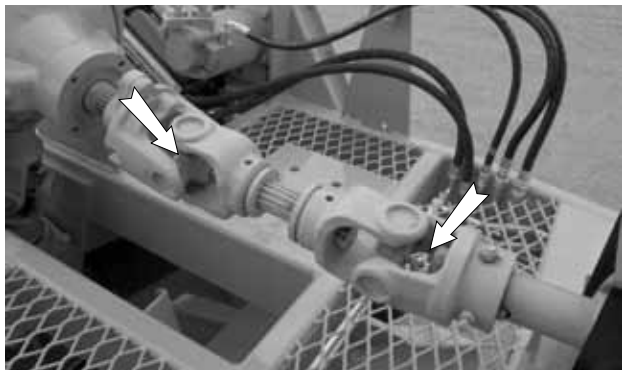
3. Grease drivetrain universals (3 locations).

   a. In front of gear box.

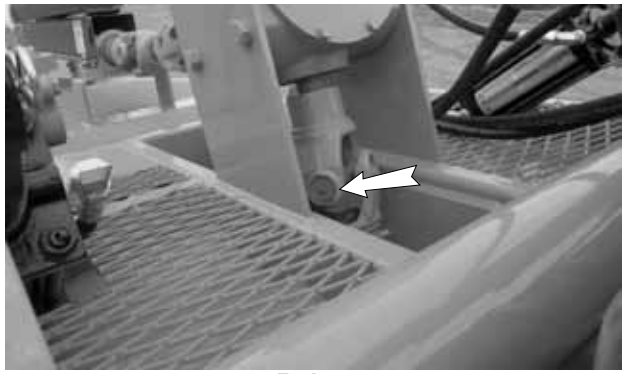
WARNING

Machine is shown with guard opened for illustrative purposes only. Do not operate with guard opened.

   b. Below gear box.



Front



Below

FIG. 42 DRIVETRAIN UNIVERSALS

4. Grease rotor shaft mounting bearings (4 locations).

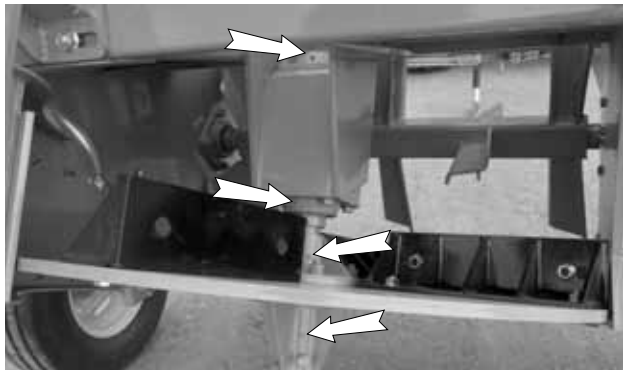


FIG. 43 ROTOR SHAFT MOUNTING BEARINGS

5. Grease cross shaft bearings (2 locations).

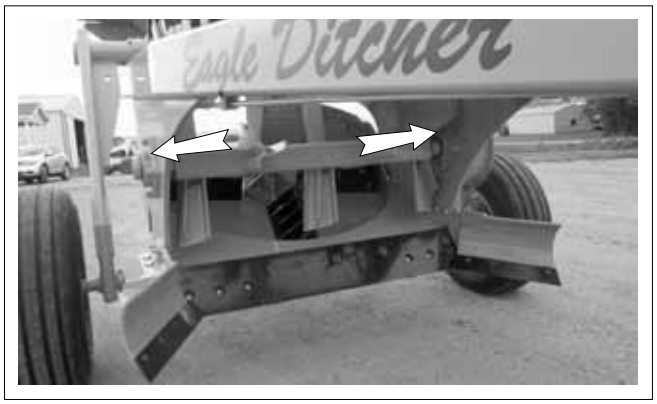


FIG. 44 CROSS SHAFT BEARINGS

Weekly or Every 40 Hours

1. Grease frame pivot bushings (2 locations).

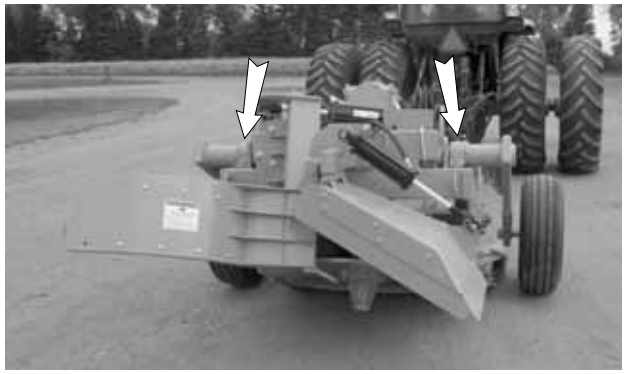
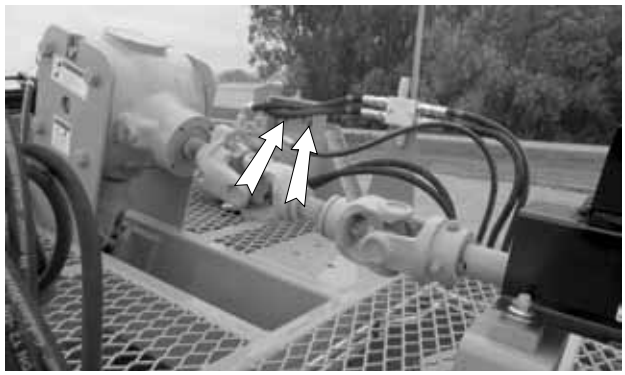


FIG. 45 FRAME PIVOT BUSHINGS

2. Check roller chain tension.

Chain Cover Removed



Motor Frame Anchor Bolts

FIG. 46 ROLLER CHAIN TENSION

3. Grease shear bolt slip surface with one shot of grease.

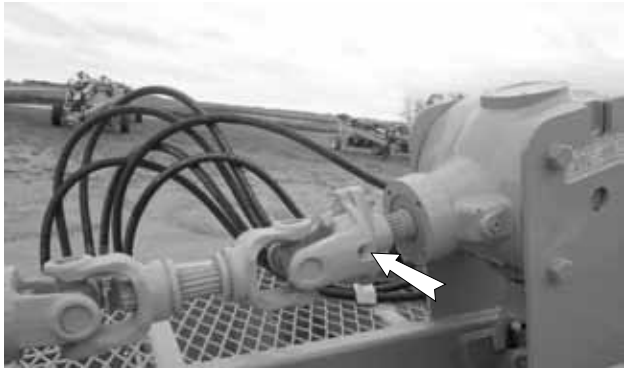


FIG. 47 SLIP SURFACE

4. Check the oil level in the main gearbox.

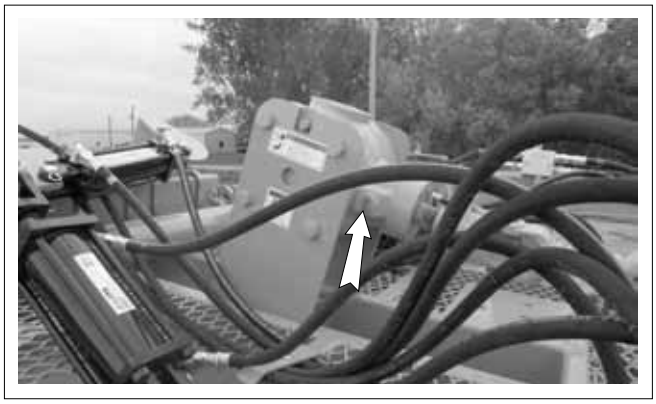


FIG. 48 MAIN GEARBOX LEVEL PLUG

5. Check the oil level in the chain case gearbox.

FIG. 49 CHAIN CASE LEVEL PLUG

Annually or Every 250 Hours

1. Change oil in main gearbox.

FIG. 50 MAIN GEARBOX

2. Wash and clean machine.

FIG. 51 MACHINE

5.1.4 SERVICE RECORD

See Lubrication and Maintenance sections for details of service. Copy this page to continue record.

ACTION CODE:	CK	CHECK	CH	CHANGE	CL	CLEAN
	LU	LUBRICATE	RE	REPACK	IN	INSPECT

Maintenance

Hours																							
Serviced by																							
8 Hours or Daily																							
LU PTO Driveline																							
LU Input Drive Shaft Bearings																							
LU Drivetrain Universals																							
LU Rotor Shaft Mounting Bearings																							
LU Cross Shaft Bearings																							
Weekly or Every 40 Hours																							
LU Frame Pivot Bushings																							
CK Roller Chain Tension																							
LU Shear Bolt Slip Surface																							
CK Main Gearbox Oil Level																							
CK Chain Case Gearbox Oil Level																							
Annually or Every 250 Hours																							
CH Main Gearbox Oil																							
CL Machine																							

5.2 MAINTENANCE

By following a careful service and maintenance program for your machine, you will enjoy many years of trouble-free service.

5.2.1 ROLLER CHAIN MAINTENANCE

The machine is designed with a roller chain in the input paddle drive system and transmits rotational power from the hydraulic motor to the paddle shaft. The tension should be checked on a weekly basis to keep in good working order. To maintain roller chain, follow this procedure:

1. Clear the area of bystanders, especially small children.

2. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.

3. Remove top anchor bolts in the cover.

4. Loosen the two lower anchor bolts.

5. Slide the cover off the enclosure.

6. **Check Chain Tension By:**

    a. Move all the slack to one side of the upper sprocket.

    b. The chain should move 1/8 to 1/4 inch (3 to 6 mm) for the proper tension.

7. **Adjust Chain Tension By:**

    a. Loosen motor mount anchor bolts.

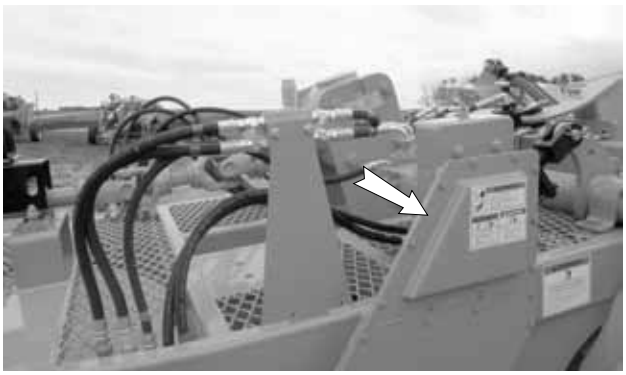
    b. Loosen jam nut on position bolt.

    c. Use position bolt to move motor mount to required position to set chain tension.

    d. Tighten anchor bolts to their specified torque.

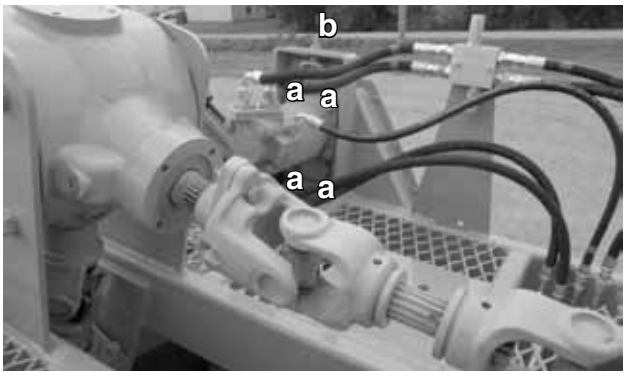
    e. Tighten jam nut to its specified torque.

8. Apply silicon to cover, install cover and tighten anchor bolts to their specified torque.



Top Cover

Roller Chain



a - Anchor Bolts b - Adjusting Bolt

Silicon

FIG. 52 ROLLER CHAIN

5.2.2 WEAR COMPONENT REPLACEMENT

The machine is designed with replaceable inserts on the rotor compartment, rotor paddles, directional door and deflector door to prevent wear to main components. Each operator should monitor the condition of these components to determine when they should be replaced.

When replacing the inserts, follow this procedure:

1. Clear the area of bystanders, especially small children.

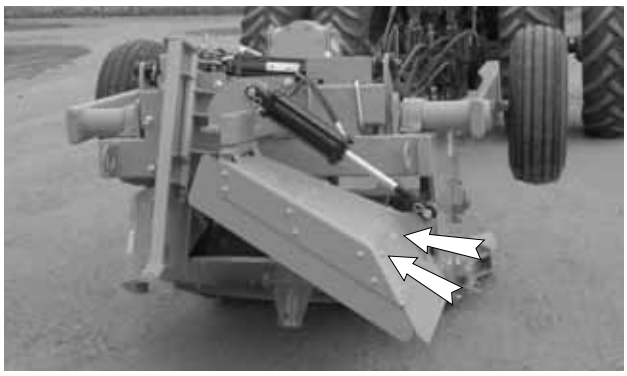
2. Use the hydraulic system to set doors at an appropriate angle to allow access to the rotor and insert mounting bolts.

3. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.

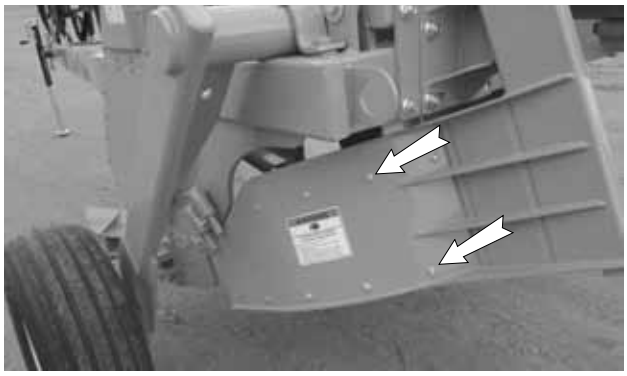
4. Loosen and remove mounting bolts to wear insert.

5. Replace insert with genuine Eagle Ditcher parts.

6. Install mounting bolts and tighten to their specified torque.



Deflector Door



Directional Door

Rotor Frame/Paddles

FIG. 53 WEAR INSERTS

5.2.3 UNPLUGGING

When the housing fills with material, follow this procedure to unplug:

1. Raise machine, stop forward motion and reverse feeding paddles to clear material from housing.

2. Return paddle drive system to regular direction and move forward.

Feeding Paddles

Reversing

FIG. 54 UNPLUGGING

5.2.4 CUTTING EDGE

The cutting edges of the wing, side and center blades are replaceable to allow the operator to change the leading edge when it wears, chips or is damaged. To install or change the cutting edge, follow this procedure:

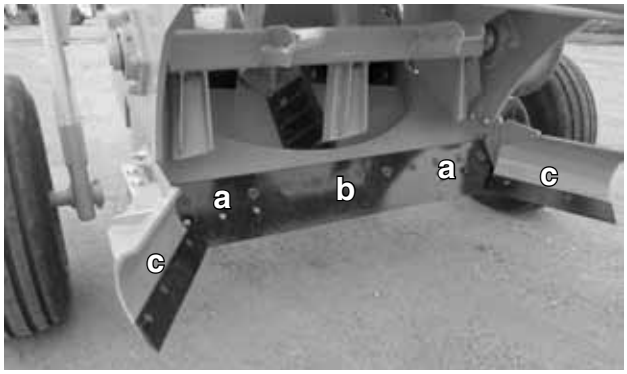
1. Clear the area of bystanders, especially small children.

2. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.

3. Remove the plow bolts through the mounting holes.

4. Replace or install cutting edge.

5. Install mounting bolts and tighten to their specified torque.



a - Side b - Center c - Wing

FIG. 55 CUTTING EDGES

5.2.5 PTO SAFETY SHIELD

It is important that the shield components rotate freely over the PTO shaft. Lubricating both the shield bearings and also periodic cleaning will ensure safe operation of the rotating shields.

1. Press the cone down and release the collar catches with a screw driver.

2. Spread the collar bearing and remove from the tube. Clean the collar and the yoke bearing groove. After cleaning thoroughly, apply a good coat of grease to the bearing groove.

3. Fit the collar bearing into the groove and the tube ensuring that the collar catches are centered over the matching holes. The tube and bearing must rotate freely in the bearing groove.

4. Fasten the cone by lining up the cone grease fitting over the grease filing hole on the collar bearing. Make sure that all catches are fastened and that the shield turns freely over the shaft.

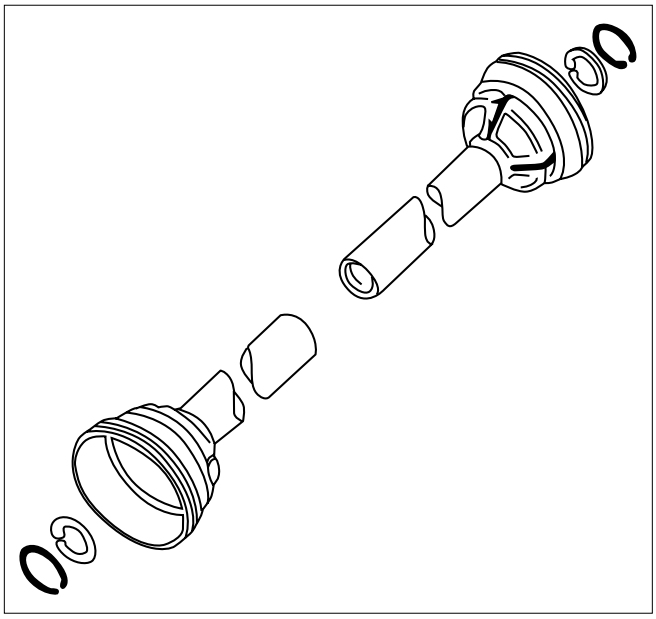


FIG. 56 CUTTING EDGES

5.2.6 GEAR BOX

The machine is designed with a right angled gear box that changes horizontal rotational power to vertical. Check the oil level on a weekly basis and clean the breather annually. When maintaining the gear box, follow this procedure:

1. Clear the area of bystanders, especially small children.

2. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.

3. **Check Oil Level:**

   a. Remove the plug from the gear box when the machine is cold.

   b. Use a piece of wire about the same length as the gear box as a dipstick to push to the bottom of the gear box. The gear box should be 1/2 full at all times.

   c. Add oil through the fill plug as required.

   d. Install and tighten fill plug.

4. **Changing Oil:**

   a. Place a container under the drain plug.

   b. Remove the drain plug and allow the system to drain for ten minutes.

   c. Install and tighten the drain plug. Use teflon tape or pipe sealant compound on the plug to prevent leaking.

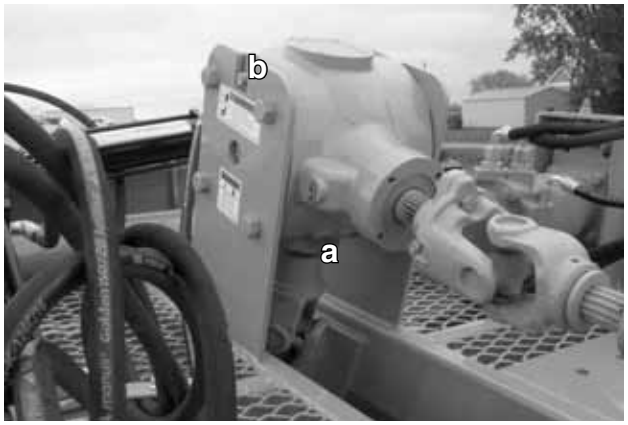
   d. Dispose of the used oil in an environmentally safe manner.

   e. Fill with 1 qt (1 L.) All-Purpose SAE 80W90 Hydraulic Oil or equivalent.

   f. Install fill plug.

   g. Start and run the system to check for leaks.

   h. Tighten any fitting that leaks.



a - Drain b - Fill/Breather

FIG. 57 GEARBOX

5. **Cleaning Breather:**

   Each gear box is equipped with a breather in the fill plug to equalize the internal pressure to the atmosphere and prevent leaks. Clean the breather on an annual basis.

   a. Remove the fill plug/breather.

   b. Check that the vent passage through the plug is open.

   c. Soak in a solvent over night if plugged.

   d. Use a high-pressure air hose to blow the passage open. Use a probe to clear the passage if the hole is caked with dirt.

   IMPORTANT

   Always clean the breather if any leaks are noticed around the shafts.

   e. Install and tighten the breather plug.

5.2.7 SHEAR BOLT

A shear bolt is provided at the yoke to the gearbox to protect the drive system during an overload.

To change the shear bolt, follow this procedure:

1. Clear the area of bystanders, especially small children.

2. Place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.

3. Turn PTO shaft by hand to locate the shear bolt holes.

4. Carefully remove remaining shear bolts using a hammer and punch if necessary. Be careful not to enlarge the holes.

5. Install the new shear bolts and tighten to their specified torque. Do not overtighten.

IMPORTANT

Use only genuine Erickson 12 mm x 2 1/2 inch Grade 8.8 replacement bolts for all operating conditions.

6. Do not operate at more than 200 horsepower. This power level exceeds the shearing strength of the bolt and will result in frequent bolt failures.

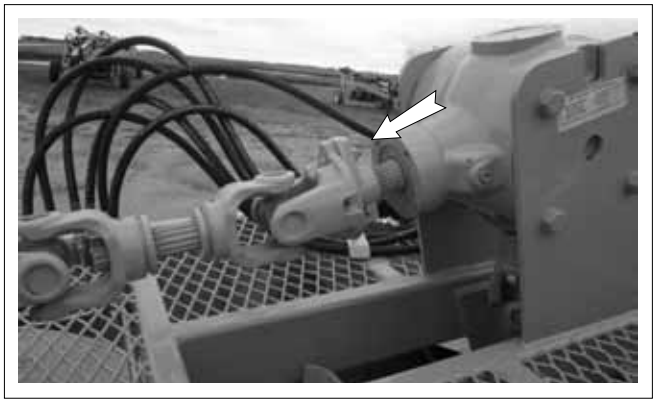


FIG. 58 SHEAR BOLT

6.0 TROUBLE SHOOTING

The Eagle Ditcher uses paddles on a rotor to displace soil and form a drainage ditch. It is a simple and reliable system that requires minimal maintenance.

In the following section, we have listed many of the problems, causes and solutions to the problems that you may encounter.

If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please call your local Eagle Ditcher dealer or distributor. Before you call, please have this Operator's Manual and the serial number from your machine ready.

PROBLEM	CAUSE	SOLUTION
Rotor doesn't turn.	Failed PTO clutch.	Repair PTO clutch on tractor.
	Broken shear bolt.	Replace shear bolt.
Machine vibrates.	Driveline doesn't telescope.	Remove, disassemble and clean telescoping joint.
	Rotor out of balance.	Replace damaged or broken anchor bolt.
Shear bolt fails.	Overloaded.	Obstructions in the field. Remove before starting. Slow down or raise machine slightly. Disengage slowly. Allow rotor to slow or stop before fully disengaging.
Slow feeding into rotor.	Slow travel speed.	Increase forward speed.
	Slow feed beater.	Increase beater speed to 60 - 65 RPM. Reduce oil flow to hydraulic motor. Should be 20 - 25 gpm to prevent overbeating on 60%.
	Insufficient hydraulic pressure.	System needs to provide 2500-3000 psi. Repair hydraulic system on tractor if required.

7 SPECIFICATIONS

7.1 MECHANICAL

Length:	**18' 6"**
Width	**7' 6"**
Height	**5' 8"**
Weight	**4480 lbs**
Input Speed:	**1000 RPM**
Tires	**11.5L 15 @ 60 psi**

The Eagle Ditcher requires a minimum of 3 remote hydraulic outlets (4 if optional deflector is ordered) with a minimum of 15 GPM and a working pressure of 2500 PSI. Valve multipliers are available from your dealer if necessary.

Tractor horsepower required is 150 HP minimum to a 200 HP maximum. Drive lines and gear boxes can be seriously damaged if excessive horsepower is used. Use only 12 mm x 2 1/2 inch Grade 8.8 replacement bolts when replacing shear bolts.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

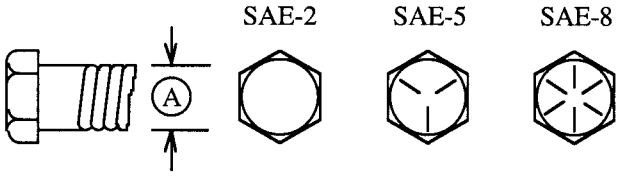
7.2 BOLT TORQUE

CHECKING BOLT TORQUE

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

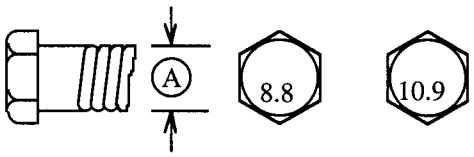
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque* SAE 2 (N.m.)	SAE 2 (lb-ft)	SAE 5 (N.m.)	SAE 5 (lb-ft)	SAE 8 (N.m.)	SAE 8 (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	60	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



METRIC TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque 8.8 (N.m.)	8.8 (lb-ft)	10.9 (N.m.)	10.9 (lb-ft)
M3	.5	.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710



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 otherwise 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.

** Shear bolts must be 12 mm x 2 1/2 inch Grade 8.8 only.

7.3 HYDRAULIC FITTING TORQUE

TIGHTENING O-RING FITTINGS *

1. Inspect O-ring and seat for dirt or obvious defects.
2. On angle fittings, back the lock nut off until washer bottoms out at top of groove.
3. Hand tighten fitting until back-up washer or washer face (if straight fitting) bottoms on face and O-ring is seated.
4. Position angle fittings by unscrewing no more than one turn.
5. Tighten straight fittings to torque shown.
6. Tighten while holding body of fitting with a wrench.

* The torque values shown are based on lubricated connections as in reassembly.

Tube Size OD (in.)	Nut Size Across Flats (in.)	Torque Value* (N.m)	Torque Value* (lb-ft)	Recommended Turns To Tighten (After Finger Tightening) (Flats)	Recommended Turns To Tighten (After Finger Tightening) (Turn)
3/8	1/2	8	6	2	1/3
7/16	9/16	12	9	2	1/3
1/2	5/8	16	12	2	1/3
9/16	11/16	24	18	2	1/3
3/4	7/8	46	34	2	1/3
7/8	1	62	46	1-1/2	1/4
1-1/16	1-1/4	102	75	1	1/6
1-3/16	1-3/8	122	90	1	1/6
1-5/16	1-1/2	142	105	3/4	1/8
1-5/8	1-7/8	190	140	3/4	1/8
1-7/8	2-1/8	217	160	1/2	1/12

8 INDEX

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