HAYBUSTER®

H-1000™

PTO Driven Tub Grinder

Serial Number 4542 thru 4921
Includes Supplement Parts Reference for SN 4921

Operating Instructions

and Parts Reference

DURATECH INDUSTRIES

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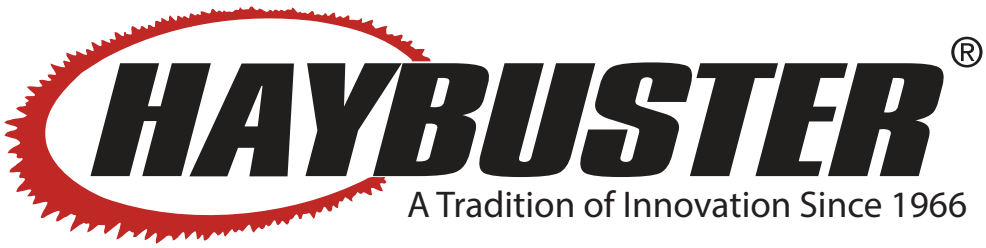
HAYBUSTER®
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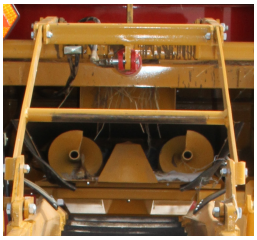

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H-1000™

PTO Driven Tub Grinder

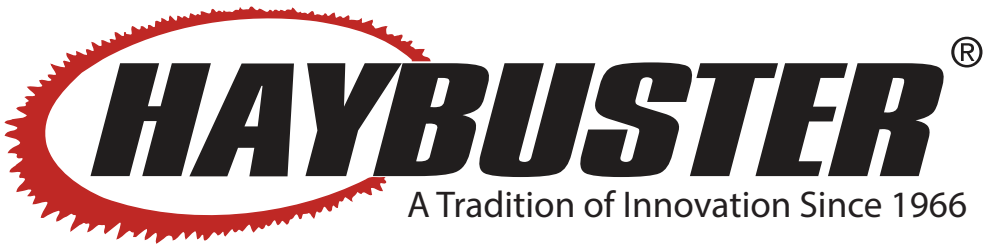
Serial Number 4542 thru 4921

Operating Instructions

and Parts Reference

DuraTech Industries International Inc. (DuraTech Industries) has made every effort to assure that this manual completely and accurately describes the operation and maintenance of the H-1000 PTO Driven Tub Grinder™ as of the date of publication. DuraTech Industries reserves the right to make updates to the machine from time to time. Even in the event of such updates, you should still find this manual to be appropriate for the safe operation and maintenance of your unit.

This manual, as well as materials provided by component suppliers to DuraTech Industries are all considered to be part of the information package. Every operator is required to read and understand these manuals, and they should be located within easy access for periodic review.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Foreword

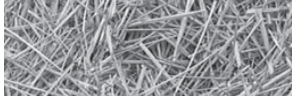
All personnel must read and understand the following sections before operating the H-1000 Tub Grinder.

- Foreword and Section 1, important safety information.
- Section 2, “Machine operation,” which explains normal operation of the machine.
- Section 2.1, “Pre-Operation Inspection”.

Appropriate use of unit

The H-1000 Tub Grinder is designed to grind material into more palatable or manageable rations for your operation. It has multiple uses:

1. Grind most types of hay
   - Big round bales
   - Loose hay
   - Square bales
2. Grind most types of grain
   - Ear corn
   - Shell corn
   - High moisture corn
   - Most small grains

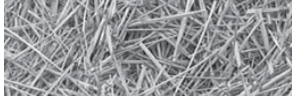


3. Grind most types of crop residue
   - Stover
   - Straw
4. Grind various sizes
   - Screens are available from 1/8” to 4”
   - Combine screen sizes to get desired cut

Operator protection

As with all machinery, care needs to be taken in order to insure the safety of the operator and those in the surrounding area.

WARNING: The **OPERATOR IS RESPONSIBLE** for the safety of the operator and those in the surrounding area. Operators and those observing the operation of the H-1000 Tub Grinder are required to wear head, eye, and ear protection, No loose clothing is allowed.



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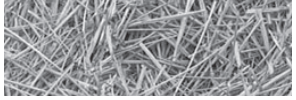

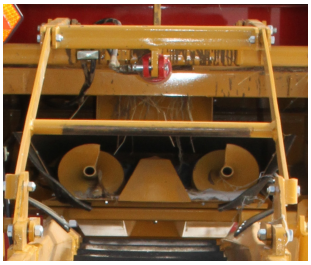

HAYBUSTER®

H-1000™

PTO Driven Tub Grinder

Serial Number 4922 thru 4921

Operating Instructions

DuraTech Industries International Inc. (DuraTech Industries) has made every effort to assure that this manual completely and accurately describes the operation and maintenance of the H-1000 PTO Driven Tub Grinder™ as of the date of publication. DuraTech Industries reserves the right to make updates to the machine from time to time. Even in the event of such updates, you should still find this manual to be appropriate for the safe operation and maintenance of your unit.

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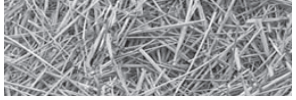


Introduction

The H-1000 Tub Grinder is designed to grind material into more palatable or manageable rations for your operation. It has multiple uses:

1. Grind most types of hay
   - Big round bales
   - Loose hay
   - Square bales
2. Grind most types of grain
   - Ear corn
   - Shell corn
   - High moisture corn
   - Most small grains
3. Grind most types of crop residue
   - Stover
   - Straw
4. Grind various sizes
   - Screens are available from 1/8” to 4”
   - Combine screen sizes to get desired cut

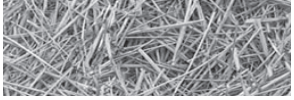
To avoid possible damage to the machine and risk of injury to the operator, consult with a DuraTech Industries International, Inc. (DuraTech Industries) representative before attempting to shred materials other than livestock forage.

Purpose

The purpose of this owner’s manual is to explain maintenance requirements and routine adjustments for the most efficient operation of your H-1000 Tub Grinder. There is also a trouble shooting section that may help in case of problems in the field. Any information not covered in this manual may be obtained from your dealer.

Special Note: When reference is made as to front, rear, left hand, or right hand of this machine, the reference is always made from standing at the rear end of the machine and looking toward the hitch. Always use serial number and model number when referring to parts or problems. Please obtain your serial number and write it below for your future reference.

MODEL: H-1000 SERIAL NO. _____



How to use this manual

Manual organization

This manual is organized into the following parts:

- **Part 1:** Operating Instructions
  - **Section 1:** Safety decals, safety instructions and information
  - **Section 2:** Describes the purposes of each part.
  - **Section 3:** Describes safe procedures.
  - **Section 4:** Tells how to use the H-1000 Tub Grinder.
  - **Section 5:** Describes how to maintain the H-1000 Tub Grinder.
- **Part 2:** Part's reference contains diagrams of each assembly, with the part number of each part. A key on the same or facing page contains a description of the part and the quantity used.

Dealer responsibilities

- Perform a daily pre-operation inspection as described in Section 2, "Operation."
- Upon delivery of the unit to the customer, it is your responsibility to conduct a training session on the safe operation of the unit for the primary operator(s). You must also conduct a "walk-around" inspection of all safety instructional decals on the machine itself. Decals are illustrated in **Part 2: Parts Reference.**
- Complete and return the Warranty Registration postcard. DuraTech Industries must receive this form before activating the warranty. Appendix A provides details of the warranty.

Operator responsibilities

- Note the important safety information in the Foreword and in Section 1, "Safety."
- Thoroughly review sections 1 and 2, which explain normal operation of the machine, and section 3, which explains maintenance requirements. These sections will function as your textbook during the dealer-conducted training course that is required before you can use the unit.
- Manuals for certain allied supplier's components are provided separately. You should also be familiar with their contents.
- Keep copies of all manuals in a readily accessible location for future reference.

Section 1: Safety

The safety of the operator is of great importance to DuraTech Industries. We have provided decals, shield and other safety features to aid you in using your machine safely. In addition, we ask you to be a careful operator who will properly use and service your Haybuster equipment.

WARNING: FAILURE TO COMPLY WITH SAFETY INSTRUCTIONS THAT FOLLOW WITHIN THIS MANUAL COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH. BEFORE ATTEMPTING TO OPERATE THIS MACHINE, CAREFULLY READ ALL INSTRUCTIONS CONTAINED WITHIN THIS MANUAL. ALSO READ THE INSTRUCTION MANUAL PROVIDED WITH YOUR TRACTOR.

THIS MACHINE IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THOSE EXPLAINED IN THE OPERATOR'S MANUAL, ADVERTISING LITERATURE OR OTHER DURATECH WRITTEN MATERIAL PERTAINING TO THE H-1000 TUB GRINDER.

1.1 Safety-alert symbols

Decals are illustrated in **Part 2: Parts Reference.**

The safety decals located on your machine contain important and useful information that will help you operate your equipment safely.

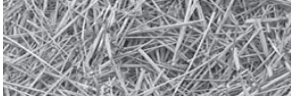
To assure that all decals remain in place and in good condition, follow the instructions below:

- Keep decals clean. Use soap and water - not mineral spirits, adhesive cleaners and other similar cleaners that will damage the decal.
- Replace all damaged or missing decals. When attaching decals, surface temperature of the machine must be at least 40° F (5° C). The surface must be also be clean and dry.
- When replacing a machine component to which a decal is attached, be sure to also replace the decal.
- Replacement decals can be purchased from your Haybuster dealer.

DuraTech uses industry accepted **ANSI** standards in labeling its products for safety and operational characteristics.

Safety-Alert Symbol

Read and recognize safety information. Be alert to the potential for personal injury when you see this safety-alert symbol.



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 that, for functional purposes, cannot be guarded.

DANGER:
Signal word - White Lettering/Red Background
Safety Alert Symbol - White Triangle/Red Exclamation Point

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.

WARNING:
Signal word - Black Lettering/Orange Background
Safety Alert Symbol - Black Triangle/Orange Exclamation Point

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.

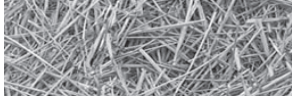
CAUTION:
Signal word - Black Lettering/Yellow Background
Safety Alert Symbol - Black Triangle/Yellow Exclamation Point

This manual uses the symbols to the right to denote important safety instructions and information.

The **DANGER**, **WARNING** and **CAUTION** symbols are used to denote conditions as stated in the text above. Furthermore, the text dealing with these situations is surrounded by a box with a white background, will begin with **DANGER**, **WARNING**, or **CAUTION**.

The **INFORMATION** symbol is used to denote important information or notes in regards to maintenance and use of the machine. The text for this information is surrounded by a box with a light grey background, and will begin with either **IMPORTANT** or **NOTE.**

	**1. Yellow warning triangle/black graphical symbol, indicates what the hazard is.** **Hazard Identification**
	**2. Red circle-with-slash/black graphical symbol indicates a prohibited action to avoid the hazard.** **Prohibited Action**
	**3. Blue mandatory action circles/white graphical symbol - indicates an action to take to avoid the hazard.** **Mandatory Action**



1.2 Operator - personal equipment

THE OPERATOR

Physical Condition

You must be in good physical condition and mental health and not under the influence of any substance (drugs, alcohol) which might impair vision, dexterity or judgment.

Do not operate a **H-1000** when you are fatigued. Be alert - If you get tired while operating your **H-1000,** take a break. Fatigue may result in loss of control. Working with any farm equipment can be strenuous. If you have any condition that might be aggravated by strenuous work, check with your doctor before operating

Proper Clothing

Clothing must be sturdy and snug-fitting, but allow complete freedom of movement. Avoid loosefitting jackets, scarfs, neckties, jewelry, flared or cuffed pants, unconfined long hair or anything that could become entangled with the machine.

Protect your head with a hard hat to reduce the risk of injury from flying debris.

Protect your hands with gloves when handling flail and sections. Heavyduty, nonslip gloves improve your grip and protect your hands.

Good footing is most important. Wear sturdy boots with nonslip soles. Steel-toed safety boots are recommended.

To reduce the risk of injury to your eyes never operate a **H-1000** unless wearing goggles or properly fitted safety glasses with adequate top and side protection.

Tractor noise may damage your hearing. Always wear sound barriers (ear plugs or ear mufflers) to protect your hearing. Continual and regular users should have their hearing checked regularly.

1.3 Machine safety labels

The safety decals located on your machine contain important information that will help you operate your equipment. Become familiar with the decals and their locations.

DANGER: ROTATING PARTS WITHIN CAN KILL OR DISMEMBER. WAIT FOR ALL MOVEMENT TO STOP BEFORE SERVICING, UNLOADING, OR INSPECTING MACHINE.

6500082

DANGER: ROTATING DRIVELINE, KEEP AWAY!

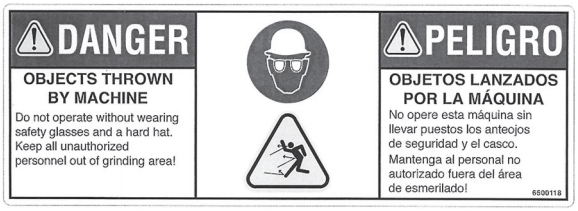
ENTANGLEMENT CAN CAUSE SERIOUS INJURIES OR DEATH.

DO NOT OPERATE WITHOUT

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

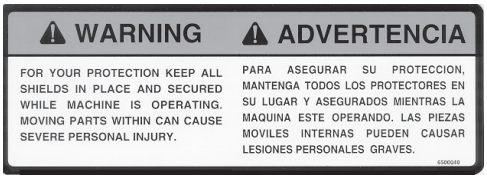
6500085

DANGER: OBJECTS THROWN BY MACHINE
DO NOT OPERATE WITHOUT WEARING SAFETY GLASSES AND A HARD HAT.
KEEP UNAUTHORIZED PERSONNEL OUT OF THE GRINDING AREA



6500118

WARNING: FOR YOUR PROTECTION KEEP ALL SHIELDS IN PLACE AND SECURED WHILE MACHINE IS OPERATING MOVING PARTS WITHIN CAN CAUSE SEVERE PERSONAL INJURY.



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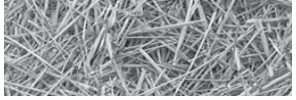


WARNING: FOR YOUR PROTECTION AND PROTECTION OF OTHERS, **PRACTICE THE FOLLOWING SAFETY RULES**.

1. BEFORE OPERATING THIS MACHINE, READ THE OPERATOR'S MANUALS SUPPLIED WITH THIS MACHINE AND YOUR TRACTOR.

2. CHECK OPERATORS MANUALS TO BE SURE YOUR TRACTOR MEETS THE MINIMUM REQUIREMENTS FOR THIS MACHINE.

3. READ ALL DECALS PLACED ON THIS MACHINE FOR YOUR SAFETY AND CONVENIENCE.

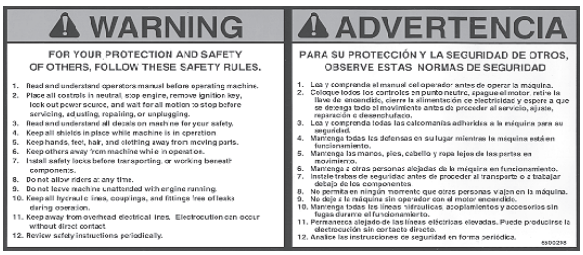
4. NEVER ALLOW RIDERS ON THIS IMPLEMENT OR THE TRACTOR.

5. KEEP OTHERS AWAY FROM THIS MACHINE WHILE IN OPERATION.

6. KEEP ALL SHIELDS IN PLACE WHILE MACHINE IS OPERATING.

7. KEEP HANDS, FEET, LOOSE CLOTHING, ETC., AWAY FROM POWER DRIVEN PARTS.

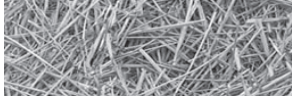
8. ALWAYS SHUT OFF MACHINE AND ENGINE BEFORE SERVICING, UNCLOGGING, INSPECTING, OR WORKING NEAR THIS MACHINE FOR ANY REASON. ALWAYS PLACE TRANSMISSION IN PARK OR SET PARK BRAKE AND WAIT FOR ALL MOVEMENT TO STOP BEFORE APPROACHING THIS MACHINE.



6500041

WARNING: NO RIDERS
SERIOUS INJURY COULD RESULT FROM RIDING ON THE MACHINE.

6500043



WARNING: OVERHEAD CONVEYOR HAZARD
TO PREVENT SERIOUS INJURY OR DEATH:

DO NOT WALK UNDER CONVEYOR AT ANY TIME. STAY CLEAR OF CONVEYOR DURING OPERATION, RAISING, AND LOWERING. LOWER CONVEYOR FULLY BEFORE SERVICING.

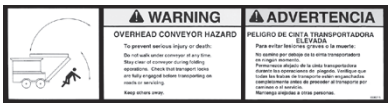
KEEP OTHERS AWAY.

6500214

WARNING: OVERHEAD CONVEYOR HAZARD
TO PREVENT SERIOUS INJURY OR DEATH:

DO NOT WALK UNDER CONVEYOR AT ANY TIME. STAY CLEAR OF CONVEYOR DURING FOLDING OPERATIONS. CHECK THAT TRANSPORT LOCKPINS ARE FULLY ENGAGED BEFORE TRANSPORTING ON ROADS OR SERVICING.

KEEP OTHERS AWAY.



6500215

WARNING: HIGH-PRESSURE FLUID HAZARD, TO PREVENT SERIOUS INJURY OR DEATH:

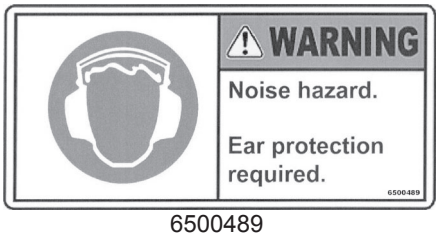
- RELIEVE PRESSURE ON SYSTEM BEFORE REPAIRING OR ADJUSTING OR DISCONNECTING.
- WEAR PROPER HAND AND EYE PROTECTION WHEN SEARCHING FOR LEAKS. USE WOOD OR CARDBOARD INSTEAD OF HANDS.
- KEEP ALL COMPONENTS IN GOOD REPAIR.

6500220

WARNING: PINCH POINT STAY BACK

6500339

WARNING: Noise hazzard.
Ear protection required.



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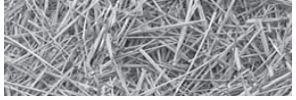
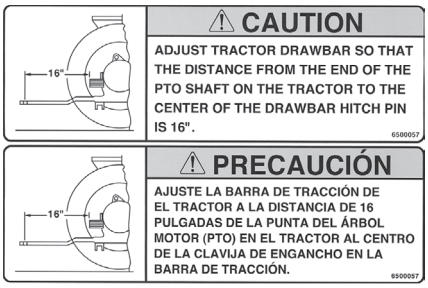


CAUTION: ADJUST TRACTOR DRAWBAR SO THAT THE DISTANCE FROM THE END OF THE P.T.O. SHAFT ON THE TRACTOR TO THE CENTER OF THE DRAWBAR HITCH PIN IS 16”.



1.4 Thrown objects and operator safety

An operational characteristic of all grinders is that objects may be thrown out of the hopper. Thrown objects may present a safety hazard to persons in the area. This section is to inform the operator of this characteristic, and what can be done to reduce the risk of injury to the operator and persons in the area. Keep all observers away from the machine.

Figure 1.1 shows an object being hit as the hammer is on the upswing. A general pattern for where thrown objects may land is shown in Figure 1.2.

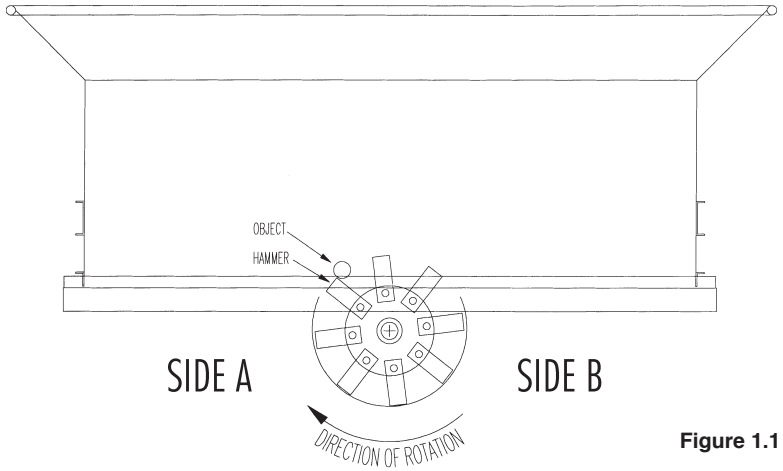


Figure 1.1

VIEWED FROM THE REAR OF THE H-1000

NOTE: The difference in the size of the area for side A versus side B. Side B is larger.

Dimensioning the size of this area is not practical. The distance a thrown object may travel is dependent on several conditions, including, but not limited to, rotor speed and diameter, condition of the hammers, style of hammers, object mass, object shape, amount of material in the tub, and how the hammer strikes the object.

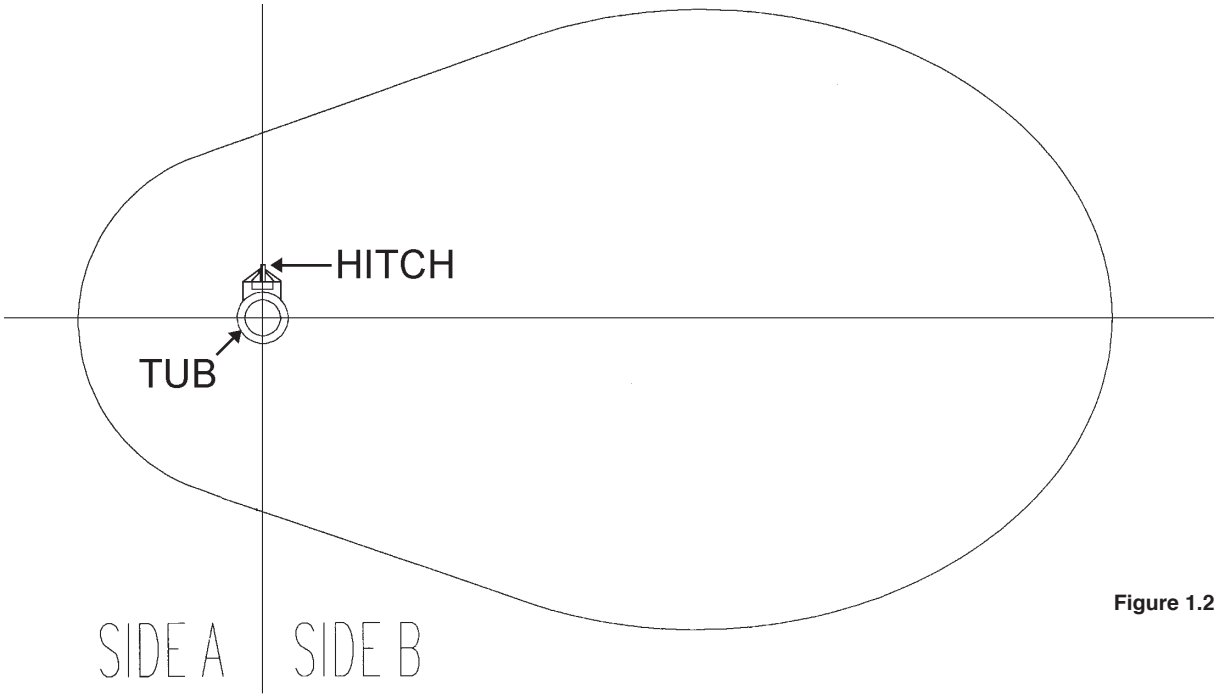
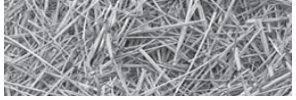


Figure 1.2



The amount of material in the tub can dampen or stop the object's potential flight. Keeping the tub full will reduce the risks. Filling the tub at least 1/2 full when starting will reduce the risk. Using a geyser plate can help reduce thrown objects. A risk may arise when the tub is being emptied, such as at the end of the grind. Running the engine at slower speeds when starting or finishing the grind will also help, especially slowing down when emptying the tub.

WARNING: To minimize the potential risk of injury or property damage, the operator must:

a) Place side B towards open areas, away from property and people.

b) Load the grinder from side A with a loader equipped with an enclosed cab.

c) Keep observers out of the area.

d) Wear a hard hat and safety glasses, at a minimum, and require that any other persons in the area are similarly equipped.

1.5 Shielding

This H-1000 Tub Grinder is equipped with shielding at all major points of potential injury. All Shields should be kept in place during operation. Bodily injury may occur if the unit is operated without shields.

WARNING: Shields are installed for your protection and to keep material off machine parts. Do not operate this PTO Driven Tub Grinder without shields in place.

1.6 Personal protection equipment

Operators and authorized observers of the H-1000 Tub Grinder are required to wear head, eye, and ear protection. No loose clothing is allowed.

1.7 Safety Review

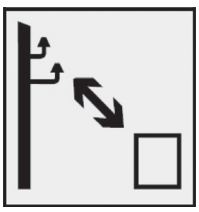
WARNING: Before attempting to operate your H-1000 Tub Grinder, carefully read and follow instructions given below and contained elsewhere in this manual.

BEFORE OPERATING

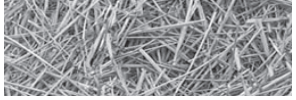
1. Read and follow all instructions contained in:
   - Operators Manual
   - Tractor Operators Manual
   - Decals placed on H-1000 Tub Grinder.

NOTE: Your dealer has additional copies of these materials.

2. Allow only properly instructed, responsible individuals to operate your machine. Carefully supervise inexperienced operators.
3. Use a tractor that meets the requirements contained in this manual. **See Appendix C, Required for Operation, page 57.**
4. Make sure the H-1000 Tub Grinder is in good operating condition and that all protective shields are in place and in proper working order. Replace damaged shields before operating.
5. Be sure all bystanders and other workers are clear before starting tractor and grinder.
6. Make no modifications to the H-1000 Tub Grinder unless specifically recommended or requested by DuraTech.
7. Check periodically for broken or worn parts and make necessary repairs.
8. Be sure the unit is securely attached to tractor during grinder operation and road transport.



Keep sufficient distance away from electrical power lines.
WARNING: Electrocution is possible when running this machine during an electric storm or heavy fog.



DURING OPERATION

1. Enforce the following safety precautions to prevent serious personal injury.
   - Keep everyone clear of work area except operator seated at tractor controls.
   - **Never work on or near grinder unless engine is off, and all motion has stopped.**
   - Disengage PTO before starting engine.
2. Power take off shafts must be locked in place with protective PTO shields in place.
3. Keep hands, feet, and clothing away from power driven parts.
4. Keep shields in place and in good condition.
5. Watch out for and avoid any object that might interfere with the proper operation of the machine.
6. Loose clothing, necklaces, and similar items are more easily caught in moving parts. Avoid the use of these items and keep long hair confined.
7. Because it is possible that your H-1000 may be used in dry areas or the presence of combustibles, special precautions should be taken to prevent fires and fire fighting equipment should be readily available.

NO SMOKING IN THIS AREA

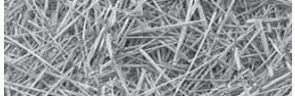
DANGER! NO OPEN FLAMES IN THIS AREA

8. Never allow riders on the machine at any time.

NORMAL SHUTDOWN PROCEDURE

WARNING: For your safety and the safety of others, you must use the following normal shutdown procedure before leaving the controls unattended for any reason, including servicing, cleaning, or inspecting. A variation of the following procedure may be used if so instructed within this manual or if an extreme emergency requires it.

1. Run H-1000 Tub Grinder until discharge conveyor is empty, and grind as much of the material in the tub as possible.
2. Reduce engine speed to idle.
3. Disengage PTO
4. Disengage hydraulics.
5. Place transmission in park and set parking brake.
6. Shut off tractor engine and remove key.



7. Wait for all movement to stop.
8. Disconnect PTO driveline from tractor.

CAUTION: At full speed, energy is stored in the rotor. **Do not use the tractor PTO brake to stop the rotor. Reduce engine speed before disengaging the PTO**

1.8 Fire Prevention

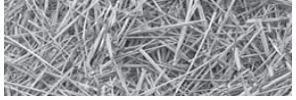
Grinding wood, hay, and other products in a tub grinder produces a large amount of potentially combustible material. The risks of fire can be significantly reduced with proper operating and maintenance procedures. This does include frequent removal of dust, debris, and other combustible materials.

Most of the products that are ground are dry and the grinding process can produce fine, dusty material. The grinding process can produce heat and the spinning rotor will circulate air within the grinding chamber. For a fire to start, fuel, oxygen and heat in sufficient quantity, must be present. During normal operation and with a properly maintained tub grinder, the material being ground will move through the grinding chamber so quickly that it doesn't have a chance to heat up sufficiently to start a fire. Also, the rapid rate that a tub grinder can pile material will quickly smother small hot spots that might occur during normal grinding operations. Keeping the material moving through the machine and across the top of the rotor is important to keep frictional heating of the material to a minimum.

NEVER leave the vicinity of the unit with the engine running**.**

PROPER OPERATION OF THE TUB GRINDER:

- Do not grind materials any finer than necessary. Finely ground materials will produce more dust and increase the risk of fire. If finely ground materials are required, it is better to grind the materials coarse first with large opening screens installed in the grinder and then regrind them to the desired consistency by installing smaller opening screens in the grinder. Be especially cautious when grinding materials that can burn easily.
- When filling the tub grinder during start-up begin by filling the rear of the tub and avoid placing materials on the spinning rotor. When material begins to fall over the rotor, set the governor control on "Manual" and rotate the tub slowly while continuing to fill the tub. Use the tub cover to control thrown objects as much as possible. When the tub is 1/2 to 2/3 full, the governor control can be set to "auto" and grinding operations can resume normally. Do not allow the tub to stop for any significant amount of time with material over the rotor to minimize frictional heating.
- Do not smoke when working with combustible materials.



REMOVAL AND CLEANING INSTRUCTIONS:

- Clean the engine compartment daily or more often if conditions require it be done more frequently. When cleaning the engine compartment, always clean the top of the engine and the areas around exhaust manifolds, exhaust plumbing and turbochargers.
- Check the rotor box for debris built up around the rotor. Remove material that may be packed tight near the bearings, on shaft or other rotating components because it will become hot due to friction.
- At shutdown, always clean and remove all dust, debris, or combustible material off the entire grinder. Use high-pressure air or water if necessary. Always move the grinder and all other equipment away from the ground material pile before leaving the job site in case of smoldering combustion in the ground material.

TUB GRINDER MAINTENANCE:

- Repair any fuel or hydraulic leaks as quickly as they are discovered. Clean up spills immediately. Fuel or oil soaked materials can contribute significantly to the rapid spreading of a fire once it has begun.
- Inspect all electrical wiring periodically. Any chafed or damaged wires should be repaired immediately. Keep all electrical connections tight to prevent arcs or sparks.
- Contact between the rotor and any stationary component of the grinding chamber such as contact between the hammers and the screens must be corrected immediately.

1.9 Fire Extinguishers:

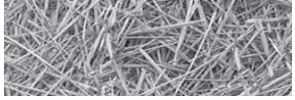
The fire extinguishers should be ABC dry chemical extinguishers that are appropriate for use with materials normally encountered on a tub grinder.

If a fire does start, CALL THE LOCAL FIRE DEPARTMENT IMMEDIATELY. Then, use the fire extinguisher if you feel confident that you can extinguish the fire. A 10# extinguisher will last about 15-20 seconds and a 20# extinguisher will last about 20-24 seconds, so they will not stop a large fire. The fire extinguishers should be at least 10#, but the preferred are 20# .

When using a fire extinguisher, use the P A S S method:

- Approach the fire with the wind at your back.
- **Pull the pin,**
- **Aim the spout,**
- **Squeeze the trigger, and**
- **Sweep along the base of the fire from about 6-8 feet away.**

Read the label on your extinguisher now, most extinguishers have descriptions of this method, and an estimated working time.



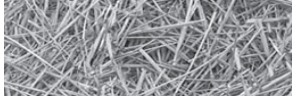
If an extinguisher is only partially used, the dry chemical will jam in the seals, allowing the extinguisher to loose its pressure charge in less than an hour, making it useless to you. It must be recharged before placing it back on the machine. Have the extinguisher recharged today; a fire will not wait for you to recharge your extinguisher tomorrow!

Fire extinguishers should be inspected and recharged by a professional at least annually to keep them at optimum performance! A "verification of service" collar that confirms the month and year of service should be attached to the neck of the container to confirm when the extinguisher was last serviced.

1.10 Towing

CAUTION: DO NOT TRANSPORT THE H-1000 TUB GRINDER without first securing the conveyor in the transport position (see 2.7.1, page 30).

1. Be sure all loose parts are securely fastened down.
2. Make sure all bystanders are clear.
3. Hitch H-1000 Tub Grinder to a tow vehicle with adequate load carrying and braking capacity. Be sure to attach safety chains between tow vehicle and H-1000 Tub Grinder. Tongue weight is 900 lbs.
4. Pull PTO apart and attach to transport bracket on the right hand side of the grinder.
5. Ensure that hitch jack is in the up position.
6. Check the turning clearance between H-1000 Tub Grinder and the towing vehicle.
7. Check local ordinances regarding restrictions for H-1000 Tub Grinder travel on your planned route.
8. Be aware of machine width at all times and do not exceed 20 miles per hour.
9. Check your state laws regarding the use of lights, slow moving vehicle signs, and other possible requirements.
10. Use good judgment and drive carefully, especially over rough and uneven roads.



1.11 Service and maintenance

WARNING: Before performing any maintenance on the machine or getting into the tub, be sure rotor and all moving parts have come to a complete stop. Shut off engine and remove the key.

Before working on or near the Tub Grinder or any reason such as servicing, inspecting or unclogging the machine:

- Follow the normal shutdown procedure found on page 14 or 28 of this manual.
- If the unit is still attached to a towing vehicle, place the towing vehicle's transmission in park and set the parking/emergency brake.
- Relieve all pressure in the hydraulic system before disconnecting hydraulic lines or performing work on the system. Make sure all connections are tight and the hoses and lines are in good condition before applying pressure to the system.

WARNING: Hydraulic fluid escaping under pressure can be invisible and have enough force to penetrate the skin. When searching for a suspected leak, use a piece of wood or a cardboard rather than your hands. If injured, seek medical attention immediately to prevent serious infection or reaction.

WARNING: FAILURE TO COMPLY WITH SAFETY INSTRUCTIONS THAT FOLLOW WITHIN THIS MANUAL COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH. BEFORE ATTEMPTING TO OPERATE THIS MACHINE, CAREFULLY READ ALL INSTRUCTIONS CONTAINED WITHIN THIS MANUAL. ALSO READ THE INSTRUCTION MANUAL PROVIDED WITH YOUR TRACTOR.

THIS MACHINE IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THOSE EXPLAINED IN THE OPERATOR'S MANUAL, ADVERTISING LITERATURE OR OTHER DURATECH WRITTEN MATERIAL PERTAINING TO THE H-1000 TUB GRINDER.

Section 2: Operation

There is no substitute for a sound preventative maintenance program and a well-trained operator.

To insure long life and economical operation, learn how to operate the H-1000 Tub Grinder and how to use the controls properly. Thoroughly instruct the operator in maintenance and operation of the H-1000 Tub.

2.1 Pre-Operating Inspection

Prior to the starting the H-1000 Tub Grinder, make a visual inspection of the machine. This can be done when lubricating the machine. Any items that are worn, broken, missing or needing adjustment must be serviced accordingly before operating the H-1000 Tub Grinder.

WARNING: Before inspecting the machine, use the normal shutdown procedure found on pages 14 and 28.

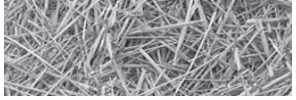
BEFORE OPERATING CHECKS

Before operating the H-1000 Tub Grinder, follow these instructions:

- ❑ Read and understand the operator's manual.
- ❑ Learn how to operate the controls properly. Do Not let anyone operate without instruction.
- ❑ Know the machine's safety features and understand the safety precautions.
- ❑ Be sure the machine is hitched properly to the tractor.
- ❑ Be sure to lubricate all lubrication points. See lubrication chart, page 42.
- ❑ Check for loose bolts.
- ❑ Make sure machine is properly adjusted.
- ❑ Check hydraulic oil level
- ❑ Check hydraulic components for leaks or damage.

WARNING: Hydraulic fluid escaping under pressure can be almost invisible and can have sufficient force to penetrate the skin. When searching for suspected leaks, use a piece of wood or cardboard rather than your hands. If injured, seek medical attention immediately to prevent serious infection or reaction.

- ❑ Visually examine rotor to see if any parts have excessive wear. These parts include shaft, plates, rods, hammers and moveable plate.



- ❑ Check screens and screen hold downs for wear and tightness.
- ❑ Check installation and condition of hammers.
- ❑ Visually examine rotor bearings and mounting bolts.
- ❑ Check all bearings for wear.
- ❑ Check chains and belts for proper tension and condition.
- ❑ Make sure all shields and guards are in place.
- ❑ Condition of decals.
- ❑ Lug nuts for tightness.
- ❑ Condition of tire rims.
- ❑ Tires for proper air pressure.
- ❑ Always grind with the machine and tractor stationary on level ground.
- ❑ In cold weather, allow five minutes for the machine to warm up before grinding.
- ❑ Start the machine and check the tub direction, speed control governor for proper operation.
- ❑ Watch for unusual or excessive vibration. If any occur, immediately shut off the power. Check to see what is wrong and correct it before starting the grinder again.
- ❑ If grinding grain, be sure proper grain attachment is in place.
- ❑ Check conveyor drive gear box (3100187) oil level. Must be filled to the plug level.

2.2 Introduction to the machine

2.2.1 Description of the H-1000 Tub Grinder

The Tub Grinder is designed to grind most types of hay, grain and crop residue such as stover and straw. The unit incorporates a number of basic features including the rotating tub, the electronic governor, the rotor and hammer assemblies, the tub chain and drive assemblies, belly and discharge conveyors, and the axle and hitch assemblies.

Material is fed into the tub of the unit by appropriate means, such as a wheel loader. As the tub rotates, the material is exposed to the rotating hammers. The hammers then grind the material before the material is discharged by the belly and discharge conveyors.

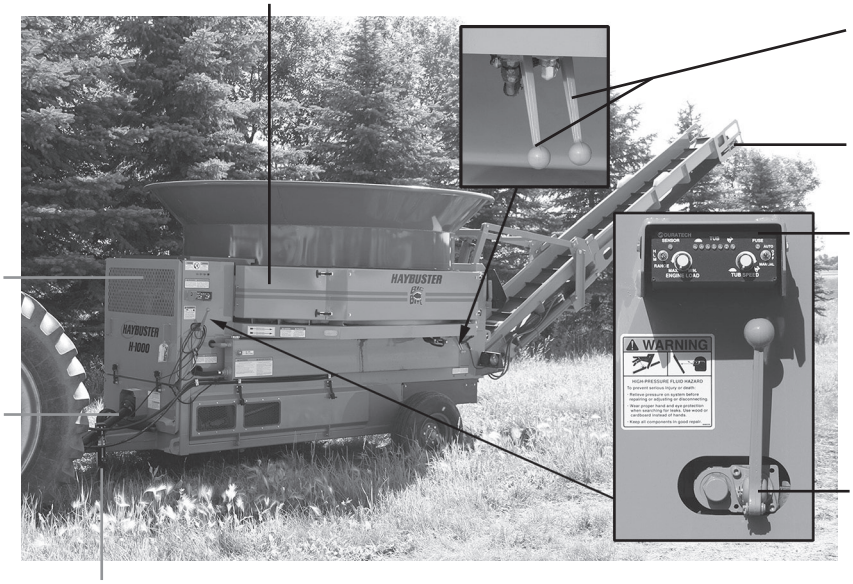
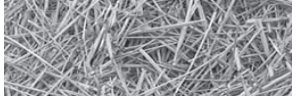


Figure 2.1
side view showing operator station and major system components

2.2.2 Overview of Operator's Controls

Operator controls include:

- **Electronic governor:** The electronic governor regulates tub rotational speed range.
- **Front hydraulic valve:** The front hydraulic valve controls hydraulic oil flow to tub orbit motors. Starts and stops the tub rotation.
- **Rear hydraulic valve:** The rear hydraulic valve raises, lowers, folds and unfolds the discharge conveyor. Two tractor hydraulic circuits are required to power this valve. For older John Deere tractors, the rear valve can be replaced with a closed center valve.
- **Tractor engine speed:** The tractor engine speed should be set so 1000 PTO shaft is running at 1000 RPM.
- **Tractor PTO lever**: Engaging the tractor's PTO lever spins the rotor, runs both conveyor belts and powers tub hydraulic drive. The conveyor must be unfolded to working position before the PTO is engaged.



2.2.3 Electronic governor

The Model RCB93 Electronic Governor regulates the speed at which the tub rotates. The electronic governor has two modes of operation, the Engine (Auto) mode and the Tub (Manual) mode. The Engine (Auto) mode is the preferred mode of operation and should be used whenever possible.

IMPORTANT: Except when calibrating or trouble shooting the electronic governor always use the Engine (Auto) mode of the electronic governor.

Engine (Auto) Mode

When the electronic governor is switched to the Engine (Auto) mode, it is monitoring the rotation speed of the tractor engine. The hydraulic flow to the tub drive mechanism is regulated proportionally to the tractor engine speed. When the engine begins to lug down, the hydraulic oil flow is reduced which in turn slows down the tub rotation. With proper calibration, the engine will only lug down to its optimum horsepower RPM and the tub rotation will be varied proportionally to keep the engine at this RPM. The result is a nearly constant load on the tractor' engine, which will maximize grinding efficiency. **See section 2.10 (pg. 33) for calibration instructions.**

Tub (Manual) Mode

In this mode the tub speed is constant and it will not change to match varying load conditions.

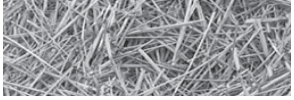
2.2.4 Rotor

The Rotor and screens are the heart of the tub grinder. The rotor on this H-1000 Tub Grinder is equipped with 64 swinging hammers. Dull edges on the hammers and/or screens will result in a loss of capacity and increased horse power requirements.

IMPORTANT: Hammer and hammer rod life can be extended by keeping the rotor rotating at 2000 RPM. **Excessive tractor horsepower and/or overfeeding the rotor can cause the hammers to lay back resulting in excessive wear on both the hammers and hammer rods.**

CAUTION: Keep all foreign objects out of the tub and away from the rotor. Foreign objects may cause personal injury or damage to the H-1000 Tub Grinder.

CAUTION: At full speed, energy is stored in the rotor. **Do not use the tractor PTO brake to stop the rotor. Reduce engine speed before disengaging the PTO.**



2.2.5 Screens

All H-1000 Tub Grinders require two screens. They come equipped from the factory with a 3” diameter hole screen and a 4” diameter hole screen. Any combination of hole sizes may be used. As a general rule, use the largest diameter screens capable of doing the job.

When using a combination, place the smallest hole diameter on the right hand side of the rotor box where the material enters the rotor.

The size of the hole in the screen determines the coarseness of grind. The larger the hole diameter, the coarser the grind. Hole sizes can vary from 1/8” diameter through 4” diameter. In general, use the larger screen sizes for grinding hay.

As a general guide, DuraTech Industries recommends the following screen sizes:

Hay	2” to 4” (5.1 cm to 10.2 cm)
Ear Corn	5/8” to 1” (1.6 cm to 2.5 cm)
Shelled Corn	3/4” (1.9 cm) dry, 5/8” (1.6 cm) high moisture
Small Grains	1/4” to 3/8” (.6 cm to .9 cm)

2.2.6 Tub

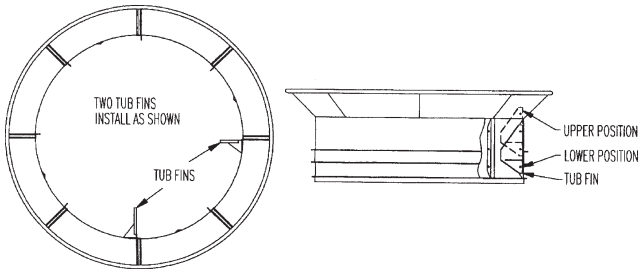
The purpose of the tub is to contain the material above the rotor, and to keep the rotor loaded

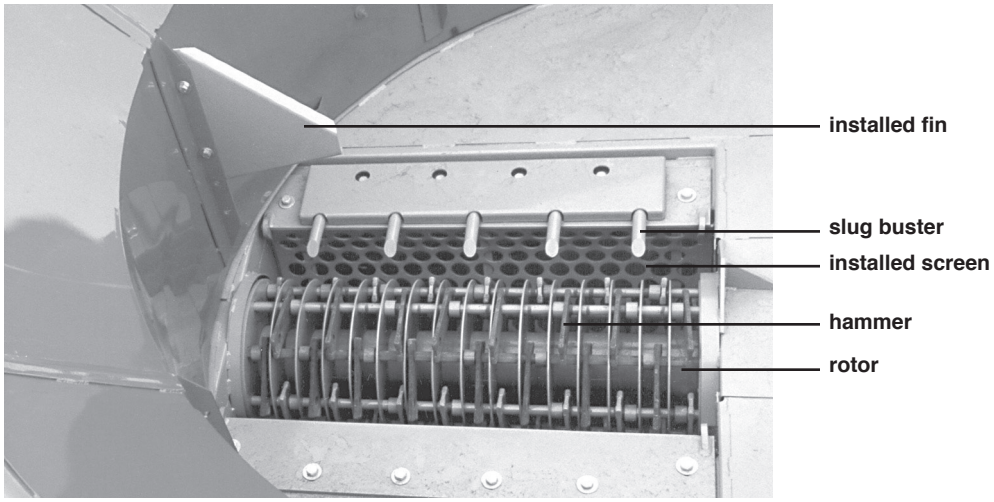
Tub Fins

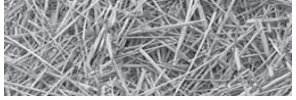
Two tub fins are furnished with the H-1000 Tub Grinder.

When grinding large round bales, use only one of the tub fins, bolted in the upper position. Two tub fins across from each other may hold the bale up and reduce capacity.

When grinding small round bales, square bales, or loose hay, use two tub fins bolted in the lower position.







2.2.7 Slug Buster and Mill Grate

A slug buster or mill grate is installed above the rotor to regulate the amount of material entering the rotor chamber. The standard slug buster is used for ideal grinding conditions (dry hay). The mill grate is used for "less than ideal grinding", (wet hay or tough grasses).

2.2.8 Discharge Conveyor Lifting and Folding

The rear manual valve on the H-1000 tub grinder controls the conveyor lift and fold. The tractor supplies hydraulic oil for operating the conveyor lift and fold system. Activate the tractor hydraulics before operating the valve on the H-1000 tub grinder.

2.2.9 Open and Closed Center Valves

John Deere Series 60 and older tractors require a closed center valve, this valve is an option. (Part # 4000564) All other tractors require an open center valve. (Part # 4000093)

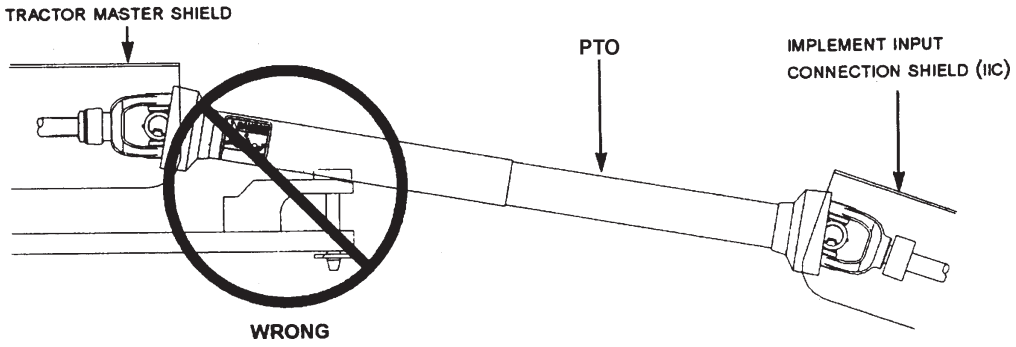
2.3 Machine Operation

2.3.1 Tractor Set Up

A tractor drawbar and 3-point arms can cause interference with the PTO driveline. This interference can cause serious damage to the PTO guarding and the PTO telescoping members.

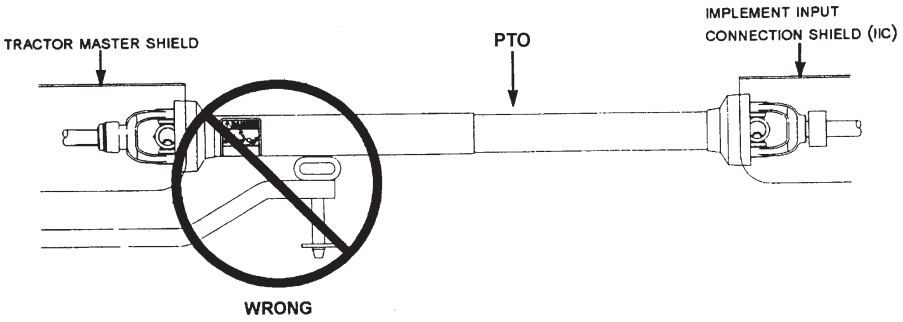
If this implement is attached to a tractor with a clevis hitch (hammer strap) style drawbar, the hammer-strap must be removed to prevent damage to the PTO guarding and the PTO telescoping members. See Figure 2.2.

Figure 2.2
incorrect clevis hitch (hammer strap) style drawbar set up

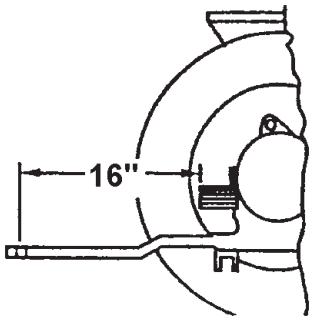


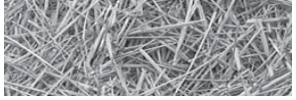
If this implement is attached to a tractor with an offset in the drawbar, be certain it is in the down position to prevent damage to the PTO guarding and the PTO telescoping members. See Figure 2.3.

Figure 2.3
incorrect offset style drawbar set up



If this implement is attached to a tractor with 3-point arms, the arms must be fully raised and locked in position to prevent damage to the PTO guarding and the telescoping members. Adjust the tractor drawbar so the distance from the end of the PTO shaft on the tractor to the center of the drawbar hitch pin hole is 16” (41 cm.) for a 1000 RPM shaft as shown at right.





2.3.2 How to hook up to tractor

To hitch the H-1000 to a tractor, perform the following steps:

1. To reduce wear on the PTO shaft knuckle joints, tractor PTO shaft should be in line (parallel) with the H-1000 Tub Grinder. If tractor is equipped with swinging drawbar, adjust so the tractor PTO and H-1000 Tub Grinder drive shaft are in line.
2. Connect hydraulic lines to the tractor.
3. Connect electrical lines to tractor.

CAUTION: To insure a safe hook-up, the H-1000 Tub Grinder and tractor should be connected with a 1" locking pin.

2.3.3 How to disconnect from tractor

To hitch the H-1000 to a tractor, perform the following steps:

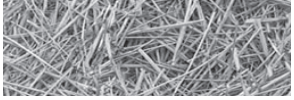
1. Park H-1000 Tub Grinder and tractor on a level spot.
2. Lower jack to ground, place blocks under jack if ground is soft.
3. Disconnect electrical wires.
4. Disconnect hydraulic lines.
5. Disconnect PTO, place shaft in shaft holder.
6. Raise hitch of H-1000 Tub Grinder to remove weight from tractor hitch by adjusting jack.
7. Remove hitch pin.
8. Drive tractor away slowly.

2.3.4 How to operate machine as a unit

INTRODUCTION

Tractor engines are designed to reach maximum power at PTO speed (1000 rpm), and most tractors are capable of engine speeds from 10 to 20 percent over PTO speed. A rotor speed of 2000 rpm is recommended. It will be necessary to operate tractor PTO at approximately 1100 rpm.

The Electronic Governor controls the feed rate to keep the tractor at its peak power point. The operator is able to select the operating range so that when the feed of material lugs down the tractor, the Electronic Governor will reduce the feed at a high enough PTO speed for the tractor to recover automatically if a slug is encountered.



GRINDING

Place materials to be ground directly into the tub. The best method for filling the H-1000 Tub Grinder is:

1. Engage rotor and increase engine speed to 1000 RPM on the P.T.O. shaft.
2. Fill the tub about half full of unground materials before starting tub rotation.
3. Start tub.
4. Place additional materials in the tub.

LOOSE HAY

The best capacity will be obtained if the tub is consistently kept no less than half full of loose hay. When loading the tub, place materials slightly to the rear rather than directly over the rotor. For best results feed the tub with small portions.

WET OR FROZEN HAY

This is the toughest material for any grinder to handle. When filling the tub with wet or frozen hay, deposit small quantities on a more frequent basis rather than filling the tub with one load.

LARGE ROUND BALES

Place large round bales in the tub on end or on the side. Try grinding bales each way to determine which method will work best for you.

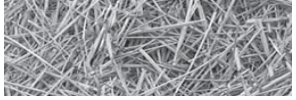
IMPORTANT: Never drop a large round bale into the tub from a high level. Ease the bale over the edge and down into the tub carefully. Dropping a large bale directly on top of the rotor will cause damage to the rotor.

CROP RESIDUE

When grinding crop residues, use the same methods as with loose hay. Extremely wet or frozen materials should be placed sparingly into the tub.

SMALL GRAINS

Grinding small grains requires special attachments. These attachments fit directly over the rotor. It is not recommended that small grains be ground without the use of one of the small grain attachments. (See Appendix B: H-1000 Tub Grinder Specifications under the heading “Options”.)



EAR CORN

Grinding ear corn requires a special attachment. This attachment fits directly over the rotor and uses crossbars in the tub to feed corncobs into the rotor. (See Appendix B: H-1000 Specifications under the heading “Options”.)

IF LODGING OCCURS

Materials may lodge against the side of the tub and not feed down to the rotor. If this occurs, reverse the tub direction briefly and then start the tub in a forward direction again. This practice normally dislodges any materials.

WARNING: Never attempt to dislodge material inside the rotor when the machine is in operation by physically pushing down on materials. **WHEN THE MACHINE IS IN OPERATION, STAY OUT OF THE TUB.**

2.4 Shutdown procedures

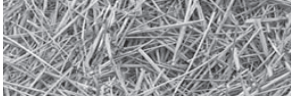
2.4.1 Normal Shutdown Procedure

CAUTION: At full speed, energy is stored in the rotor. **Do not use the tractor PTO brake to stop the rotor.**

WARNING: The stored up energy in the rotor causes it to rotate long after disengaging the tractor PTO. Before performing any maintenance on the machine or getting into the tub, be sure rotor and all moving parts have come to a complete stop.

Before working on or near the H-1000 Tub Grinder for any reason, including servicing, inspecting or unclogging machine:

1. Run H-1000 Tub Grinder until discharge conveyor is empty, and grind as much of the material in the tub as possible.
2. Reduce engine speed to idle.
3. Disengage PTO
4. Disengage hydraulics.
5. Place transmission in park and set parking brake.
6. Shut off tractor engine and remove key.
7. Wait for all movement to stop.
8. Disconnect PTO driveline from tractor.



2.4.2 Emergency Shutdown Procedure

Disengage PTO and tractor hydraulics

2.5 Storage

2.5.1 Preparing for storage

To prepare the unit for storage, perform the following steps:

1. Check the wheel bearings for lubrication requirements and adjustments at the end of the season.
2. Check the pressure roller bearings for lubrication and adjustments at the end of the season.
3. Clean the machine thoroughly to prevent rust and to make inspections easier. Clean and repaint the tub floor to prevent rust and sticking problems at start up time.
4. Check for loose or worn chains, belts, sprockets, and pulleys.
5. Check the condition of bearings.

2.5.2 Removing from storage

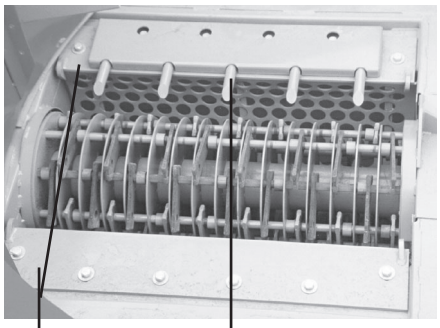
To prepare the unit for use after storage, perform the following steps:

1. Perform a thorough pre-operation inspection.

2.6 Installing a screen

CAUTION: Follow normal shutdown procedure before entering tub to do any service work.

1. Loosen and remove bolts on the screen holddown and slugbuster.
2. With a large hook or bar, pull the screen from its chamber.
3. Make sure material is clear from screen track.
4. Install the new screen.
5. Replace the screen holddown , slugbuster and bolts. Tighten all bolts securely.



2.7 Road Transport

2.7.1 Set up to transport

Inspect H-1000 Tub Grinder for any loose parts, tools, or any materials. Remove them or fasten them securely to the H-1000 Tub Grinder.

To set up the H-1000 Tub Grinder for transport, perform the following steps:

1. Fold the conveyor.
2. Check for local restrictions on towing.

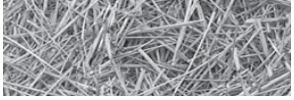
conveyor in transport position

2.7.2 Change back to operate

To set up H-1000 for operation, perform the following steps:

1. Connect H-1000 Tub Grinder to tractor.
2. Connect hydraulic hoses and electrical cable to tractor
3. Raise hydraulic conveyor lift.
4. Unfold conveyor to working length.

conveyor in working position



2.8 Parts of the electronic governor

FUSE LIGHT

This light is on whenever the electronic governor is receiving power.

SENSOR LIGHT

This light is on whenever the electronic governor is receiving an adequate input signal from the sensor and the rotor is engaged.

SPEED LIGHTS

These lights provide a relative indication of how fast your tub should be turning based on the output signal that the electronic governor is sending to the electro-hydraulic valve.

MODE SWITCH

The mode switch has three possible positions. The off position which turns the electronic governor off and two other positions which correspond to the tub (manual) and engine (auto) modes of operation. In the “tub (manual)” position the tub will rotate at a constant speed based on the settings of the Tub Limit Knob (Tub Speed Knob). The “engine (auto)” position uses all the functions of the Electronic Governor. The maximum tub speed will be limited by the Tub Limit Knob (Tub Speed Knob), and the tractor engine load will be controlled by the Engine Load Knob.

TUB SPEED KNOB (TUB LIMIT KNOB)

This knob sets the maximum speed at which the tub will rotate in both the tub (manual) and engine (auto) modes. In the engine (auto) mode tub speed will vary between zero and this setting depending on the tractor engine load.

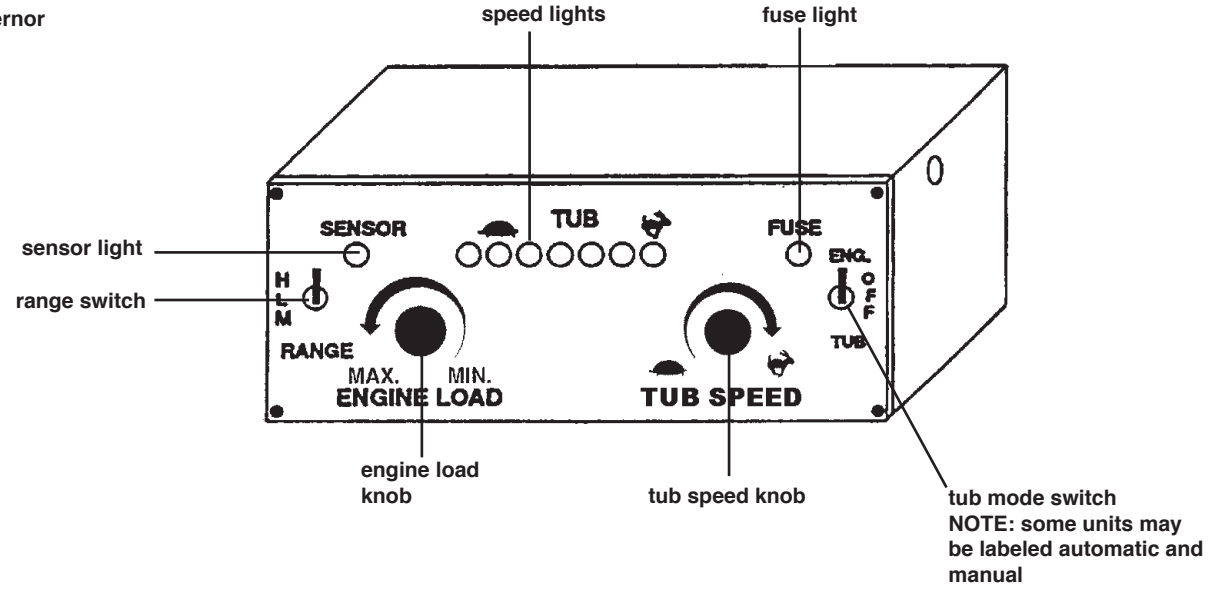
ENGINE LOAD KNOB

This knob is used only in engine (auto) mode. It controls the load placed on the tractor’s engine. Turning the knob clockwise decreases engine load, and turning the knob counterclockwise increases the engine load.

RANGE SWITCH

This switch is a coarse adjustment for the engine load knob and can be switched to a H- high, M-medium or L-low setting.

Figure 2.5
electronic governor
controls



2.9 Operation of the electronic governor

Engine (Auto) mode

IMPORTANT: Except when calibrating or trouble shooting the electronic governor always use the engine (Auto) mode of the electronic governor.

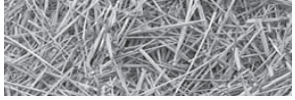
In engine (Auto) mode, the electronic governor monitors the rotation speed of the tractor's engine. The hydraulic flow to the tub drive mechanism is regulated in proportion to the tractor's engine speed. As the engine speed slows, the electronic governor decreases the hydraulic flow which slows down the tub's rotation. Conversely, as the tractor's engine speed increases, the electronic governor increases the hydraulic flow which speeds up the tub's rotation. This allows the electronic governor to automatically control the feed rate keeping the tractor's engine running within the governor's optimum power zone. When the load on the grinding rotor begins to lug the tractor's engine, the governor automatically reduces the tub's rotation speed in proportion to the load. The result is nearly a constant load on the tractor's engine, which maximizes the grinding efficiency.

The range of rotor speeds for which the electronic governor will regulate the hydraulic flow is determined by the setting of the engine load knob. For example, turning the engine load knob counter clockwise will increase the load on the engine by keeping the tub engaged to a lower engine RPM.

With proper calibration, the tractor's engine will only load down to its optimum horsepower RPM, and the tub's rotation speed will be varied proportionally to keep the tractor's engine at this RPM.

Tub (Manual) mode

In tub (manual) mode, the electronic governor performs as a simple tub speed control. In this mode the tub speed is constant and it will not change to match varying load conditions.



2.10 Calibration of the electronic governor

To calibrate the electronic governor, perform the following steps:

1. Begin calibration procedure with H-1000 Tub Grinder completely shutdown. Place the MODE switch in the OFF position and the RANGE switch in the H-High position. Rotate the TUB LIMIT KNOB fully clockwise toward the rabbit position. Turn the ENGINE LOAD KNOB fully clockwise, and switch the MODE switch to Engine (Auto) Position.

2. Verify that tub rotation lever is in neutral. Inspect machine to verify that all personnel are clear of the machine.

3. Start tractor and run the grinder at about 1/2 throttle to allow the hydraulic system to warm up before calibrating the RCB93 Electronic Governor.

4. When the system has reached operating temperature, throttle the tractor to 1000-1200 engine RPM. Engage the tub drive and throttle up to PTO speed. The FUSE light and the SENSOR light should come on. The tub should not be rotating at this time. If the tub is rotating, read section 4.1 “Troubleshooting the electronic governor system” in this manual.

5. Slowly rotate the ENGINE LOAD KNOB counter-clockwise until the tub just begins to move. The tub should begin to rotate. If it does not begin to rotate, switch the range switch to M-Medium or L-Low and repeat as necessary.

TEST: Throttle the tractor’s engine down and the tub should stop rotating, return the tractor’s engine to PTO RPM and the tub should start to rotate.

If the tub will not rotate, read section 4.1 “Troubleshooting the electronic governor system” in this manual.

2.11 Adjusting the tub’s rotation speed

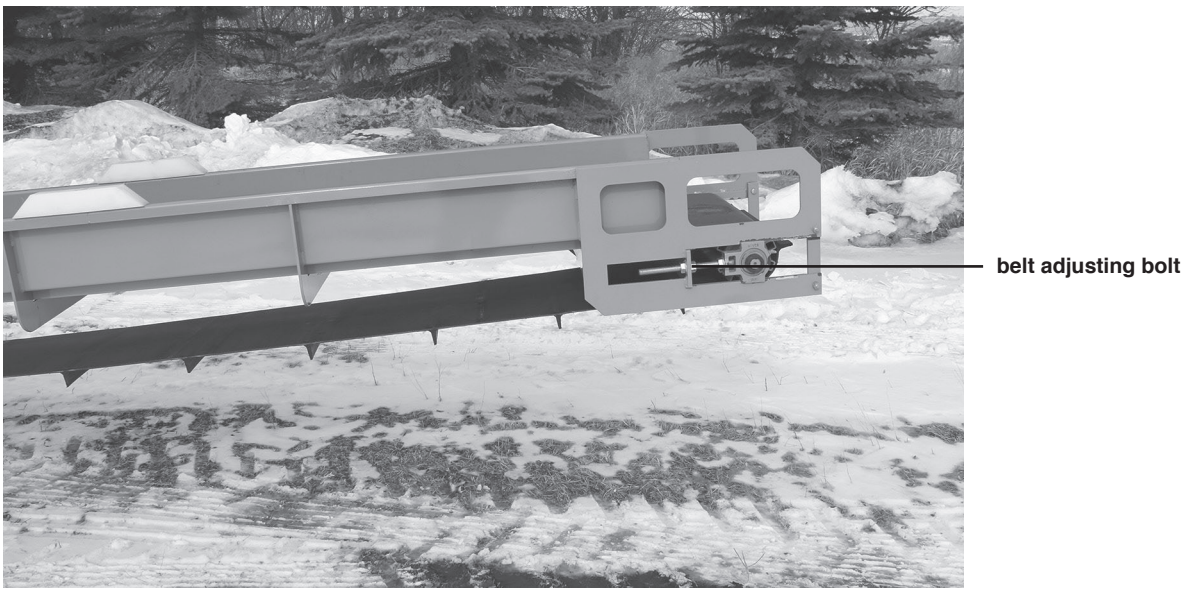
Tub rotation is controlled by two components . The tub is started, stopped and reversed by the front hydraulic valve, and the tub’s rotation speed is controlled by the tub limit knob (tub speed knob) on the electronic governor.

2.12 Adjusting the conveyor belt tension

The discharge conveyor is adjustable to allow for belt stretch and tracking. If the conveyor belt slows down or stops during operation, slippage may be the cause. To eliminate slippage, tighten the adjusting bolts on the conveyor equally. This will increase the conveyor belt's tension and help to keep the belt centered on the rollers.

IMPORTANT: Do not overtighten conveyor belts. Use only enough tension to eliminate belt slippage.

Figure 2.6
discharge conveyor belt adjusting bolt



2.13 Adjusting the conveyor belt tracking

A. When a new belt is installed: Use only genuine DuraTech Industries parts.

1. Begin by adjusting the drive roller so that the mounting bearings are the same distance from the end of the conveyor frame. This ensures that the roller centerline is square with conveyor frame. Adjust the idler roller bolts so that they are equal on both sides of the conveyor.

B. If the belt is running to the right side, perform the following steps:

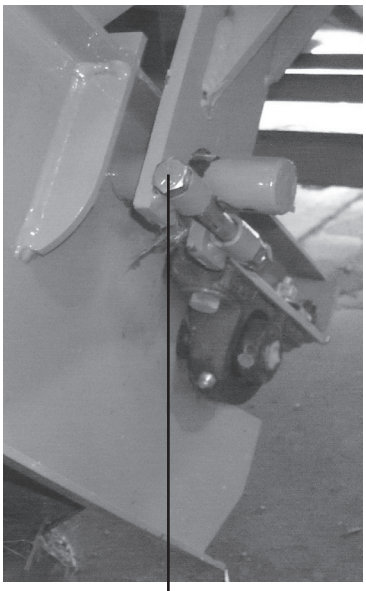
1. Adjust the idler roller bolt on the right side of the conveyor. Increase tension by approximately 2 full turns of the adjusting nut.
2. Make certain that all personnel are clear of machine and the start engine. Engage the tractor PTO.

NOTE: The rotor will also be turning.

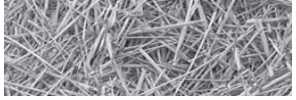
3. Observe conveyor belt tracking from a safe location.
4. If further adjustment is required, disengage tractor PTO, and shut down the machine using the normal shutdown procedure.
5. Some adjustment of the drive roller may be required if no improvement is noted by increasing the idler roller tension.
6. Repeat steps 1-5 until proper tracking is achieved.

C. If the belt is running to the left side, perform the following steps:

1. Adjust the idler roller bolt on the left side of the conveyor. Increase the tension by approximately 2 full turns of the adjusting nut.
2. Make certain that all personnel are clear of machine and start engine. Engage the tractor PTO.
3. Observe the tracking of the conveyor belt from a safe location.
4. If further adjustment is required, disengage tractor PTO and shutdown using the normal shutdown procedure.
5. Some adjustment of the drive roller may be required if no improvement is noted by increasing the idler roller tension.
6. Repeat steps 1-5 until proper tracking is achieved.



idler roller tension adjusting bolt



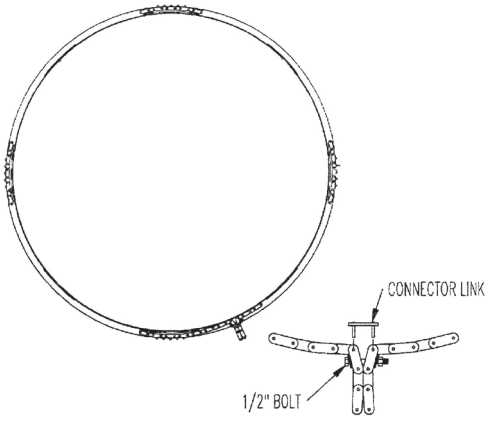
2.14 Main drive belt adjustment

Adjustment has been provided for tightening main drive belts. Belts tend to stretch rapidly when first put into operation. Tighten regularly to prevent slippage. Belt tension should be checked at 30-minute intervals or as necessary until stretch is eliminated. Belt tension can be checked by pressing on individual belts with thumb (approximately 20 lbs.) in the center of the span. Deflection should be 1/2” or thickness of V-belt.

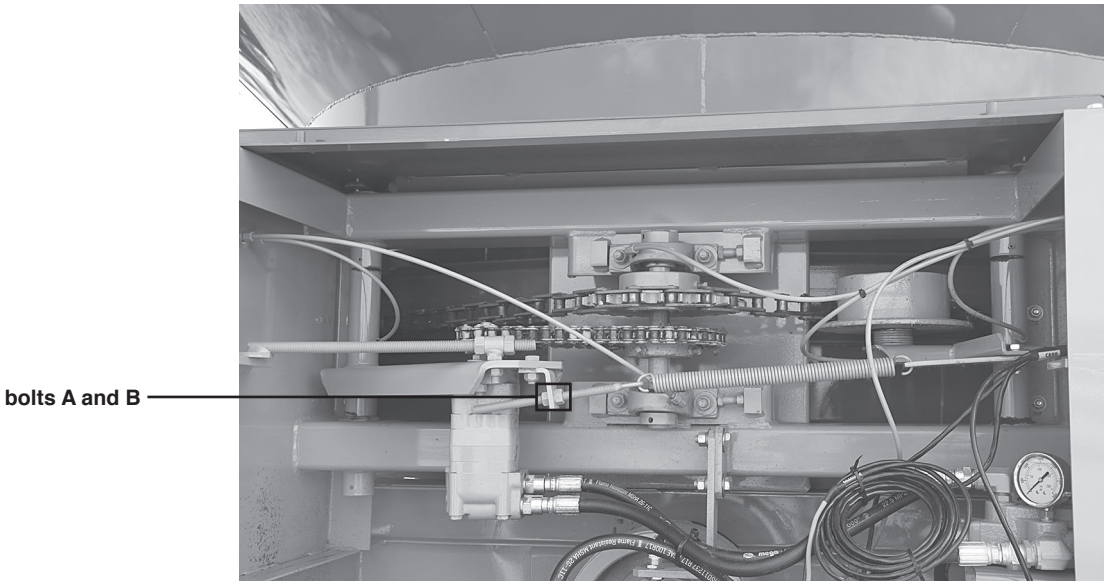
2.15 Sizing the tub drive chain

Tub drive chain is equipped with spring tensioned idlers which take up the slack in the chain during normal operation. Due to normal wear, the tub drive chain may tend to climb on the driving teeth of the tub. If this should occur, the chain should be resized to fit the tub.

To size the tub drive chain, remove the tub drive chain from the drive sprocket. Using a ½” bolt inserted through the chain links, draw the chain together so that the center-to-center measurement on link pins matches the pins on the connector link.



2.15A Adjusting tub chain tension



A spring tension system is used to keep tension on the tub chain. To adjust the tension, move the nuts A and B on spring tension bolt as needed.

2.16 Electro-hydraulic valve coil test

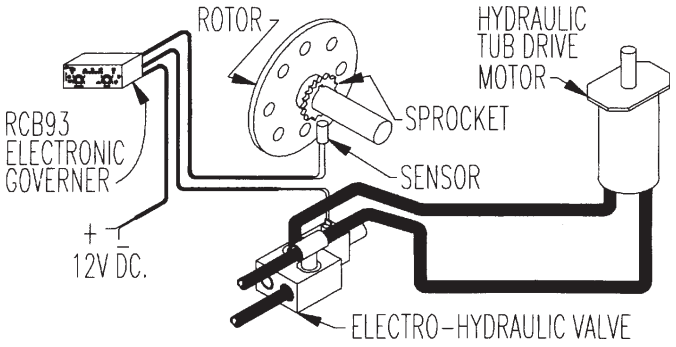
This test requires an accurate ohm meter. Disconnect the wiring harness leads at the electro-hydraulic valve coil. Check resistance of valve coil leads at the terminals. The resistance should be between 8 to 12 ohms for a 12 volt system. If the values are not within this range, replace the electro-hydraulic valve coil.

MANUAL OVERRIDE

NOTE: If there is an electrical failure with the machine, it may still be able to grind. Switch the electronic governor off. Remove the rubber end cap and loosen the jam nut on the electro-hydraulic valve. Start the machine and engage the tub drive.

CAUTION: PTO MUST BE ENGAGED AT THIS TIME. WATCH FOR MOVING PARTS

Turn the adjusting screw clockwise until the tub rotates at the desired speed. Lock the jam nut on the adjusting stud and replace the rubber end cap on the electro-hydraulic valve. When the electro-hydraulic valve is adjusted in this manner, it will function only as a manual flow control. The grinder will now operate as it would if the electronic governor were switched to the tub (manual) mode. The tub speed will be constant and it will not change to match varying load conditions.



Contact your dealer for future repairs or replacement parts. When the problems are corrected, calibrate the electro-hydraulic valve.

2.17 Electro-hydraulic valve calibration

DuraTech Industries International Inc. test runs every grinder before it leaves the factory. The electronic governor system was calibrated at this time and should not need any further adjustment. Before attempting to adjust the electro-hydraulic valve, follow the instructions below.

NOTE: With the electronic governor switched to tub (manual) mode, the tub will continue to rotate regardless of the engine RPM.

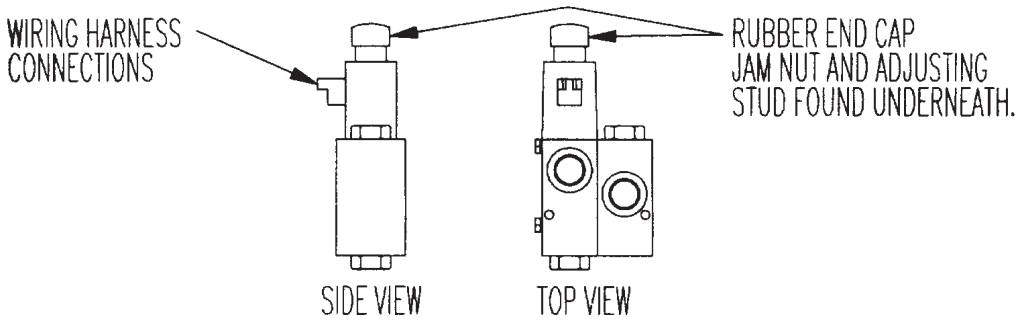
1. When first starting the machine, run at less than full throttle to allow the hydraulic system to warm up before operating.
2. With engine running at full throttle, turn the engine load knob clockwise to maximum position and set the mode switch in the engine (auto) position. Engage the tub using the tub control lever. Check the sensor light on the electronic governor before doing any adjusting! At this point, the sensor light should be lit. If the sensor light is not lit, read section 4.1 “Troubleshooting the electronic governor system” in this manual.

NOTE: Turning the engine knob clockwise will decrease the load on the engine by disengaging the tub at a higher engine RPM.

3. If tub is not turning, you are ready to proceed to the grinding section of this book. Remember the engine load knob adjusts the load placed on the engine, and under normal conditions this will be the only adjustment you will have to make.

IMPORTANT: Stay clear of all moving parts while calibrating the electro-hydraulic valve. **The tub will be rotating during this adjustment.**

Figure 2.7
electro-hydraulic valve



To calibrate the electro-hydraulic valve coil after following the three steps above, perform the following steps:

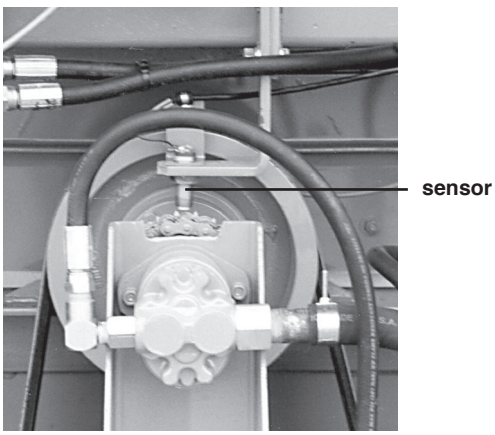
1. Remove the rubber end cap from the end of the electro-hydraulic valve. This will reveal a jam nut and an adjusting screw with a screwdriver slot.
2. Disconnect the wiring harness from the electro-hydraulic valve coil, and loosen the jam nut.
3. Start the engine, engage the tub drive in the forward direction and engage the PTO. Throttle the engine up to a fast idle.
4. If the tub is not rotating, turn the adjusting screw clockwise until it bottoms out. Turn the adjusting screw counterclockwise until the tub stops. The electro-hydraulic valve is now calibrated.
5. Lock the adjusting screw with the jam nut and replace the rubber cap. Shut down the machine using the normal shutdown procedure in this manual. Reconnect the wiring harness to the electro-hydraulic valve coil

2.18 Sensor test

Gap between sensor and sprocket tooth is 3/32” (2.4 mm)

Sensor resistance is 900 ohms +/- 10%.

Figure 2.8
speed sensor



Section 3: General Maintenance

SERVICE AND MAINTENANCE

CAUTION: If for any reason arc welding is to be done, always ground cylinder to frame of machine to prevent arcing in bearings.

1. Before working on or near the H-1000 Tub Grinder for any reason, including servicing, inspecting or unclogging machine:

    a. Run H-1000 Tub Grinder until discharge conveyor is empty, and grind as much of the material in the tub as possible.

    b. Reduce engine speed to idle.

    c. Disengage PTO

    d. Disengage hydraulics.

    e. Place transmission in park and set parking brake.

    f. Shut off tractor engine and remove key.

    g. Wait for all movement to stop.

    h. Disconnect PTO driveline from tractor.

2. When replacing any part on your H-1000 Tub Grinder, be sure to use only DuraTech Industries authorized parts.

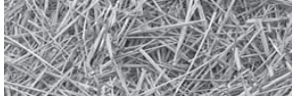
3. Relieve all pressure in the hydraulic system before disconnecting the lines or performing other work on the system. Make sure all connections are tight and the hoses and lines are in good condition before applying pressure to the system.

WARNING: Hydraulic fluid escaping under pressure can be invisible and have enough force to penetrate the skin. When searching for a suspect leak, use a piece of wood or cardboard rather than your hands. If injured, seek medical attention immediately to prevent serious infection or reaction.

4. Visually examine to see if any internal parts show excessive wear. Repair or replace needed parts. These parts include rotor plates and holes in the plates that support the rods. Enlarged holes can cause rods to break.

    Also check rods, rod locking and retaining devices, hammers, screens, screen tracks and hold downs, main shaft, hinges or anything else that could wear and perhaps fail if not properly maintained, and cause damage to the rotor and/or personnel safety. Check bearing alignment and mounting bolts to insure a firm foundation and reduced vibration.

    Keep all foreign objects out of the tub and away from the rotor. Foreign objects may result in personal injury or cause severe damage to hammers, screens, rods, and other parts that will cause rotor failure.



5. Check for loose or worn chains, belts, sprockets and pulleys.

6. Keep sprockets and pulleys aligned.

7. Inspect rotor and all rotating parts for wrapped twine or wire build up.

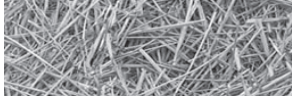
8. If machine is going to sit idle for an extended period of time, tub floor should be cleaned to prevent rust and sticking problems at start up time.

9. The proper tire pressure is 50 PSI.

10. The wheel bearings should be checked for lubrication and adjustments yearly, preferably at the end of the season.

If a generous amount of grease is on the bearing and in the housing, and if the grease is soft, the grease will not need changing.

If the lubricant is caked and the bearing seems dry, wash the bearing to remove old grease. Repack the bearing.



3.1 Lubrication

CAUTION: Follow normal shutdown procedure before adjusting or lubricating.

Hydraulic oil reservoir capacity: 12 gallons. Change hydraulic oil and filter at least once a year.

Gear Box: Check level periodically. Drain and refill with No. 90 gear lube once a year. Needs to be filled to the plug level.

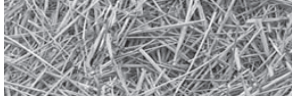
When operating the H-1000 Tub Grinder during cold weather, perform all lubrication after bearings are at operating temperatures.

BEARING LUBRICATION

Bearings operating in the presence of dust and water should contain as much grease as speed will permit, since a full bearing with a slight leakage is the best protection against entrance of foreign material. In the higher speed ranges, too much grease will cause overheating.

High-speed operation, abnormal bearing temperature may indicate faulty lubrication. Normal temperature may range from “cool to warm to the touch” up to a point. Unusually high temperatures “too hot to touch for more than a few seconds” accompanied by excessive leakage of grease indicates too much grease. High temperatures with no grease showing at the seals, particularly if the bearing seems noisy, usually indicate too little grease. Normal temperature and a slight showing of grease at the seals indicate proper lubrication.

The following chart is a general guide for relubrication. Certain conditions may require a change of lubrication periods as dictated by experience.



Lubrication Chart

REF. NO.	LOCATION	NUMBEROF GREASE FITTINGS	FREQUENCY	
1.	Tub Drive Shaft Bearings	2	40 hrs.	*
2.	Tub Rollers Bearings	8	5 hrs.	*
3.	Tub Pressure Roller	4	5 hrs.	
4.	Tub Chain Idler	1	5 hrs	
5.	Tub Chain Idler Pivot	1	40 hrs.	
6.	Hyd. Motor Pivot	1	40 hrs	
7.	Input Shaft Bearings	2	10 hrs.	*
8.	Rotor Bearings	2	10 hrs.	*
9.	Belly Pan Auger Bearings	2	10 hrs.	*
10.	Discharge Conveyor Driveline Bearings	4	40 hrs.	*
10A	Dis. Conv. Driveline U-joint, S.N. GI3757 & up	4	40 hrs.	
11.	Discharge Conveyor Bearings	4	40 hrs.	*
12.	P.T.O.	3	40 hrs.	
13.	Wheel Bearings		Annually	
14.	Roller Chains		Graphite spray or oil daily in dusty conditions	
* Refer to bearing lubrication				

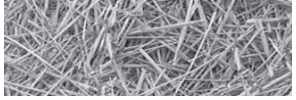
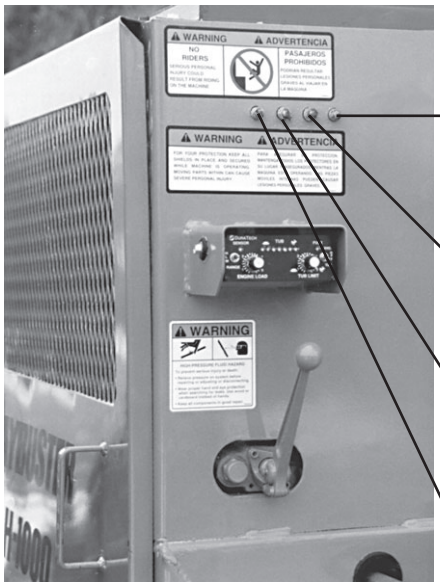


Figure 3.1
4 zerks above operator controls



tub drive shaft bearing (Ref # 1)

tub chain idler (Ref # 4)

rotor bearing (Ref # 8)

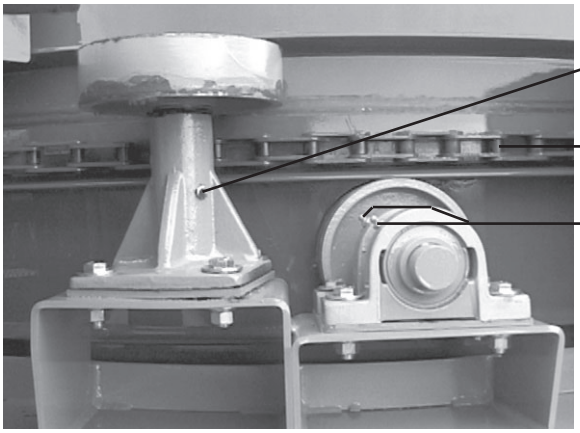
tub chain idler pivot (Ref # 5)

Figure 3.2
2 zerks on opposite side of machine from operator controls

hydraulic motor pivot (Ref # 6)

tub drive shaft bearing (Ref # 1)

Figure 3.3
tub roller, tub pressure roller and roller chain



tub pressure roller (Ref # 3)

roller chain (Ref # 16)

tub roller bearings (Ref # 2)

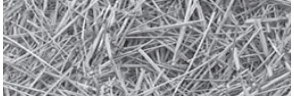
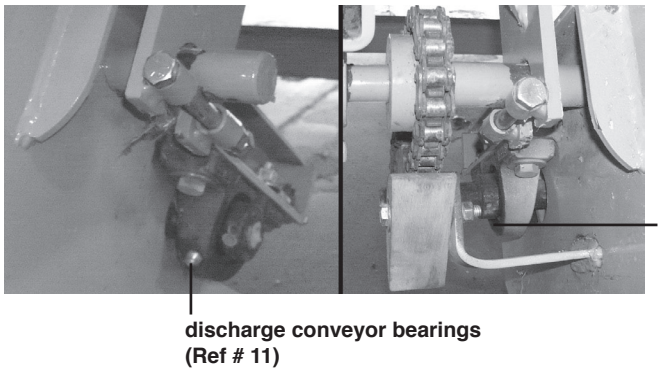


Figure 3.4
discharge conveyor bearings



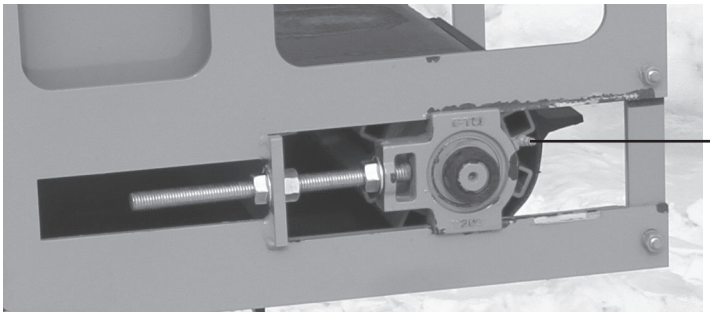


Figure 3.5
second rotor bearing lubrication point

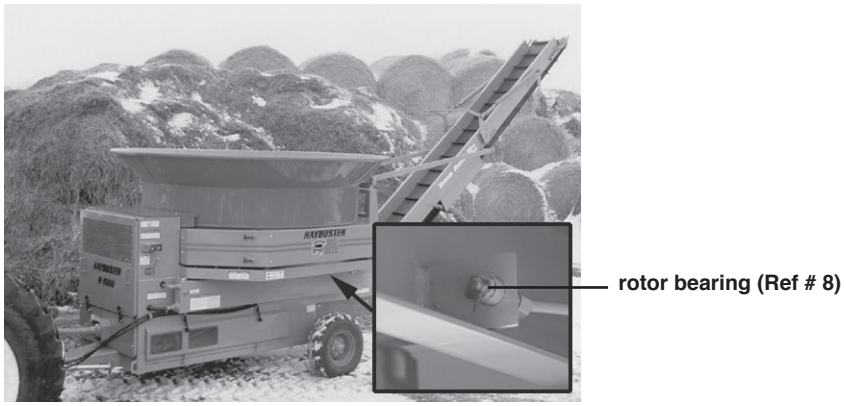
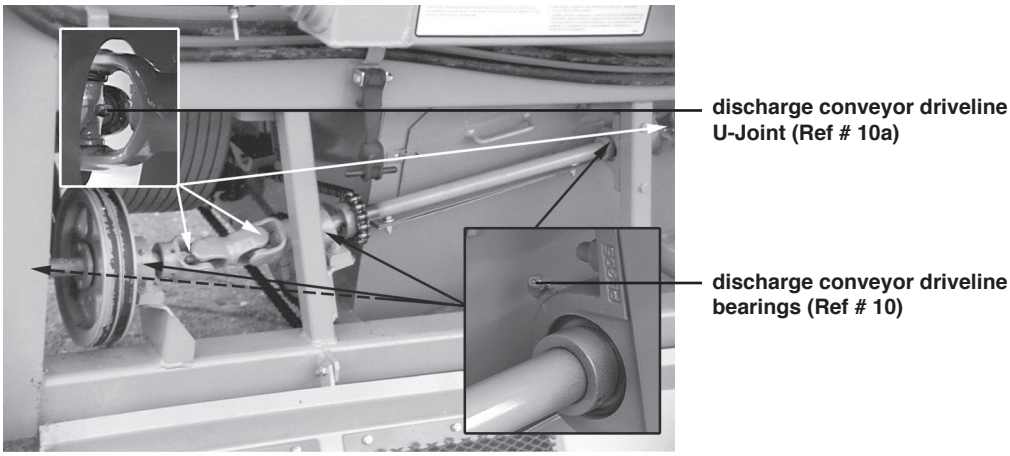


Figure 3.6
discharge conveyor driveline U-Joint and bearing lubrication points



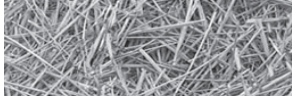


Figure 3.7
two of three PTO lubrication points

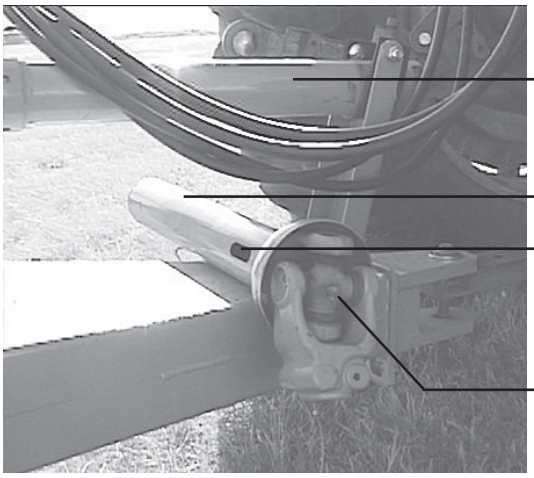
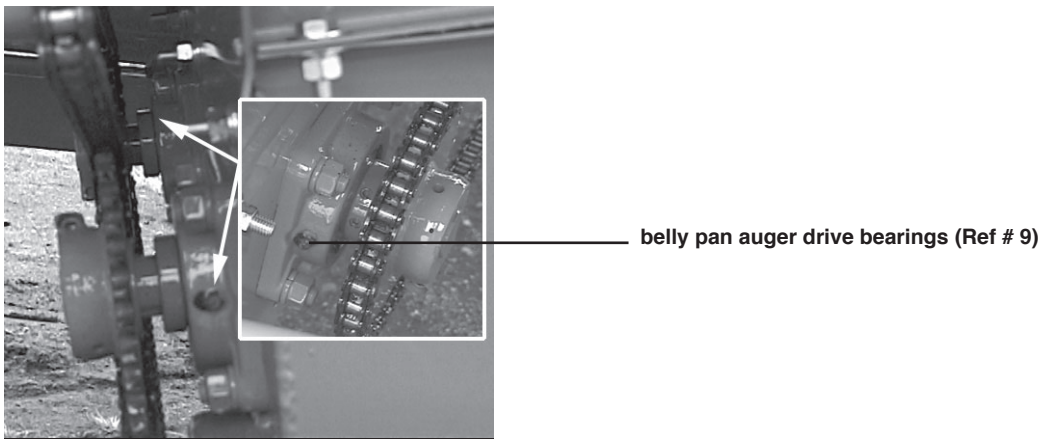


Figure 3.8
belly pan auger drive bearing lubrication points

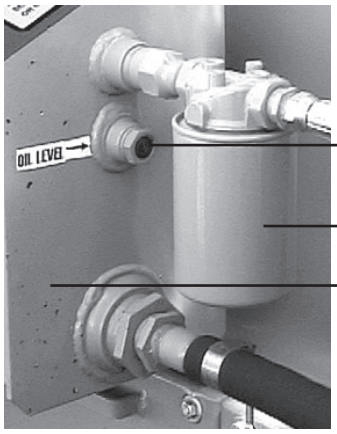


3.2 Hydraulic system

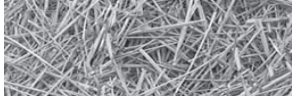
CAUTION: Lack of proper oil level in the reservoir tank will cause system to heat under continuous running. Check the hydraulic oil level daily and replace as necessary.

All machines have been pre-run at the factory to insure all functions are performing correctly. The hydraulic reservoir contains approximately 6 gallons of hydraulic oil for test running only. Before operating the machine, add additional oil to the reservoir tank. It will take approximately 6 additional gallons of hydraulic oil. This should bring the oil level to the sight glass on side of reservoir.

Check the hydraulic oil regularly, and if the oil has a burnt smell or milky appearance, change it immediately.



DuraTech Industries recommends using Cenex Qwicklift HTB if your machine has a Qwicklift decal on the hydraulic tank. Other acceptable fluids include Mobil 423, Farmland Super HTB, Conoco Hydroclear Power Tran Fluid, or other similar fluids. If the hydraulic tank does not have this decal, then all of the above fluids are acceptable.



3.3 Hammermill maintenance

Visually examine the mill to see if any of the internal parts show excessive wear. These parts should include rotor discs and the holes in the discs that support the rods. Enlarged holes can cause rods to break or bend. Also check rods, rod locking or retaining devices, hammers, screens, screen tracks and hold downs, main shaft, platform locking devices, hinges or anything else that could wear and perhaps fail and causing damage to the hammermill and/or personnel safety if not properly maintained. The bearings should also be checked along with mounting bolts to insure a firm foundation and reduced vibration.

CAUTION: Keep all foreign objects out of the tub and away from the mill. Foreign objects may result in personal injury or damage to the machine.

The hammers have been designed and manufactured to provide the best compromise between hardness for good wearing qualities and strength for dependability and resistance to breakage.

WARNING: The hammers have been heat treated, and any alteration of the hammers by heating, grinding, resurfacing or any other process can change the mechanical properties of the hammer and make it unsuitable or dangerous to use.

Because of the high capacity of the machine, the hammers will wear and must be considered expendable. Each hammer has four cutting edges. For maximum life, it is suggested that hammers be rotated periodically to even out the wear over the entire rotor. If one end of a hammer is allowed to wear too long, one of the hammer's cutting edges will be lost.

Screens also have two cutting edges. When cutting edges become rounded, the screen can be turned end for end exposing the new cutting edges. The results of badly worn hammers and screens is loss of capacity, and added horse power requirements.

Hammer rods are case hardened to maximize wearability and toughness, although hammer rods must be considered expendable.

NOTE: Hammer and hammer rod life can be extended by keeping rotor rotating at 2000 RPM. Over powering or over feeding the rotor will cause the swinging hammers to lay back resulting in excessive wear on both the hammers and the rods.

3.4 Hammer maintenance and replacement

CAUTION: Follow normal shutdown procedure before entering tub to do any service work.

When installing or changing hammers, be sure to follow hammer pattern diagram carefully (page 49). Misplacement could cause excessive vibration.

We recommend the following:

A. Always replace hammers in pairs, 180 degrees apart. (illustrations A & B below).

B. Tips placed 180 degrees apart should be the same weight

To install new hammers or change the cutting edge on existing hammers:

1. Clear tub floor of all forage to allow easy access to rotor and rear rotor bearing cover.
2. Remove rear rotor bearing cover. Item A in figure 4.9.
3. Loosen two bolts at rear of rotor which holds the movable plate in place. Item B in figure 4.9.
4. Rotate movable plate counter clockwise to align holes allowing hammer rods to be removed through rear of rotor. Item C in figure 3.9.
5. Remove one row of hammers and replace, taking note as to where spacers are located. (page 52).

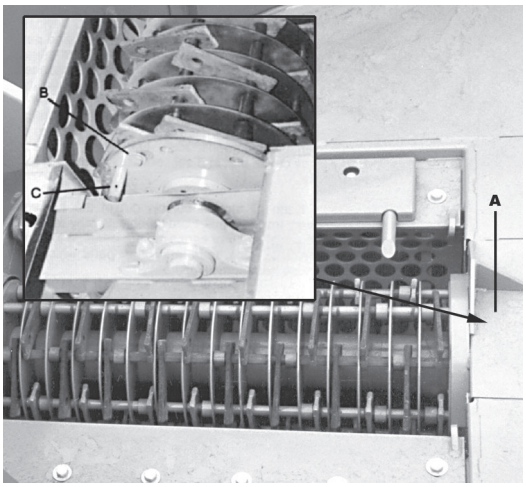


figure 3.9

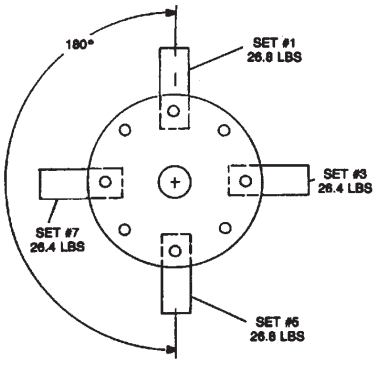


ILLUSTRATION A

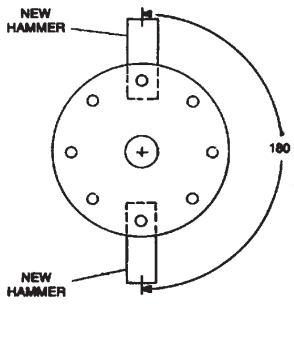


ILLUSTRATION B

6. After all hammers have been replaced or turned, reassemble movable plate and rear rotor bearing cover.
7. When starting the rotor after installing a new set of hammers or turning corners, watch for unusual or excessive vibration. If any occurs, immediately shut off the rotor. Check to see what is wrong and correct it before starting the rotor again.

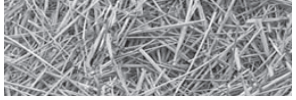
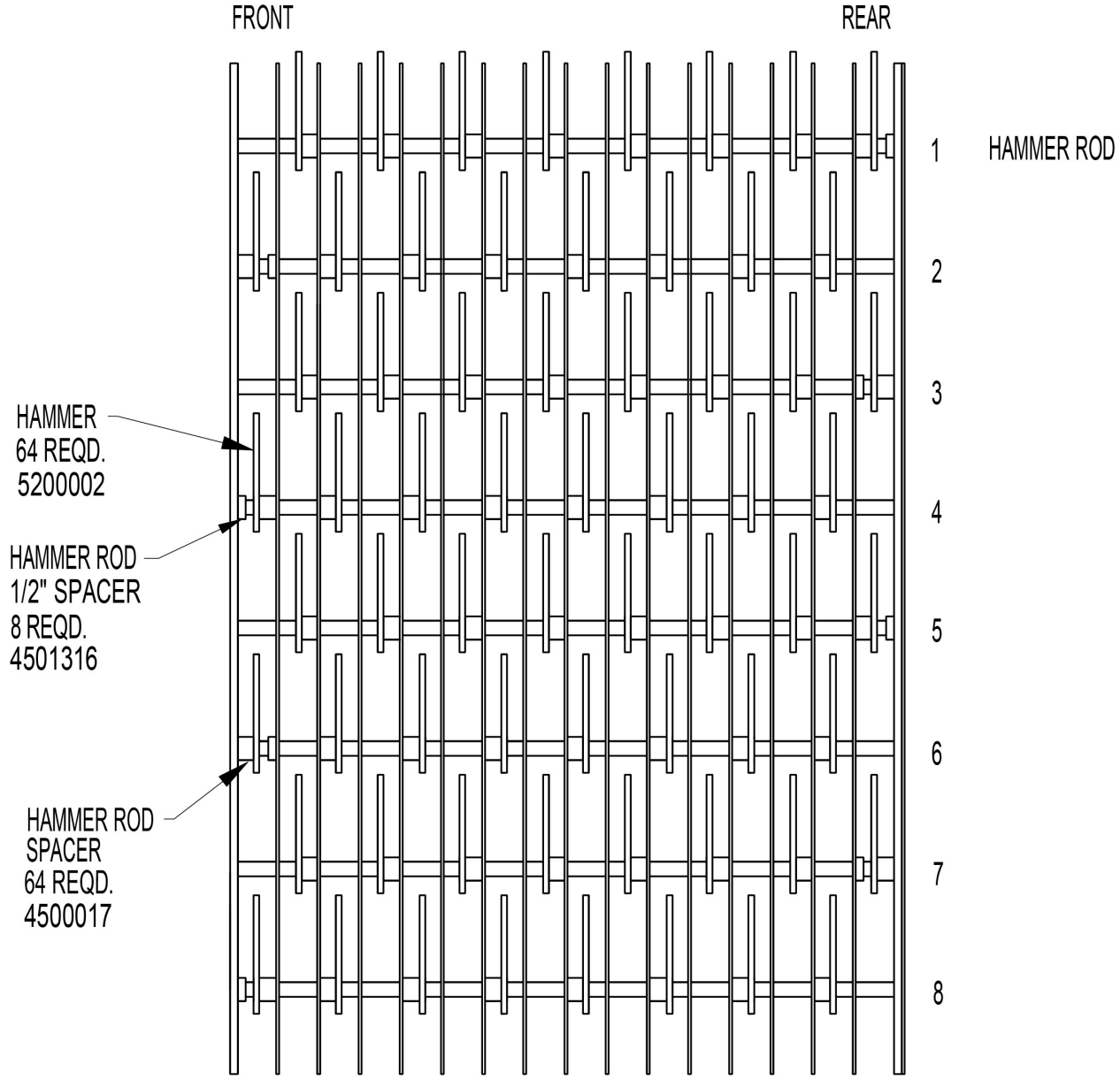
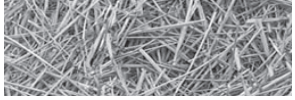


Figure 3.11
hammer spacing chart for the H-1000





Section 4: Troubleshooting the H-1000 Tub Grinder

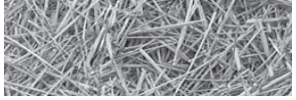
4.1 Troubleshooting the electronic governor system

1. When power is reaching the electronic governor the fuse light should be on. If this light fails to go on, check the fuse, the battery connections, the wiring harness, and the indicator lamp.

2. Checking the TUB MODE operation of the electronic governor. With the engine and hydraulic systems at operating temperature, and the tub drive control valve in the forward position, throttle the engine up to PTO speed.

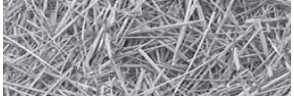
With the mode switch in the tub position, the tub should be rotating. The speed of the tub can be varied by rotating the tub limit knob. The number of tub speed lights which are lit will vary with the setting of the tub limit knob. If the number of tub speed lights lit varies as you rotate the tub limit knob, the manual portion of the controls are functioning correctly. Proceed to step 3. If the manual portion is not working properly, proceed to trouble shooting table below.

PROBLEM	CAUSE	REMEDY
1. The tub does not rotate but the electronic governor and the manual hydraulic valve are working properly. There is pressure to the orbit motor.	1. The tub is binding. 2. There is too much material in tub, or the tub is overloaded due to wet or tough grinding material. 3. The pressure relief valve in the control valve set too low or is faulty.	1. Remove the material causing problem. 2. Reduce the amount of material in the tub. 3. Check oil pressure
2. The tub does not rotate, but the valve is receiving 10 to 12 volts of DC power. There is no pressure to the orbit motor. **Note:** The valve refers to the valve where you disconnect the wiring harness. For more information see "Electronic governor hardware test" later in this section.	1. The manual hydraulic valve is not engaged. 2. The valve assembly is dirty or faulty. 3. The solenoid is faulty.	1. Engage the manual hydraulic valve. 2. Clean or replace the valve assembly. 3. Test the solenoid and replace as necessary.
3. The tub does not rotate, and there is no voltage to the valve.	1. There is no power to the electronic governor. a The electronic governor is switched off. b The fuse is blown. c The tub limit knob is set fully counterclockwise. 2. A wire in the wiring harness is broken. 3. The electronic governor is faulty.	1. a Switch the electronic governor mode switch to tub. b Replace the fuse. c Turn the tub speed knob clockwise. 2. Replace or repair the wiring harness. 3. Replace the electronic governor.
4. The tub runs with the electronic governor switch off. Disconnect the wiring harness at the valve. A. If the tub stops B. If the tub keeps turning	1A. The electronic governor is out of adjustment. 2.A The electronic governor is faulty. 1B. The valve override screw is adjusted in too far. 2.B The valve is faulty.	1.A Readjust the electronic governor. 2.A Replace electronic governor. 1.B Adjust the override screw. 2.B Replace the valve.
5. The tub speed can not be varied with the tub limit knob.	1. Valve override is not adjusted correctly. 2. The valve is stuck. 3. The solenoid is stuck. 4. The electronic governor is faulty.	1. Adjust the override screw. 2. Clean or replace the valve assembly. 3. Test the solenoid and replace as necessary. 4. Replace the electronic governor.



3. Checking the ENGINE MODE operation of the electronic governor. If the tub mode controls function correctly after following the tub mode trouble shooting check list, then follow the calibration instructions on page 36 of this manual. If the tub will not rotate, proceed to trouble shooting table below.

PROBLEM	CAUSE	REMEDY
1. The tub will not rotate, and the sensor light is not lit.	1. The sensor gap is out of adjustment. 2. There is a broken wire on the wiring harnes 3. The sensor is fault. 4. The sensor light bulb is faulty. 5. The electronic governor is faulty.	1. Readjust the sensor gap to 3/32". This is roughly the thickness of a nickel. 2. Repair or replace the wiring harness. 3. Test and replace the sensor as necessary. 4. Replace the sensor light bulb 5. Replace the electronic governor.
2. The tub will not rotate, and the sensor light is lit.	1. The tub limit knob is set to "turtle". 2. The manual hydraulic valve is in the neutral position. 3. The electronic governor is faulty.	1 Adjust the tub limit knob to a value toward rabbit. 2 Engage the manual hydraulic valve. 3. Replace the electronic governor.



ELECTRONIC GOVERNOR HARDWARE TEST

1. Power source: 12 volts DC

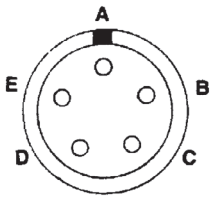
   Red wire + positive pin A wiring harness

   Black wire - Negative Pin B wiring harness

2. Test output voltage to valve DC

   Red wire + positive pin D wiring harness.

   Black wire - negative pin E. wiring harness.



A - 12 volts DC
B - Ground
C - Digital sensor signal
D - (+) to valve
E - (-) to valve

Test the electronic governor with power supplied to the governor control box and the mode switch set to the tub position. The grinder does not need to be running for this test. Disconnect the wiring harness at the valve. With a voltmeter set for 12 volts DC, connect the red lead of the voltmeter to the red lead of the wiring harness and black lead to the black wire. Turn the tub limit knob until the left speed light (turtle) is on. The voltmeter should read approximately 3 volts. Turn the tub limit knob clockwise. As more speed lights light up, the voltage should increase. Turn the knob until the right speed light (Rabbit) is lit. The volt meter should now read a minimum of 9 volts.

ELECTRONIC GOVERNOR VOLT-OHM READINGS

WIRE HARNESS CONNECTOR	ENGINE	IGNITION SWITCH	READING	INCORRECT READING INDICATES	CHECK IF INCORREC-T READING
Valve terminals, system in Manual (Wires attached)	Not Running	ON	13 volts DC	Defective wiring, control box	Wires to valve
Valve terminals, system in Auto (Wires attached)	Running 1500 to 2550 rpm	ON	1-10 volts DC varies with rpm *	Defective wiring, control box	Wires to valve
Valve terminals, (Wires removed)	Not Running	OFF	9.6 ohms	Defective valve	
Pin A to B	Not Running	ON	13 volts DC	13 volts not at control box, no ground	Wires to tractor
Pin A to Ground	Not Running	ON	13 volts DC	13 volts power not reaching box	Wires to tractor
Pin B to Ground	Not Running	OFF	Less than 5 ohms	Black wire not grounded	Ground Wire
Pin D to E	Not Running	OFF	9.6 ohms	Valve wiring or valve defective	Wires to valve, valve
Pin D to Ground	Not Running	OFF	Infinite ohms	Valve wiring or valve defective	White wire to valve, valve
Pin E to Ground	Not Running	OFF	Infinite ohms	Valve wiring or valve defective	Blue or black wire to valve

3. Output voltage of sensor AC

   red wire - Pin C wiring harness

   Black wire - Pin B wiring harness.

Set the sensor gap to 3/32”.

Remove the wiring harness from the electronic governor.

With the grinder at operating speed. Set volt meter to AC volts, connect leads to pins B and C. The volt meter should read at least 2 to 3 volts AC.

ELECTROHYDRAULIC VALVE COIL TEST

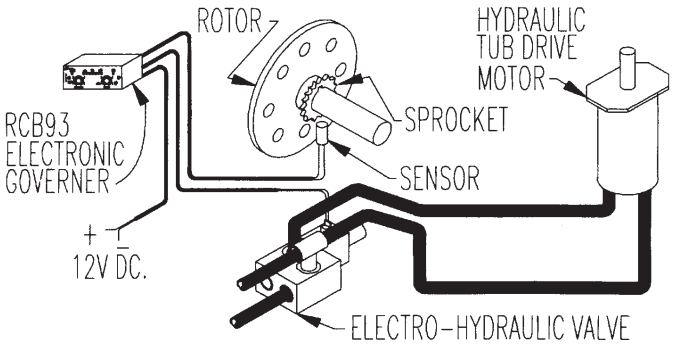
This test requires an accurate ohm meter. Disconnect the wiring harness leads at the electro-hydraulic valve coil. Check resistance of valve coil leads at the terminals. The resistance should be between 8 to 12 ohms for a 12 volt solenoid. If the values are not within this range, replace the electro-hydraulic valve coil.

MANUAL OVERRIDE

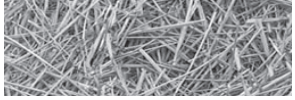
NOTE: If there is an electrical failure with the machine, it may still be able to grind. Switch the electronic governor off. Remove the rubber end cap and loosen the jam nut on the electro-hydraulic valve. Start the machine and engage the tub drive.

CAUTION: PTO MUST BE ENGAGED AT THIS TIME. WATCH FOR MOVING PARTS

Turn the adjusting screw clockwise until the tub rotates at the desired speed. Lock the jam nut on the adjusting stud and replace the rubber end cap on the electro-hydraulic valve. When the electro-hydraulic valve is adjusted in this manner, it will function only as a manual flow control. The grinder will now operate as it would if the electronic governor were switched to the tub (manual) mode. The tub speed will be constant and it will not change to match varying load conditions.

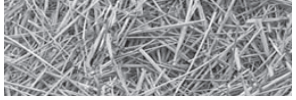


Contact your dealer for future repairs or replacement parts. When the problems are corrected, calibrate the electro-hydraulic valve.



4.2 General Troubleshooting

1. No grinding capacity	1. The screen is plugged. 2. The hammers or screens are badly worn. 3. Materials are too light or fluffy.	1. Clean out the holes in the screen. 2. Replace or turn worn parts. 3. Mix the lighter material with heavier material. 4. Use a larger screen. 5. Use the grapple loader to force feed the material.
2. The tub slows down or turns slowly.	1. The electronic governor is not adjusted properly. 2. The electronic governor system malfunctions. 3. The hydraulic pressure is low.	1. See the sections on the electronic governor in the operations section of this manual. 2. See Troubleshooting the electronic governor in this manual. 3a. Check oil pressure. 3b. Look for internal leakage or wear in the orbit motor or pump.
3. The machine vibrates excessively.	1. A hammer is broken. 2. The rotor bearing is defective. 3. The driveline is worn or misaligned. 4. Foreign material is wrapped in the rotor. 5. The hammer pattern is incorrect.	1. Replace the broken hammer. See page 51 for more information about replacing hammers. 2. Replace the rotor bearing. 3. Replace worn part or the complete driveline. 4. Remove the foreign material. 5. See page 51 for more information about replacing hammers.
4. The engine looses excessive RPM's before the tub stops.	1. The electronic governor is not adjusted properly.	1. See the sections on the electronic governor in the operations section of this manual.
5. The tub stalls.	1. The tub hydraulic system pressure is set too low. 2. The tub is overloaded due to wet or tough grinding materials. 3. Too much material in the tub. 4. The tub is binding. 5. The hydraulic oil is too hot causing electronic governor valve to bind.	1a. Check oil pressure. 1b. Readjust the pressure relief valve to 2,000 PSI max. 2. Reduce amount of material in tub or shift the hydraulic tub drive to low range. 3. Reduce the amount of material in tub. 4. Remove material buildup between the tub and the platform framework. 5. Reduce the load on the hydraulic system, or stop and allow the hydraulic oil to cool.
6. The hydraulic oil overheats.	1. Pressure relief valve in control valve is faulty. 2. The tub is overloaded. 3. Worn pump, control valve, hyd. motors, etc.	1. Check oil pressure. 2. Reduce the amount of material in the tub. 3. Rebuild or replace the hydraulic components as necessary.



Appendix A: Warranty

DuraTech Industries International Inc. (DuraTech Industries) warrants to its authorized dealer, who in turn warrants to the original purchaser for twelve (12) months from Retail Sale Date that this product will be free from defects in material and workmanship when used as intended and under normal maintenance and operating conditions.

This warranty shall become void if in the judgment of DuraTech Industries International, Inc. the machine has been subject to misuse, negligence, alterations, damaged by accident or lack of required normal maintenance, or if the product has been used for a purpose for which it was not designed.

All claims for warranty must be made through the dealer which originally sold the product and all warranty adjustments must be made through same.

This warranty does not apply to tires or bearings or any other trade accessories not manufactured by DuraTech Industries International Inc. Buyer must rely solely on the existing warranty, if any, of these respective manufacturers.

DuraTech Industries International Inc., shall **not** be held liable for damages of any kind, direct, contingent, or consequential to property under this warranty. DuraTech Industries International Inc., cannot be held liable for any damages resulting from causes beyond its control. DuraTech Industries International Inc., shall **not** be held liable under this warranty for rental costs or any expense or loss for labor or supplies.

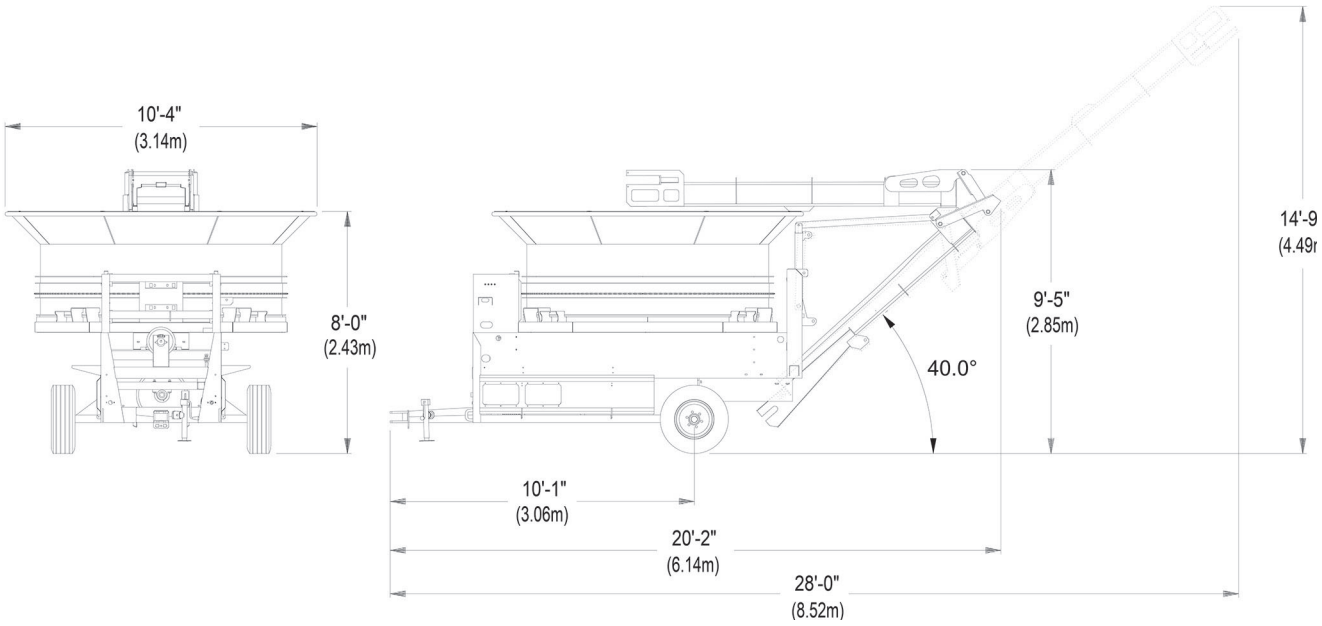
DuraTech Industries International Inc., reserves the right to make changes in material and/or designs of this product at any time without notice.

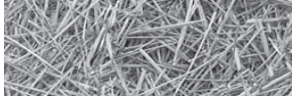
This warranty is void if DuraTech Industries International Inc. does not receive a valid warranty registration card at its office in Jamestown, North Dakota, USA, within 10 days from date of original purchase.

All other warranties made with respect to this product, either expressed or implied, are hereby disclaimed by DuraTech Industries International Inc.

Appendix B: H-1000 Tub Grinder Specifications

Weight ..... 7,400 lbs. (3,356 kg)
Width ..... 10 ft.-4 in. (3.14 m)
Height in Transport Position ..... 9 ft.-5 in. (2.85 m)
Length ..... 20 ft.-2 in. (6.14 m) with conveyor folded
Wheels ..... Drop center rims, Timken bearings
Bearings ..... All standard size, grease sealed
Recommended Tire Size ..... 9.5 x 14 (2)
Recommended Power ..... 80 to 175 H.P.
Recommended Cylinder Speed ..... 2000 rpm
Rotor - Std No. of Hammers 64
Hammer Size ..... 2-1/2 x 7-3/4 x 3/8 (6.35 cm x 19.69 cm x 0.95 cm)
Rotor - Shaft diameter ..... 3 in. stress proof steel
Rotor Size ..... 44-1/2 in. long, 26 in. diameter hammers extended
Screen Area ..... 2,403 sq. in. (6.45 sq. cm)
Screens Available (inches) 1/8" (3 mm), 3/16" (5 mm), 1/4" (6 mm), 1/2" (13 mm), 5/8" (16 mm), 3/4" (19 mm), 1" (2.5 cm), 1-1/2" (3.8 cm), 2" (5 cm), 3" (8 cm), 4" (10cm)
Feed Delivery ..... 20 ft. folding rubber belt conveyor w/cleats 18 in. Wide
Tub size ..... 96 in. (244 cm) I.D.
Tub Depth ..... 44 1/2 in. (113 cm)
Tub Drive ..... Electro-Hydraulic





Options

AVAILABLE OPTIONS FOR HAYBUSTER H-1000 Tub Grinder:

- Ear Corn Kit
- Geyser Plate
- Grain Grinding Hopper
- Mill Grate
- Rack for loose hay
- Various Screens Sizes

Appendix C: Required for operation

Tractor - 80 to 175 hp

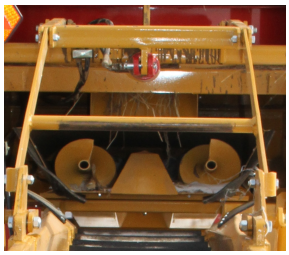
1000 RPM PT0 Shaft

Dual Hydraulics, double acting control valve, 8 GPM, 1500 psi

See also Section 3.3.1, Tractor Set Up, and section 3.2.9 Open and closed center valves

Grinder

Approximately 6 gallons of hydraulic oil. DuraTech Industries recommends using Cenex Qwicklift HTB if your machine has a Qwicklift decal on the hydraulic tank. Other acceptable fluids include Mobil 423, Farmland Super HTB, Conoco Hydroclear Power Tran Fluid, or other similar fluids. If the hydraulic tank does not have this decal, then all of the above fluids are acceptable



HAYBUSTER®

H-1000™

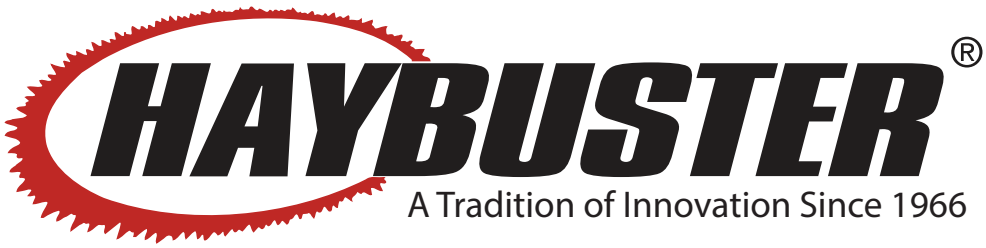
PTO Driven Tub Grinder

Serial Number 4542 to 4921

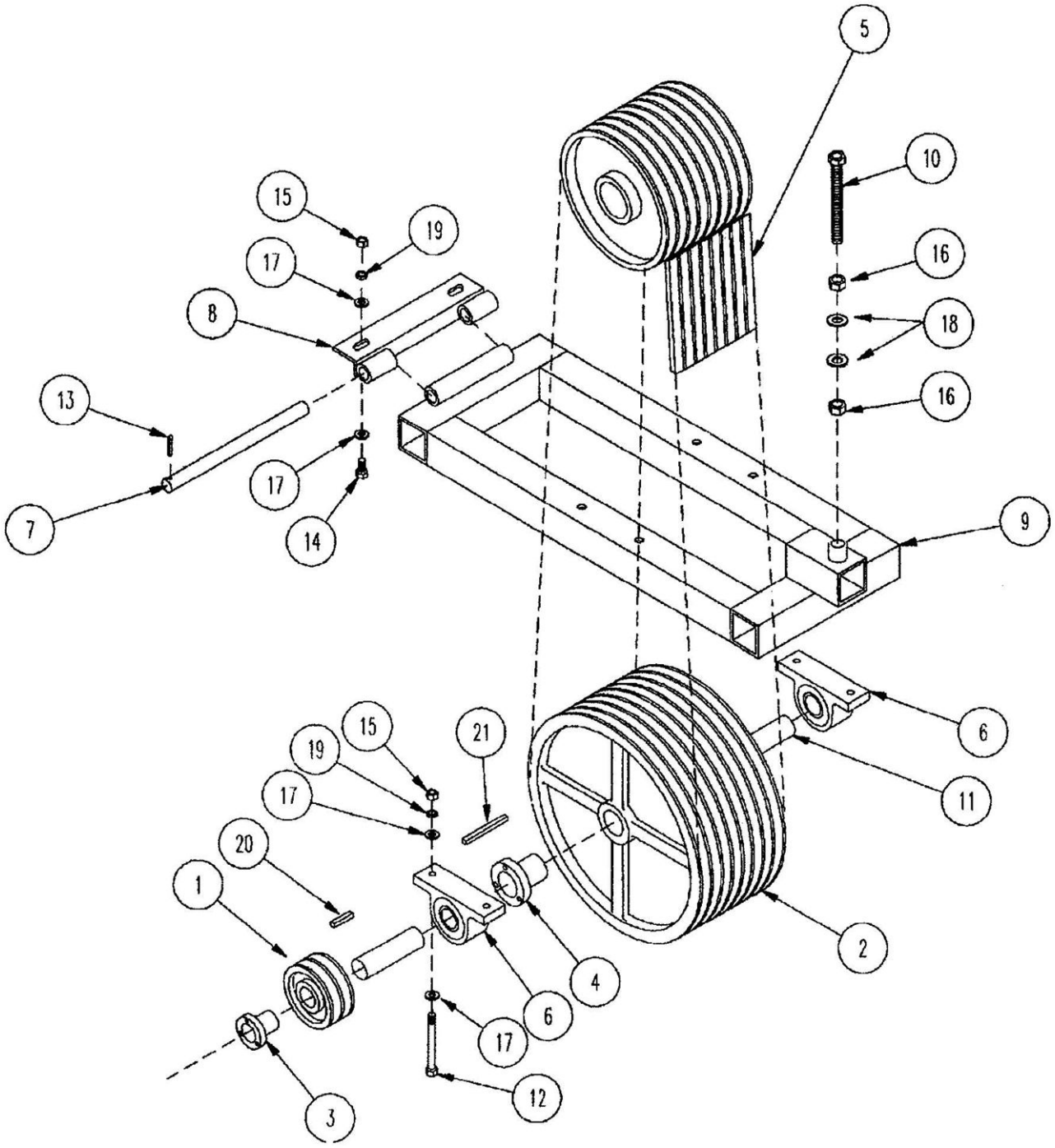
Parts Reference

DuraTech Industries International Inc. (DuraTech Industries) has made every effort to assure that this manual completely and accurately describes the operation and maintenance of the H-1000 PTO Driven Tub Grinder™ as of the date of publication. DuraTech Industries reserves the right to make updates to the machine from time to time. Even in the event of such updates, you should still find this manual to be appropriate for the safe operation and maintenance of your unit.

This manual, as well as materials provided by component suppliers to DuraTech Industries are all considered to be part of the information package. Every operator is required to read and understand these manuals, and they should be located within easy access for periodic review.


HAYBUSTER®
A Tradition of Innovation Since 1966

H-1000 Tub Grinder Parts Reference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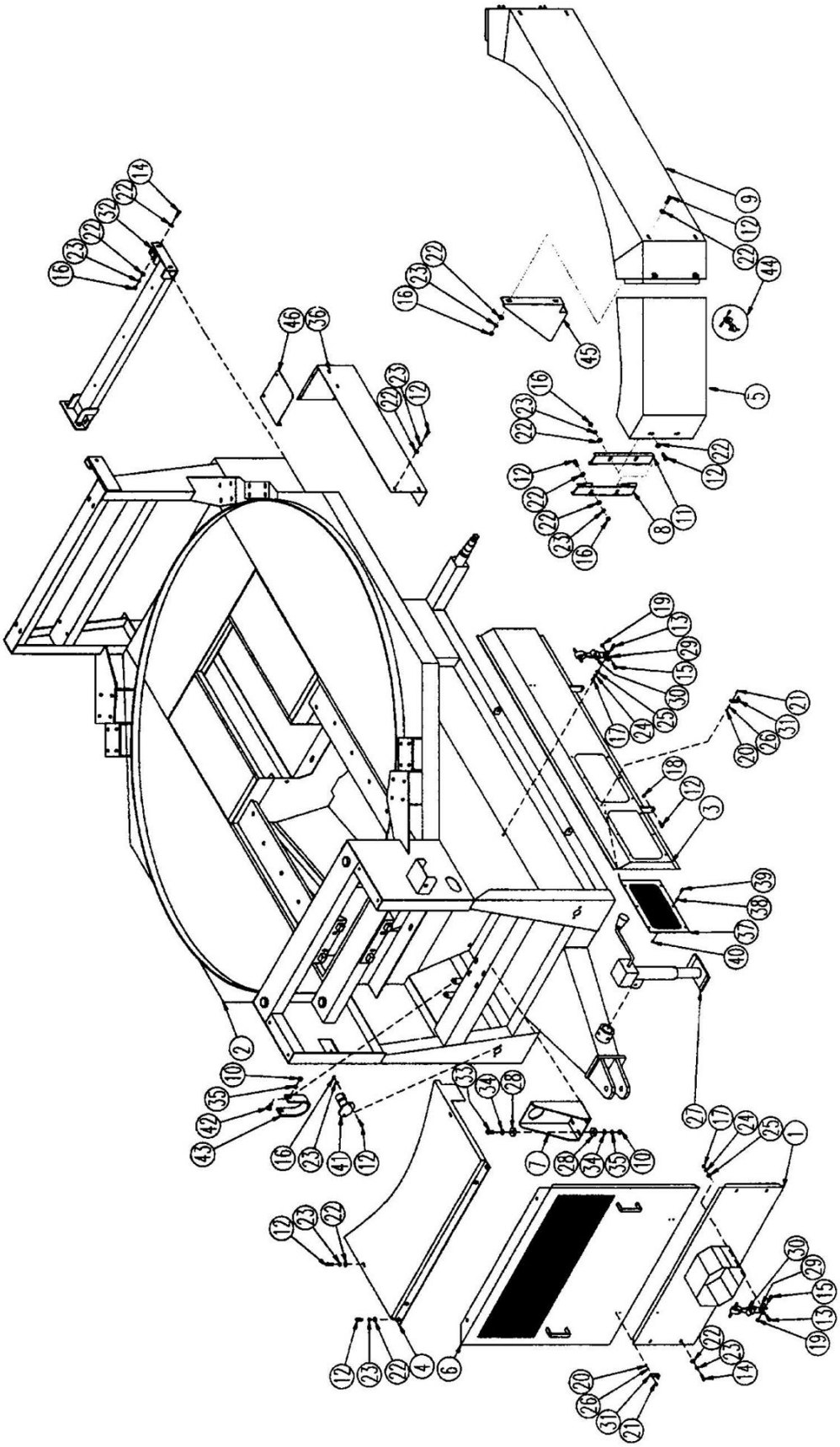
H-1000 Bull Wheel Frame Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	1400008	SHVE\B-2\5.0		1	EA
2	1400069	SHVE\B-8\200		1	EA
3	1400504	BUSH\P1\1-3/4		1	EA
4	1400518	BUSH\R2\2		1	EA
5	1600030	V-BELT\B\85		8	EA
	1600084	V-BELT\4B\85\BANDED		2	EA
6	2000505	BRG\PB\1-3/4\2BOLT		2	EA
7	4500223	PIN\RD\1X14-1/2\BULL WHEEL		1	EA
8	4500224	HINGE\FRM\BULL WHL		1	EA
9	4500230	FRM\BULL WHL		1	EA
10	4500256	BOLT\WELD\3/4X8\BULL WHEEL		1	EA
11	4500489	SHAFT\INPUT\BULL WHEEL\1-3/4X22		1	EA
12	4800041	BOLT\HEX\1/2X5		4	EA.
13	4800050	PIN\COT\3/16X1-1/2		1	EA
14	4800082	BOLT\HEX\1/2X1-1/2		2	EA.
15	4900001	NUT\HEX\1/2\NC		6	EA.
16	4900004	NUT\HEX\3/4\NC		2	EA.
17	5000004	WASH\FLAT\1/2		12	EA.
18	5000005	WASH\FLAT\3/4		2	EA.
19	5000006	WASH\LOCK\1/2		6	EA.
20	6200008	KEY\SQ\3/8X2		1	EA.
21	6200015	KEY\SQ\1/2X4-1/2		1	EA



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1	4500556	GUARD\PTO\FR		1	EA
2	4502527	FRM\MAIN\WLDMNT		1	EA
3	4500558	DOOR\DRV\SIDE\LH	THRU SN 4781	1	EA
3a	4500753	DOOR\DRV\SIDE\RH	THRU SN 4781	1	EA
3b	4503001	DOOR\DRV\SIDE\LH	SN 4782 & UP	1	EA.
3c	4503002	DOOR\DRV\SIDE\RH	SN 4782 & UP	1	EA.
4	4501028	GUARD\DR\TOP		1	EA
5	4501307	SHLD\RLLR\TUB\16		2	EA
5a	4501309	SHLD\RLLR\TUB\RH\16		2	EA
6	4500578	SHLD\DR\FRONT\H1000	THRU SN 4781	1	EA
6a	4503012	DOOR\DRIVE\FRONT	SN 4782 & UP	1	EA.
7	4501020	BRKT\PUMP\15GAL	(for SN Up to 4920)	1	EA
8	4501022	BRKT\HINGE\MALE\RH		2	EA
8a	4501021	BRKT\HINGE\MALE\LH		2	EA
9	4501308	SHLD\CHAIN\TUB\SIDE\16		2	EA
10	4900001	NUT\HEX\1/2\NC		6	EA.
11	4501024	BRKT\HINGE\FEMALE\RH		2	EA
11a	4501023	BRKT\HINGE\FEMALE\LH		2	EA
12	4800003	BOLT\HEX\3/8X1		56	EA.
13	4800013	BOLT\HEX\5/16X1	THRU SN 4781	6	EA.
13a	4800468	SCR\RD\SLOT\#10X1/2	SN 4782 & UP	12	EA.
14	4800034	BOLT\HEX\3/8X1-1/2		12	EA.
15	4800281	BOLT\HEX\5/16X2\NF		6	EA
16	4900002	NUT\HEX\3/8\NC		42	EA.
17	4900003	NUT\HEX\5/16\NC	THRU SN 4781	6	EA.
17a	4900190	NUT\FLG\SERR\#10\NC	SN 4782 & UP	12	EA.
18	4900023	NUT\TPLCK\3/8\NC		4	EA.
19	4900071	NUT\NYLCK\5/16\NF		6	EA
20	4900009	NUT\HEX\1/4\NC		12	EA.
21	4800024	BOLT\HEX\1/4X3/4		12	EA.
22	5000001	WASH\FLAT\3/8		104	EA.
23	5000019	WASH\LOCK\3/8		64	EA.
24	5000022	WASH\LOCK\5/16	THRU SN 4781	6	EA.
25	5000023	WASH\FLAT\5/16	THRU SN 4781	6	EA.
26	5000035	WASH\FLAT\1/4		12	EA.
27	5800632	JACK\5000LB\15"\SWIVEL-STYLE		1	EA.
28	7500310	GRMT\1-1/4 OD 17/32 ID		8	EA
29	7501624	LTCH\MNT\7500166		6	EA

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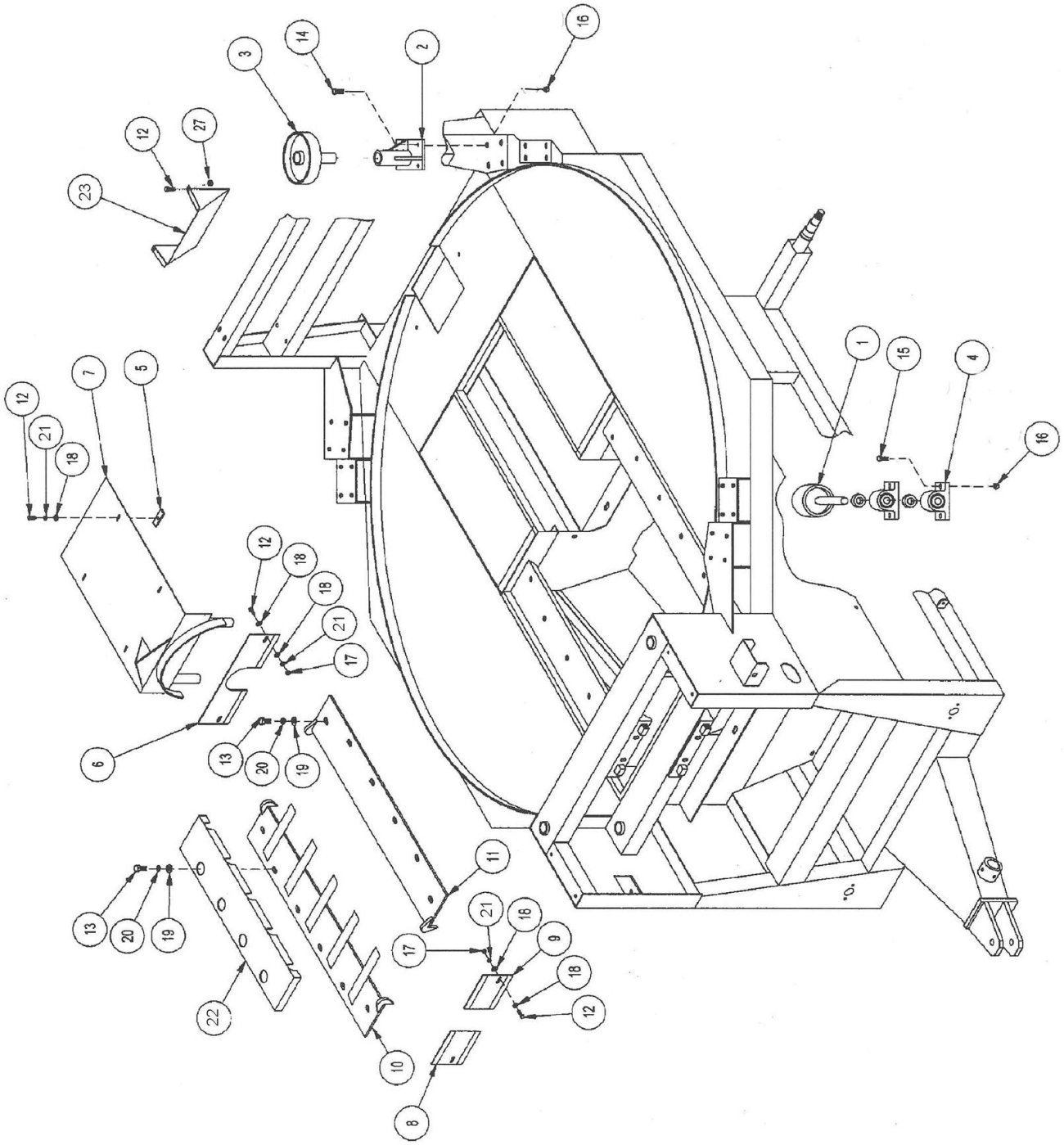
Item	Part No.	Name	Remarks	Qty	Uom
29a	7501660	LATCH\RBBR\8\W-STD-CATCH	SN 4742 & UP		EA.
30	7500166	LATCH\RBBR\6	THRU SN 4741	6	EA.
30a	7501660	LATCH\RBBR\8\W-STD-CATCH	SN 4742 & UP		EA.
31	7500190	LATCH\RBBR\CATCH\6		6	EA
32	4502847	BRKT\CNVYR\DSCHG		1	EA
33	4800070	BOLT\HEX\1/2X2-1/2		4	EA.
34	5000004	WASH\FLAT\1/2		8	EA.
35	5000006	WASH\LOCK\1/2		6	EA.
36	4502952	SHLD\DRV\REAR		1	EA
37	4500659	SCRN\DOOR\DRV	THRU SN 4781	4	EA
38	5000035	WASH\FLAT\1/4	THRU SN 4781	24	EA.
39	4800301	SCR\FLG\SERR\1/4X3/4\NC	THRU SN 4781	24	EA.
40	4900040	NUT\FLG\SERR\1/4\NC	THRU SN 4781	24	EA.
41	4500601	BRKT\PTO\WEASLER		1	EA
41a	4501089	BRKT\PTO\WEASLER\1-3/4			EA
42	4800908	BOLT\CRG\1/2X1		2	EA.
43	4500754	BELT\BRKT\PTO		1	EA.
44	7500606	LATCH\35-M\AUSTIN		8	EA
45	4501310	BRKT\SHLD\CHAIN\TUB		4	EA
46	4502951	CVR\GEARBOX\CNVYRDRV		1	EA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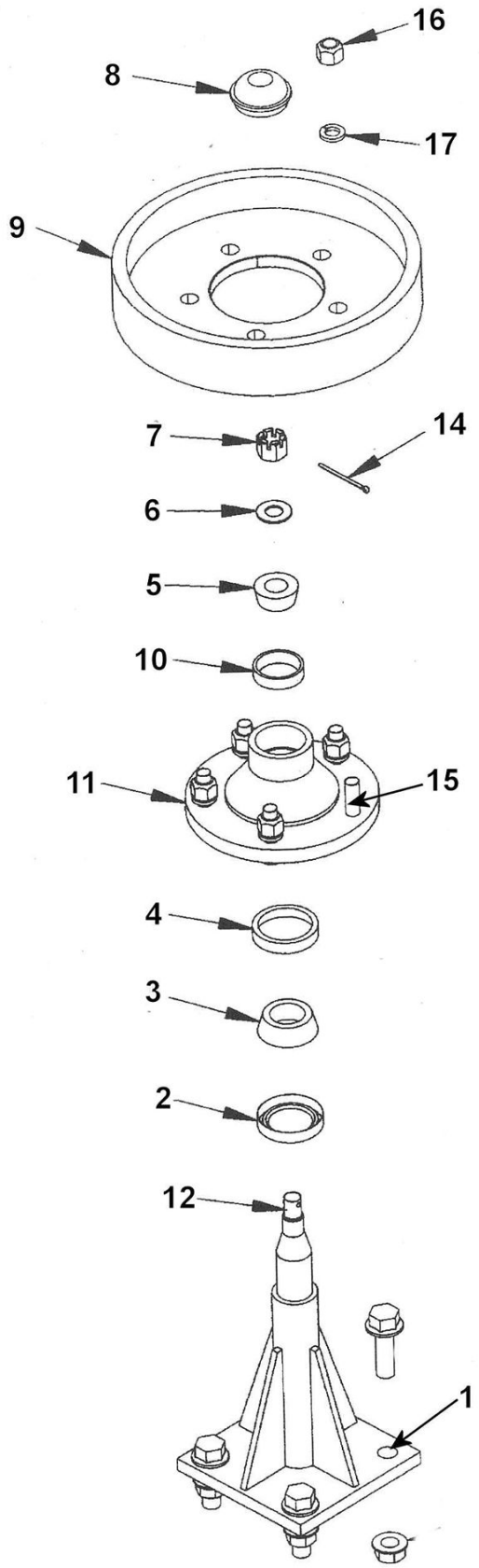
Item	Part No.	Name	Remarks	Qty	Uom
1	1200013	RLLR\TUB\1-1/2\W/O FLANGE		4	EA
2	4501313	BRKT\RLLR\PRES	SEE PRESSER ROLLER ASSEMBLY	4	EA
3	4700115	DRUM\RLLR\PRESS	SEE PRESSER ROLLER ASSEMBLY	4	EA
4	2000501	BRG\PB\1-1/2\2BOLT	SN UP TO 4821	8	EA
4A	4702007	BRG\PB\RLLR\TUB\ASY	SN 4822 & UP, SEE TUB ROLLER BEARING ASSEMBLY	4	EA
5	4500094	LATCH\CVR\BRG\RTR\REAR		4	EA
6	4500182	DOOR\RTR\REAR\BRG		1	EA
7	4500259	CVR\BRG\RTR\REAR		1	EA
8	4500442	DOOR\RTR\FR\BRG\RH	SN UP TO 4781	1	EA
8A	4502851	DOOR\RTR\FR\BRG\RH	SN 4782 & UP	1	EA.
9	4500443	DOOR\RTR\FR\BRG\LH	SN UP TO 4781	1	EA
9A	4502852	DOOR\RTR\FR\BRG\LH	SN 4782 & UP	1	EA.
10	4501034	HOLDDOWN\SCRN\5 TOOTH\H1000>		1	EA
11	4500576	SCRN\HOLDDOWN\H1000		1	EA
12	4800003	BOLT\HEX\3/8X1		10	EA.
13	4800010	BOLT\HEX\5/8X2		12	EA.
14	4800949	BOLT\FLG\5/8X2\GR8\NC		16	EA
15	4800930	BOLT\FLG\SERR\1/2X2\NC		16	EA
16	4900100	NUT\FLG\TPLCK\1/2\NC		16	EA
16A	4900178	NUT\FLG\TPLCK\5/8\GR8\NC		16	EA
16B	4900001	NUT\HEX\1/2\NC			EA.
17	4900002	NUT\HEX\3/8\NC		4	EA.
18	5000001	WASH\FLAT\3/8		12	EA.
19	5000002	WASH\FLAT\5/8		12	EA.
20	5000003	WASH\LOCK\5/8		12	EA.
21	5000019	WASH\LOCK\3/8		8	EA.
22	4501033	RISER\GRATE\HAY\1-1/2		1	EA
23	4501321	DEFLR\MATL\PLFRM		1	EA
NS	4900023	NUT\TPLCK\3/8\NC		2	EA.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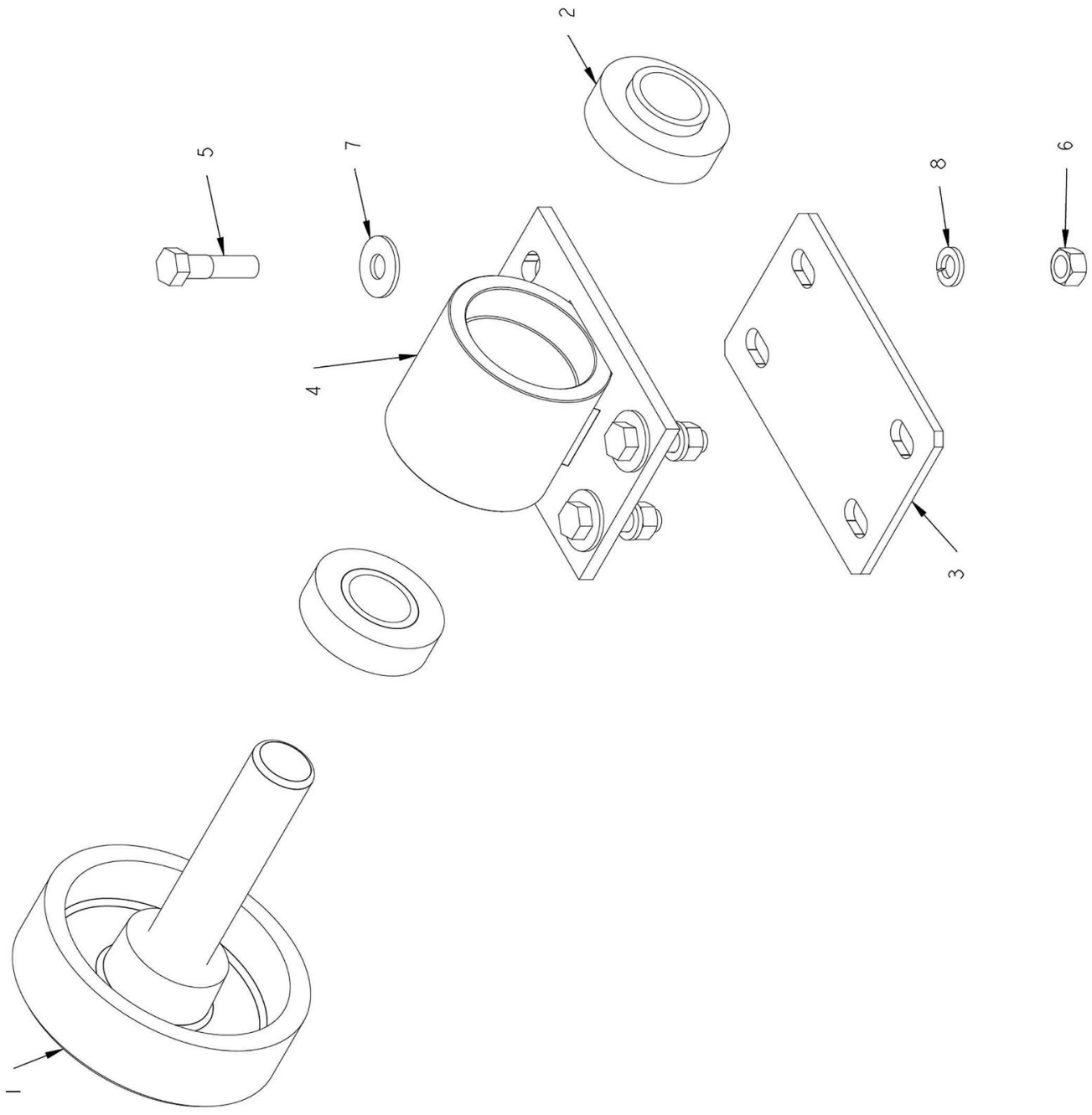
Item	Part No.	Name	Remarks	Qty	Uom
1	4501313	BRKT\RLLR\PRES		1	EA
2	2900055	SEAL/WHEEL HUB(16069)		1	EA
3	2900018	CONE\OUTER\WHL;HUB(67048		1	EA
4	2900004	CUP\INNER\WHEEL HUB		1	EA
5	2900061	OUTERCONE/WHL;HUB(11949		1	EA
6	5000094	WASH\SPNDL\5/8		1	EA
7	4900112	NUT\SLOT.\5/8\NF		1	EA
8	2900064	CAP/WHL;HUB(985)		1	EA
9	4700115	DRUM\RLLR\PRESS		1	EA
10	2900056	OUTERCUP/WHL;HUB(11910)		1	EA
11	2900057	HUB\5-BOLT\(985)\COMPLETE	INCLUDES 2, 3, 4, 5, 8, 10, 11, 15, 16	1	EA
12	3000025	SPNDL\PRESS\RLLR\10"		1	EA
14	4800172	PIN\COT\1/8X2		1	EA.
15	2900010	BOLT\WHL\WHL;HUB\100 SR		5	EA
16	4900094	NUT\TPR\WHEL\1/2\13/16OD\NF		5	EA
17	5000004	WASH\FLAT\1/2		5	EA.
CA	4501317	RLLR\PRESS\COMPL			EA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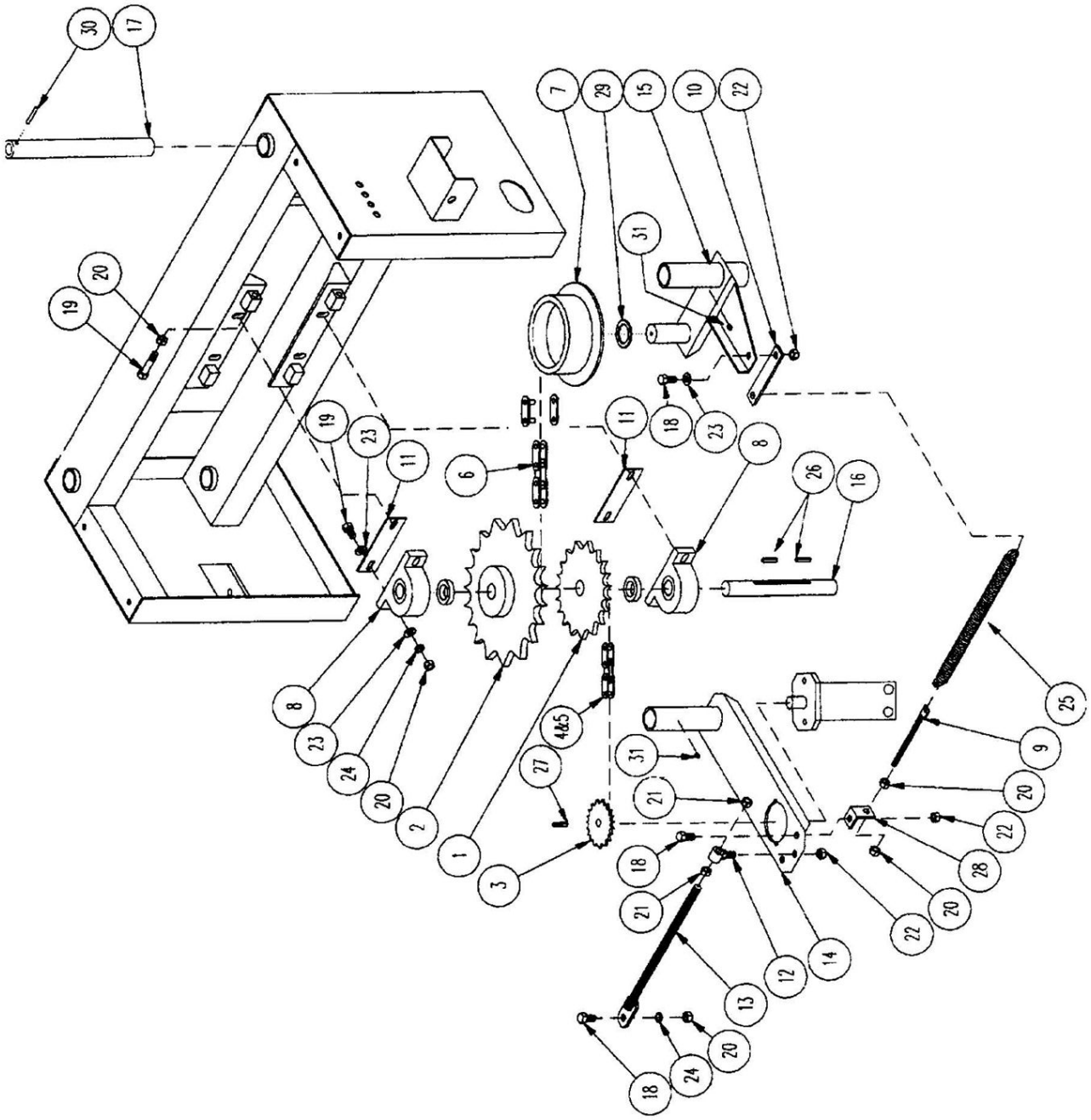
Item	Part No.	Name	Remarks	Qty	Uom
1	1200013	RLLR\TUB\1-1/2\W/O FLANGE		1	EA
2	2000584	BRG\CYL\1-1/2\DLOK		2	EA
3	4501900	SHIM\RLLR\SPPRT\TUB\10GA			EA
3A	4501131	SHIM\RLLR\SUP\TUB\1/4			EA
4	4702007	BRG\PB\RLLR\TUB\ASY	INCLUDES #2	1	EA
5	4800114	BOLT\HEX\1/2X2		4	EA.
6	4900001	NUT\HEX\1/2\NC		4	EA.
7	5000004	WASH\FLAT\1/2		4	EA.
8	5000006	WASH\LOCK\1/2		4	EA.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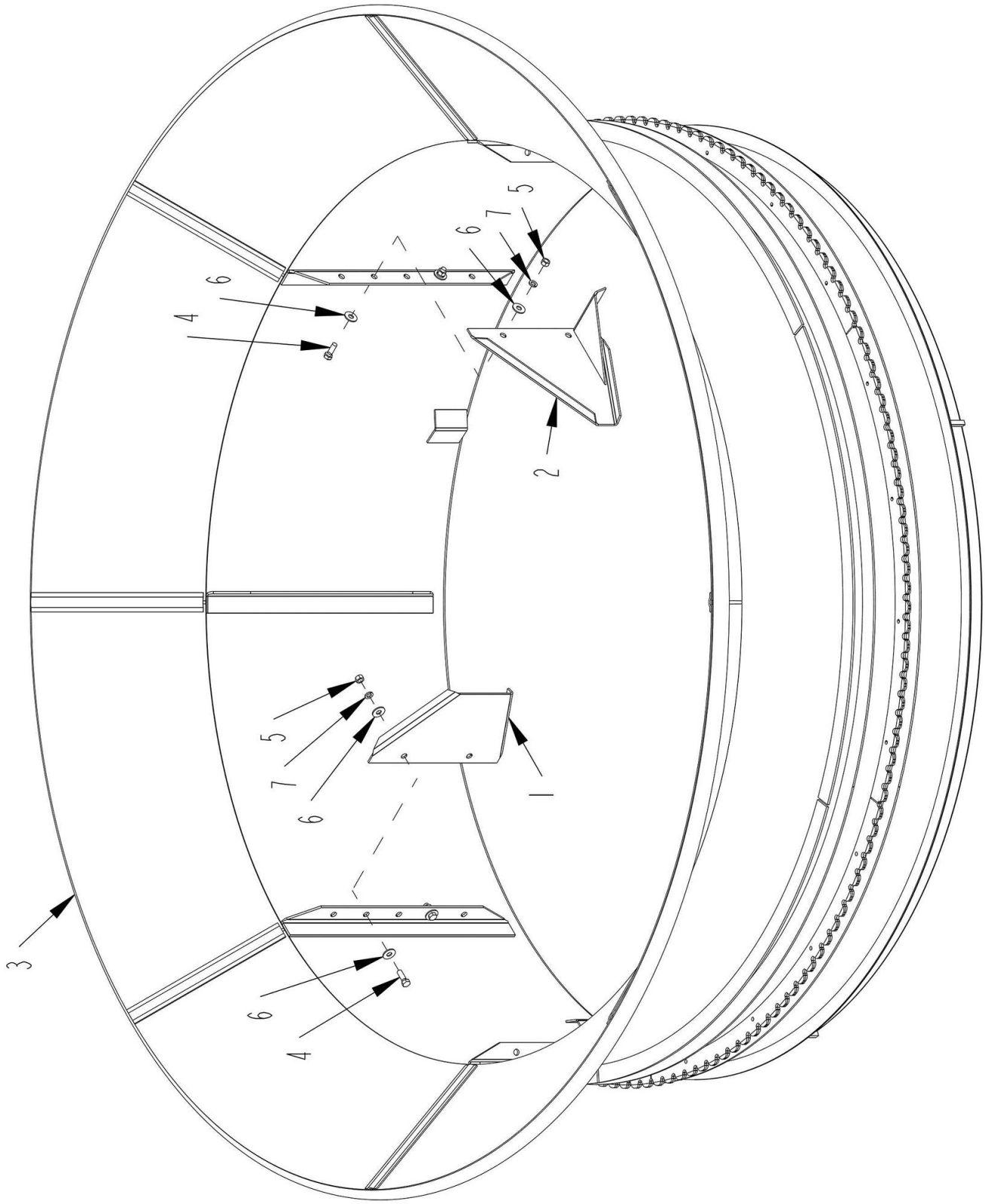
Item	Part No.	Name	Remarks	Qty	Uom
1	1000033	SPKT\60\B\30\1-1/4\1/4		1	EA
2	1000077	SPKT\80\B\30\1-1/4\1/4KW		1	EA
3	1000134	SPKT\60\B\12\1		1	EA
4	1100062	CHAIN\60\CL		1	EA.
4a	1100063	CHAIN\60\OL			EA.
5	1100088	CHAIN\60\43		1	EA
6	1100094	CHAIN\2080\157+CL		1	EA
6a	1100070	CHAIN\2080\CL			EA
6b	1100071	CHAIN\2080\OL			EA
7	1200007	RLLR\#6		1	EA
8	2000502	BRG\PB\1-1/4\2BOLT		2	EA
9	4500197	BOLT\TENS.\SPG\1/2X8		1	EA
10	4500331	LINK\SPG\1/4X6-1/4		1	EA
11	4500332	SHIM\BRG\2X6-1/4		4	EA
12	4701691	BRKT\TGHTR\CHAIN\ORBIT		1	EA
13	4500335	BOLT\TGHTR\ORBITMTR\TUBDRV		1	EA
14	4500587	BRKT\TGHTR\CHAIN\TUBDRV		1	EA
15	4500588	BRKT\ARM\SWING\LH		1	EA
16	4500591	SHFT\RD\1-1/4 X 11-1/2LG		1	EA
17	4500592	SHAFT\RD\1 1/2x19 1/2 \TUB DRIVE		2	EA
18	4800082	BOLT\HEX\1/2X1-1/2		3	EA.
19	4800114	BOLT\HEX\1/2X2		6	EA.
20	4900001	NUT\HEX\1/2\NC		9	EA.
21	4900005	NUT\HEX\5/8\NC		2	EA.
22	4900014	NUT\TPLCK\1/2\NC		3	EA.
23	5000004	WASH\FLAT\1/2		9	EA.
24	5000006	WASH\LOCK\1/2		5	EA.
25	6100001	SPRING.156OT 63/64OD13LIH		1	EA
26	6200005	KEY\SQ\1/4X1-1/2		2	EA,
27	6200022	KEY\SQ\5/16X1-1/2\HARDEND		1	EA
28	4500589	BRKT\SPG\TENS.\H1000		1	EA
29	5000008	WASH\MACH\1-1/2IDX10GA\NR		5	EA.
30	4800221	PIN\RLLD\1/4X2		2	EA
31	3800082	FTG\LUB\1/4NFXZERK\ADAPT		2	EA.
CA	4500566	DR\TUB\ASSY\H1000			EA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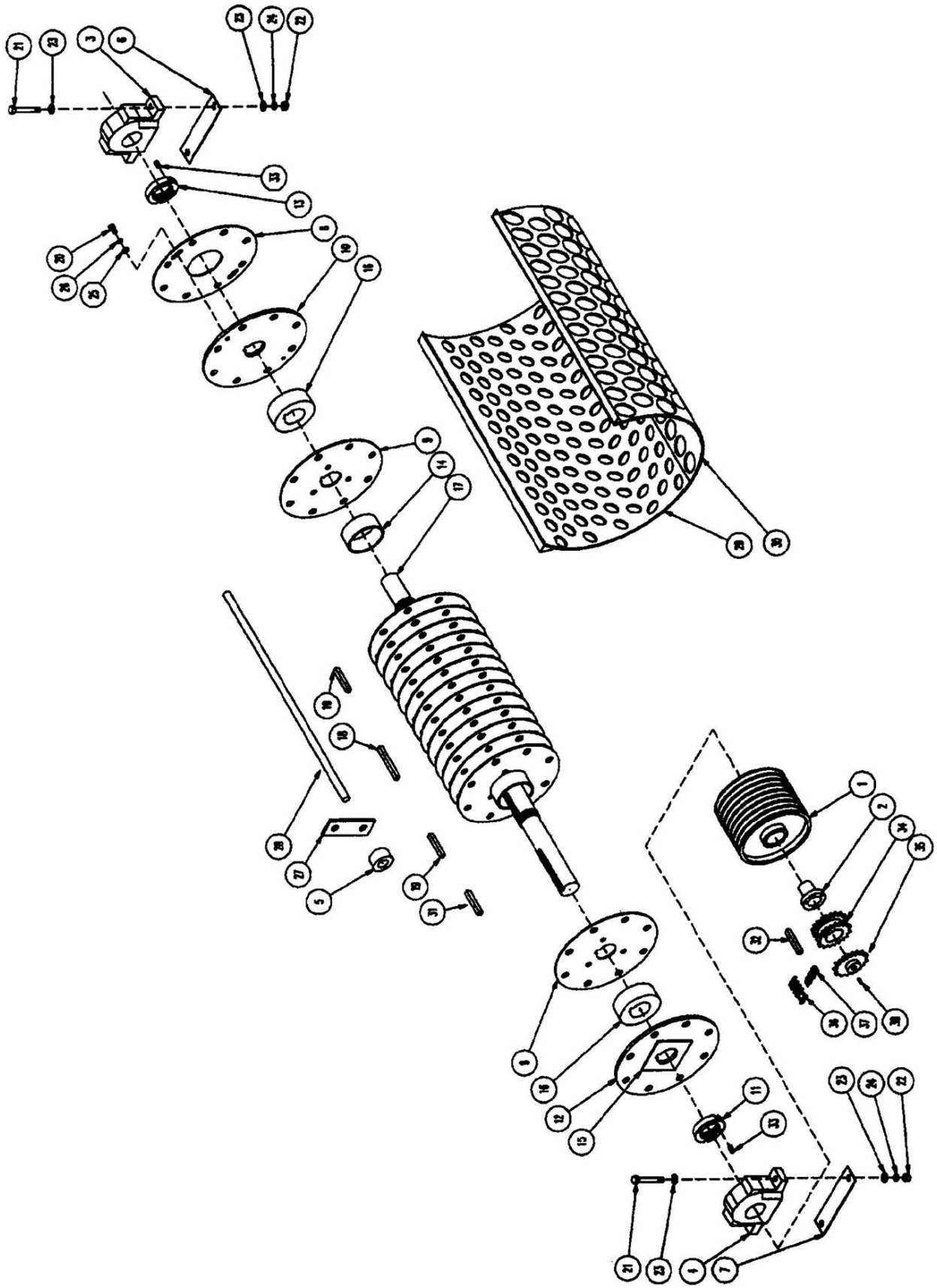
Item	Part No.	Name	Remarks	Qty	Uom
1	4500756	AGTTR\TUB\10”		1	EA
2	4500757	AGTTR\TUB\14”		1	EA
3	4502397	TUB\1030		1	EA
4	4800082	BOLT\HEX\1/2X1-1/2		4	EA.
5	4900001	NUT\HEX\1/2\NC		4	EA.
6	5000004	WASH\FLAT\1/2		8	EA.
7	5000006	WASH\LOCK\1/2		4	EA.



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1	1400016	SHVE\B8\11		1	EA
2	1400519	BUSH\R2\2-1/4		1	EA
3	2000508	BRG\PB\2-7/16\E\DODGE		1	EA
4	2000509	BRG\PB\2-3/4\E\DODGE		1	EA
5	4500248	Spacer\Hammer\1-1/2X1.028X1		48	EA
5A	4501316	SPCR\HMMR\1-1/2X1.032X1/2		8	EA
6	4500444	SHIM\BRG\RTR\10GA\3X10-1/4		2	EA
7	4500445	SHIM\BRG\10GA\3X11-1/4		2	EA
8	4500019	PL\RTR\MOVEABLE5.32IDX3/16	Liability Waiver Required	1	EA
9	4500020	PL\RTR\3IDX3/16	Liability Waiver Required	15	EA
10	4500021	PL\RTR\END\SLUGS\3IDX1/2	Liability Waiver Required	1	EA
11	4700267	NUT\RTR\3\W/O;SHOULDER	Liability Waiver Required	1	EA
12	4500023	PL\RTR\END\SLUGS\3IDX1/2	Liability Waiver Required	1	EA
13	4700266	NUT\ROTOR\3 W/SHOULDER	Liability Waiver Required	1	EA
14	4500134	SPACER\SHAFT\5.56 OD\RTR	Liability Waiver Required	14	EA
15	4500253	WASH\THRUST\3-1/8IDX6SQ	Liability Waiver Required	1	EA
16	4500425	SPCR\CAST\RTR\6-1/4 OD X 3 ID	Liability Waiver Required	2	EA
17	4500494	SHAFT\ROTOR\3X65	Liability Waiver Required	1	EA
18	6200035	KEY\RECT\1/2X5/8X6-1/4		1	EA
19	6200043	KEY\RECT\1/2X5/8X4		2	EA
20	4800085	BOLT\HEX\1/2X1		2	EA.
21	4800100	BOLT\HEX\5/8X4		4	EA.
22	4900005	NUT\HEX\5/8\NC		4	EA.
23	5000050	WASH\FLAT\11/16\2"ODX1/4T		8	EA
24	5000003	WASH\LOCK\5/8		4	EA.
25	5000004	WASH\FLAT\1/2		2	EA.
26	5000006	WASH\LOCK\1/2		2	EA.
27	5200002	3/8 AB SUPREME HAMMER		64	EA
28	5300020	SHFT\HMMR\15/16 X 43		8	EA
31	6200013	KEY\SQ\5/8X4-1/2		1	EA
32	6200029	KEY\SQ\5/8X2		1	EA
33	4800323	SCR\SET\AL1/2X1\NC		4	EA.
34	1000191	SPKT\DBL\60\20\2-3/4"BORE		1	EA
35	1000203	SPKT\60\B\20\3/4\3/16KEY		1	EA
36	1100064	CHAIN\60DBL\CL		1	EA.
37	1100193	CHAIN\60DBL\19		1	EA
38	6200052	KEY\SQ\3/16X1		1	EA
NS	4500206	PL\CYL\WASH\REINFORCEMENT			EA

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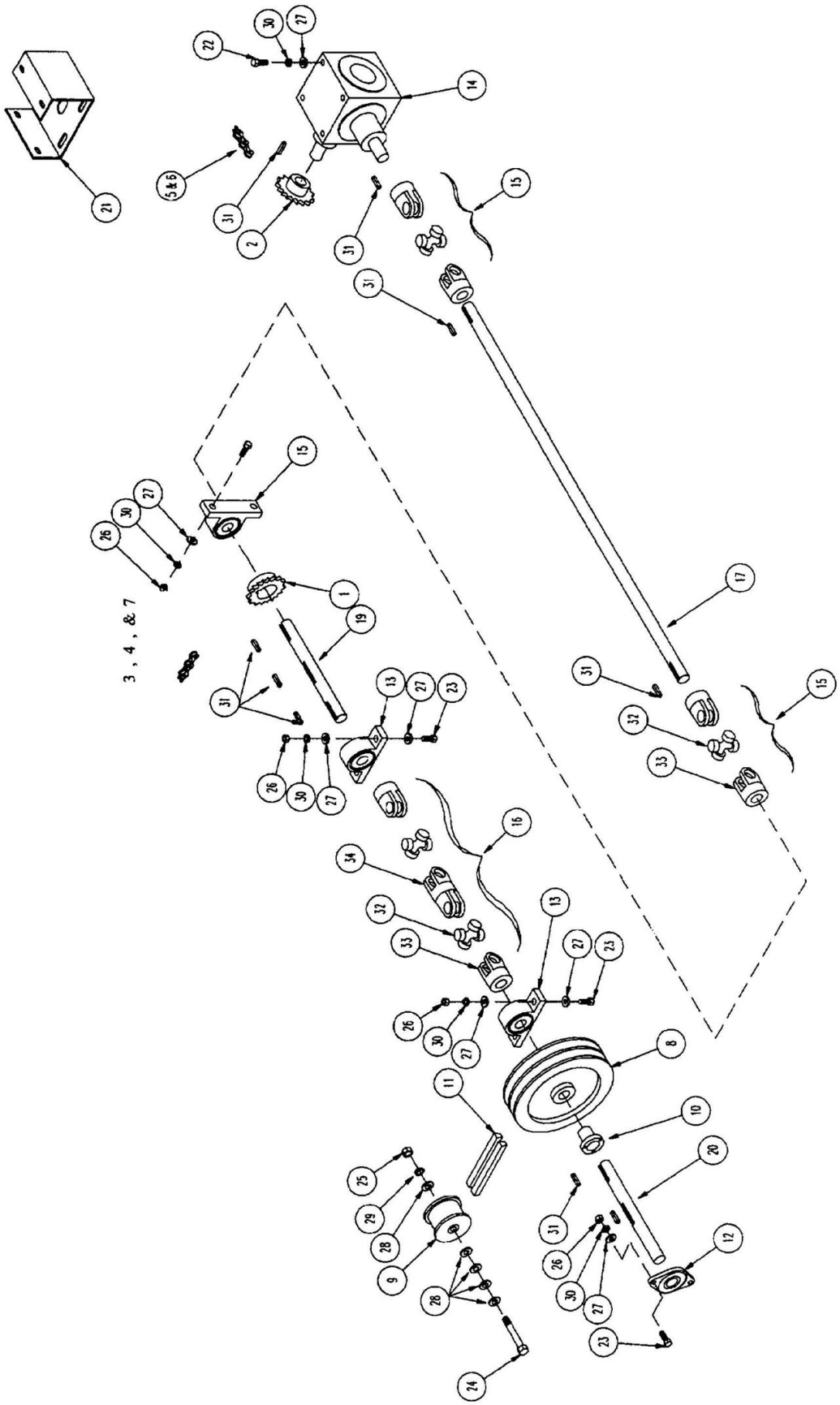
Item	Part No.	Name	Remarks	Qty	Uom
	4500446	RTR\NEW\43X15/16RD\H1000			EA
	4500570	RTR\CORE\43X15/16RD H1000\3X65SFT 2-7/16,2-3/4BRG			EA.
	5400094	SCRN\1/8HL\11GA	1/8”		EA
	5400075	SCRN\3/16HL\1/4T	3/16”		EA
	5400009	SCRN\1/4HL\1/4T	1/4”		EA
	5400010	SCRN\3/8HL\1/4T	3/8”		EA
	5400011	SCRN\1/2HL\1/4T	1/2”		EA
	5400012	SCRN\5/8HL\1/4T	5/8’		EA
	5400013	SCRN\3/4HL\1/4T	3/4”		EA
	5400014	SCRN\1HL\1/4T	1”		EA
	5400067	SCRN\1-1/2HL\1/4T	1-1/2”		EA
	5400015	SCRN\2HL\1/4T	2”		EA
	5400089	SCRN\2HL\1/4T\W/SLOT	2” Slotted		EA
	5400016	SCRN\3HL\1/4T	3”		EA
	5400087	SCRN\3HL\1/4T\W/SLOT	3” Slotted		EA
	5400061	SCRN\4HL\1/4T	4”		EA
	5400088	SCRN\4HL\1/4T\W/SLOT	4” Slotted		EA
	5400108	SCRN\5HL\1/4T	5”		EA
	5400079	SCRN\DUMMY1/4T	Dummy		EA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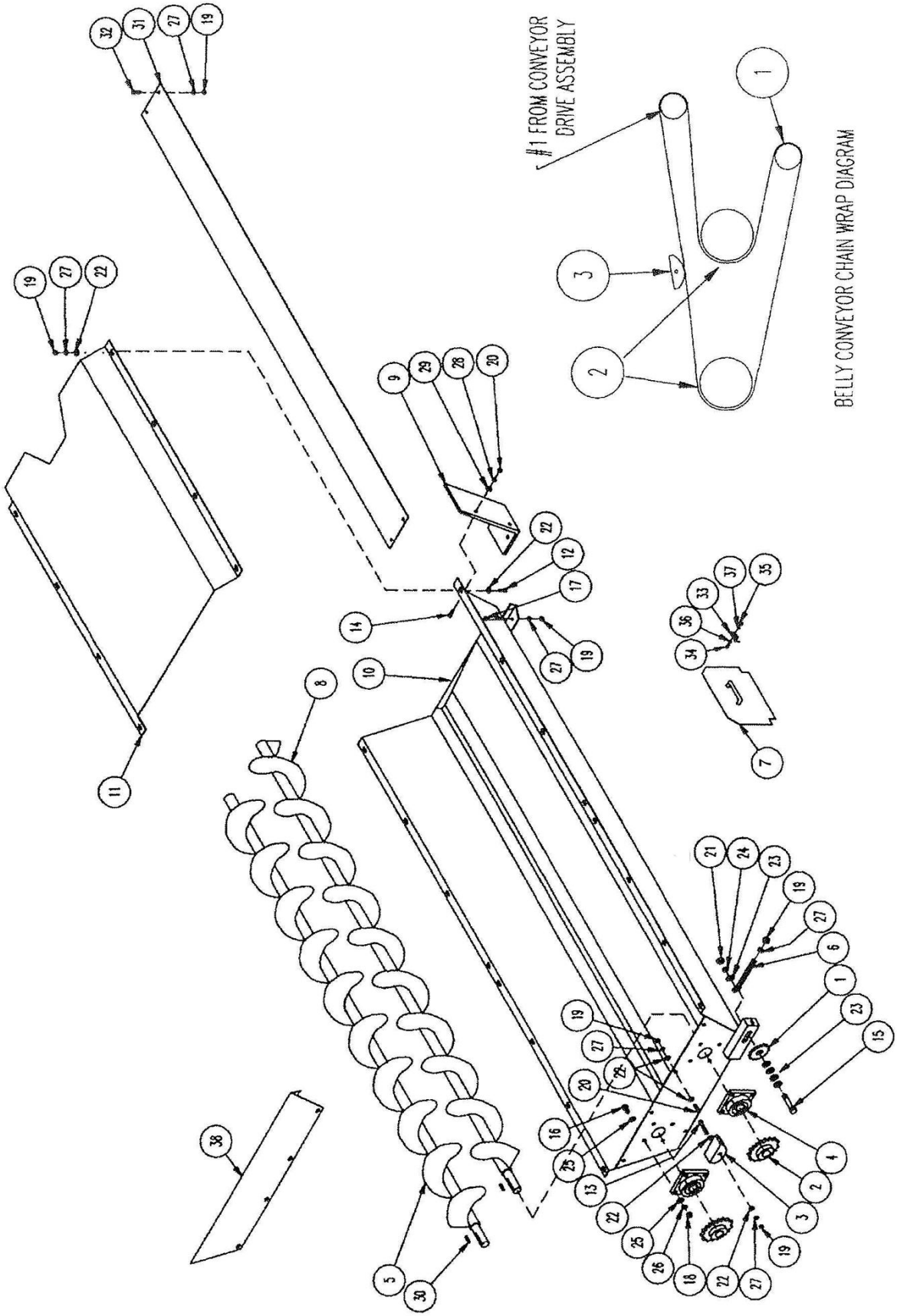
Item	Part No.	Name	Remarks	Qty	Uom
CA	4500585	DR\CNVYR\ASSY\SUB			EA
1	1000042	SPKT\50\B\15\1\1/4KW		1	EA
2	1000128	SPKT\60\B\15\1\1/4		1	EA
3	1100059	CHAIN\50\CL		1	EA.
4	1100060	CHAIN\50\OL		1	EA.
5	1100062	CHAIN\60\CL		1	EA.
6	1100105	CHAIN\60\35		1	EA
7	1100151	CHAIN\50\153		1	EA
8	1400033	SHVE\B-2\9.0\2BK90H		1	EA
9	1400204	PULY\IDLER\DBL\312		1	EA
10	1400503	BUSH\H\1		1	EA
11	1600009	V-BELT\B\60		2	EA
12	2000310	BRG\FLG\CAST\1\2BOLT		1	EA.
13	2000503	BRG\PB\1\2BOLT		3	EA.
14	3100187	GRBX\RECT\1:1\OPPOSING		1	EA
15	3600091	U-JOINT\SGL\1"TO1"\RD#6		2	EA
16	3600138	U-JOINT\#6 DBL\COMPL		1	EA
17	4501015	SHFT\RD\1X66\CNVYRDRV		1	EA
19	4501016	SHFT\RD\1X27\CNVYRDRV		1	EA
20	4500584	SHFT\RD\CR\1X12\CNVYRDRV		1	EA
21	4501017	BRKT\GEARBOX		1	EA
22	4800003	BOLT\HEX\3/8X1		4	EA.
23	4800034	BOLT\HEX\3/8X1-1/2		8	EA.
24	4800135	BOLT\HEX\1/2X3-1/2		1	EA.
25	4900001	NUT\HEX\1/2\NC		1	EA.
26	4900002	NUT\HEX\3/8\NC		10	EA.
27	5000001	WASH\FLAT\3/8		14	EA.
28	5000004	WASH\FLAT\1/2		5	EA.
29	5000006	WASH\LOCK\1/2		1	EA.
30	5000019	WASH\LOCK\3/8		14	EA.
31	6200014	KEY\SQ\1/4X1-1/4		9	EA.
32	3600008	#6 CROSS &BEARING KIT			EA.
33	3600103	#6 RW1” YOKE			EA
34	3600151	#6 DOUBLE YOKE			EA


#1 FROM CONVEYOR DRIVE ASSEMBLY
BELLY CONVEYOR CHAIN WRAP DIAGRAM

Item	Part No.	Name	Remarks	Qty	Uom
1	1000038	SPKT\IDLER\50\17\5/8		1	EA
2	1000121	SPKT\GRP\50\30\1-1/4\1/4KW		2	EA
3	7501667	BLK\PLSTC\IDLER	IN PLACE OF 2000016	1	EA.
4	2000314	BRG\FLG\1-1/4\4BOLT\ CLMP		2	EA
5	4500003	AUGER\RH\9X96		1	EA
6	4500046	BRKT\DR\IDLER\ADJUST\RD		1	EA
7	4500945	DOOR\CNVYR\ACCESS		2	EA
8	4500173	AUGER\LH\9X96		1	EA
9	4500495	SEAL\BLLY\PAN		2	EA
10	4500559	CNVYR\BLLY\BOLTED		1	EA
11	4500955	COV\CNVYR\BLLY\H1000		1	EA
12	4800003	BOLT\HEX\3/8X1		20	EA.
13	4800029	BOLT\HEX\3/8X2-1/2		1	EA
14	4800071	BOLT\HEX\5/16X1-1/4		6	EA.
15	4800079	BOLT\HEX\5/8X2-1/2		1	EA.
16	4800082	BOLT\HEX\1/2X1-1/2		8	EA.
17	4800156	BOLT\HEX\3/8X3		3	EA.
18	4900001	NUT\HEX\1/2\NC		8	EA.
19	4900002	NUT\HEX\3/8\NC		33	EA.
20	4900003	NUT\HEX\5/16\NC		6	EA.
21	4900005	NUT\HEX\5/8\NC		1	EA.
22	5000001	WASH\FLAT\3/8		42	EA.
23	5000002	WASH\FLAT\5/8		5	EA.
24	5000003	WASH\LOCK\5/8		1	EA.
25	5000004	WASH\FLAT\1/2		16	EA.
26	5000006	WASH\LOCK\1/2		8	EA.
27	5000019	WASH\LOCK\3/8		33	EA.
28	5000022	WASH\LOCK\5/16		6	EA.
29	5000023	WASH\FLAT\5/16		6	EA.
30	6200014	KEY\SQ\1/4X1-1/4		2	EA.
31	4500658	SH\CNVYR\WEAR\7X96		2	EA
32	4800053	BOLT\CRG\3/8X1\NC		8	EA.
33	7500656	FSTNER\SNAP\MCMASTER		4	EA
34	4800574	ORDER 4800468		4	EA
35	4900072	NUT\HEX\#10\NC		4	EA.
36	5000100	WASH\FLAT\#10		4	EA
37	5000104	WASH\LOCK\#10		4	EA
38	4500954	Guide\Matl\Cnvyr\Belly\Fr		1	EA

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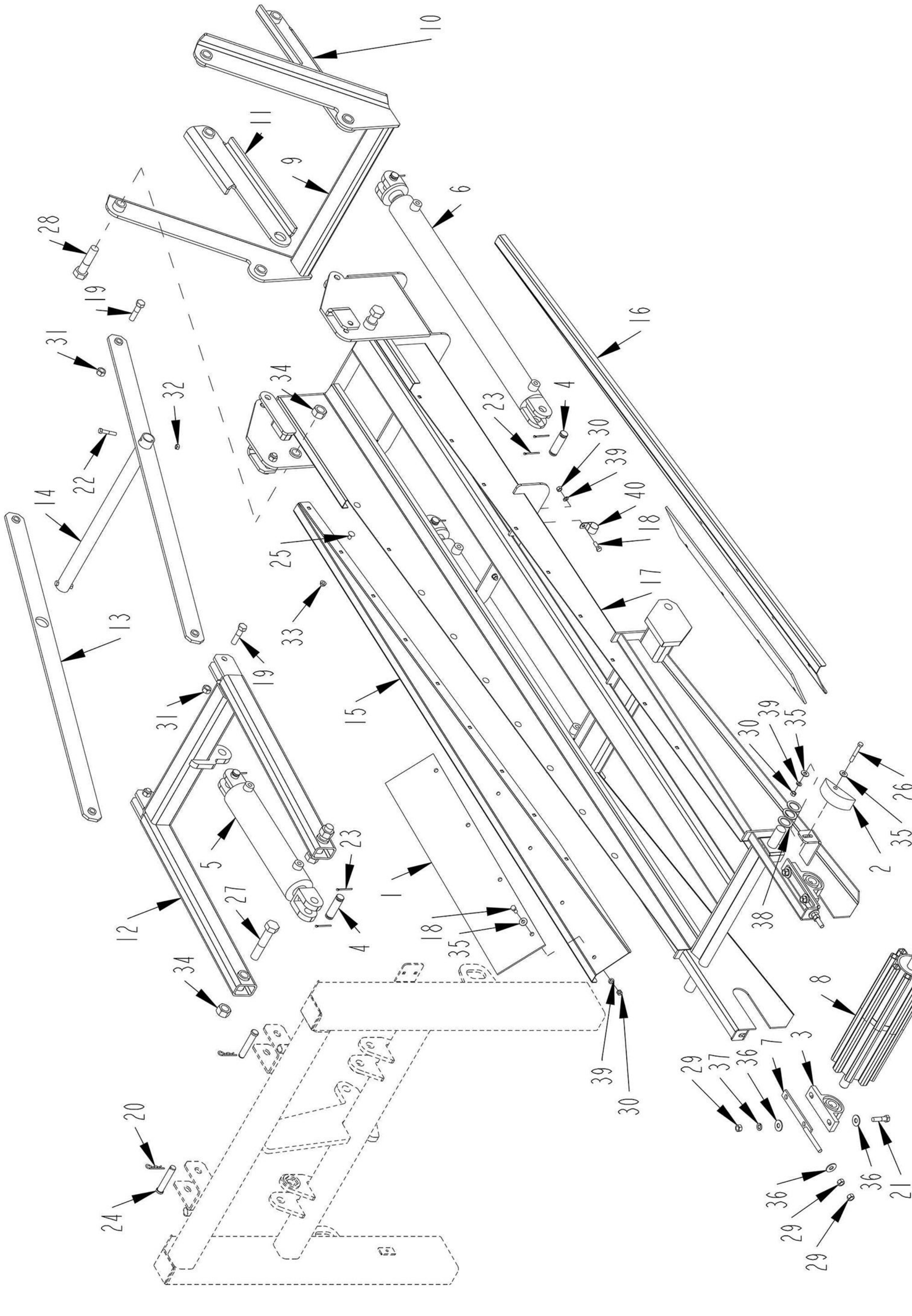
Item	Part No.	Name	Remarks	Qty	Uom
NS	4500541	Brkt\Belly\Pan\Blk\Tghtr			EA
NS	4501312	Pl\End\Pan\Belly			EA
NS	4501321	DEFLR\MATL\PLFRM			EA

H-1000 Tub Grinder Parts Reference



Item	Part No.	Name	Remarks	Qty	Uom
1	1700179	SEAL\RBR\FRONT\CNVYR\BELLY		2	EA
2	7501667	BLK\PLSTC\IDLER	IN PLACE OF 2000016	1	EA.
3	2000507	BRG\PB\1-1/8\2BOLT		2	EA
4	4100030	PIN 1" X 3-1/2" HYD. CYL.		6	EA.
5	4100216	CYL\HYD\3-1/2X12\1-1/2ROD\3/4-16\ORB		1	EA.
6	4100218	CYL\HYD\3X30\1-1/2ROD\7/8FOR\PARALLEL		2	EA
7	4500180	TGHTR BOLT\CVNYR\DISCH\LWR		2	EA
8	4500941	RLLR\DRV\CNVYR\DISCH		1	EA
9	4501593	FRM\LINKAGE\FOLD\CNVYR		1	EA
10	4501594	FRM\LINKAGE\FOLD\CNVYR\LH		1	EA
11	4501595	FRM\LINKAGE\FOLD\CNVYR\RH		1	EA
12	4501853	FRM\LIFT\CNVYR\DISCH		1	EA
13	4501859	BRKT\LIFT\CNVYR\DISC		2	EA
14	4502534	TUBE\SPCR\ARM\LIFT\CNVYR		1	EA
15	4502953	SH\SIDE\RH\CNVYR		1	EA
16	4502954	SH\SIDE\LH\CNVYR		1	EA
17	4502955	FRM\CNVYR\DISCH\LOWER		1	EA
18	4800003	BOLT\HEX\3/8X1		10	EA.
19	4800079	BOLT\HEX\5/8X2-1/2		4	EA.
20	4800107	PIN\HAIR\1/8(#9)		2	EA.
21	4800114	BOLT\HEX\1/2X2		4	EA.
22	4800146	BOLT\HEX\3/8X2		2	EA.
23	4800203	PIN\COT\5/32X2		12	EA.
24	4800215	PIN\CLEVIS\3/4X4		2	EA
25	4800394	BOLT\CRG\3/8X3/4\NC		18	EA
26	4800514	BOLT\HEX\3/8X2-3/4		1	EA.
27	4800546	BOLT\HEX\1X5\NC		2	EA
28	4800647	BOLT\HEX\1X4\NC		2	EA.
29	4900001	NUT\HEX\1/2\NC		8	EA.
30	4900002	NUT\HEX\3/8\NC		11	EA.
31	4900012	NUT\TPLCK\5/8\NC		4	EA.
32	4900023	NUT\TPLCK\3/8\NC		2	EA.
33	4900076	NUT\FLG\SERR\3/8\NC		18	EA.
34	4900127	NUT\TPLCK\1\NC		4	EA.
35	5000001	WASH\FLAT\3/8		10	EA.
36	5000004	WASH\FLAT\1/2		10	EA.
37	5000006	WASH\LOCK\1/2		4	EA.
38	5000007	WASH\1-1/4\MACH\BUSH		3	EA.

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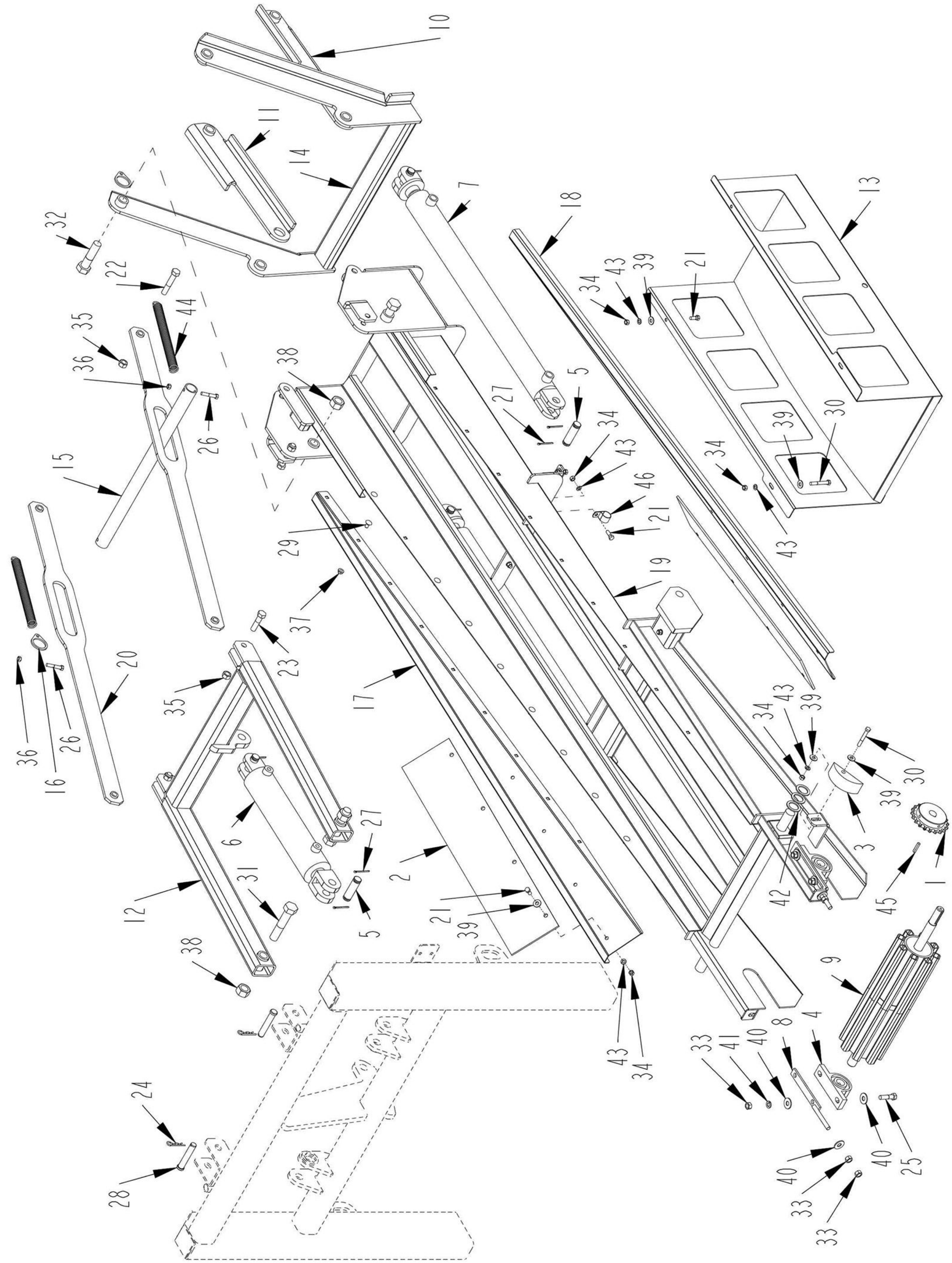
Item	Part No.	Name	Remarks	Qty	Uom
39	5000019	WASH\LOCK\3/8		11	EA.
40	7501606	CLAMP\CUSHION\#18\1-1/8"		2	EA.
NS	1000092	SPKT\B\60\20\1\1/4KW		1	EA

H-1000 Tub Grinder Parts Reference



Item	Part No.	Name	Remarks	Qty	Uom
1	1000092	SPKT\B\60\20\1\1/4KW		1	EA
2	1700179	SEAL\RBR\FRONT\CNVYR\BELLY		2	EA
3	7501667	BLK\PLSTC\IDLER	IN PLACE OF 2000016	1	EA.
4	2000507	BRG\PB\1-1/8\2BOLT		2	EA
5	4100030	PIN 1" X 3-1/2" HYD. CYL.		6	EA.
6	4100216	CYL\HYD\3-1/2X12\1-1/2ROD\3/4-16\ORB		1	EA.
7	4100218	CYL\HYD\3X30\1-1/2ROD\7/8FOR\PARALLEL		2	EA
8	4500180	TGHTR BOLT\CVNYR\DISCH\LWR		2	EA
9	4500941	RLLR\DRV\CNVYR\DISCH		1	EA
10	4501594	FRM\LINKAGE\FOLD\CNVYR\LH		1	EA
11	4501595	FRM\LINKAGE\FOLD\CNVYR\RH		1	EA
12	4501853	FRM\LIFT\CNVYR\DISCH		1	EA
13	4502296	GUIDE\CNVYR\BELT\BOTTOM		1	EA
14	4502297	FRM\LINKAGE\FOLD\CNVYR		1	EA
15	4502298	TUBE\SPCR\ARM\LIFT\CNVYR		1	EA
16	4502299	BRKT\SPG\CNVYR\DISCH		2	EA
17	4502953	SH\SIDE\RH\CNVYR		1	EA
18	4502954	SH\SIDE\LH\CNVYR		1	EA
19	4502955	FRM\CNVYR\DISCH\LOWER		1	EA
20	4502956	BRKT\LIFT\CNVYR\DISCH		2	EA
21	4800003	BOLT\HEX\3/8X1		12	EA.
22	4800054	BOLT\HEX\5/8X3-1/2		2	EA.
23	4800079	BOLT\HEX\5/8X2-1/2		2	EA.
24	4800107	PIN\HAIR\1/8(#9)		2	EA.
25	4800114	BOLT\HEX\1/2X2		4	EA.
26	4800146	BOLT\HEX\3/8X2		2	EA.
27	4800203	PIN\COT\5/32X2		12	EA.
28	4800215	PIN\CLEVIS\3/4X4		2	EA
29	4800394	BOLT\CRG\3/8X3/4\NC		18	EA
30	4800514	BOLT\HEX\3/8X2-3/4		3	EA.
31	4800546	BOLT\HEX\1X5\NC		2	EA
32	4800647	BOLT\HEX\1X4\NC		2	EA.
33	4900001	NUT\HEX\1/2\NC		8	EA.
34	4900002	NUT\HEX\3/8\NC		15	EA.
35	4900012	NUT\TPLCK\5/8\NC		4	EA.
36	4900023	NUT\TPLCK\3/8\NC		2	EA.
37	4900076	NUT\FLG\SERR\3/8\NC		18	EA.
38	4900127	NUT\TPLCK\1\NC		4	EA.

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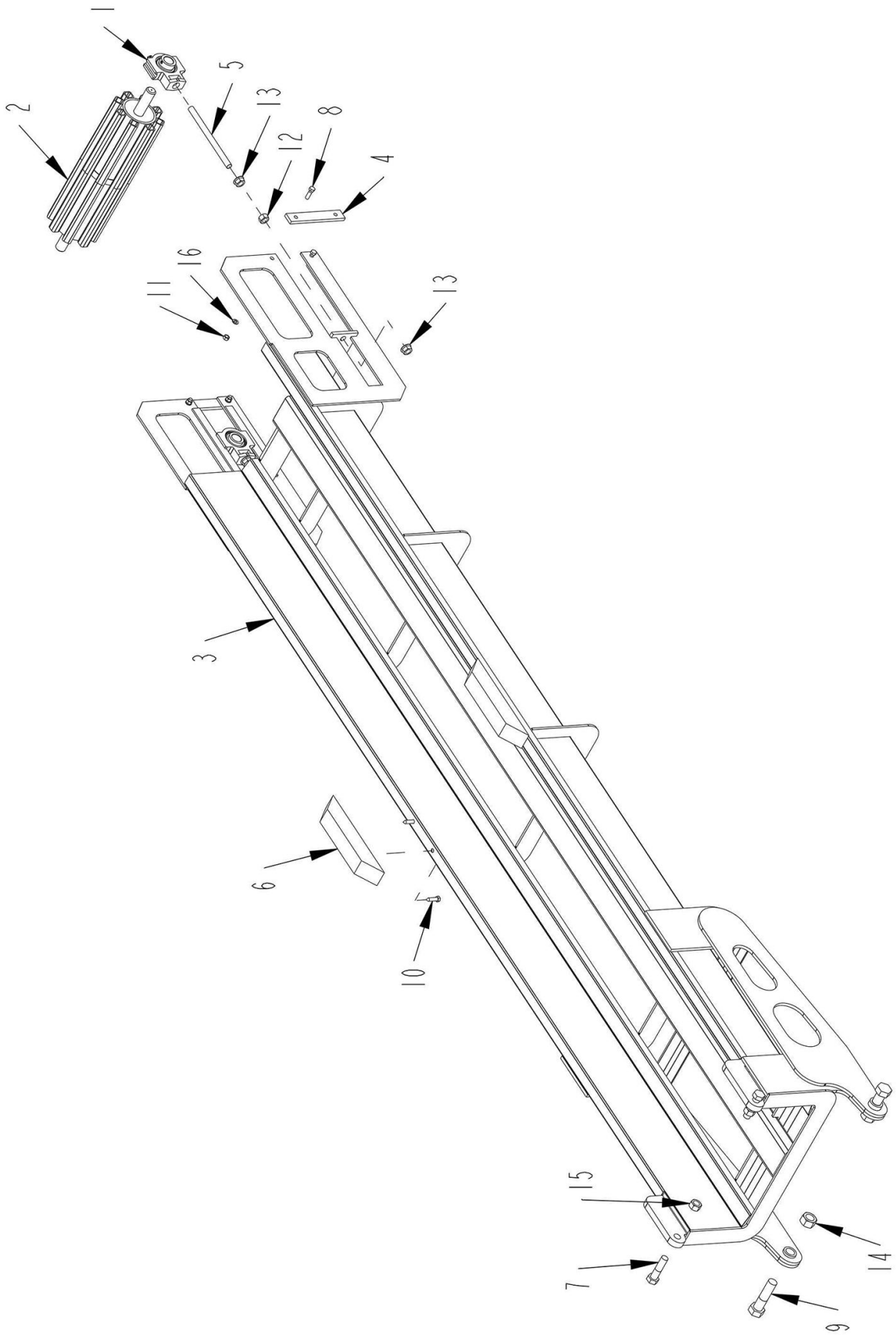
Item	Part No.	Name	Remarks	Qty	Uom
39	5000001	WASH\FLAT\3/8		14	EA.
40	5000004	WASH\FLAT\1/2		10	EA.
41	5000006	WASH\LOCK\1/2		4	EA.
42	5000007	WASH\1-1/4\MACH\BUSH		3	EA.
43	5000019	WASH\LOCK\3/8		15	EA.
44	6100001	SPRING.156OT 63/64OD13LIH		2	EA
45	6200005	KEY\SQ\1/4X1-1/2		1	EA,
46	7501606	CLAMP\CUSHION\#18\1-1/8"		2	EA.
NS	1700017	BELT\CNVYR\18\39'4\W/DTCHMN			EA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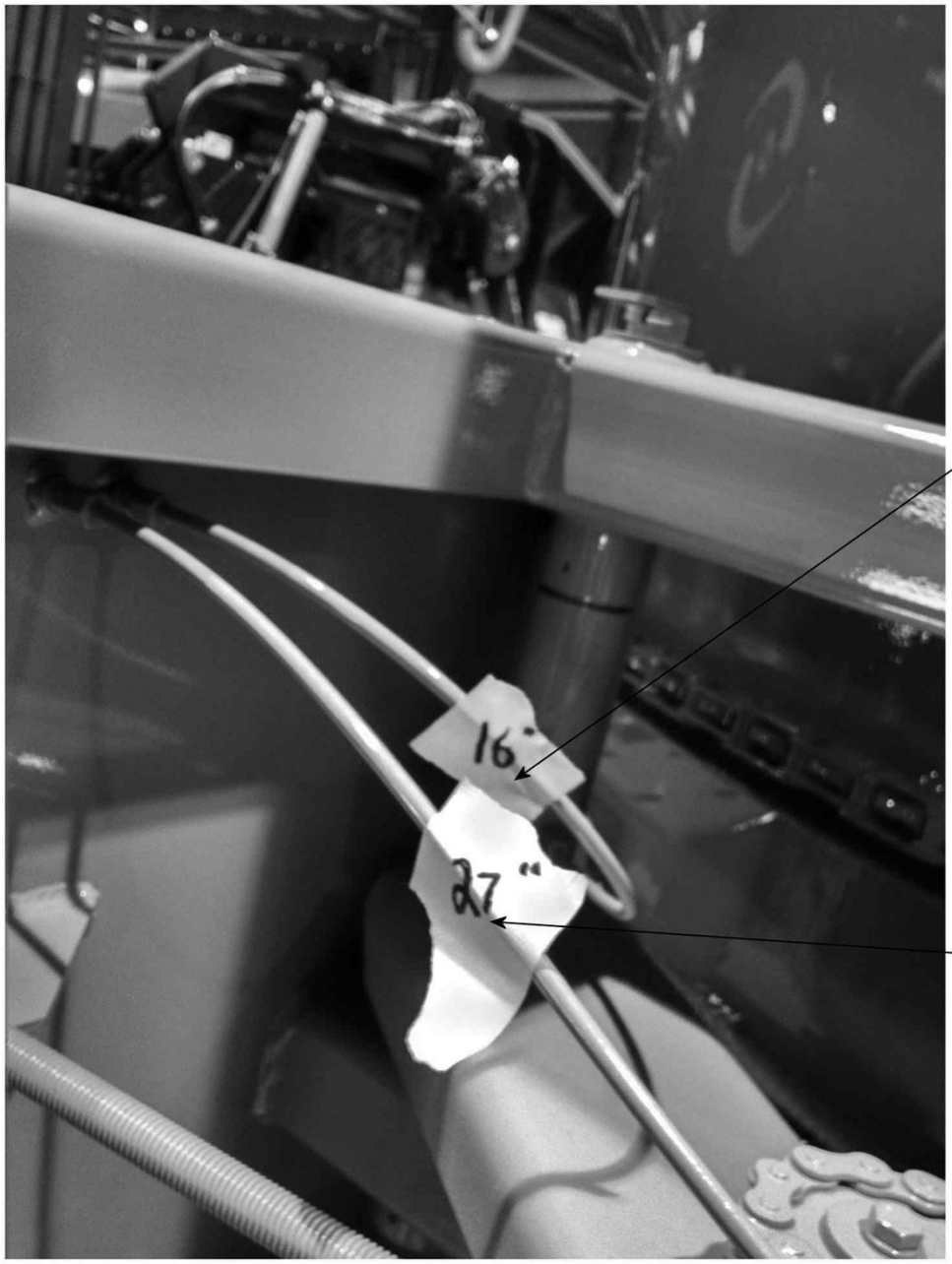
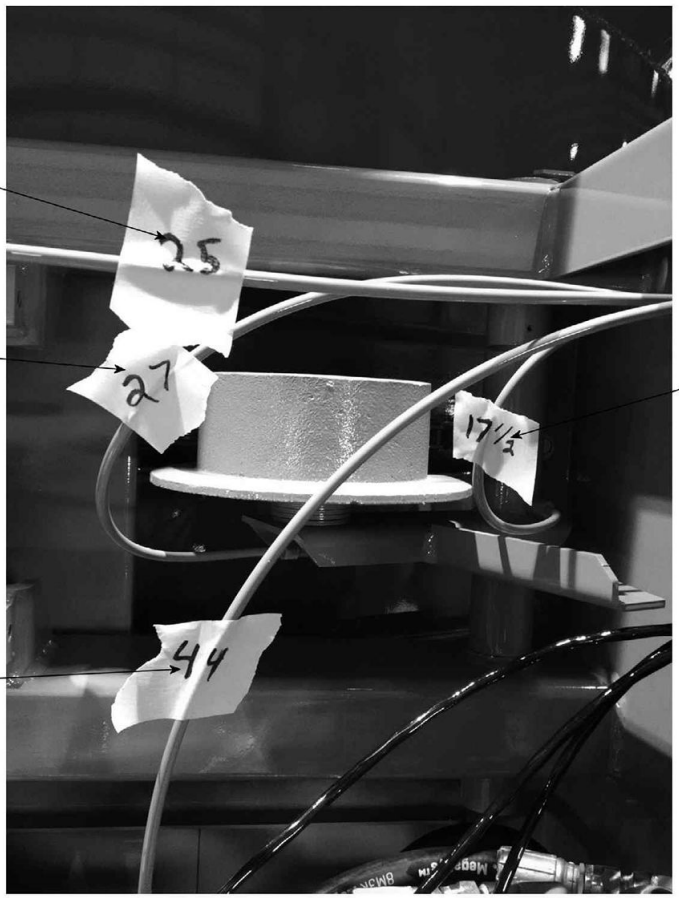
Item	Part No.	Name	Remarks	Qty	Uom
1	2000322	BRG\TUU\1-1/8\W-ECC\BSEAL		2	EA
2	4500942	RLLR\IDLER\CNVYR\DISCH		1	EA
3	4501592	FRM\CNVYR\DISCH\UPPER		1	EA
4	4501863	STRAP\REINFRC\GUIDE\BRG\CNVYR		2	EA
5	4702205	BOLT\ADJ\RLLR\DRV\CNVYR		2	EA
6	4704099	BMPR\CNVYR\DISCH		2	EA
7	4800017	BOLT\HEX\3/4X3		2	EA.
8	4800098	BOLT\HEX\3/8X1-1/4\NC		4	EA.
9	4800647	BOLT\HEX\1X4\NC		2	EA.
10	4801198	SCR\LAG\3/8X1-1/2		4	EA
11	4900002	NUT\HEX\3/8\NC		4	EA.
12	4900005	NUT\HEX\5/8\NC		2	EA.
13	4900058	NUT\FLG\TPLCK\5/8\NC		4	EA
14	4900127	NUT\TPLCK\1\NC		2	EA.
15	4900139	NUT\TPLCK\3/4\GR8\NC		2	EA.
16	5000019	WASH\LOCK\3/8		4	EA.



HOSE #3701632
FITTINGS (2) 3800095
TO BACK PIPE
ZERK #3800043

HOSE #3701633
FITTING (1) 3800095
(1) 3800062
TO BOTTOM BEARING
ZERK #3800043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FITTINGS (1) 3800095
(1) 3800062
TO TOP BEARING
ZERK #3800043
HOSE #3701633
FITTINGS (1) 3800095
(1) 3800062
TO CHAIN ROLLER
ZERK #3800043
HOSE #3701636
FITTING (1) 3800095
(1) 3800062
FRONT ROTOR BEARING
ZERK #3800043
HOSE # 3701634
FITTINGS (2) 3800095
TO BACK PIPE
ZERK #3800043
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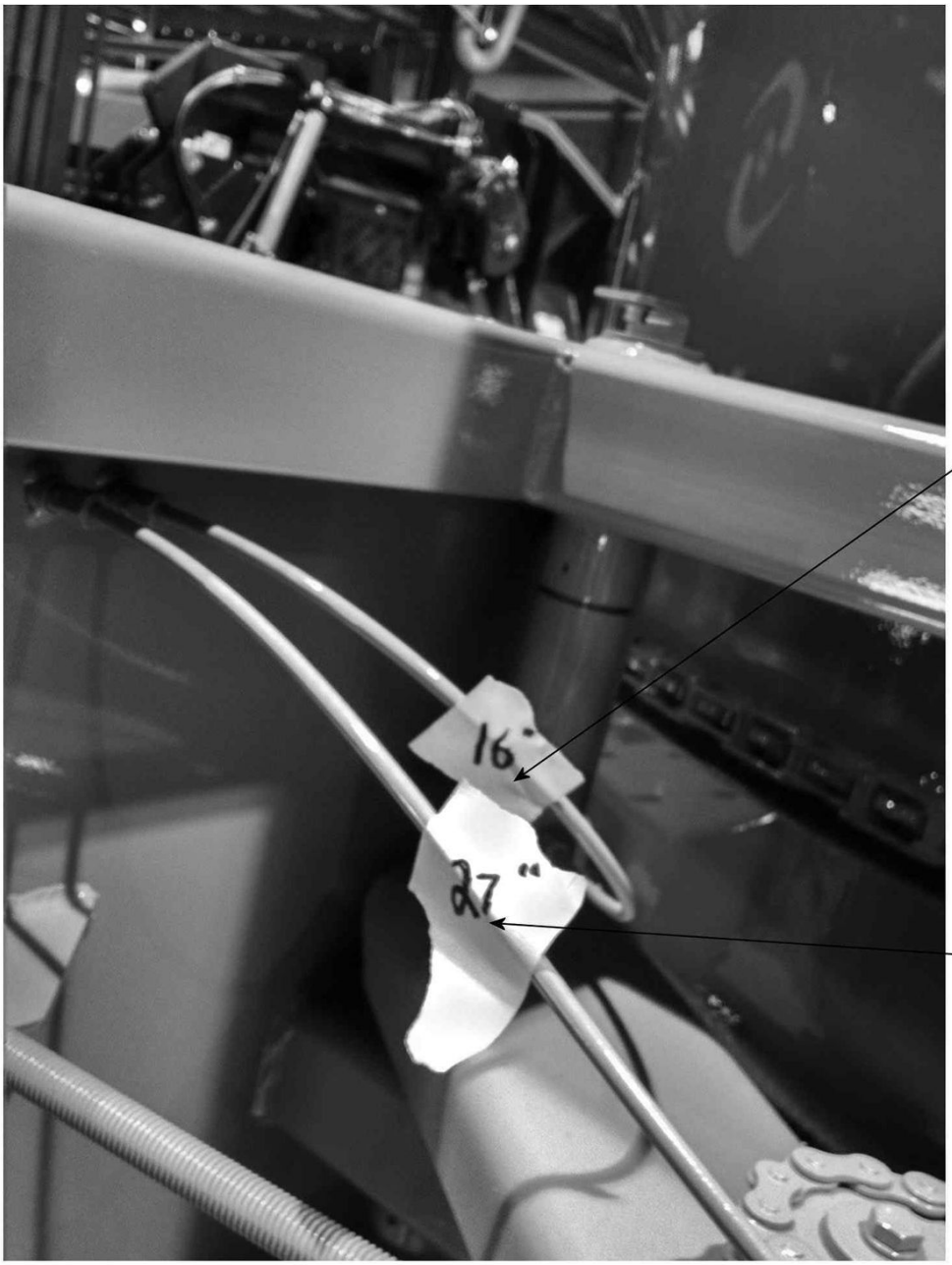
HOSE #3701637
FITTINGS (1) 3800095
(1) 3800062
TO BACK ROTOR BEARING
ZERK #3800043
34



HOSE #3701632
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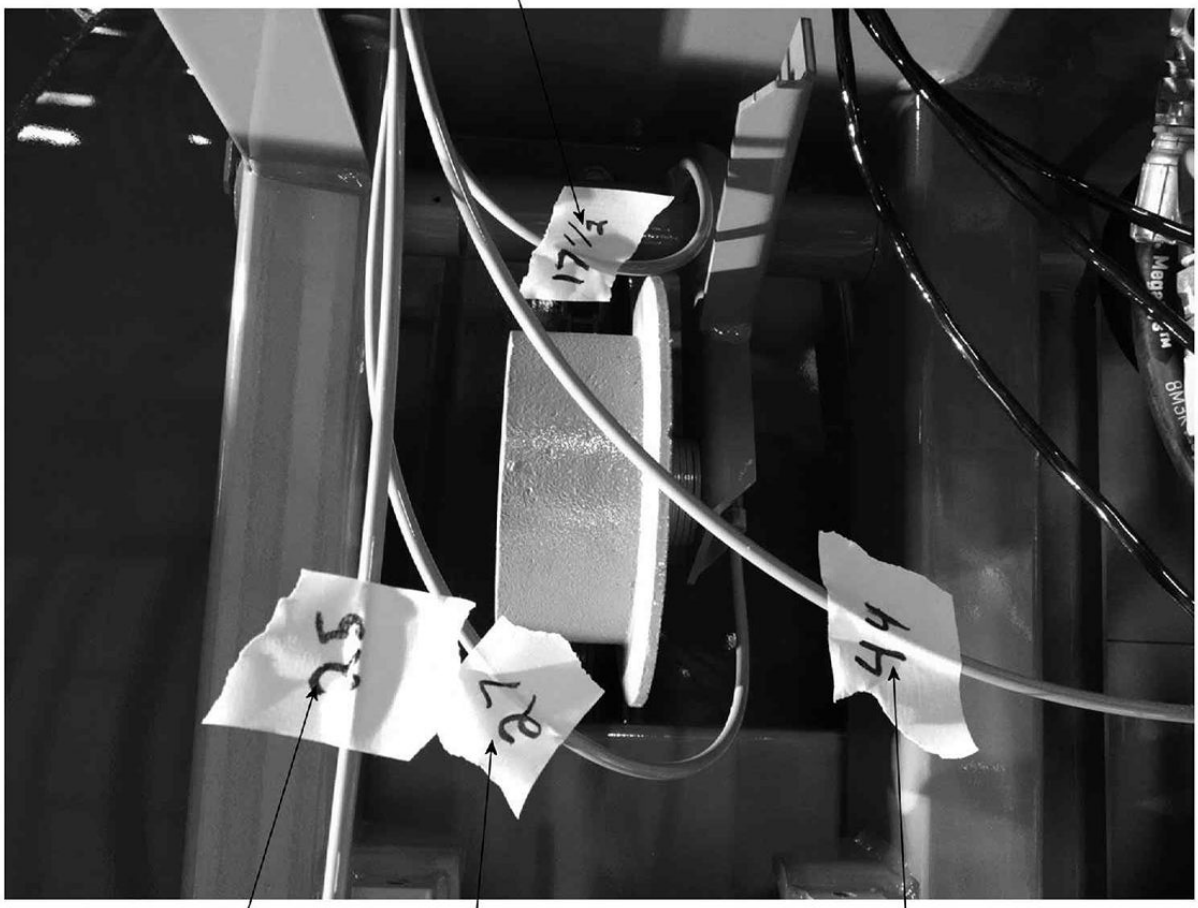
TO BACK PIPE
ZERK #3800043

HOSE #3701633
FITTING (1) 3800095
(1) 3800062
TO BOTTOM BEARING
ZERK #3800043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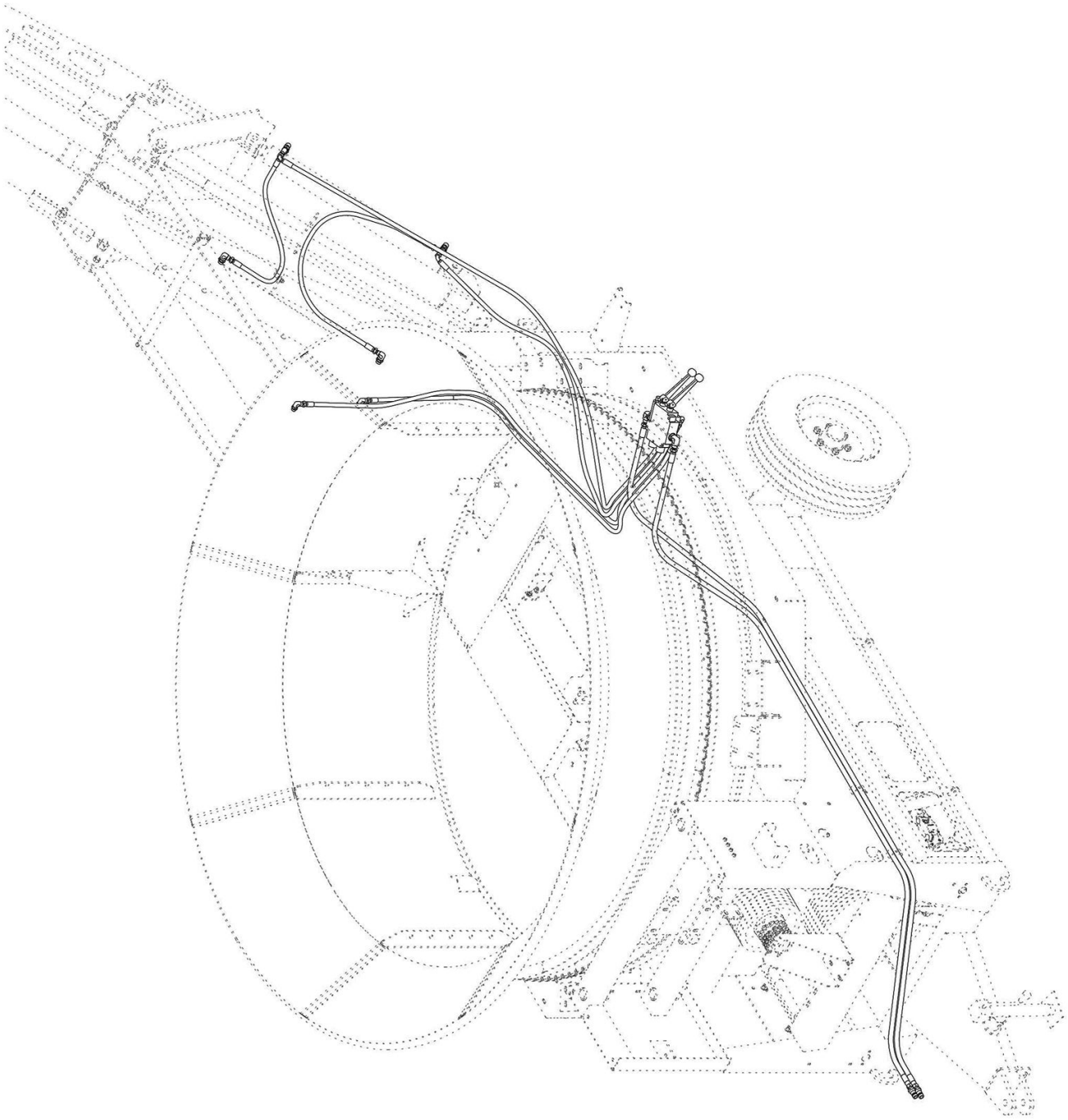
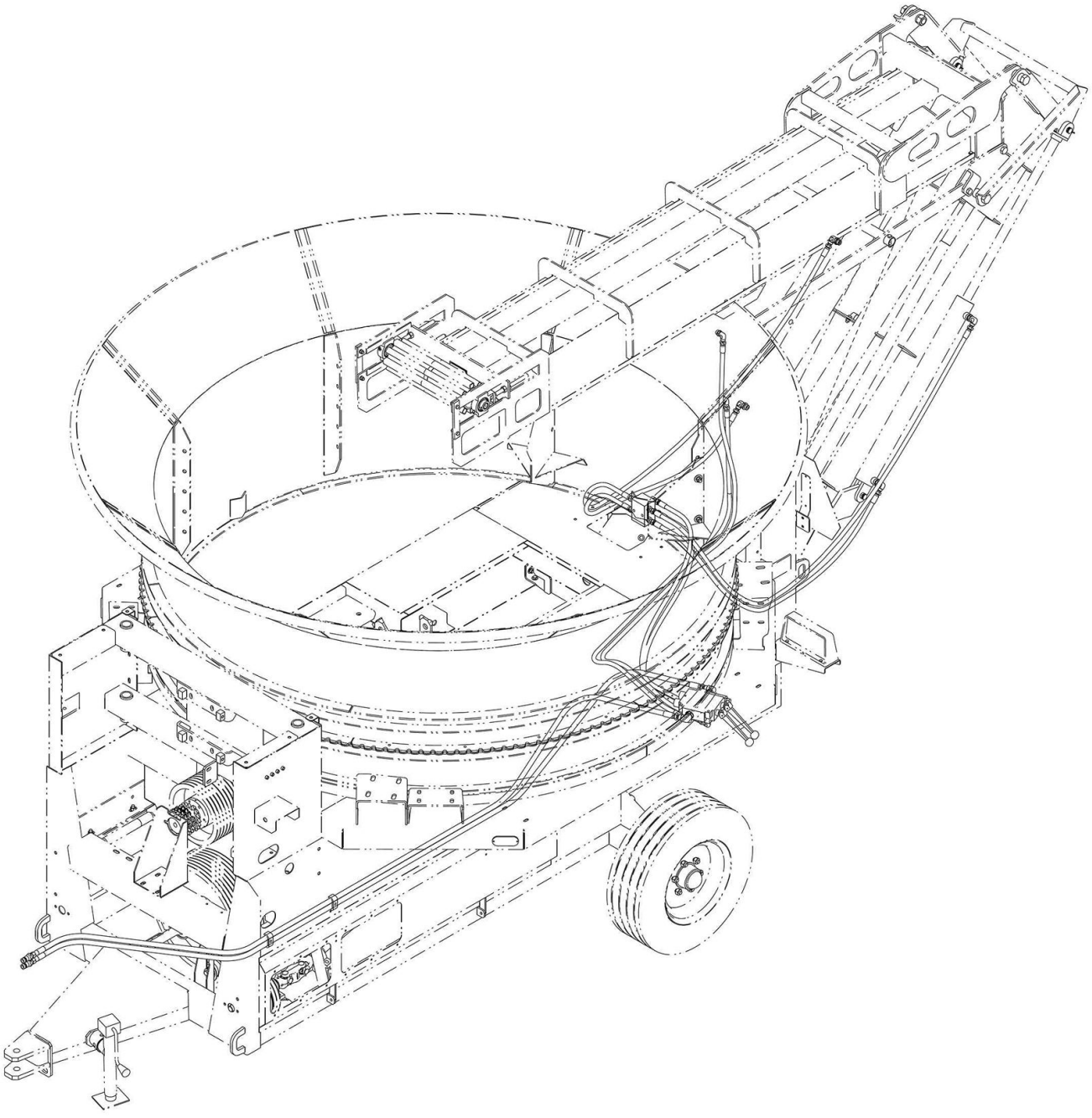
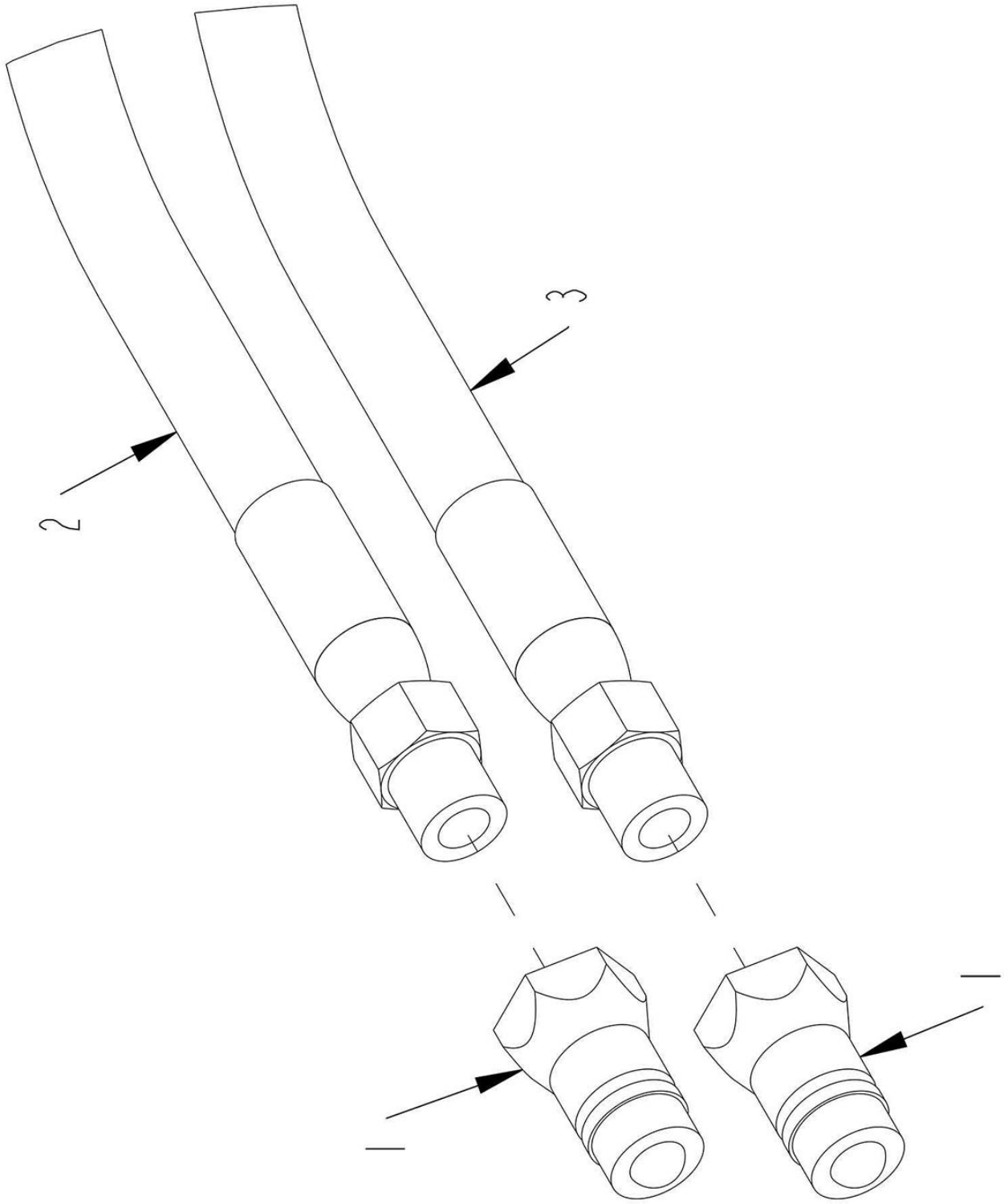
ZERK #3800043
HOSE #3701635
FITTINGS (1) 3800095
(1) 3800062
TO TOP BEARING
ZERK #3800043
HOSE #3701633
FITTINGS (1) 3800095
(1) 3800062
TO CHAIN ROLLER
ZERK #3800043
HOSE #3701636
FITTING (1) 3800095
(1) 3800062
FRONT ROTOR BEARING
ZERK #3800043


HOSE #3701637
FITTINGS (1) 3800095
(1) 3800062
TO BACK ROTOR BEARING
ZERK #3800043
34



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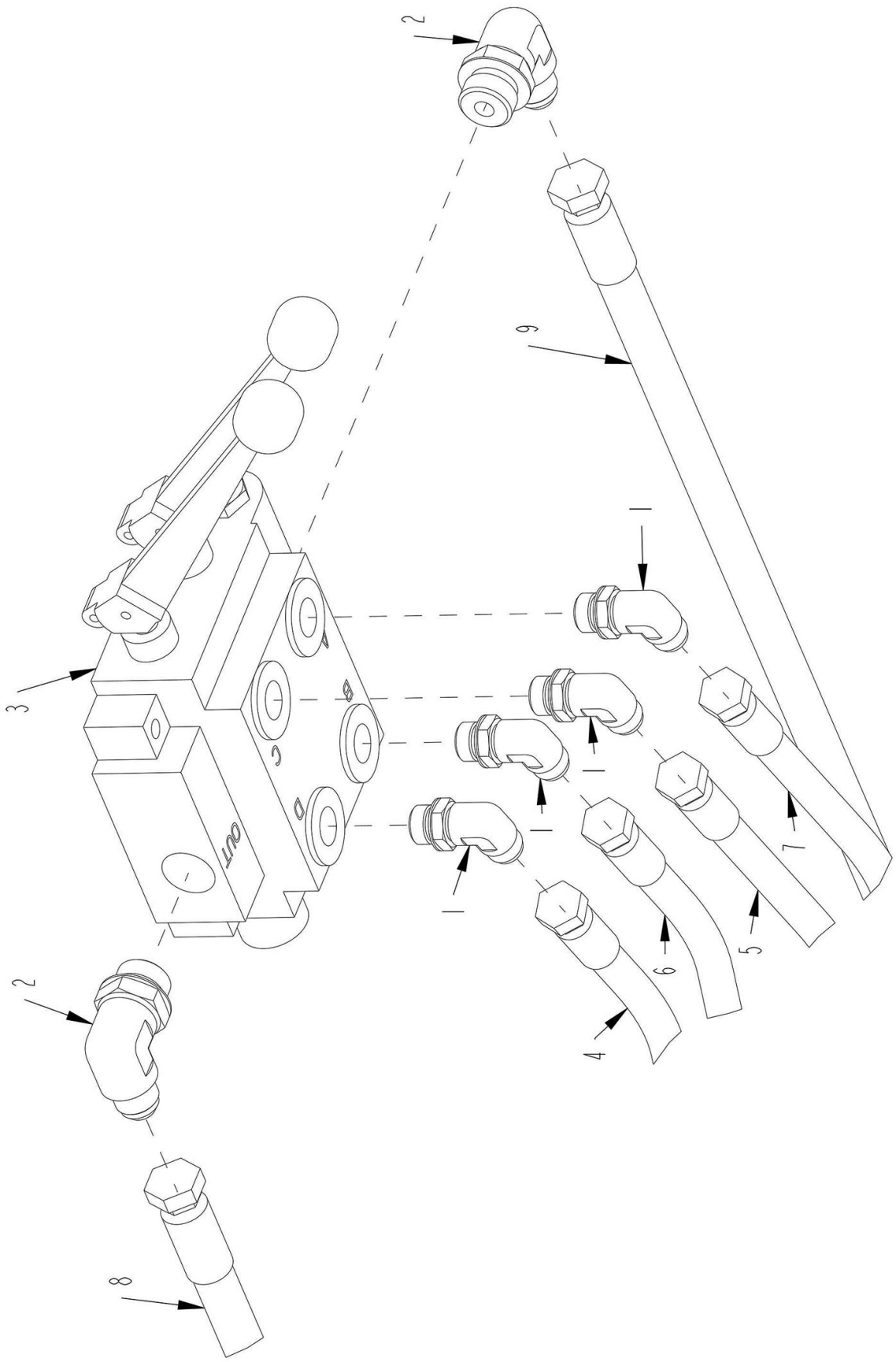
Item	Part No.	Name	Remarks	Qty	Uom
1	3800694	FTG\3/4FOR\QUICK;CPLR\MALE		2	EA.
2	3701614	HOSE\HYD\1/2X186\7/8FJICX1/2MBX	HOSE_9A_H1000	1	EA.
3	3701614	HOSE\HYD\1/2X186\7/8FJICX1/2MBX	HOSE_9B_H1000	1	EA.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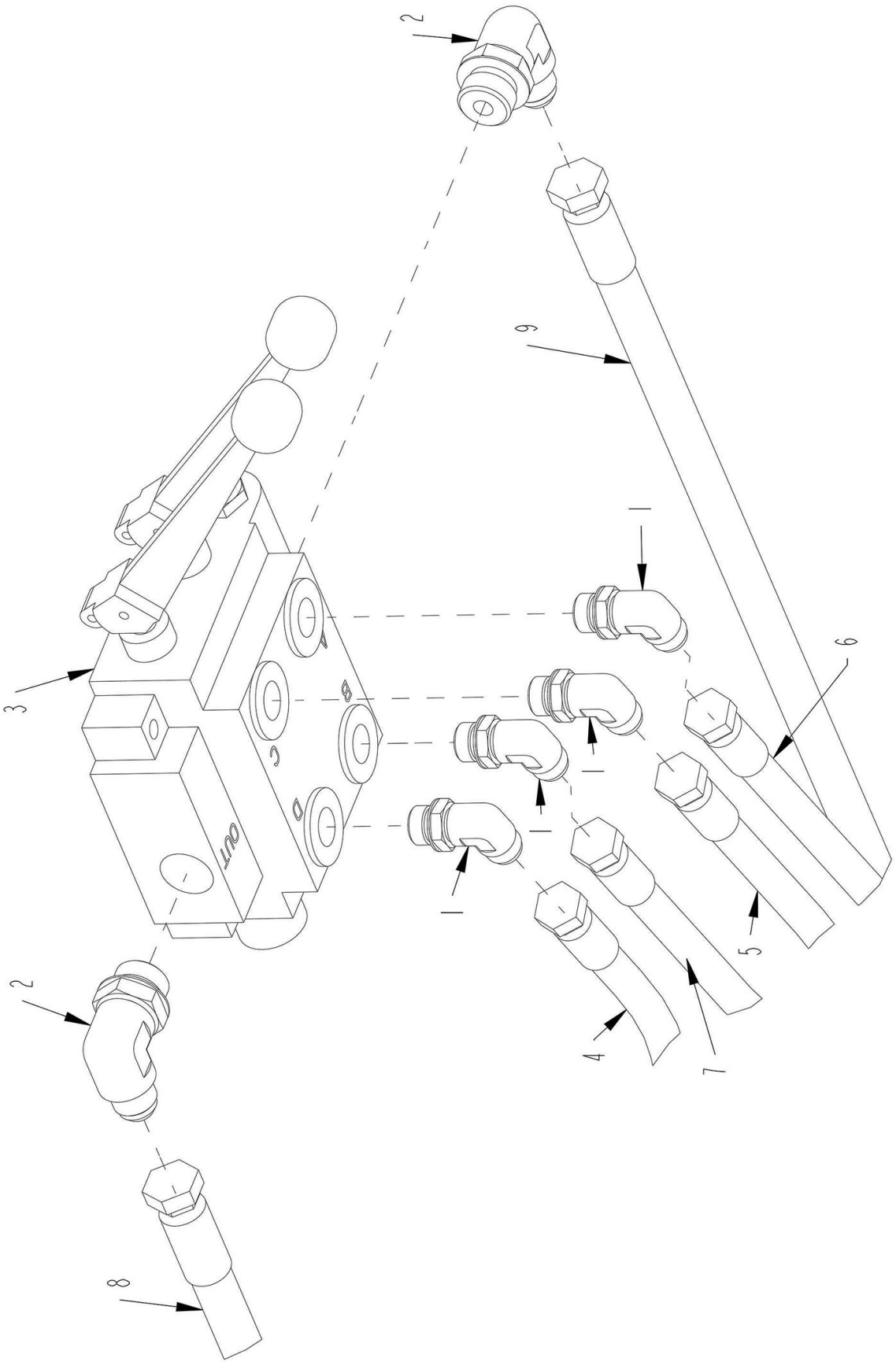
Item	Part No.	Name	Remarks	Qty	Uom
1	3800537	FTG\3/4MORX3/4MJIC\90		4	EA.
2	3800892	FTG\1-1/16MORX7/8MJIC\90		2	EA.
3	4000093	VALVE\HYD\2-SPL\3POS-4W\FOR-THRD		1	EA
3A	4000564	VLV\HYD\2-SPL\3POS-4W\CLOSED CENTER OPTION			EA
4	3701608	HOSE\HYD\3/8X79\3/4FJIC	HOSE_10_H1000	1	EA.
5	3701609	HOSE\HYD\3/8X98\3/4FJICS	HOSE_11_H1000	1	EA
6	3701610	HOSE\HYD\3/8X100\3/4FJICSX9/16FJIC90	HOSE_12_H1000	1	EA.
7	3701611	HOSE\HYD\3/8X132\3/4FJICSX9/16FJIC90	HOSE_13_H1000	1	EA.
8	3701614	HOSE\HYD\1/2X186\7/8FJICX1/2MBX	HOSE_9A_H1000	1	EA.
9	3701614	HOSE\HYD\1/2X186\7/8FJICX1/2MBX	HOSE_9B_H1000	1	EA.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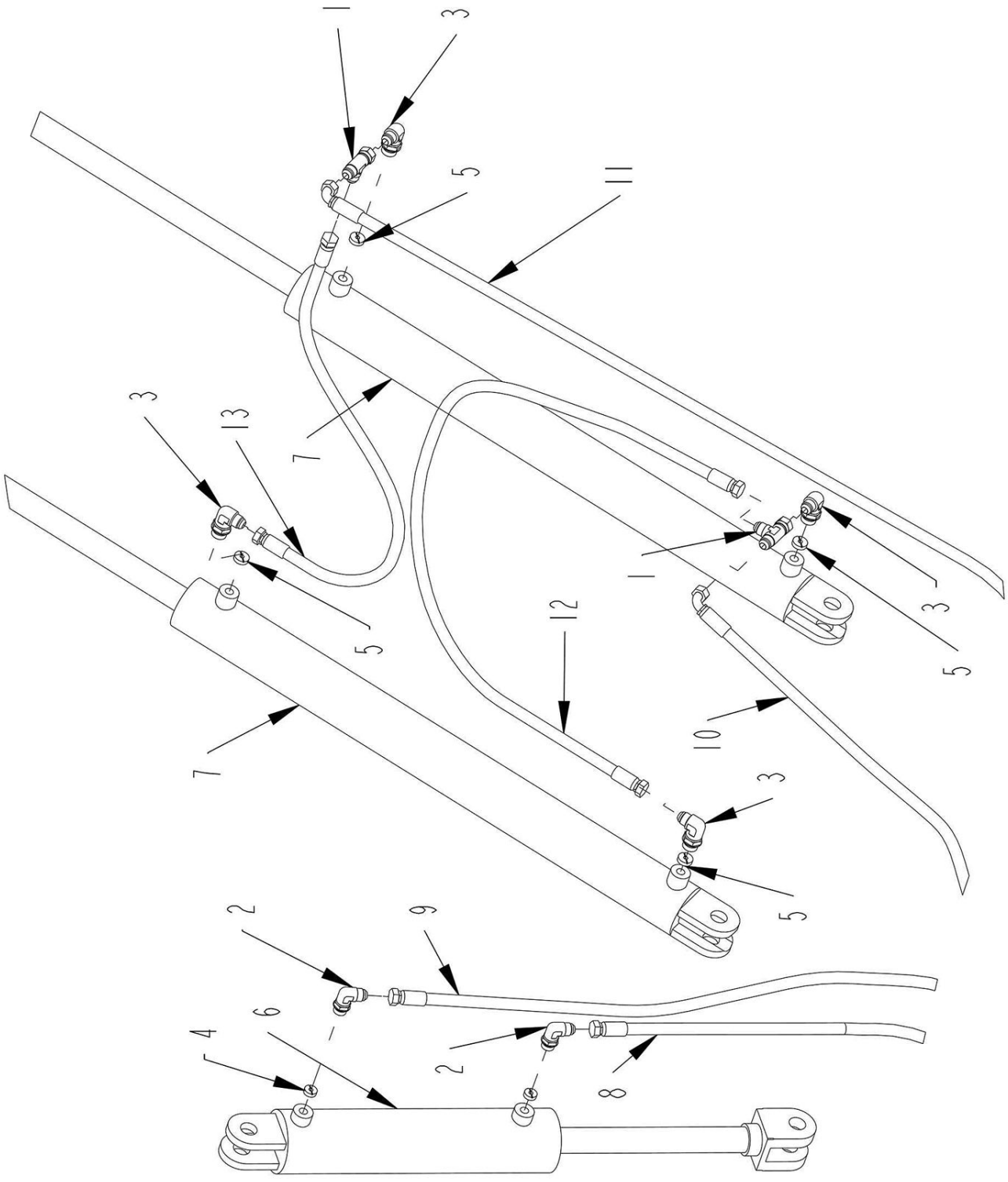
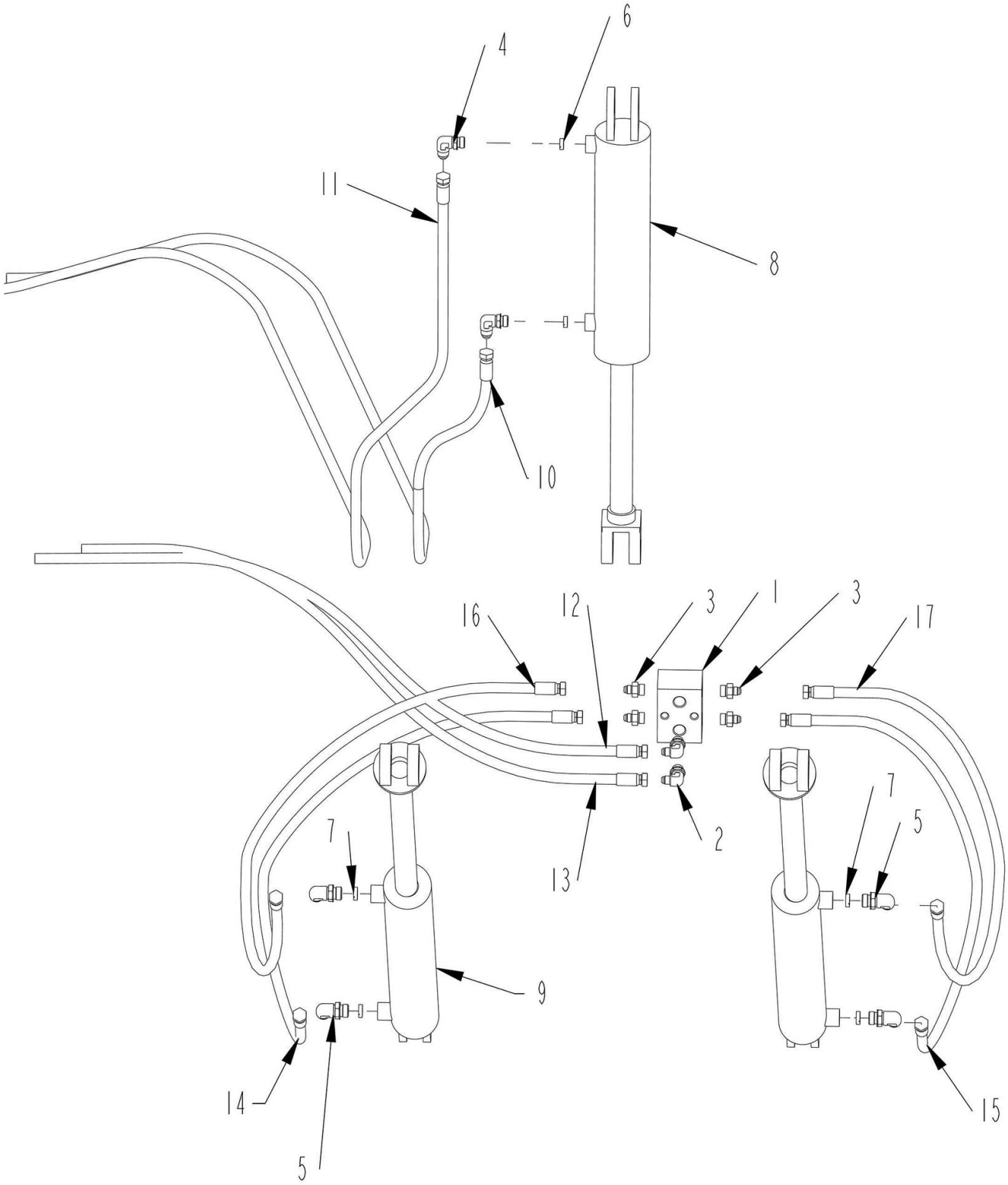
Item	Part No.	Name	Remarks	Qty	Uom
1	3800537	FTG\3/4MORX3/4MJIC\90		4	EA.
2	3800892	FTG\1-1/16MORX7/8MJIC\90		2	EA.
3	4000093	VALVE\HYD\2-SPL\3POS-4W\FOR-THRD		1	EA
3a	4000564	VLV\HYD\2-SPL\3POS-4W\CLOSED CENTER OPTION			EA
4	3701608	HOSE\HYD\3/8X79\3/4FJIC	HOSE_10_H1000	1	EA.
5	3701609	HOSE\HYD\3/8X98\3/4FJICS	HOSE_11_H1000	1	EA
6	3701642	HOSE\HYD\3/8X63\3/4FJIC	HOSE_16_H1000	1	EA.
7	3701642	HOSE\HYD\3/8X63\3/4FJIC	HOSE_17_H1000	1	EA.
8	3701614	HOSE\HYD\1/2X186\7/8FJICX1/2MBX	HOSE_9A_H1000	1	EA.
9	3701614	HOSE\HYD\1/2X186\7/8FJICX1/2MBX	HOSE_9B_H1000	1	EA.

H-1000 Tub Grinder Parts Reference



Item	Part No.	Name	Remarks	Qty	Uom
1	3800484	FTG\3/4FJICSX3/4MJICX3/4MJIC\RUN;TEE		2	EA.
2	3800537	FTG\3/4MORX3/4MJIC\90		2	EA.
3	3800696	FTG\7/8MORX3/4MJIC\90		4	EA.
4	3800844	FTG\3/4MOR\ORIFICE\0.062"		2	EA
5	3800927	FTG\7/8MOR\ORIFICE\.0625"		4	EA
6	4100216	CYL\HYD\3-1/2X12\1-1/2ROD\3/4-16\ORB		1	EA.
7	4100218	CYL\HYD\3X30\1-1/2ROD\7/8FOR\PARALLEL		2	EA
8	3701608	HOSE\HYD\3/8X79\3/4FJIC	HOSE_10_H1000	1	EA.
9	3701609	HOSE\HYD\3/8X98\3/4FJICS	HOSE_11_H1000	1	EA
10	3701610	HOSE\HYD\3/8X100\3/4FJICSX9/16FJIC90	HOSE_12_H1000	1	EA.
11	3701611	HOSE\HYD\3/8X132\3/4FJICSX9/16FJIC90	HOSE_13_H1000	1	EA.
12	3701612	HOSE\HYD\3/8X59\3/4FJICX9/16FJIC	HOSE_14_H1000	1	EA
13	3701613	HOSE\HYD\3/8X34\3/4FJIC-9/16FJIC	HOSE_15_H1000	1	EA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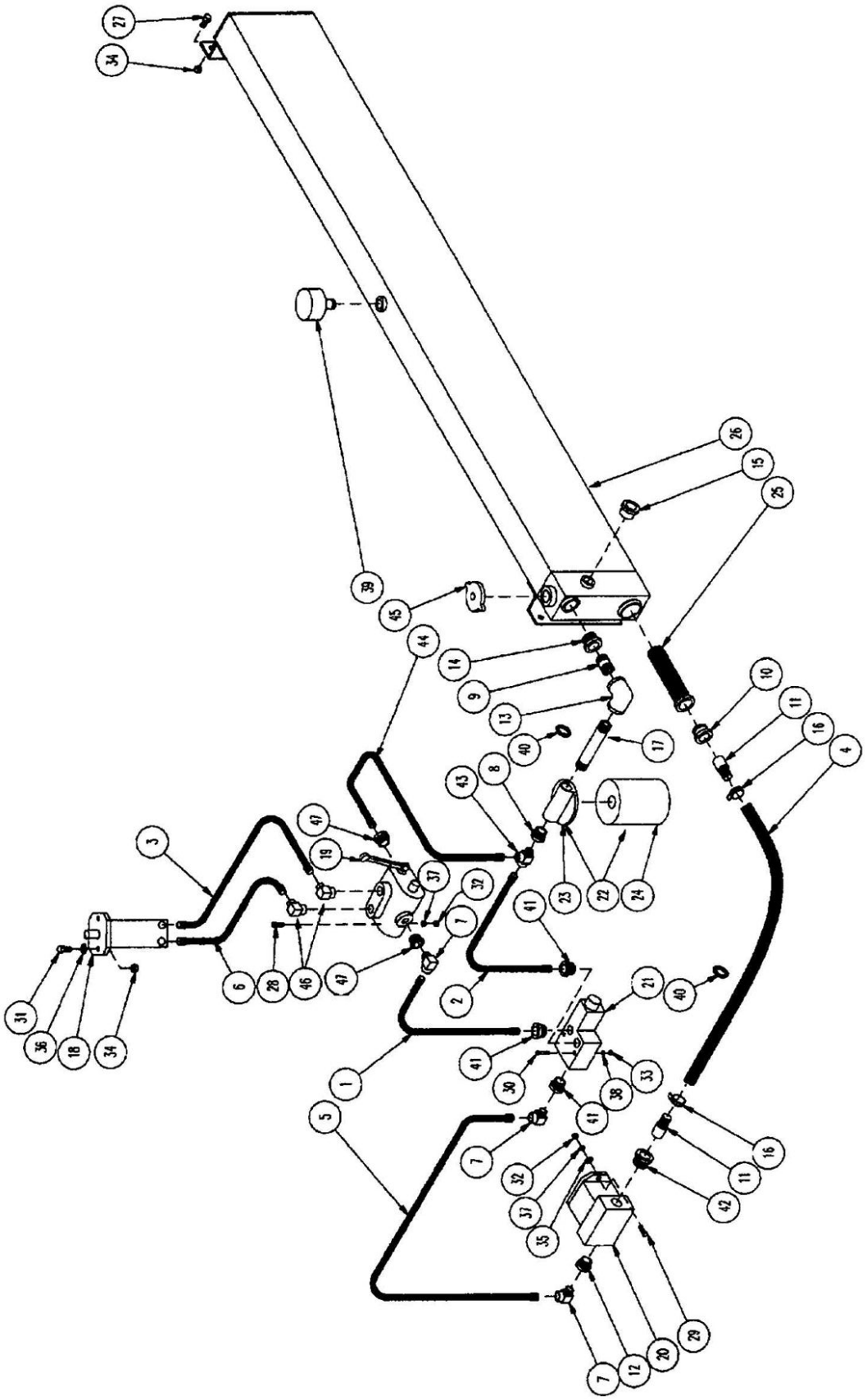
Item	Part No.	Name	Remarks	Qty	Uom
1	3800428	MNFLD\DBL;TEE\BLK\3/4FOR		1	EA.
2	3800453	FTG\3/4MORX9/16MJIC\90		2	EA.
3	3800477	FTG\3/4MORX3/4MJIC\ADP		4	EA.
4	3800537	FTG\3/4MORX3/4MJIC\90		2	EA.
5	3800696	FTG\7/8MORX3/4MJIC\90		4	EA.
6	3800844	FTG\3/4MOR\ORIFICE\0.062"		2	EA
7	3800927	FTG\7/8MOR\ORIFICE\.0625"		4	EA
8	4100216	CYL\HYD\3-1/2X12\1-1/2ROD\3/4-16\ORB		1	EA.
9	4100218	CYL\HYD\3X30\1-1/2ROD\7/8FOR\PARALLEL		2	EA
10	3701608	HOSE\HYD\3/8X79\3/4FJIC	HOSE_10_H1000	1	EA.
11	3701609	HOSE\HYD\3/8X98\3/4FJICS	HOSE_11_H1000	1	EA
12	3701642	HOSE\HYD\3/8X63\3/4FJIC	HOSE_16_H1000	1	EA.
13	3701642	HOSE\HYD\3/8X63\3/4FJIC	HOSE_17_H1000	1	EA.
14	3701643	HOSE\HYD\3/8X71\3/4FJIC	HOSE_18_H1000	1	EA.
15	3701643	HOSE\HYD\3/8X71\3/4FJIC	HOSE_19_H1000	1	EA.
16	3701644	HOSE\HYD\3/8X101\3/4FJIC	HOSE_20_H1000	1	EA.
17	3701644	HOSE\HYD\3/8X101\3/4FJIC	HOSE_21_H1000	1	EA.



Item	Part No.	Name	Remarks	Qty	Uom
1	3700091	Hose\Hyd\1/2x22\SW-SO		1	EA
2	3700110	Hose\Hyd\1/2x20\SW-SO		1	EA.
3	3700230	Hose\Hyd\1/2x32\SW\Oring		1	EA
4	3700236	Hose\Hyd\1x31		1	EA
5	3700328	Hose\Hyd\1/2x28\SW-SO		1	EA
6	3700329	Hose\Hyd\1/2x29\SW-Oring		1	EA
7	3800008	1/2 90Deg Street Elbow		3	EA
8	3800010	3/4x1/2 Bushing		1	EA
9	3800015	Nipple\3/4x2		1	EA
10	3800022	Bushing\1-1/4x1		1	EA
11	3800056	Nipple\King\1		2	EA
12	3800115	7/8 str O/R x 1/2 Pipe		1	EA
13	3800035	Elbow\90 Deg\3/4		1	EA
14	3800131	Bushing\1x3/4		1	EA
15	3800137	FTG\3/4MP\SIGHT:GLASS		1	EA
16	3800143	Hose Clamp\1-1/2\T-Bolt		2	EA
17	3800034	Nipple\3/4x7-1/2		1	EA
18	3900005	MTR\HYD\14.9\2000\SAE;A		1	EA
19	4000095	VALVE\HYD\1-SPL\W/DETENT\ O-Ring\1800PSI		1	EA
20	4200025	PUMP\HYD\1.87CU.IN.\RH\EATON\15		1	EA
21	4300065	VALVE\SERVO\15GPM\12VDC		1	EA
22	4400006	Filter Complete F4E		1	EA
23	4400004	Filter Base F4E		1	EA
24	4400005	Filter Element F4E		1	EA
25	4400007	Strainer		1	EA
26	4500580	TANK\OIL\BOLTED		1	EA
27	4800018	BOLT\HEX\1/2X1-1/4		6	EA.
28	4800034	BOLT\HEX\3/8X1-1/2		3	EA.
29	4800098	BOLT\HEX\3/8X1-1/4\NC		2	EA.
30	4800101	BOLT\HEX\1/4X2-1/2		2	EA.
31	4800114	BOLT\HEX\1/2X2		2	EA.
32	4900002	NUT\HEX\3/8\NC		5	EA.
33	4900009	NUT\HEX\1/4\NC		2	EA.
34	4900014	NUT\TPLCK\1/2\NC		8	EA.
35	5000001	WASH\FLAT\3/8		2	EA.
36	5000004	WASH\FLAT\1/2		2	EA.
37	5000019	WASH\LOCK\3/8		5	EA.
38	5000024	WASH\LOCK\1/4		2	EA.

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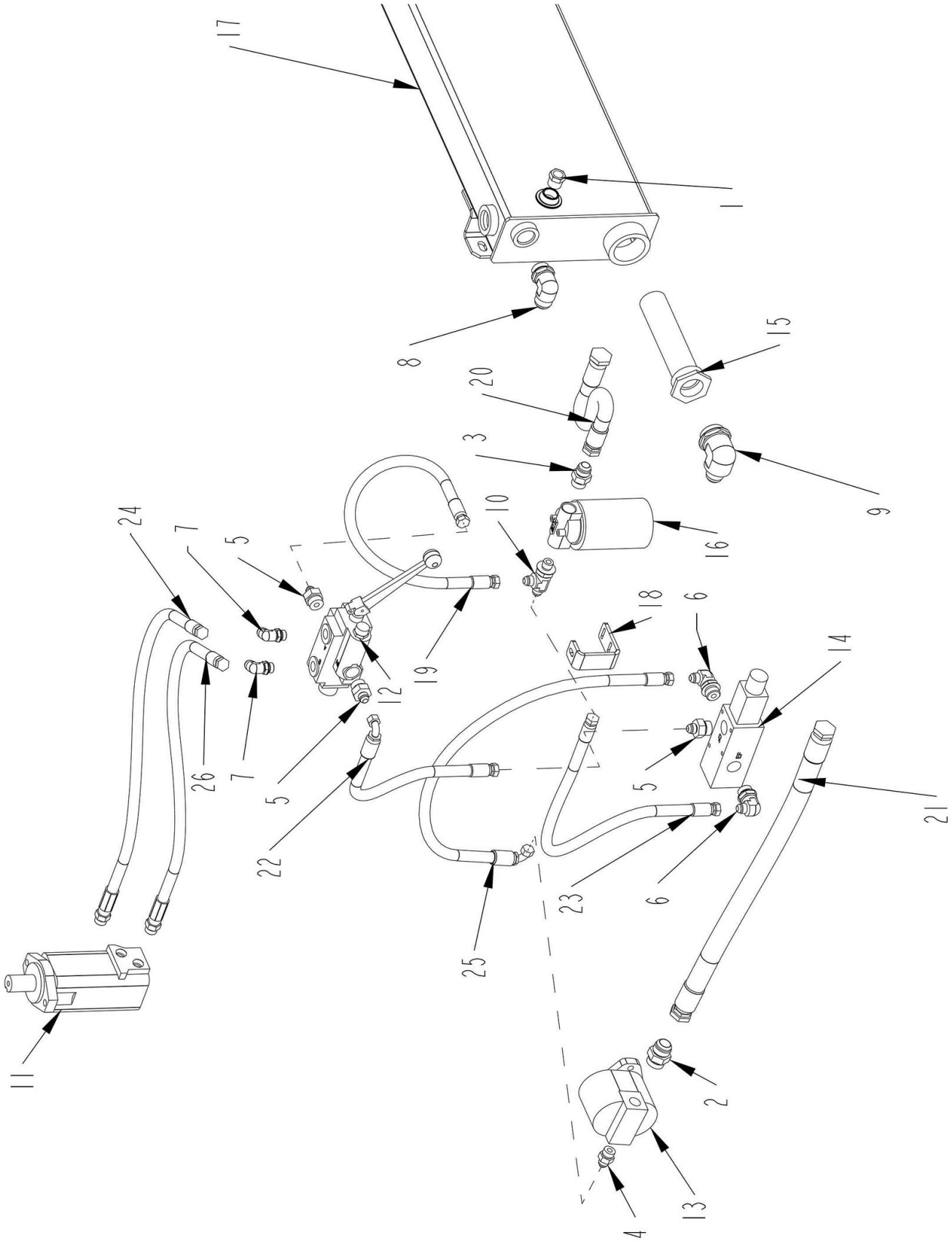
Item	Part No.	Name	Remarks	Qty	Uom
39	3800253	FTG\3/4MP\VENT\>ABS-40		1	EA
40	7500360	GRMT\RBBR\2X1.75IDX1/4T		2	EA.
41	3800119	Ftg\1-1/16morx1/2fp\adpt		3	EA
42	3800012	Ftg\1-5/16morx1fp\Adpt		1	EA
43	3800161	1/2 Male Run Tee		1	EA
44	3700018	Hose\Hyd\1/2x18\SW-SO		1	EA
45	7501030	OIL CAP\UNVENTED		1	EA
46	3800048	Ftg\3/4morx1/2fp\90d\St;El		2	EA
47	3800119	Ftg\1-1/16morx1/2fp\adpt		2	EA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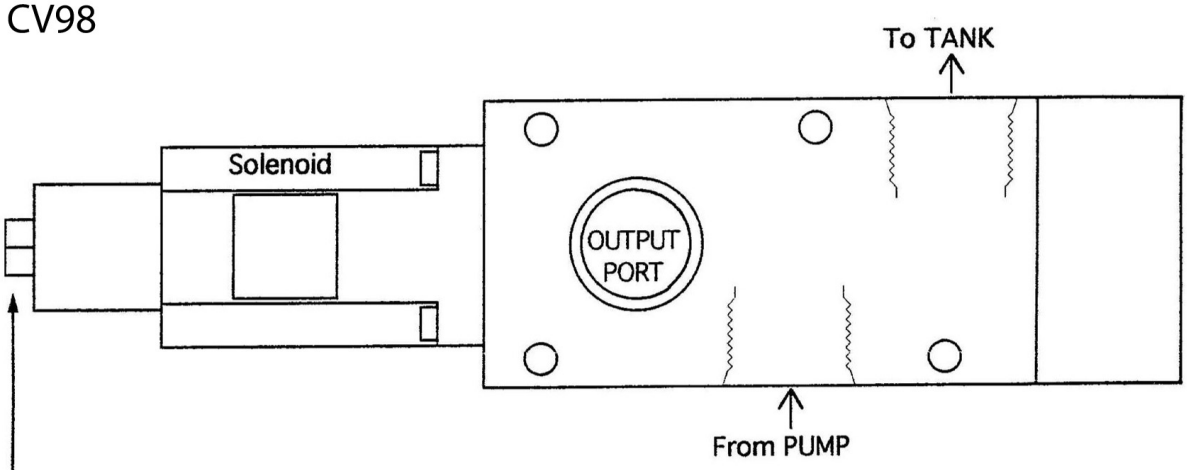
Item	Part No.	Name	Remarks	Qty	Uom
1	3800137	FTG\3/4MP\SIGHT:GLASS		1	EA
2	3800274	FTG\1-5/16MORX1-5/16MJIC\ST		1	EA
3	3800277	FTG\1-1/16MORX1-1/16MJIC\ST		1	EA
4	3800328	FTG\7/8MORX3/4MJIC\ADPT		1	EA.
5	3800480	FTG\1-1/16MORX3/4MJIC\ADPT		3	EA
6	3800536	FTG\1-1/16MORX3/4MJIC\90		2	EA
7	3800537	FTG\3/4MORX3/4MJIC\90		2	EA.
8	3800728	FTG\1-5/16MORX1-5/16MJIC\90		1	EA.
9	3800904	FTG\1-7/8MORX1-5/16MJIC\90		1	EA
10	3801017	FTG\1-1/16MORX1/2MJICX1/2MJIC\RUN;TEE		1	EA.
11	3900005	MTR\HYD\14.9\2000\SAE;A		1	EA
12	4000095	VALVE\HYD\1-SPL\W/DETENT\ O-Ring\1800PSI		1	EA
13	4200025	PUMP\HYD\1.87CU.IN.\RH\EATON\15		1	EA
14	4300065	VALVE\SERVO\15GPM\12VDC		1	EA
15	4400067	FLTR\SCRN\2-1/2MORX1-7/8FOR\30GPM\ST30-100-RV3		1	EA
16	4400165	FLTR\COMP\10MICRON\3.7D\35GPM		1	EA
17	4500580	TANK\OIL\BOLTED		1	EA
18	4502671	BRKT\FILTER		1	EA.
19	3701076	HOSE\HYD\1/2X21\3/4FJICS		1	EA.
20	3701677	HOSE\HYD\3/4X9\1-5/16FJICX1-1/16FJIC		1	EA.
21	3701702	HOSE\HYD\1X27-1/2\1-5/16FJICX1-5/16FJIC		1	EA.
22	3701673	HOSE\HYD\1/2X22\3/4FJICX3/4FJIC\90		1	EA.
23	3700982	HOSE\HYD\1/2X 20\3/4FJICX3/4FJIC		1	EA.
24	3701674	HOSE\HYD\1/2X32\3/4FJICX5/8MBX		1	EA.
25	3701011	HOSE\HYD\1/2X31\3/4FJICSX3/4FJIC90		1	EA
26	3701676	HOSE\HYD\1/2X29\3/4FJICX5/8MBX		1	EA.
NS	7501030	OIL CAP\UNVENTED		1	EA
NS	3800253	FTG\3/4MP\VENT\>ABS-40		1	EA
NS	4800018	BOLT\HEX\1/2X1-1/4		5	EA.
NS	4900014	NUT\TPLCK\1/2\NC		5	EA.

NOTE: THE DIFFERENCE BETWEEN THE 12 VOLT AND 24 VOLT SOLENOID IS LISTED ON THE SERIAL NUMBER PLATES. THE SOLENOIDS ARE ELWOOD 160261-XX6 OR 160261-XX9. THE 6 IS A 12 VOLT SOLENOID, THE 9 IS A 24 VOLT SOLENOID. ALSO, 12 OR 24 ARE STAMPED ON THE NEWEST SERIAL NUMBER PLATES. 12 VOLT SOLENOID RESISTANCE IS 8-12 OHMS, 24 VOLT RESISTANCE IS 38-44 OHMS.

NOTE: 15 GPM IS STANDARD FLOW RATE. ANY VALVES THAT ARE NOT 15 GPM ARE TO BE STAMPED IN METAL OF THE VALVE CASING NEXT TO THE SERIAL NUMBER INDICATING THE FLOW RATE, E.G. 25 INDICATES 25 GPM.

CV98



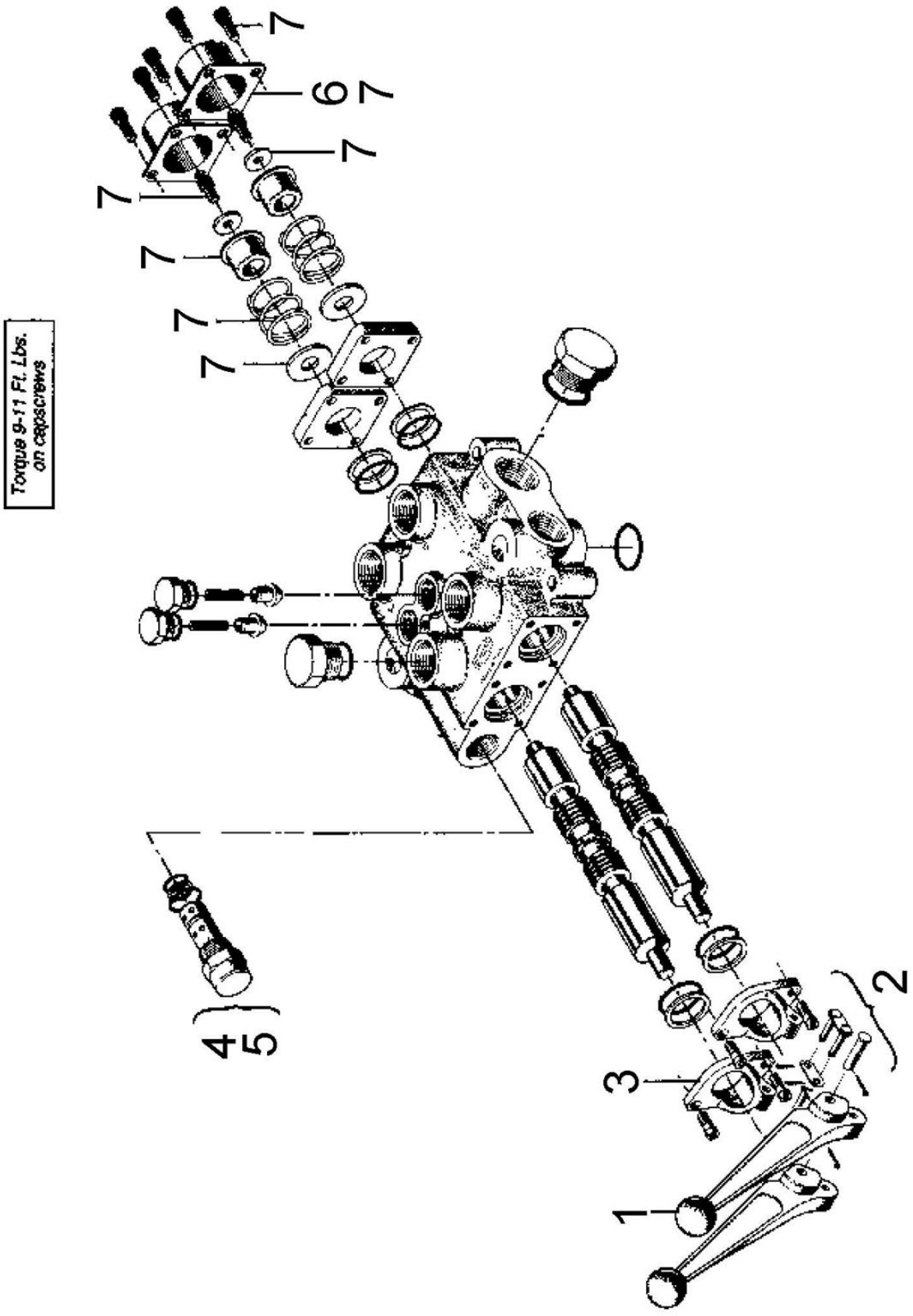
Starting Point/Manual Override Adjustment

The starting point is preset to 0 GPM. If any further adjustment is required; 1- Loosen jam nut. 2- Turn the adjusting screw clockwise to increase the flow or counter clockwise to decrease flow. 3- Gently tighten the jam nut.

WARNING- If the adjusting screw is turned to far counter clockwise, the valve will behave erratically or stop working all together. Turn the adjusting screw no more than 1/16 to 1/8 of a turn counter clockwise after flow has stopped.

For manual operation when electrical control fails, turn the adjusting screw clockwise until the desired constant flow is obtain.

Item	Part No.	Name	Remarks	Qty	Uom
CA	4300065	VALVE\SERVO\15GPM\12VDC			EA
	4300010	SOLENOID\HYD VALVE\12V			EA
	4800648	SCR\CAP\ALN\10-24X1			EA
	4800650	SCR\CAP\ALN\10-24X2-1/2			EA


Torque 9-11 Ft. Lbs. on capscrews
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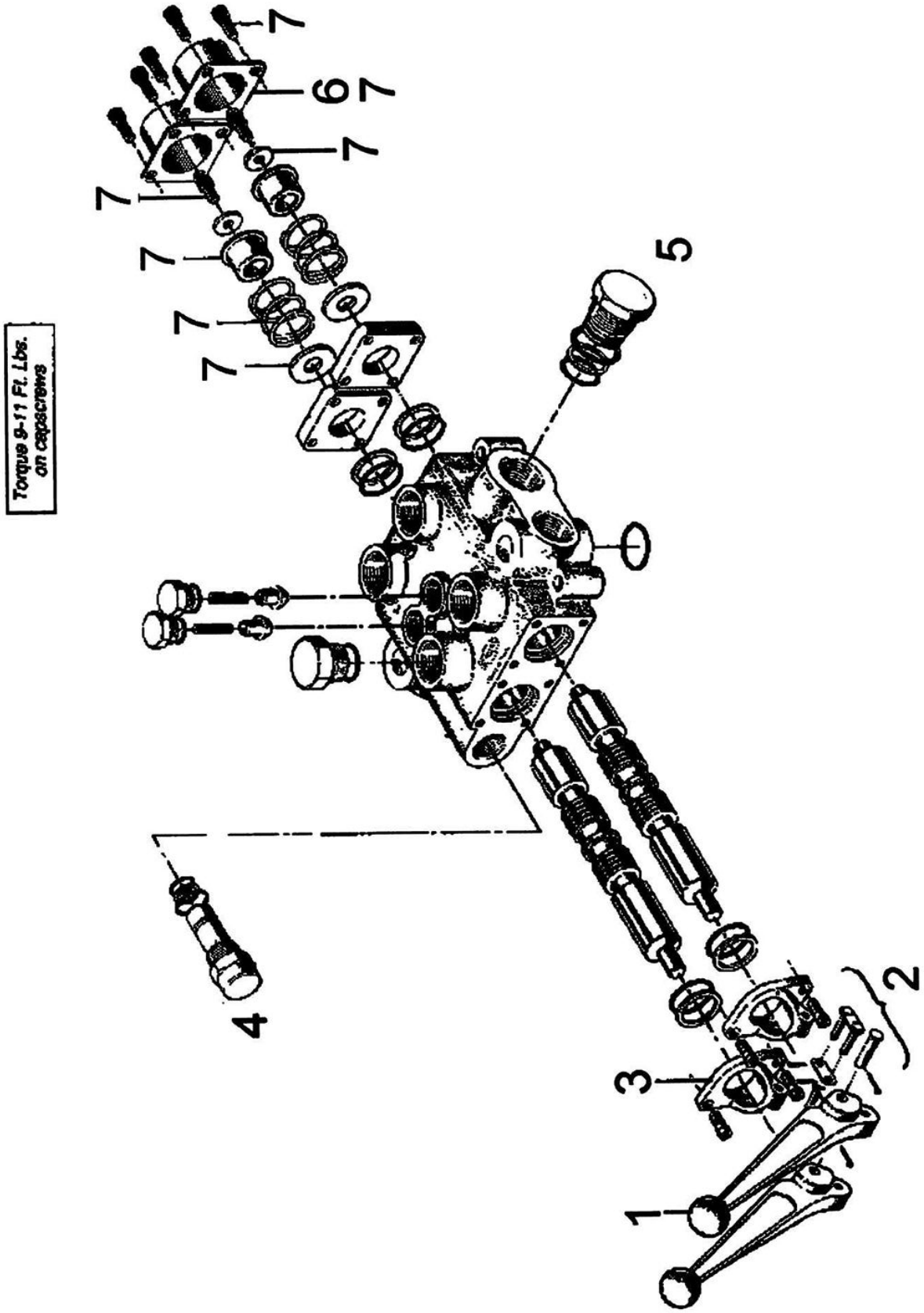
Item	Part No.	Name	Remarks	Qty	Uom
1	4000001	HANDLE\HYD\VALVE BANK			EA
2	4000002	Connector Links Handle			EA
3	4000004	Handle Bracket			EA
4	4000006	New Adj. Relief Valve			EA
5	4000065	NON ADJ.VALVE			EA
6	4000029	End Cap			EA
7	4000106	VALVE\KIT\SPRING\CENTER			EA
	7501004	SEAL KIT			EA
	4000010	VALVE\HYD\2-SPL\3POS-4W\F PIPE THREAD			EA
	4000093	VALVE\HYD\2-SPL\3POS-4W\FOR-THRD			EA


Torque 9-11 Ft. Lbs. on capscrews
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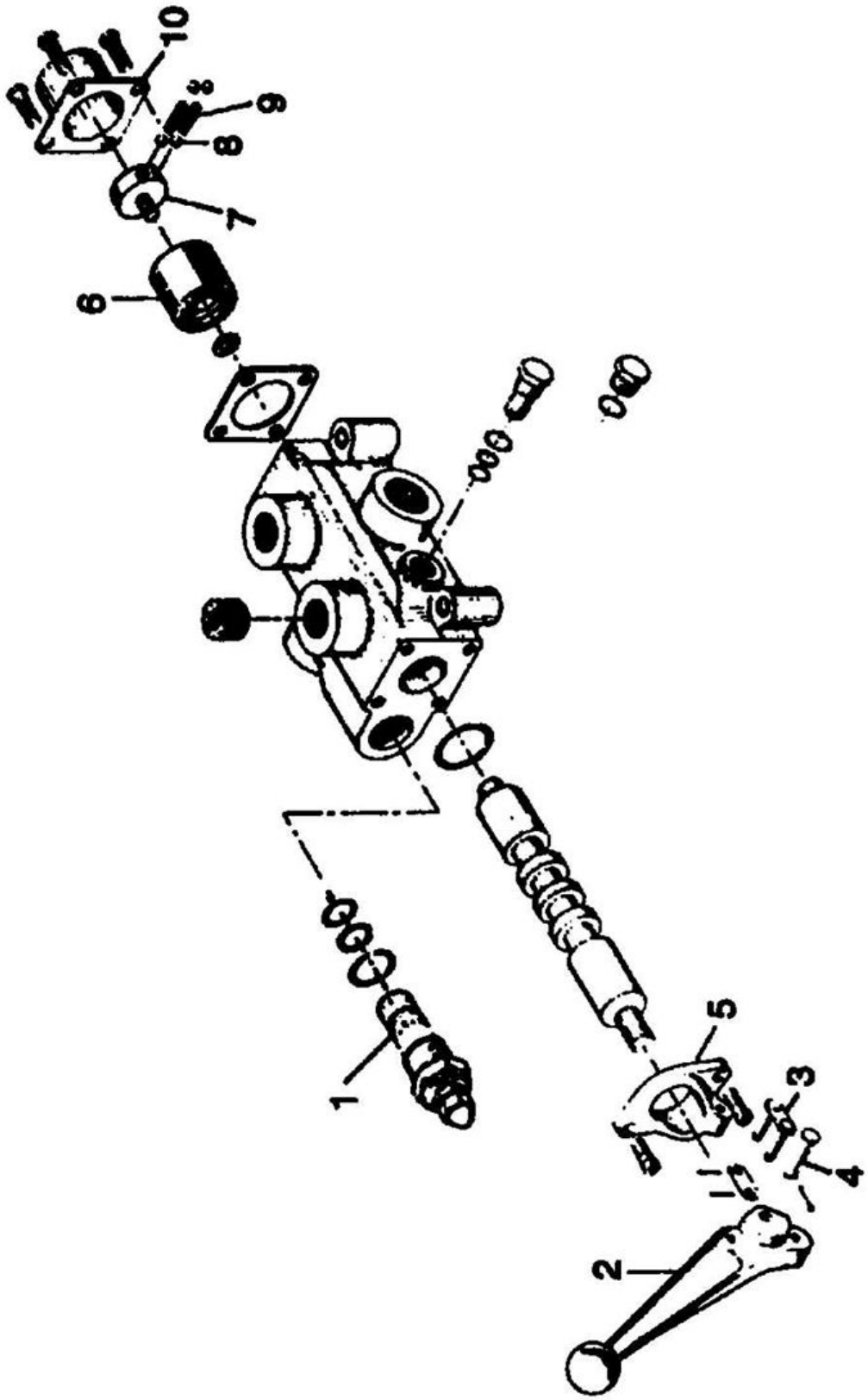
Item	Part No.	Name	Remarks	Qty	Uom
1	4000001	HANDLE\HYD\VALVE BANK			EA
2	4000002	Connector Links Handle			EA
3	4000004	Handle Bracket			EA
4	4000192	PLUG\NO-RELIEF			EA
5	4000008	CLOSED CENTER PLUG-			EA
6	4000029	End Cap			EA
7	4000106	VALVE\KIT\SPRING\CENTER			EA
	7501004	SEAL KIT			EA
	4000564	VLV\HYD\2-SPL\3POS-4W\CLOSED CENTER OPTION			EA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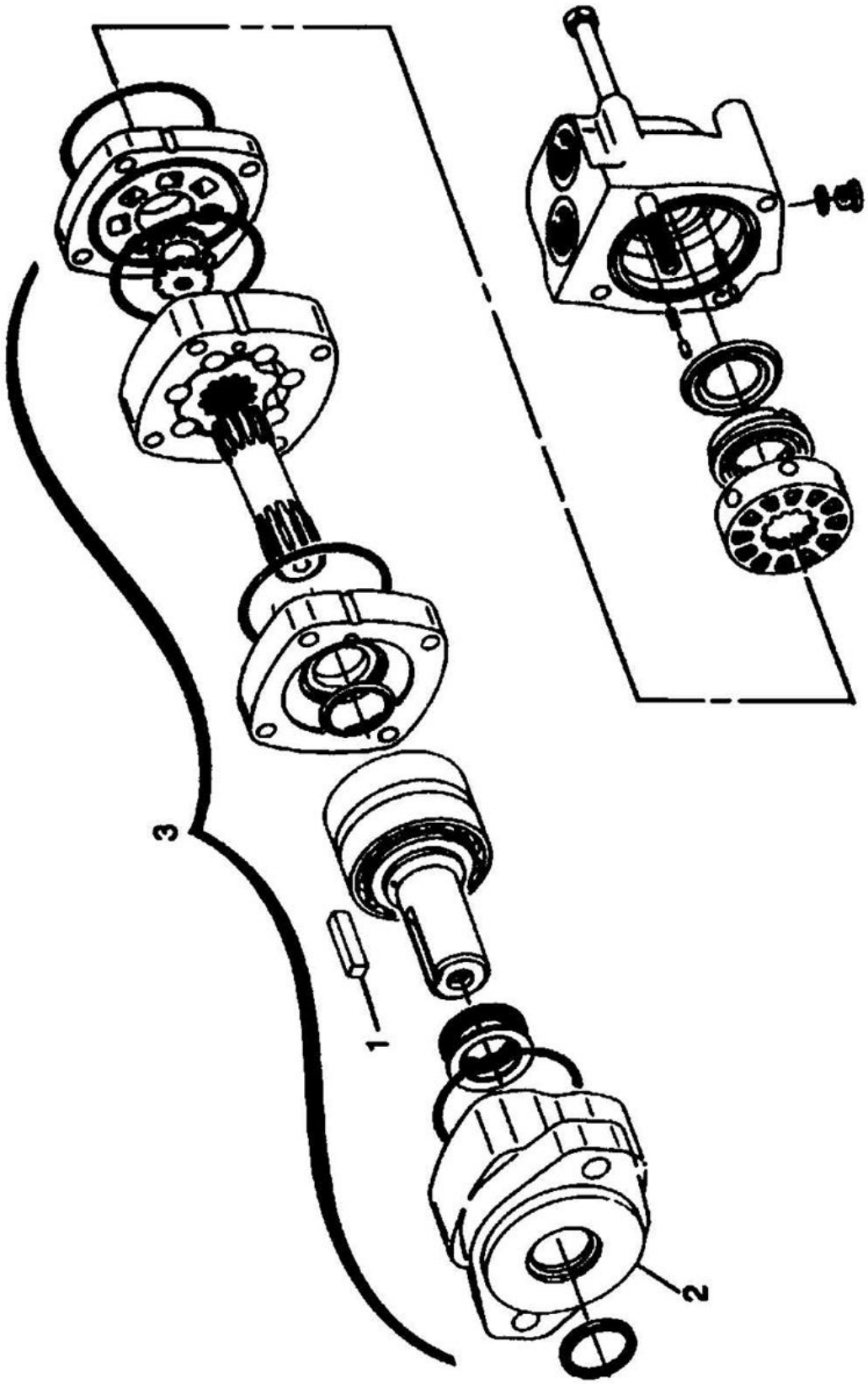
Item	Part No.	Name	Remarks	Qty	Uom
1	4000006	New Adj. Relief Valve		1	EA
2	4000001	HANDLE\HYD\VALVE BANK		1	EA
3	4000002	Connector Links Handle		1	EA
4	4000003	Pin Handle w/Key		1	EA
5	4000004	Handle Bracket		1	EA
6	4000025	Detent Sleeve		1	EA
7	4000026	Detent Retainer (Screw)		1	EA
8	4000027	Retent Spring		2	EA
9	4000028	Ball (1/4 Steel)		4	EA
10	4000029	End Cap		1	EA
11	7501013	Seal Kit (Not Shown)		1	EA
12	4000035	Valve Complete, Pipe Thread			EA
12	4000095	VALVE\HYD\1-SPL\W/DETENT\ O-Ring\1800PSI			EA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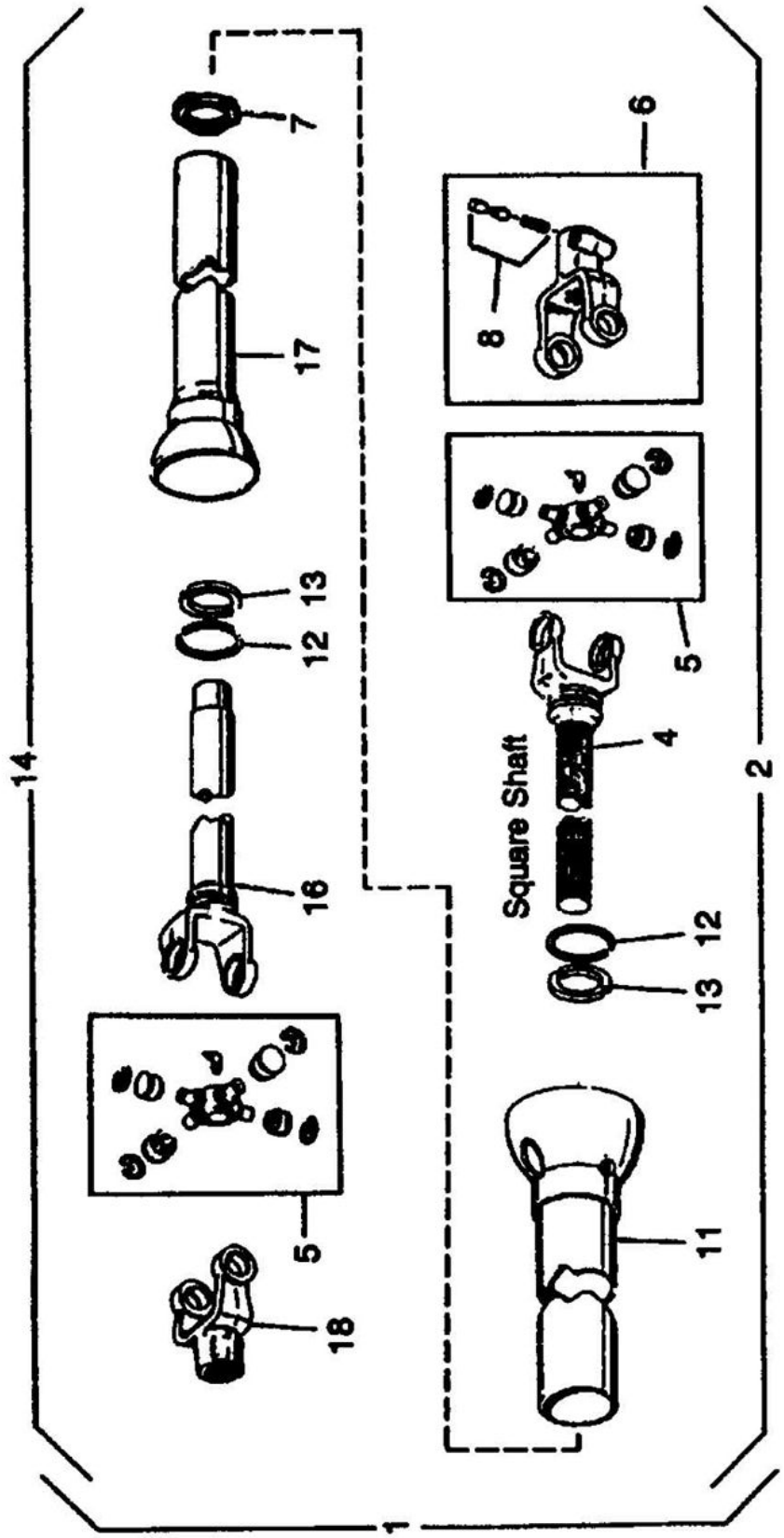
Item	Part No.	Name	Remarks	Qty	Uom
1	6200004	KEY\SQ\5/16X1-1/2		1	EA
2	3900011	Flange Mount		1	EA
3	3900005	MTR\HYD\14.9\2000\SAE;A		1	EA
NS	7501005	Seal Kit Complete 2000 Series		1	EA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Square Shaft
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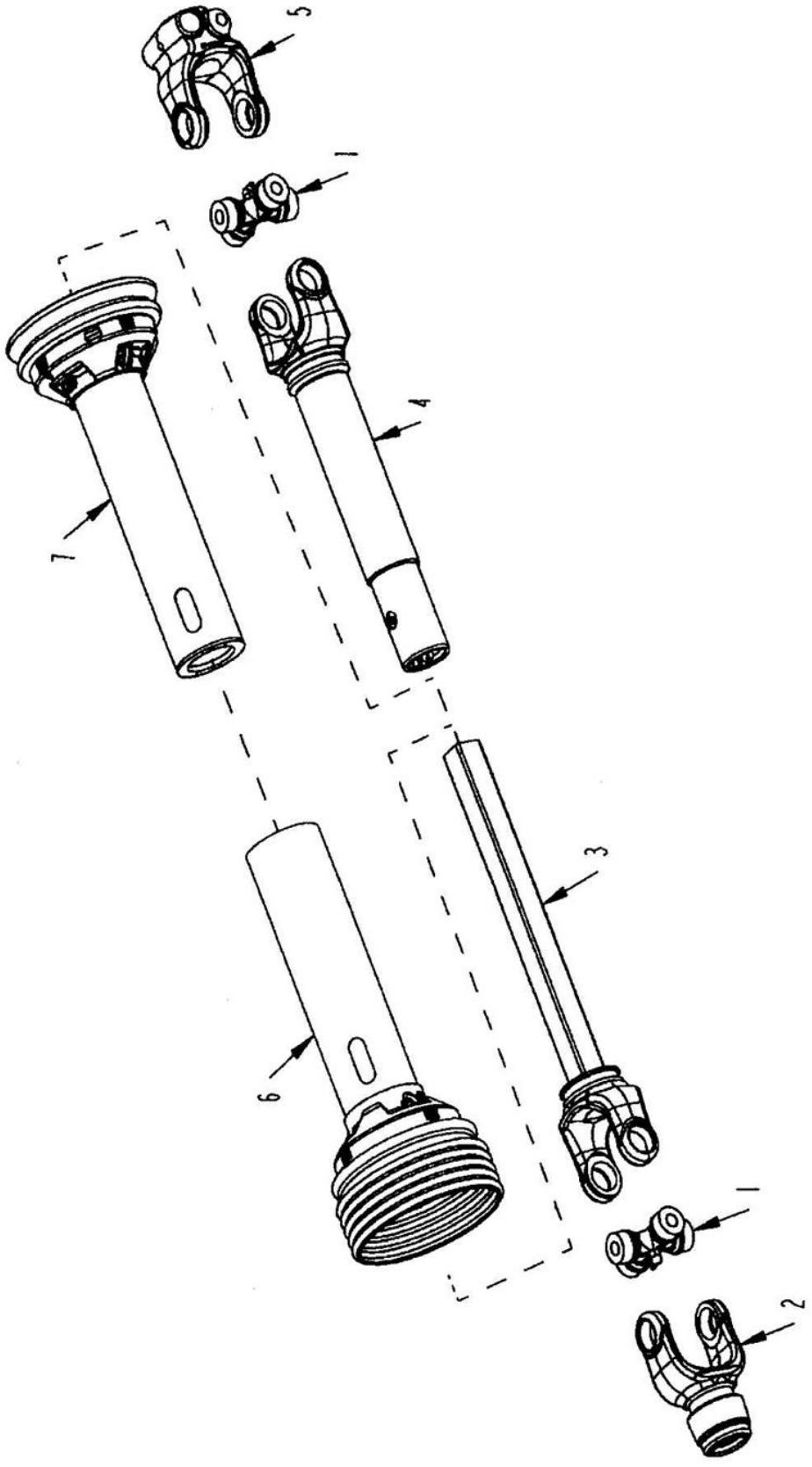
Item	Part No.	Name	Remarks	Qty	Uom
1	3600101	l-55 Univ. Joint & TelescopingShaftAssembly Comp. w/1-3/8 21-Spline Yoke		1	EA
1A	3600141	PTO Complete L55 w/1-3/4 20Spline			EA
2	3600017	Joint & Shaft Half w/Guard, Tractor 1/2 Complete w/1-3/8 21-Spline Yoke		1	EA
2A	3600100	Joint & Shaft Half w/Guard, Tractor Half Complete w\1-3/4 20-Spline Yoke		1	EA
4	3600095	Yoke & Shaft		1	EA
5	3600013	CROSS & BEARING KIT 55W		2	EA
6	3600016	Yoke Assembly, 1-3/8 21-Spline		1	EA
6A	3600064	Yoke Assembly, 1-3/4 20-Spline		1	EA
7	3600096	Nylon Centralizer		1	EA
8	3600094	Saf-T-Pin and Spring Kit		1	EA
11	3600475	GUARD\SET\PTO\3600474	REPLACES 3600076 AND 3600015	1	EA
12	3600097	Bearing Retainer		2	EA
13	3600098	Nylon Bearing		2	EA
14	3600014	Joint & Tube Half w/Guard, Machine Half Complete		1	EA
16	3600099	Yoke & Tube		1	EA
17	3600475	GUARD\SET\PTO\3600474	REPLACES 3600076 AND 3600015	1	EA
18	3600012	MACHINE YOKE 1-3/4” L55 W/KEYWAY		1	EA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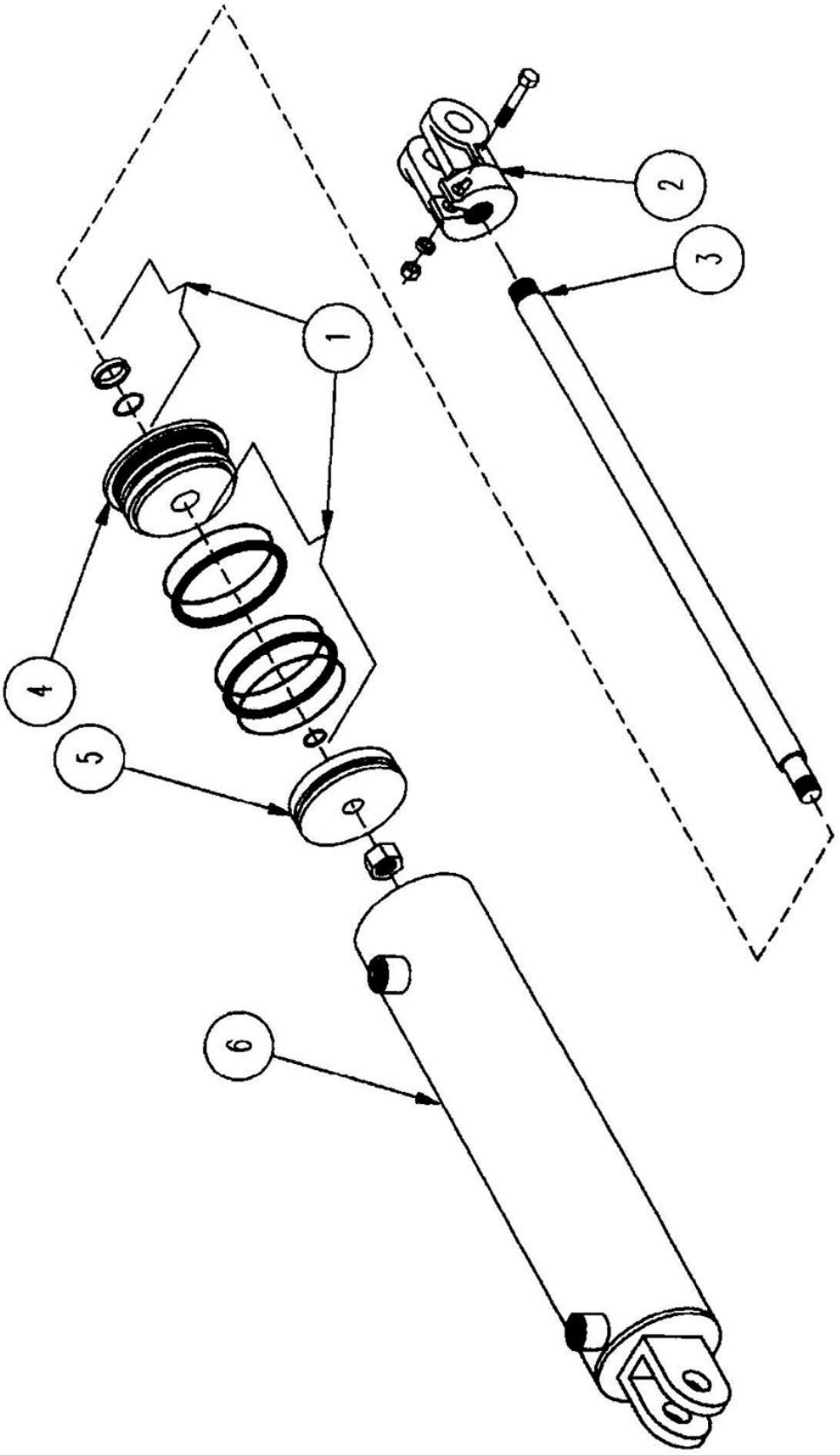
Item	Part No.	Name	Remarks	Qty	Uom
	3600474	PTO\COMP\55R\1-3/8-21CLRX1-3/4CLAMP;W/3/8KW			EA
	3600469	PTO\COMP\55R\1-3/4-20QDX1-3/4CLAMP;W/3/8KW\PLASTC			EA
1	3600013	CROSS & BEARING KIT 55W		2	EA
2	3600536	YOKE\55\QD\CLR\1-3/4\20SP		1	EA.
	3600532	LOCK\SAFTY;SLID\KIT\1-3/4			EA
2A	3600535	YOKE ASSY\55W\1-3/8\21-SP		1	EA.
	3600271	SAFETY SLD LCK REPAIR KIT for 3600363			EA.
	3600477	JOINT&SHAFT\ASM\W-GRD\1-3/8	SET FOR 3600474; INCLUDES 1,2,3,6	1	EA
	3600472	JOINT&SHAFT\ASM\W-GRD\1-3/4	SET FOR 3600474; INCLUDES 1,2A,3,6	1	EA
	3600478	JOINT&TUBE\ASM\W-GRD	SET FOR 3600474/469; INCLUDES 1,4,5,7	1	EA
5	3600012	MACHINE YOKE 1-3/4” L55 W/KEYWAY		1	EA
	3600475	GUARD\SET\PTO\3600474	INCLUDES 6,7, REPLACES 3600076 AND 3600015	1	EA
	6500085	DECAL\DNGR\ROTATNG;DR-LNE			EA.
	6500310	DECAL\DNGR\GAURD;MISSING		1	EA
	3600563	NYLON\REPAIR\KIT\PLASTIC		2	EA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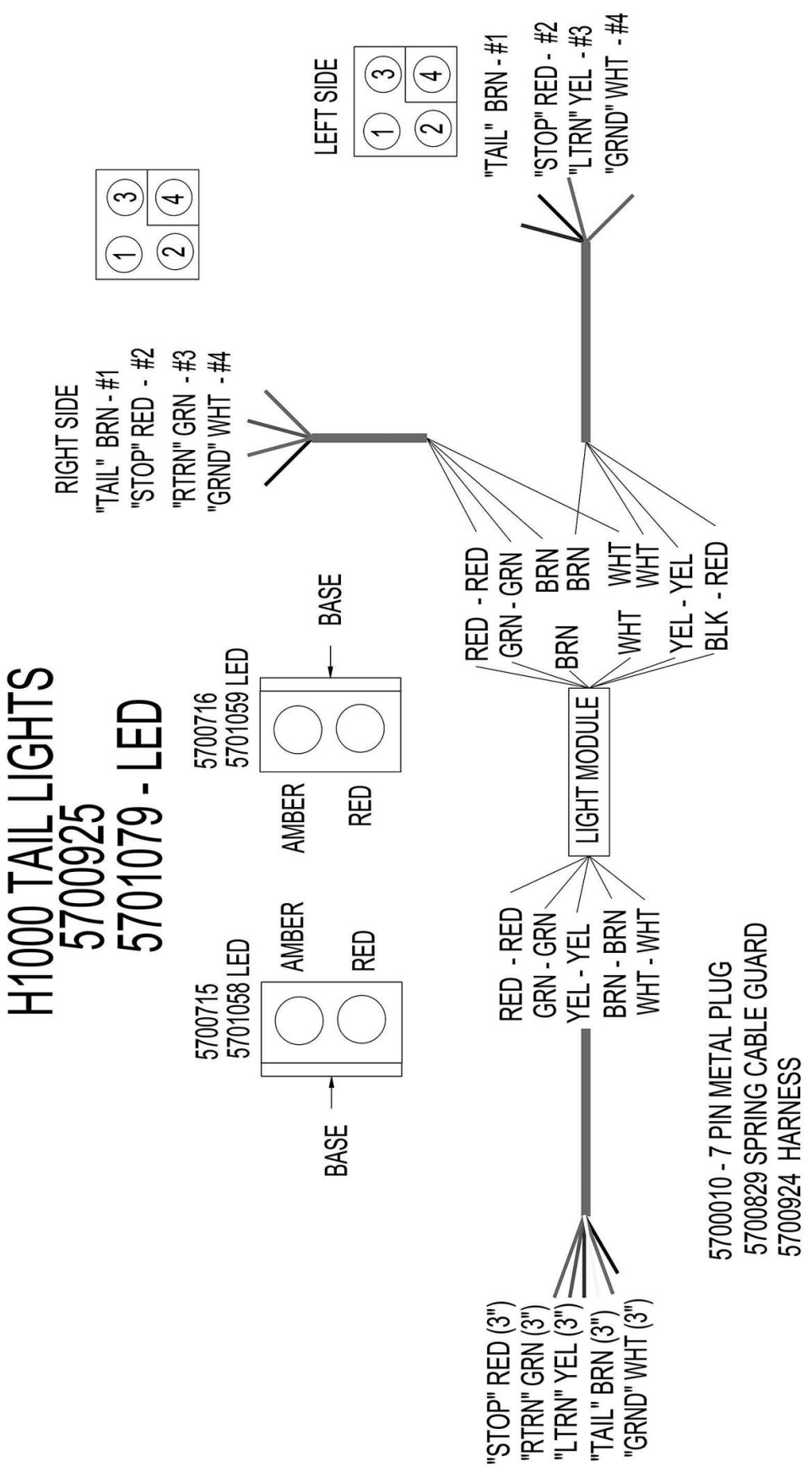
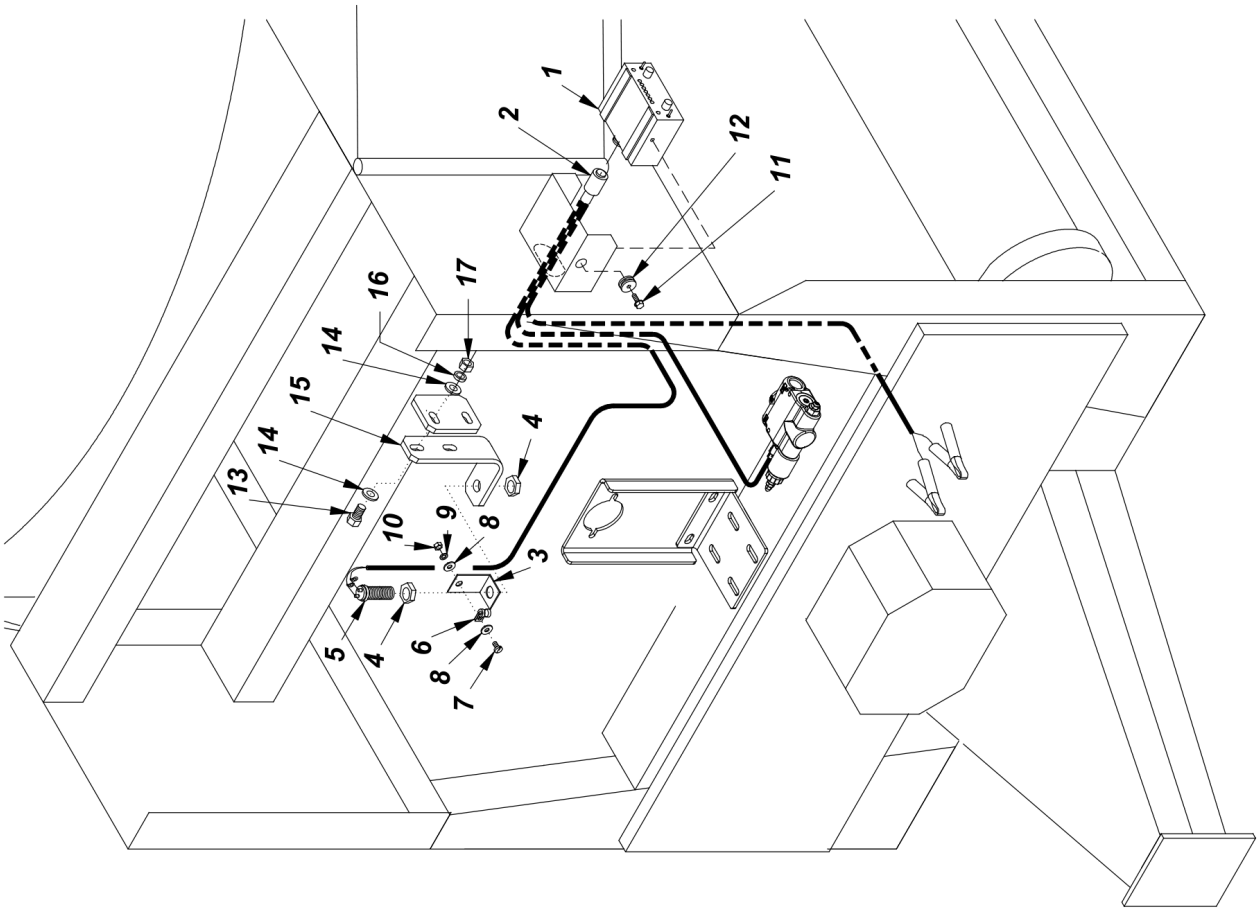
Item	Part No.	Name	Remarks	Qty	Uom
	4100216	CYL\HYD\3-1/2X12\1-1/2ROD\3/4-16\ORB			EA.
1	4100105	KIT\SEAL\CYL\HYD\3-1/2\RAM		1	EA.
2	4100034	YOKE\CYL\HYD\3 X 24		1	EA
	4100218	CYL\HYD\3X30\1-1/2ROD\7/8FOR\PARALLEL			EA
1	4100143	KIT\SEAL\CYL\HYD\3\1-1/2RD-RAM for 4100211		1	EA.
2	4100034	YOKE\CYL\HYD\3 X 24		1	EA
3	4100098	ROD\CYL\HYD\RAM\3X30\1-1/2”		1	EA


H1000 TAIL LIGHTS
5700925
5701079 - LED
RIGHT SIDE
"TAIL" BRN - #1
"STOP" RED - #2
"RTRN" GRN - #3
"GRND" WHT - #4
LEFT SIDE
"TAIL" BRN - #1
"STOP" RED - #2
"LTRN" YEL - #3
"GRND" WHT - #4
5700716
5701059 LED
BASE
AMBER
RED
5700715
5701058 LED
AMBER
RED
BASE
RED - RED
GRN - GRN
BRN
BRN
WHT
WHT
YEL - YEL
BLK - RED
LIGHT MODULE
RED - RED
GRN - GRN
YEL - YEL
BRN - BRN
WHT - WHT
"STOP" RED (3")
"RTRN" GRN (3")
"LTRN" YEL (3")
"TAIL" BRN (3")
"GRND" WHT (3")
5700010 - 7 PIN METAL PLUG
5700829 SPRING CABLE GUARD
5700924 HARNESS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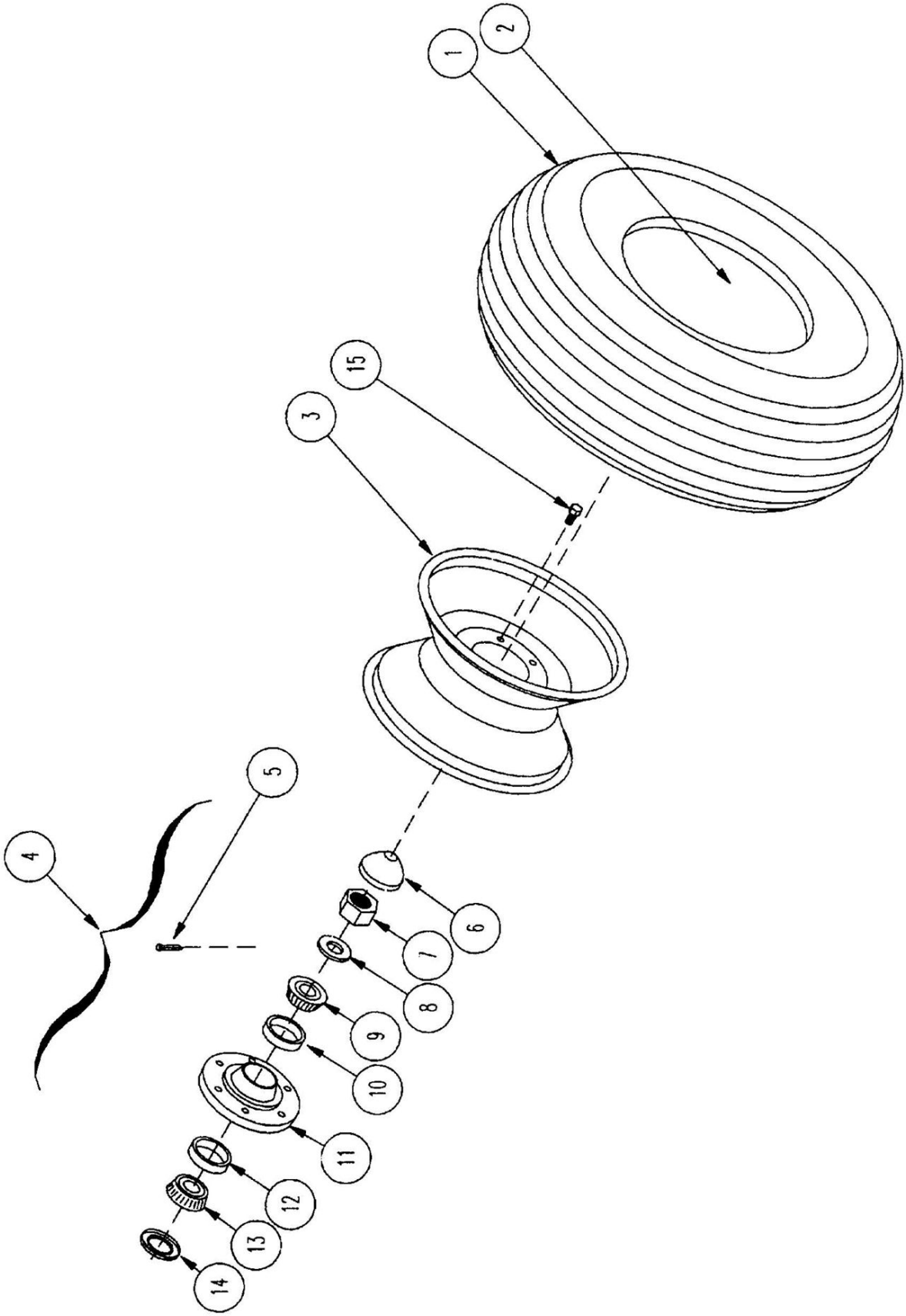
Item	Part No.	Name	Remarks	Qty	Uom
1	4300034	NEW STYLE CONTRL BOX RCB93		1	EA
2	4300007	WIRING HARNESS		1	EA
3	4500205	BRKT\SENSOR		1	EA
4	4900057	NUT\JAM\3/4\NF		2	EA
5	4300088	MAGNETIC SENSOR		1	EA
6	7500219	CLAMP\WIRE\1/4		1	EA
7	4800154	SCR\RD\SLOT\1/4X1/2\NC		1	EA
8	5000035	WASH\FLAT\1/4		2	EA.
9	5000024	WASH\LOCK\1/4		1	EA.
10	4900009	NUT\HEX\1/4\NC		1	EA.
11	4800301	SCR\FLG\SERR\1/4X3/4\NC		2	EA.
12	7500124	GROMMET\RUBBER\2757		2	EA
13	4800082	BOLT\HEX\1/2X1-1/2		2	EA.
14	5000004	WASH\FLAT\1/2		4	EA.
15	4500994	BRKT\SENSOR\GOVERNOR\H1000		1	EA
16	5000006	WASH\LOCK\1/2		2	EA.
17	4900001	NUT\HEX\1/2\NC		2	EA.
NS	4300038	REBUILT CONTR0L BOX RCB93			EA.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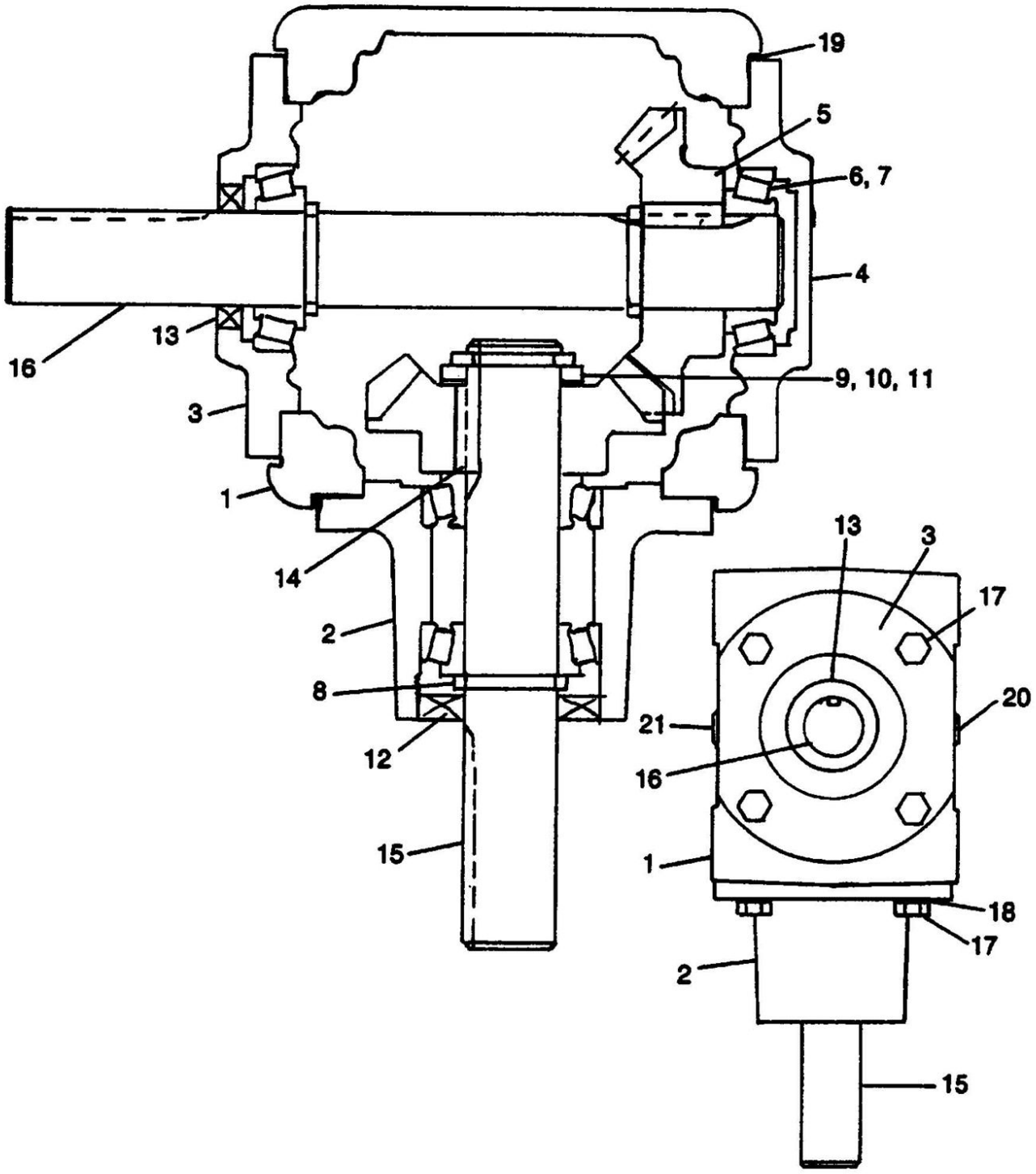
Item	Part No.	Name	Remarks	Qty	Uom
1	2600013	TIRE\9.5LX14\8PLY		2	EA
2	2600406	TUBE\9.5LX14-15		2	EA
3	2600601	WHL\6-BOLT\14X8		2	EA
1 & 3	2600825	WHL\IMP\9.5X15\TIRE&RIM		2	EA
4	2900069	HUB\COMPLETE\2900069		2	EA
4A	2900171	HUB\6-BOLT\STUDS\COMPLETE		2	EA.
5	4800044	PIN\COT\5/32X1-1/2		2	EA.
6	2900013	CAP\DUST\WHL;HUB(DC-13)		1	EA
7	4900054	NUT\CASTLE\1/2\NF		1	EA.
8	5000055	WASH\SPINDLE\7/8		1	EA.
9	2900018	CONE\OUTER\WHL;HUB(67048		1	EA
10	2900004	CUP\INNER\WHEEL HUB		1	EA
12	2900006	CUP\INNER\WHEEL HUB		1	EA
13	2900007	CONE\OUTER\WHL;HUB(2900069)		1	EA
14	2900008	SEAL\GREASE(2900069HUB)		1	EA
15	2900010	BOLT\WHL\WHL;HUB\100 SR		12	EA
1	2600041	TIRE\31X10.5X15\LOAD;C	HIGHWAY TRANSPORT OPTION		EA.
1 & 3	2600823	WHL\HWY\31X10.5X15\TIRE&RIM\6-BOLT\10X15_RIM\BALANCED	HIGHWAY TRANSPORT OPTION	2	EA.
	8100634	SPNDL\2X12\256+\S2000			EA
	2900172	STUD\WHL\9/16-18X2-1/8\GR5\P151403			EA.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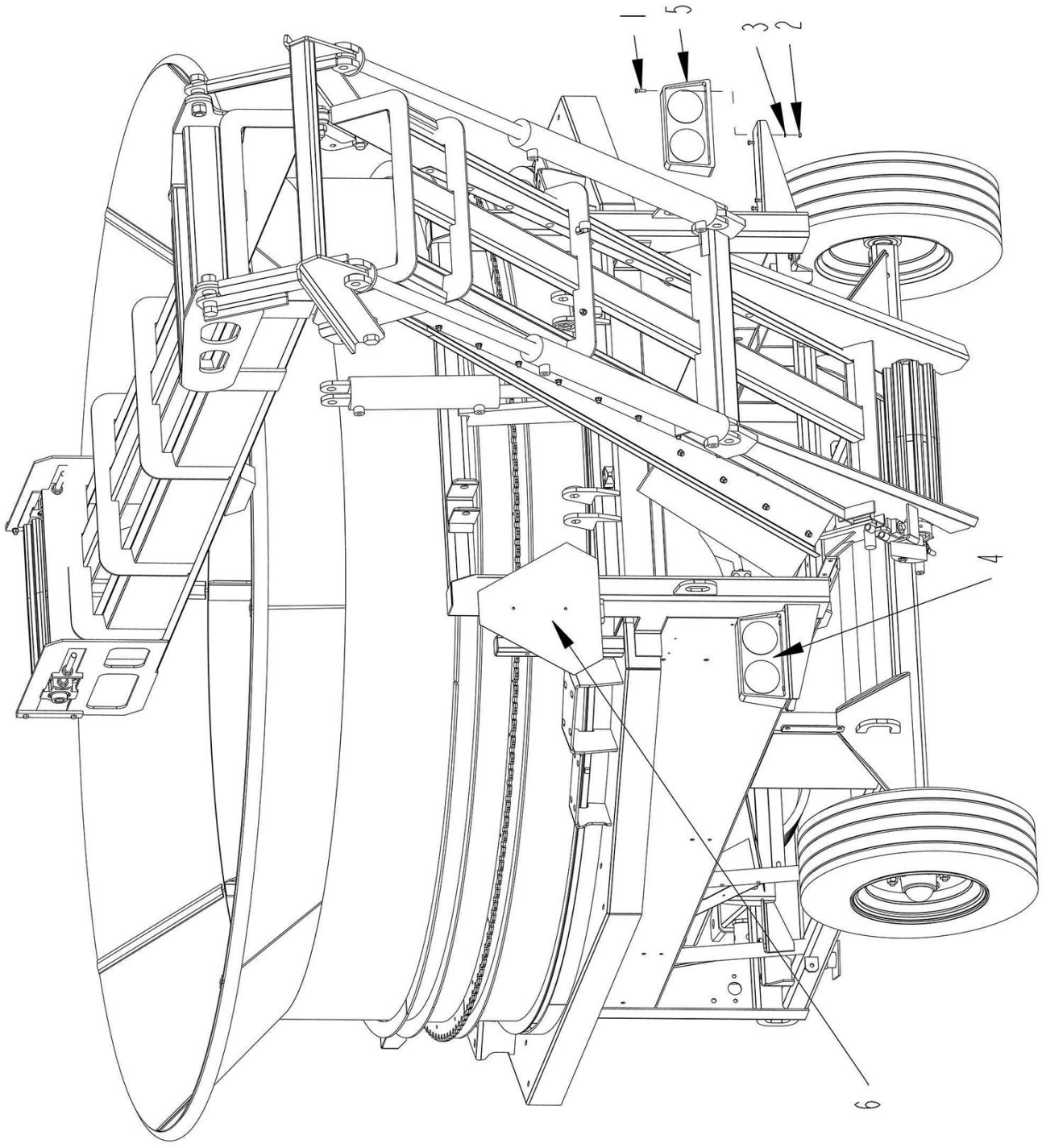
Item	Part No.	Name	Remarks	Qty	Uom
1	3100322	Open Center Case		1	EA
2	3100323	Quill 1.98 Dia. Seal		1	EA
3	3100324	Open Cover		1	EA
4	3100325	Closed Cover		1	EA
5	3100326	19T Gear		2	EA
6	2900032	CONE/WHEEL HUB(44643		4	EA
7	2900033	CUP/WHEEL HUB (44610		4	EA
8	3100327	Snap Ring		3	EA
9	3100335	Shim. .007 1809 OG			EA
10	3100328	1 ID x 1-1/2 OD x .130 Washer		1	EA
11	3100329	Snap Ring		1	EA
12	3100309	1 x 1.98 Seal		1	EA
13	3100313	1 x 1-1/2 Seal		1	EA
14	3100330	1/4 x 1/4 x .93 Key		2	EA
15	3100331	Pinion Shaft		1	EA
16	3100332	Cross Shaft		1	EA
17	3100301	5/16 x 7/8 Bolt		12	EA
18	3100333	5/16 Lock Washer		12	EA
19	3100336	Shim .020			EA
	3100337	Shim .007			EA
	3100338	Shim .005			EA
20	3100318	1/4 NPT Plug		1	EA
21	3100319	1/4 NPT Vent		1	EA
22	3100334	Shaft (to Reverse Gear Box)		1	EA
23	3100187	GRBX\RECT\1:1\OPPOSING		1	EA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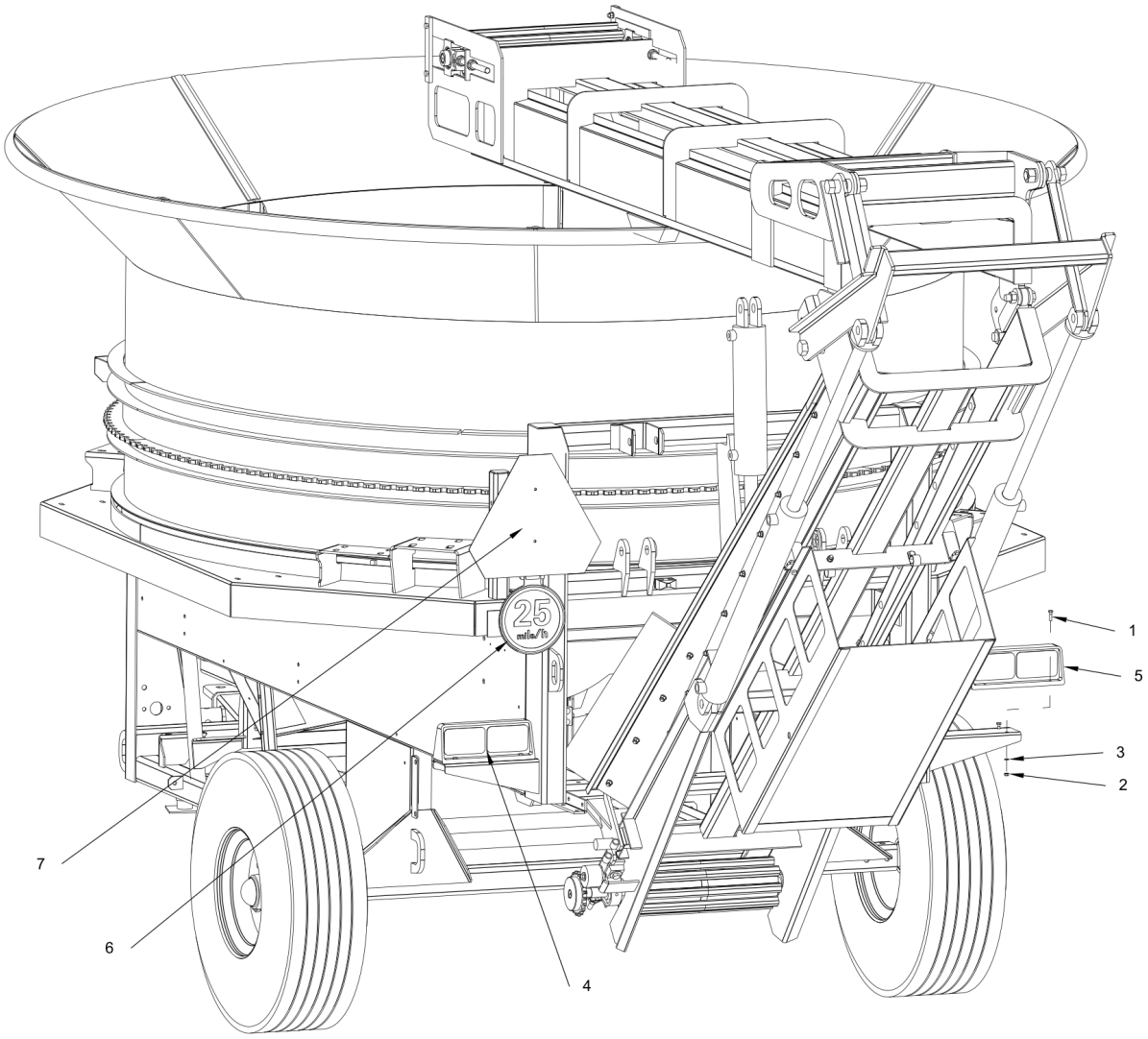
Item	Part No.	Name	Remarks	Qty	Uom
1	4800277	BOLT\HEX\1/4X1		8	EA.
2	4900009	NUT\HEX\1/4\NC		8	EA.
3	5000024	WASH\LOCK\1/4		8	EA.
4	5701058	TAILLIGHT\RED;RIGHT\LED\ASSY\4PIN		1	EA.
5	5701059	TAILLIGHT\RED;LEFT\LED\ASSY\4PIN	N/A (Order 5701285 and 5701283)	1	EA.
6	7501353	SIGN\SMV\PLSTC-BCKNG		1	EA.
	5700924	HARN\TAIL;LIGHTS\SHREDDR\4PIN		1	EA.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mi/h
km/h
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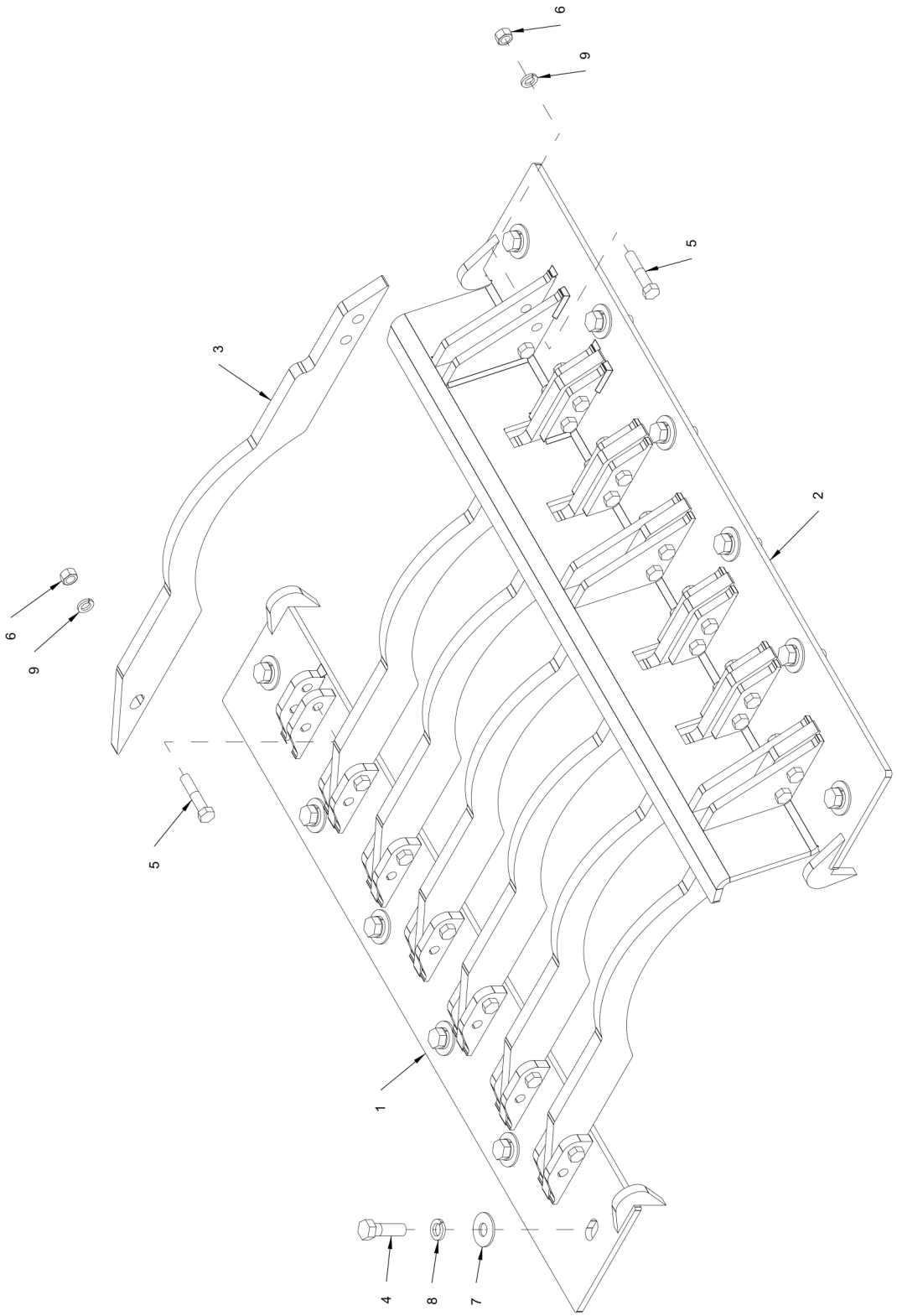
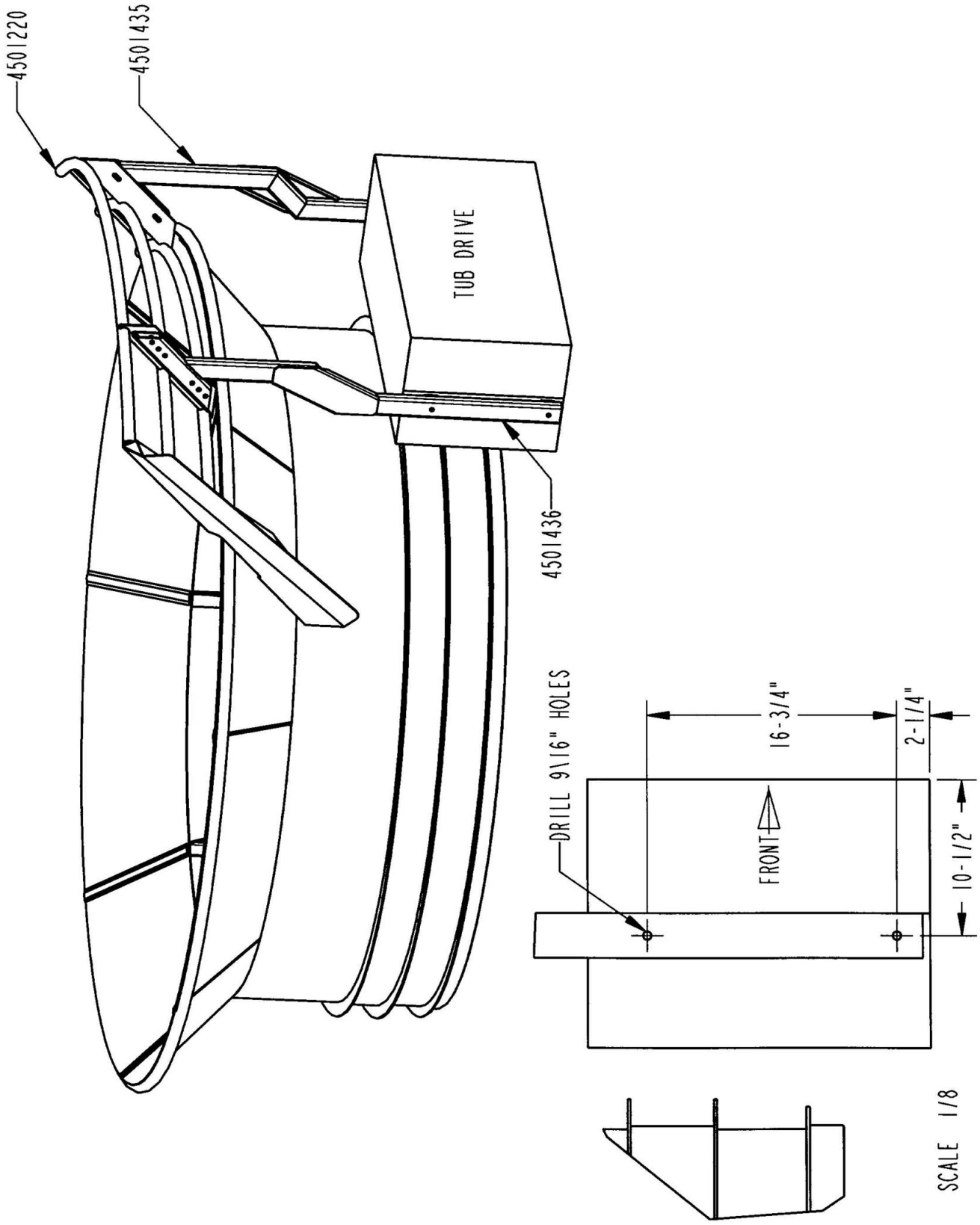
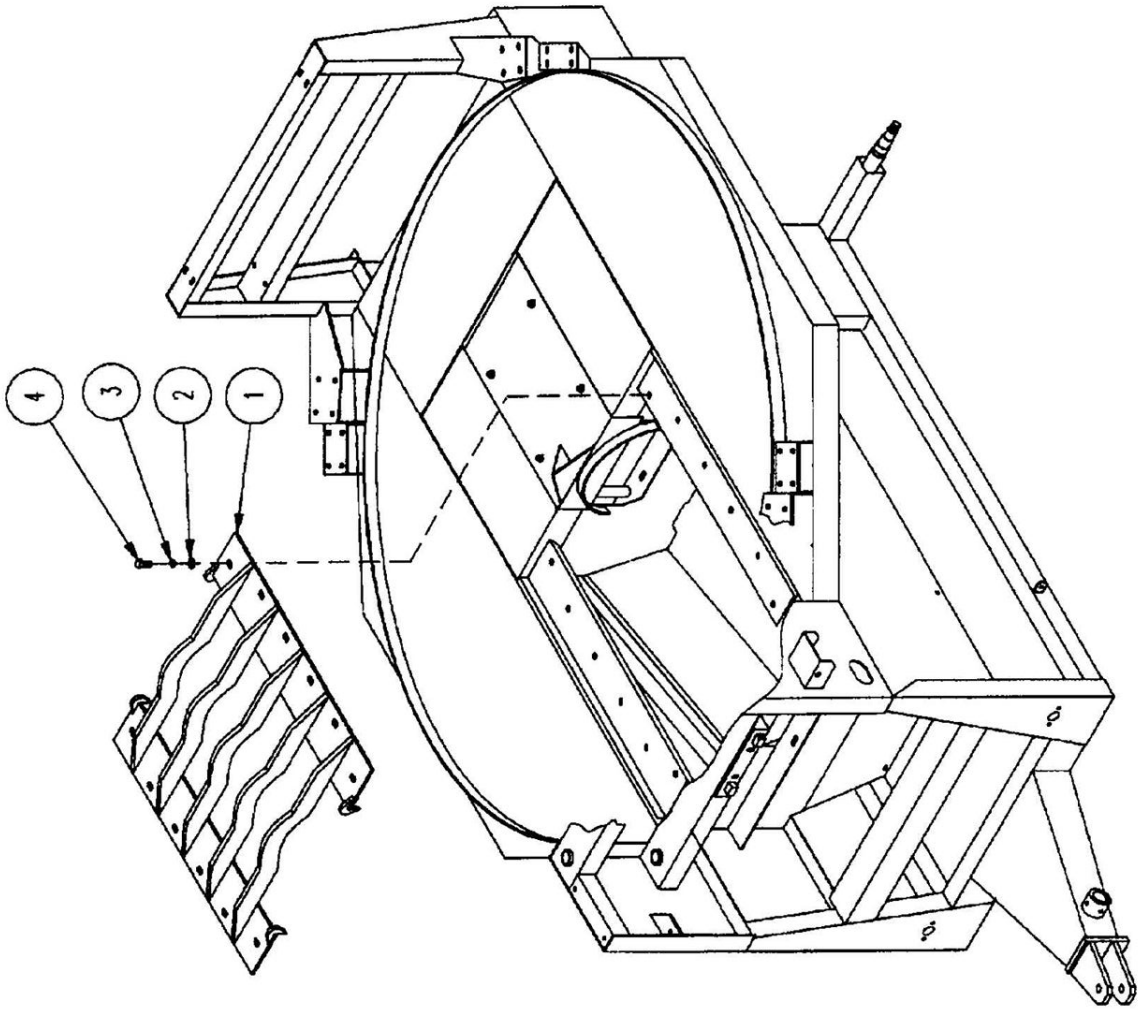
Item	Part No.	Name	Remarks	Qty	Uom
1	4800277	BOLT\HEX\1/4X1		8	EA.
2	4900009	NUT\HEX\1/4\NC		8	EA.
3	5000024	WASH\LOCK\1/4		8	EA.
4	5701284	LGHT\TAIL\AMBER-LEFT\4PN-WP\LED		1	EA.
5	5701285	LGHT\TAIL\AMBER-RGHT\4PN-WP\LED		1	EA.
6	7501701	DECAL\ASSY\ID\SPD\25MPH/40KM/H		1	EA.
7	7501353	SIGN\SMV\PLSTC-BCKNG		1	EA.
NS	5701296	HARN\TAIL;LIGHTS\SHREDDER\4FLAT		1	EA.



Item	Part No.	Name	Remarks	Qty	Uom
1	4503007	PL\SIDE\GRATE\MILL\7-BAR\H1000		1	EA.
2	4503009	PL\GEYSER\7 BAR\H1000		1	EA.
3	4503013	BAR\GRATE\MILL\2-1/2		7	EA
4	4800010	BOLT\HEX\5/8X2		12	EA.
5	4800070	BOLT\HEX\1/2X2-1/2		21	EA.
6	4900001	NUT\HEX\1/2\NC		21	EA.
7	5000002	WASH\FLAT\5/8		12	EA.
8	5000003	WASH\LOCK\5/8		12	EA.
9	5000006	WASH\LOCK\1/2		21	EA.
CA	4503054	PL\GYSR\W/MILL\7-BAR\2-1/2"\ASSY\H1000			EA.


4501220
4501435
TUB DRIVE
4501436
DRILL 9\16" HOLES
16-3/4"
2-1/4"
FRONT
10-1/2"
SCALE 1/8

Item	Part No.	Name	Remarks	Qty	Uom
CA	4501439	GUIDE\HAY\KIT\H1000\2000			EA.
	4501220	FRM\GUIDE\HAY\H1000&H1100		1	EA
	4501435	BRKT\GUIDE\HAY\LH\H1000		1	EA
	4501436	BRKT\GUIDE\HAY\RH\H1000		1	EA
	4800068	BOLT\HEX\1/2X3		4	EA.
	4800070	BOLT\HEX\1/2X2-1/2		4	EA.
	4900001	NUT\HEX\1/2\NC		8	EA.
	5000004	WASH\FLAT\1/2		8	EA.
	5000006	WASH\LOCK\1/2		8	EA.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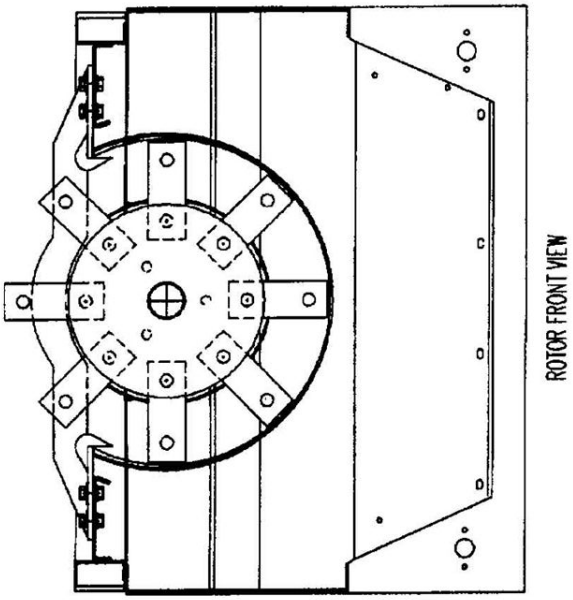
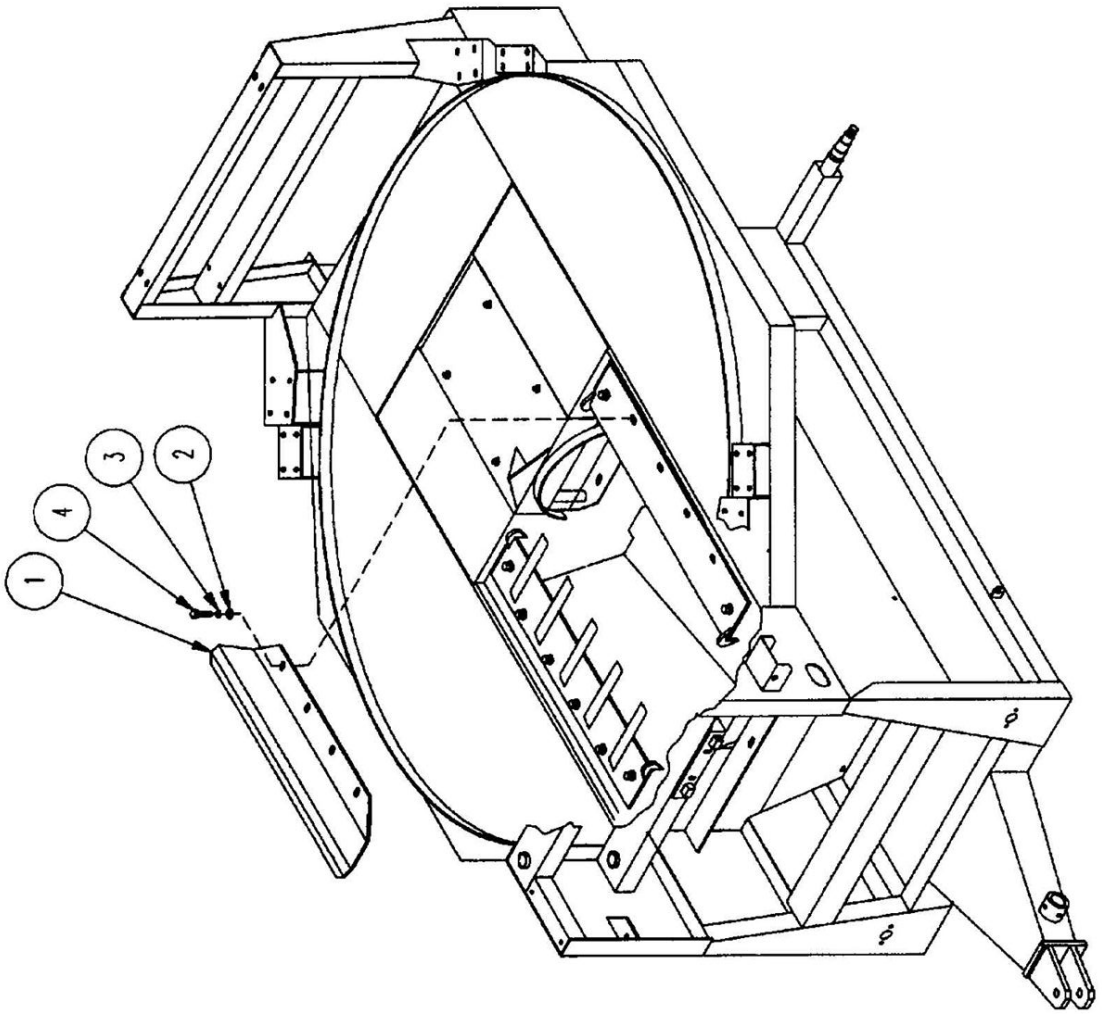

ROTOR FRONT VIEW

Item	Part No.	Name	Remarks	Qty	Uom
1	4500667	Grate\Mill		1	EA
2	5000002	WASH\FLAT\5/8		12	EA.
3	5000003	WASH\LOCK\5/8		12	EA.
4	4800010	BOLT\HEX\5/8X2		12	EA.
	4500726	Grate\Mill\Kit			EA
	4501282	Plate\Geyser\Slotted\H1000	For use with the mill grate		EA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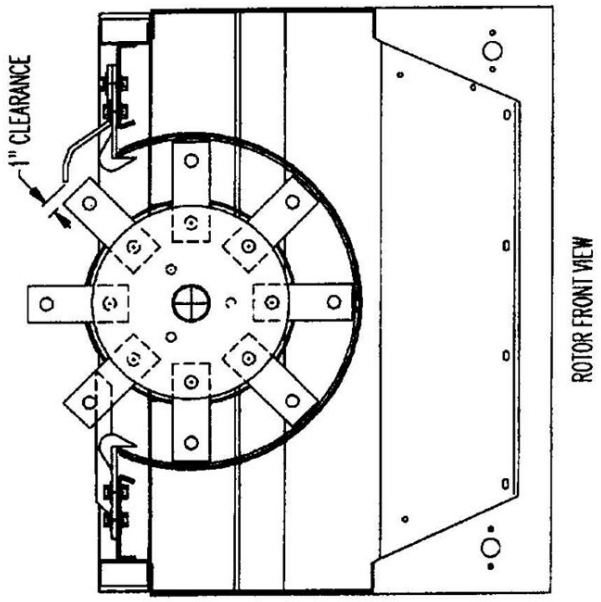
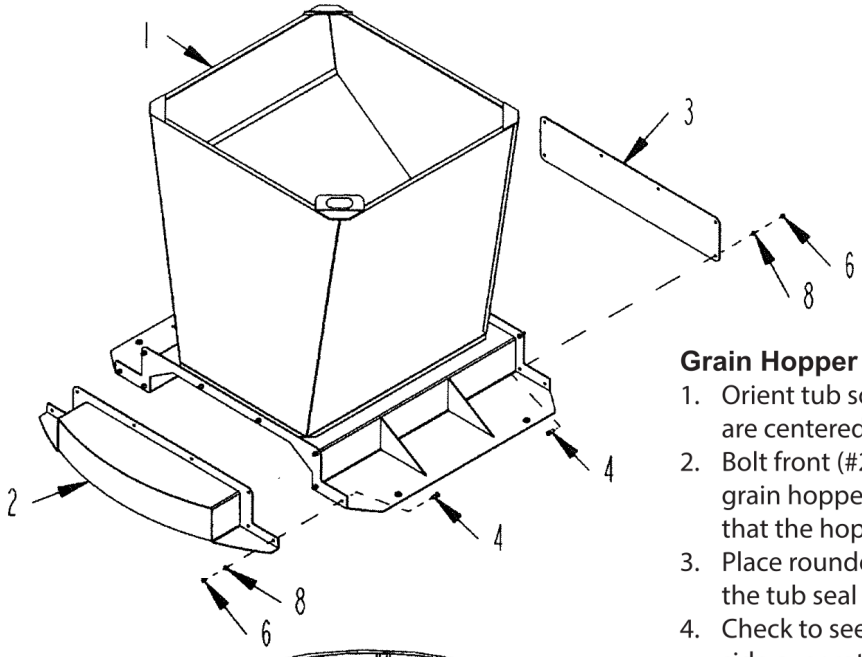
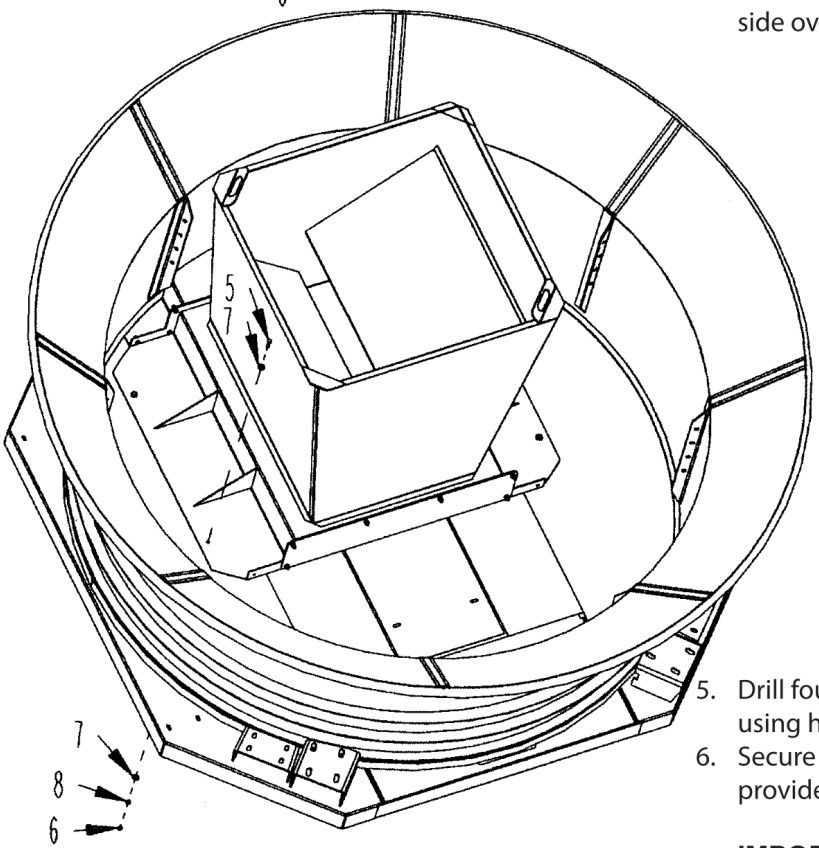

1" CLEARANCE
ROTOR FRONT VIEW

Item	Part No.	Name	Remarks	Qty	Uom
CA	4500673	Pl\Geyser\H1000\Kit			EA
1	4500672	Plate\Geyser\H1000		1	EA
2	5000002	WASH\FLAT\5/8		4	EA.
3	5000003	WASH\LOCK\5/8		4	EA.
4	4800010	BOLT\HEX\5/8X2		4	EA.
1A	4501282	Plate\Geyser\Slotted\H1000	For use with the mill grate		EA



Grain Hopper Option Installation:

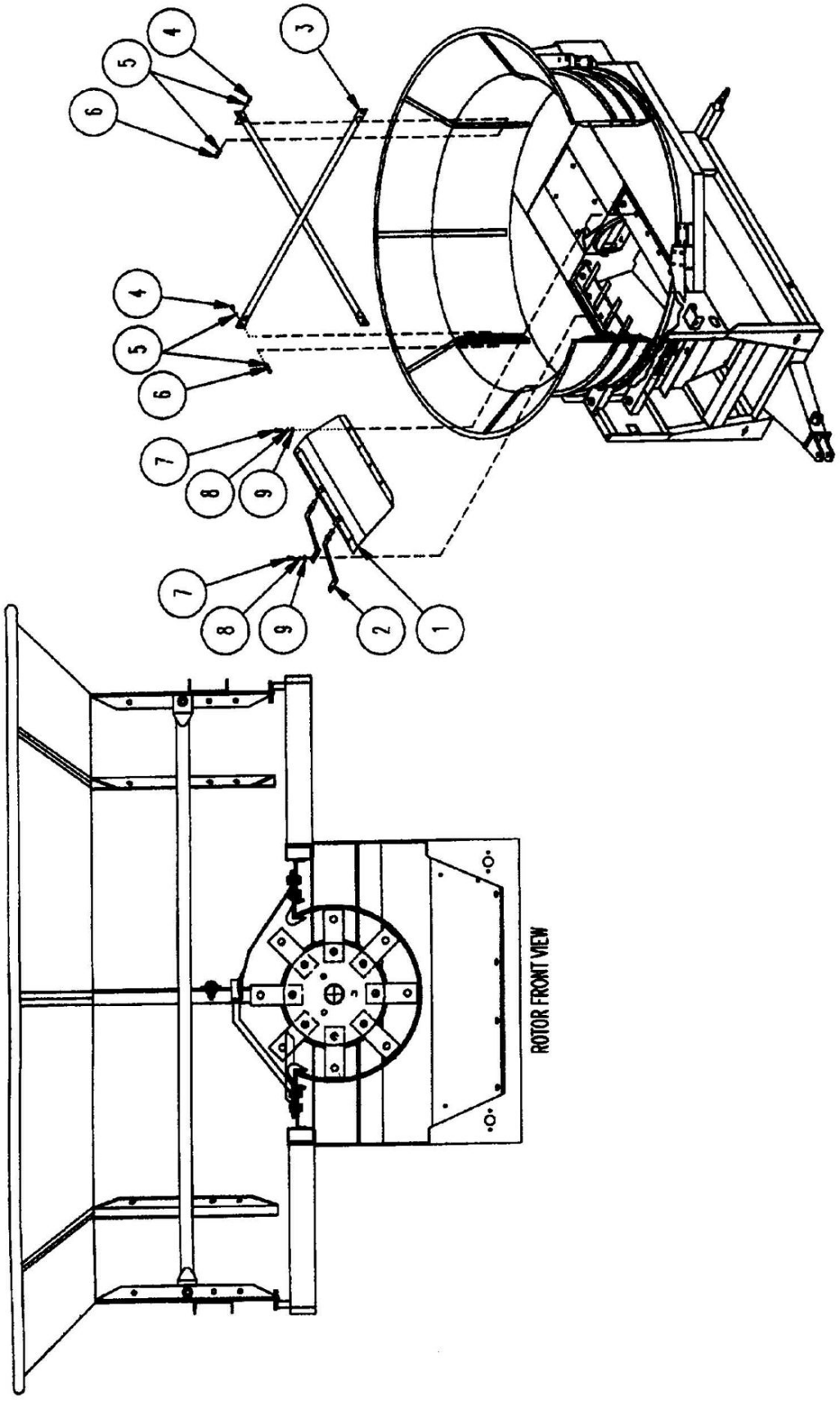
1. Orient tub so that two interior tub angles are centered in front of the cylinder box.
2. Bolt front (#2) and rear (#3) covers to the grain hopper with hardware. Check to see that the hopper baffle orientation is correct.
3. Place rounded end of hopper tight against the tub seal ring.
4. Check to see the hopper is centered side to side over rotor.



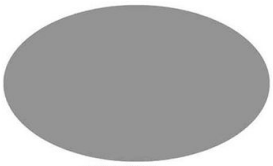
5. Drill four 7/16″ holes through tub floor using hopper as a guide.
6. Secure hopper to the floor with the provided 3/8″ hardware.

IMPORTANT! DO NOT ROTATE TUB WITH HOPPER INSTALLED.

Item	Part No.	Name	Remarks	Qty	Uom
CA	4501349	HPPR\GRAIN\ASSY\COMPLETE			EA
1	4501335	HPPR\GRAIN		1	EA
2	4501339	CVR\RTR\HPPR\GRAIN		1	EA
3	4501341	CVR\END\HPPR\GRAIN		1	EA
4	4800003	BOLT\HEX\3/8X1		14	EA.
5	4800034	BOLT\HEX\3/8X1-1/2		4	EA.
6	4900002	NUT\HEX\3/8\NC		18	EA.
7	5000001	WASH\FLAT\3/8		8	EA.
8	5000019	WASH\LOCK\3/8		18	EA.


ROTOR FRONT VIEW

Item	Part No.	Name	Remarks	Qty	Uom
CA	4500752	Optn\Ear Corn\H-100095			EA
1	4500750	Cover\Rotor\Ear Corn		1	EA
2	4500751	BRKT\COVER\ROTOR\EARCORN		2	EA
3	4500122	PIPE\CROSS\1-1/2X95		2	EA
4	4800114	BOLT\HEX\1/2X2		4	EA.
5	5000004	WASH\FLAT\1/2		8	EA.
6	4900001	NUT\HEX\1/2\NC		8	EA.
7	4800010	BOLT\HEX\5/8X2		6	EA.
8	5000003	WASH\LOCK\5/8		6	EA.
9	5000002	WASH\FLAT\5/8		6	EA.



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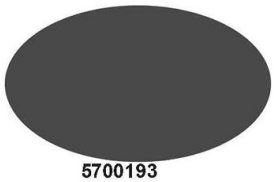

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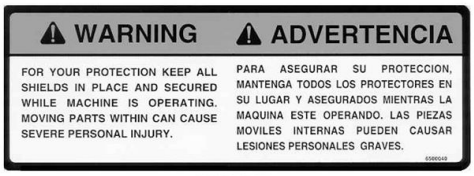
6500020



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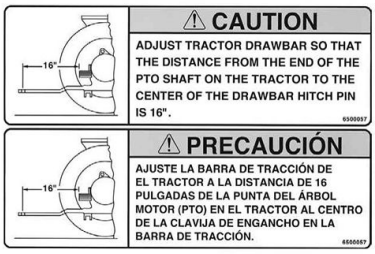

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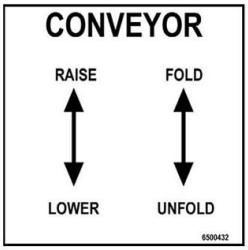
6500096

6500102



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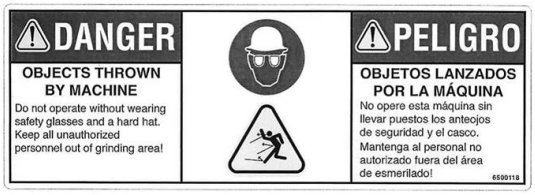

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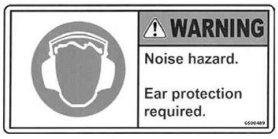

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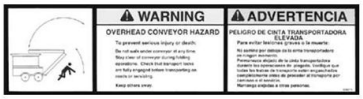

6500215

Item	Part No.	Name	Remarks	Qty	Uom
1	5700192	LAMP\RFLCTR\AMB\4-3/8X>		2	EA
2	5700193	LAMP\RFLCTR\RED\4-3/8X>		2	EA
3	6500020	DECAL\LOGO\HYBSTR\SNBRS\3		1	EA.
4	6500040	DECAL\WARN\SHIELD\PROT		5	EA.
5	6500041	DECAL\WARN\PROTECTION		2	EA.
6	6500043	DECAL\WARN\NO;RIDERS		2	EA.
7	6500052	DECAL\INFO\OIL;LEVEL		1	EA
8	6500054	DECAL\LOGO\H-1000		1	EA
9	6500056	DECAL\INFO\ROTATION\STR		1	EA
10	6500057	DECAL\CAUT\ADJ.DRAW BAR		1	EA
11	6500082	DECAL\DNGR\ROTATN;PART;>		4	EA.
12	6500085	DECAL\DNGR\ROTATNG;DR-LNE		1	EA.
13	6500096	DECAL\LOGO\HYBSTR\3\W/O;>		2	EA
14	6500102	DECAL\LOGO\STRIPE\RED\FT			FT
15	6500118	DECAL\DNGR\OBJCTS;THROWN		1	EA
16	6500214	DECAL\WARN\OVRHED;CNVYR;>		2	EA
17	6500215	DECAL\WARN\FOLDNG;CNVYR;>		2	EA
18	6500220	DECAL\WARN\HI;PRESS;FLUID		1	EA.
19	6500339	DECAL\WARN\PINCH;POINT		2	EA
20	6500363	DECAL\LOGO\BIGBITE\UNVRSL		2	EA
21	6500432	DECAL\CNVYR\H1130\GP50		1	EA
22	6500489	DECAL\WARN\PPE\HEARING		1	EA
	6500002	DECAL\KIT\H-1000			EA
	7500077	PAINT\YELLOW\SPRAY\12OZ			EA.
	7500092	PAINT\YELLOW\QUART			EA.
	7500091	PAINT\YELLOW\GALLON			EA.
	7500078	PAINT\RED\SPRAY\11OZ>			EA.
	7500105	PAINT\RED\QUART			EA.
	7500104	PAINT\RED\GALLON			EA.


HAYBUSTER
HAYBUSTER
H-1000
6500020
6500054
6500085
6500057
6500096
6500102
6500040
6500363


6500215
6500214
6500339
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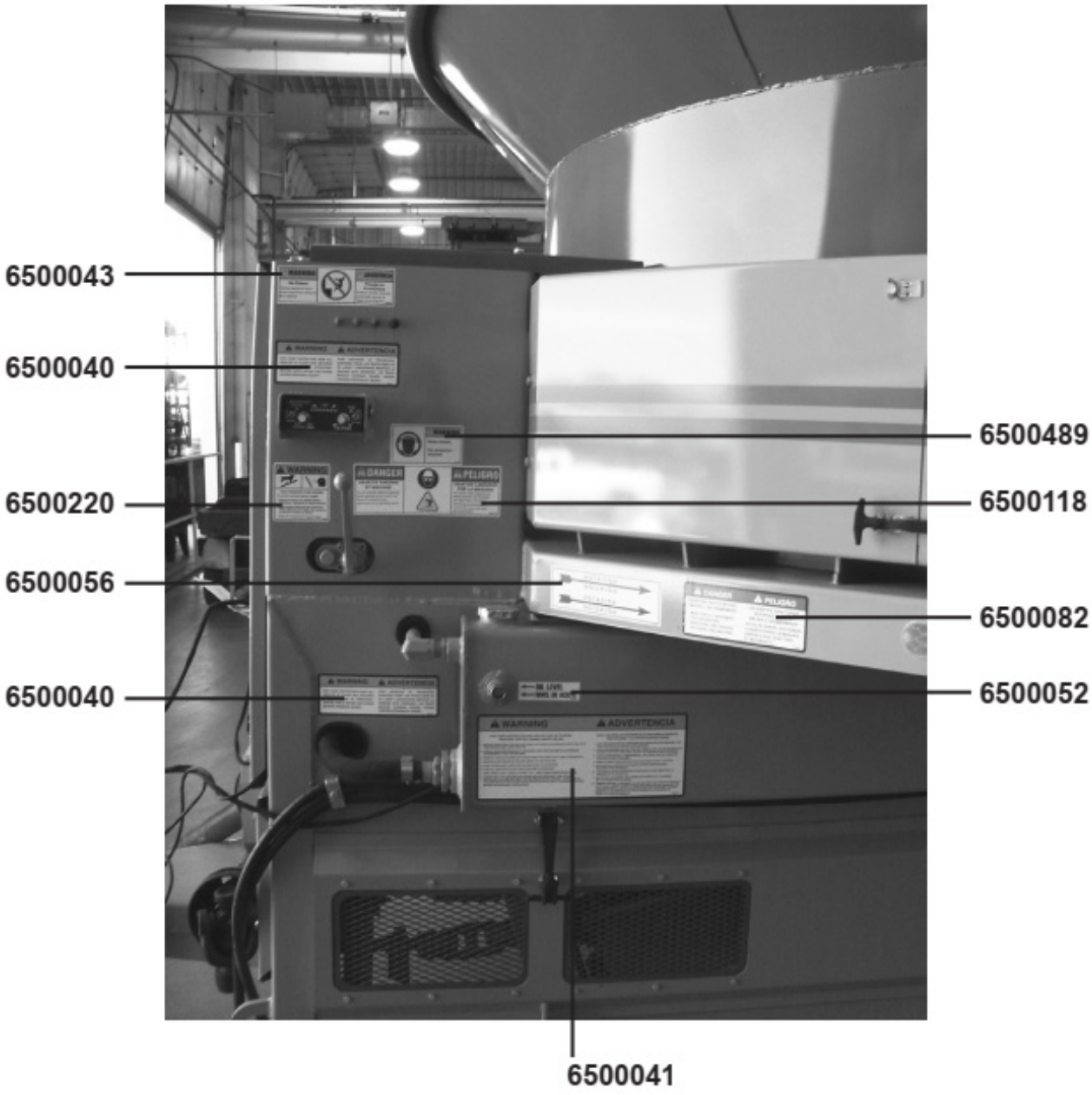
HAYBUSTER
H-1000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6500040
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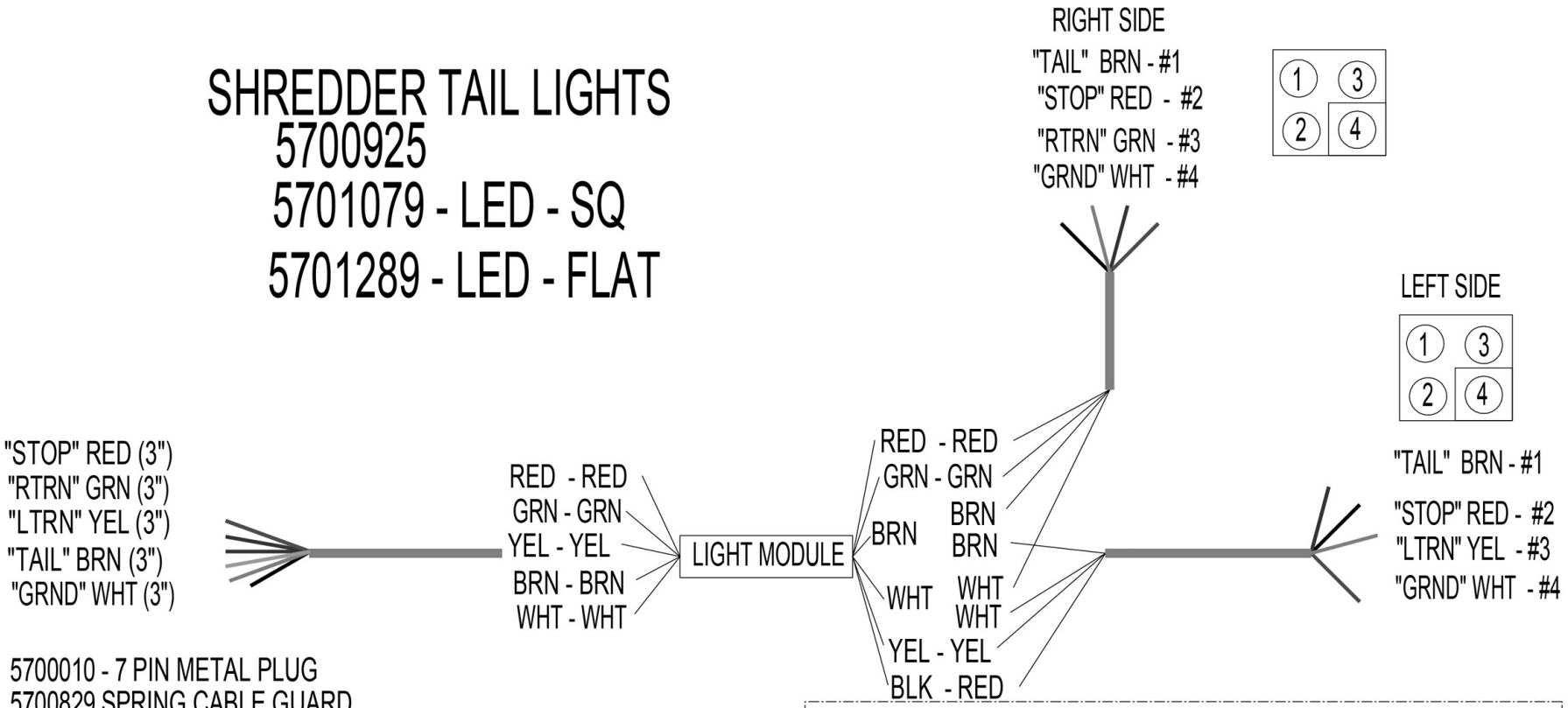
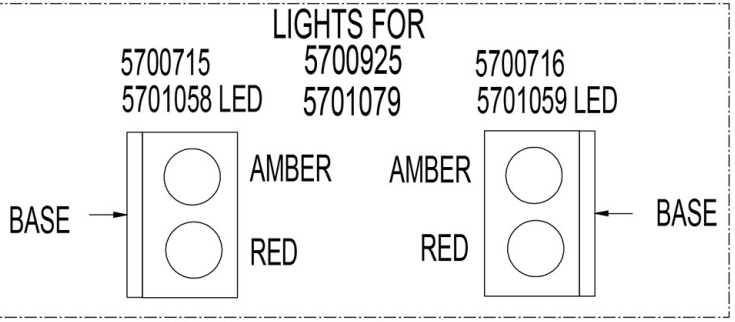
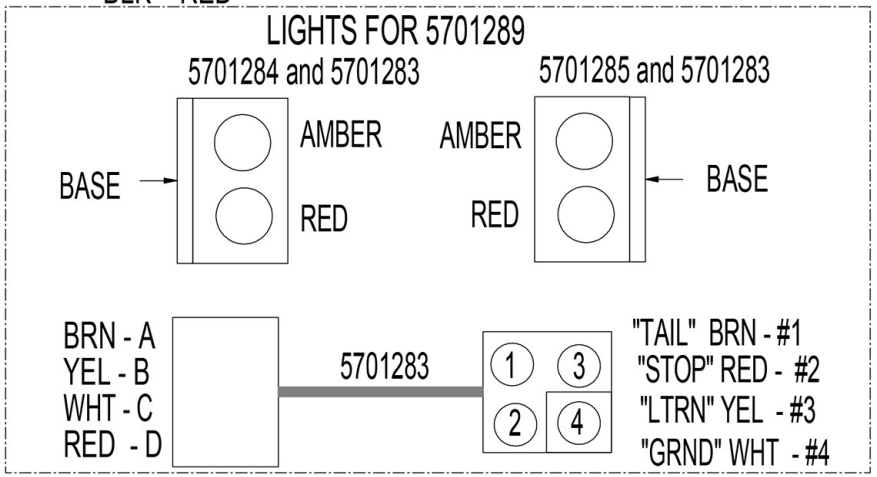
6500082
6500052
6500041

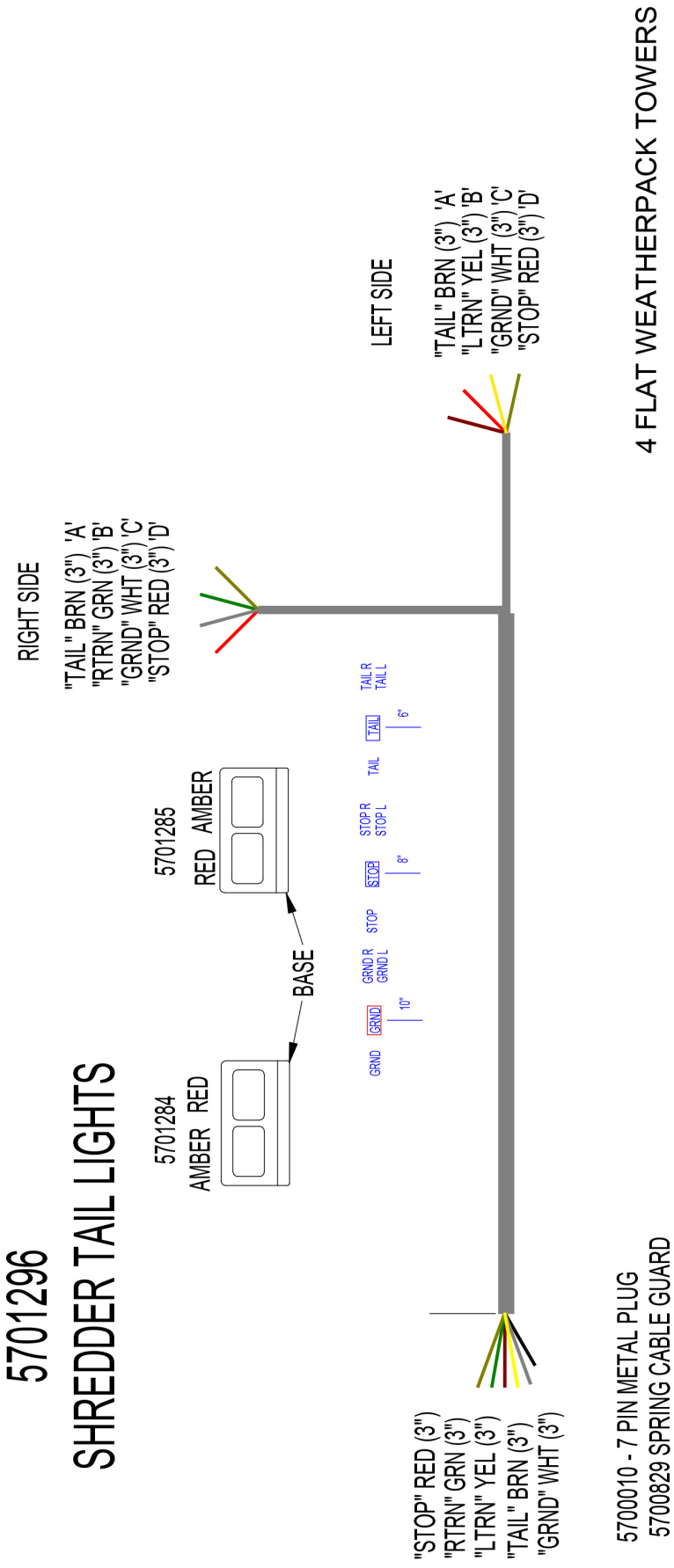
SHREDDER TAIL LIGHTS
5700925
5701079 - LED - SQ
5701289 - LED - FLAT

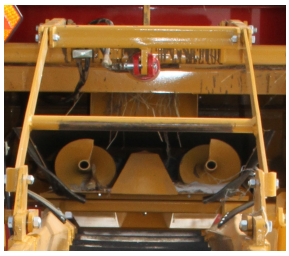


5700010 - 7 PIN METAL PLUG
5700829 SPRING CABLE GUARD
5700924 HARNESS







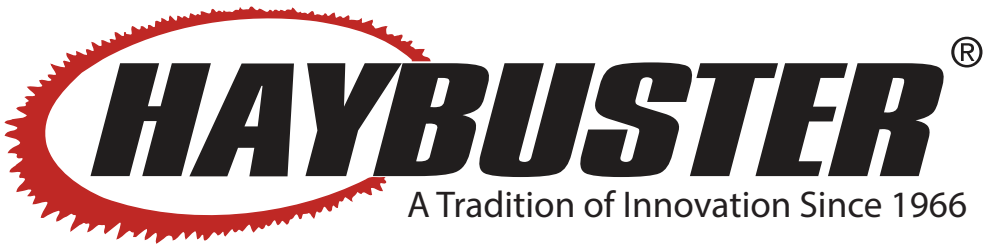


H-1000™
PTO Driven Tub Grinder
Serial Number 4542 thru 4921

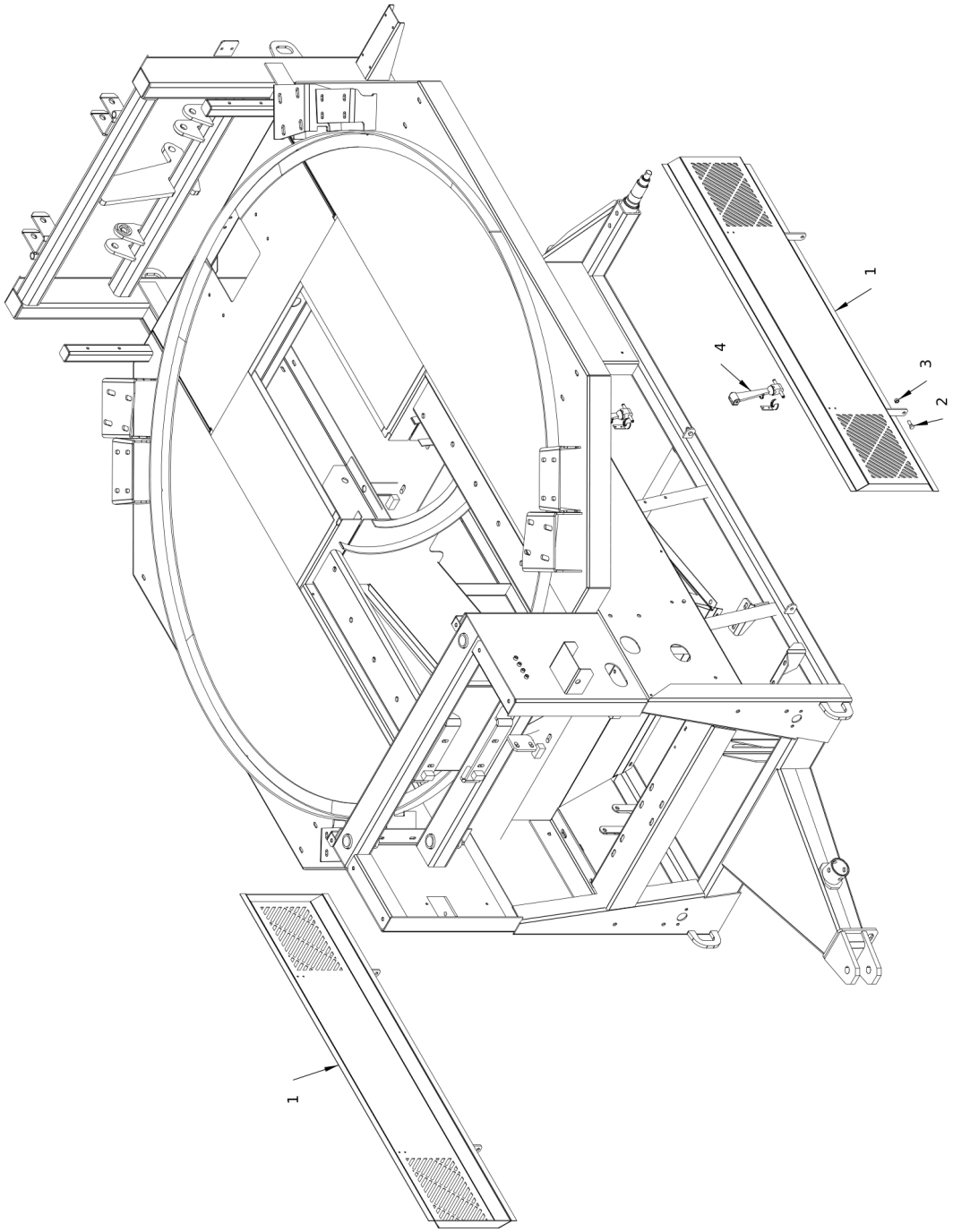
Supplement Parts Reference
For Serial Number 4921

DuraTech Industries International Inc. (DuraTech Industries) has made every effort to assure that this manual completely and accurately describes the operation and maintenance of the H-1000 PTO Driven Tub Grinder™ as of the date of publication. DuraTech Industries reserves the right to make updates to the machine from time to time. Even in the event of such updates, you should still find this manual to be appropriate for the safe operation and maintenance of your unit.

This manual, as well as materials provided by component suppliers to DuraTech Industries are all considered to be part of the information package. Every operator is required to read and understand these manuals, and they should be located within easy access for periodic review.


HAYBUSTER®
A Tradition of Innovation Since 1966

H-1000 Supplement Parts Reference for SN 1023492100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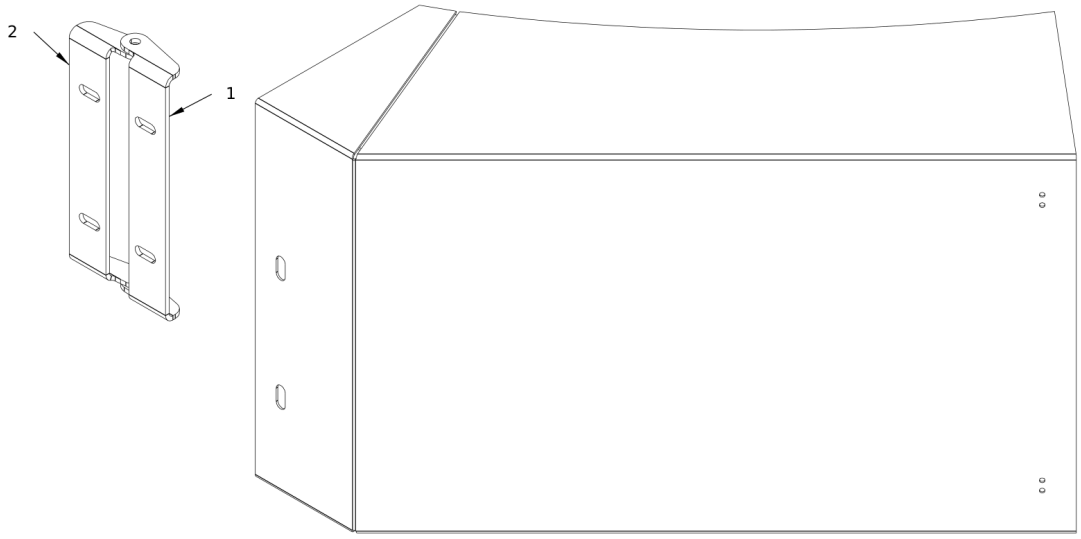
H-1000 Side Door Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	4502992	DOOR\DRV\SIDE		2	EA.
2	4800003	BOLT\HEX\3/8X1		4	EA.
3	4900023	NUT\TPLCK\3/8\NC		4	EA.
4	7501660	LATCH\RBBR\8\W-STD-CATCH		4	EA.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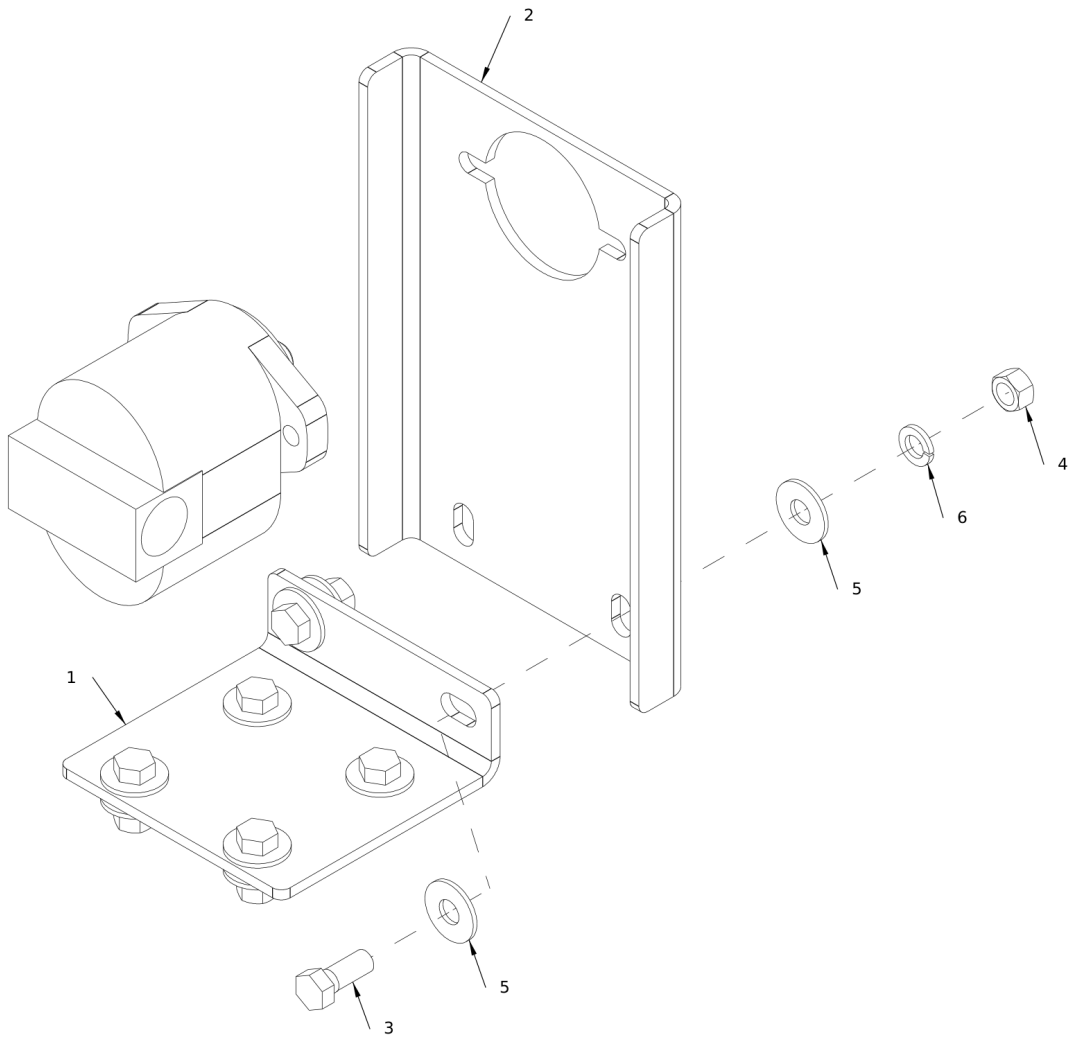
H-1000 Drive Door Hinge Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	4503060	HINGE\FAB\12-1/2\OUTER		4	EA.
2	4503061	HINGE\FAB\12-1/2\INNER		4	EA.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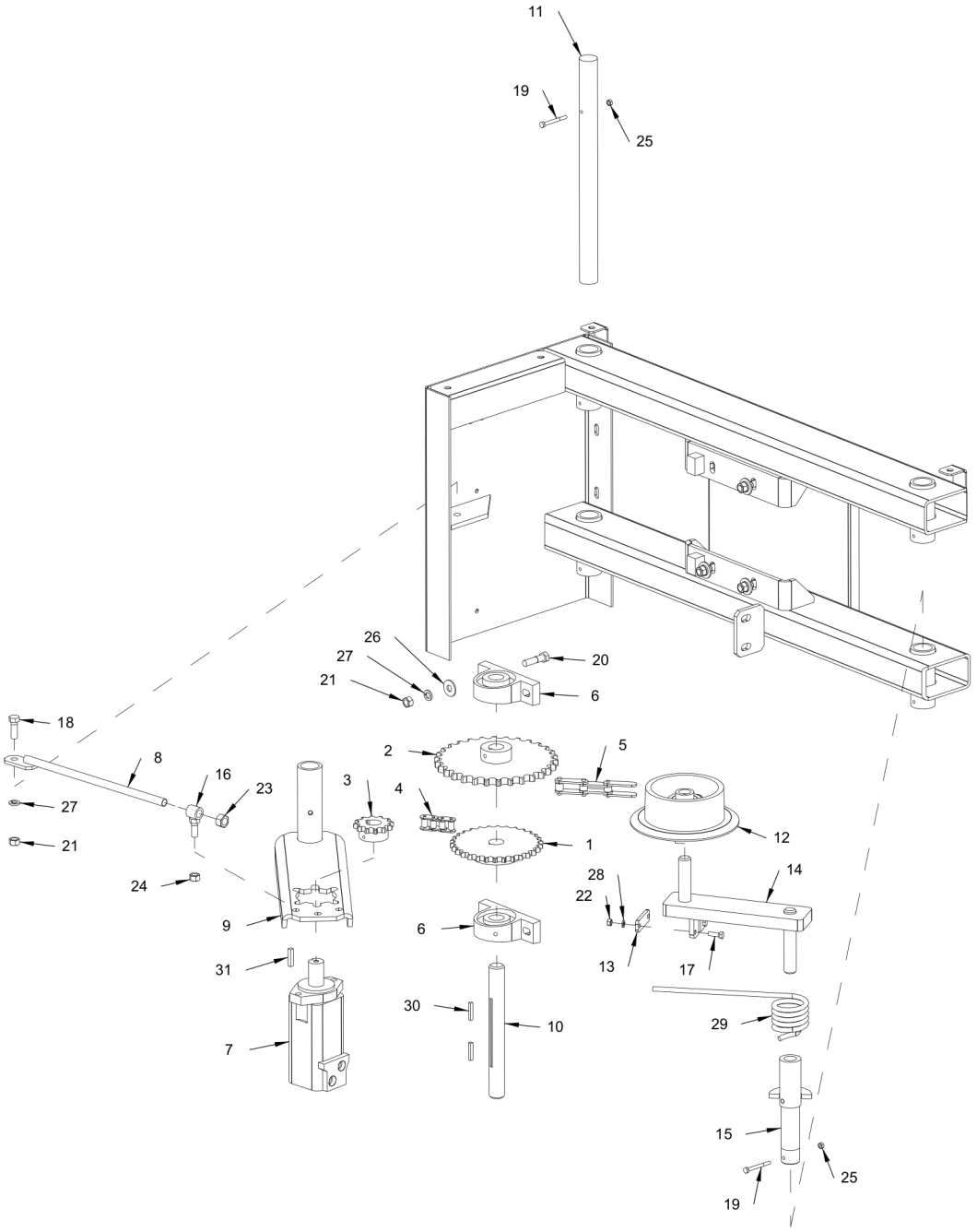
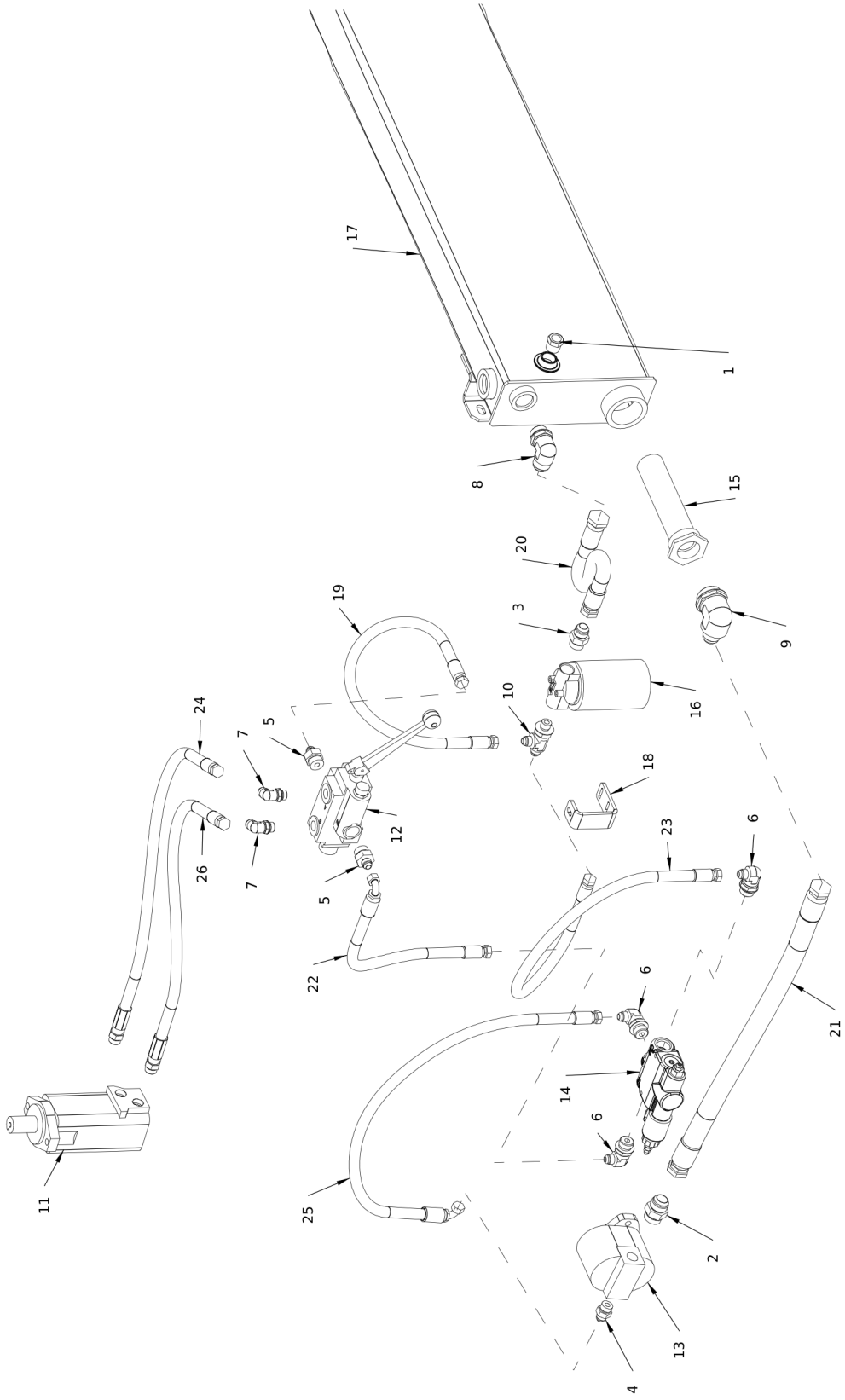
H-1000 Drive Pump Bracket Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	4502988	BRKT\PUMP\DR		1	EA.
2	4502989	BRKT\PUMP\DR		1	EA.
3	4800018	BOLT\HEX\1/2X1-1/4		6	EA.
4	4900001	NUT\HEX\1/2\NC		6	EA.
5	5000004	WASH\FLAT\1/2		12	EA.
6	5000006	WASH\LOCK\1/2		6	EA.



H-1000 Tub Drive Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	1000033	SPKT\60\B\30\1-1/4\1/4		1	EA
2	1000077	SPKT\80\B\30\1-1/4\1/4KW		1	EA
3	1000134	SPKT\60\B\12\1		1	EA
4	1100045	CHAIN\60\47		1	EA
4a	1100062	CHAIN\60\CL			EA.
5	1100320	CHAIN\2080\161+CL		1	EA
5a	1100070	CHAIN\2080\CL			EA
5b	1100071	CHAIN\2080\OL			EA
6	2000502	BRG\PB\1-1/4\2BOLT		2	EA
7	3900005	MTR\HYD\14.9\2000\SAE;A		1	EA
8	4500335	BOLT\TGHTR\ORBITMTR\TUBDRV		1	EA
9	4500587	BRKT\TGHTR\CHAIN\TUBDRV		1	EA
10	4500591	SHFT\RD\1-1/4 X 11-1/2LG		1	EA
11	4500592	SHAFT\RD\1 1/2x19 1/2 \TUB DRIVE		1	EA
12	4501331	RLLR\DR\TUB		1	EA
13	4501383	BRKT\SPRING\		1	EA
14	4501705	BRKT\RLLR\TNSN		1	EA
15	4502993	SHFT\TGHTNR\CHAIN		1	EA.
16	4701691	BRKT\TGHTR\CHAIN\ORBIT		1	EA
17	4800013	BOLT\HEX\5/16X1		2	EA.
18	4800082	BOLT\HEX\1/2X1-1/2		1	EA.
19	4800101	BOLT\HEX\1/4X2-1/2		2	EA.
20	4800114	BOLT\HEX\1/2X2		4	EA.
21	4900001	NUT\HEX\1/2\NC		5	EA.
22	4900003	NUT\HEX\5/16\NC		2	EA.
23	4900005	NUT\HEX\5/8\NC		1	EA.
24	4900014	NUT\TPLCK\1/2\NC		1	EA.
25	4900084	NUT\TPLCK\1/4\NC		2	EA.
26	5000004	WASH\FLAT\1/2		8	EA.
27	5000006	WASH\LOCK\1/2		5	EA.
28	5000022	WASH\LOCK\5/16		2	EA.
29	6100078	SPG\DR\TUB		1	EA.
30	6200005	KEY\SQ\1/4X1-1/2		2	EA,
31	6200022	KEY\SQ\5/16X1-1/2\HARDEND		1	EA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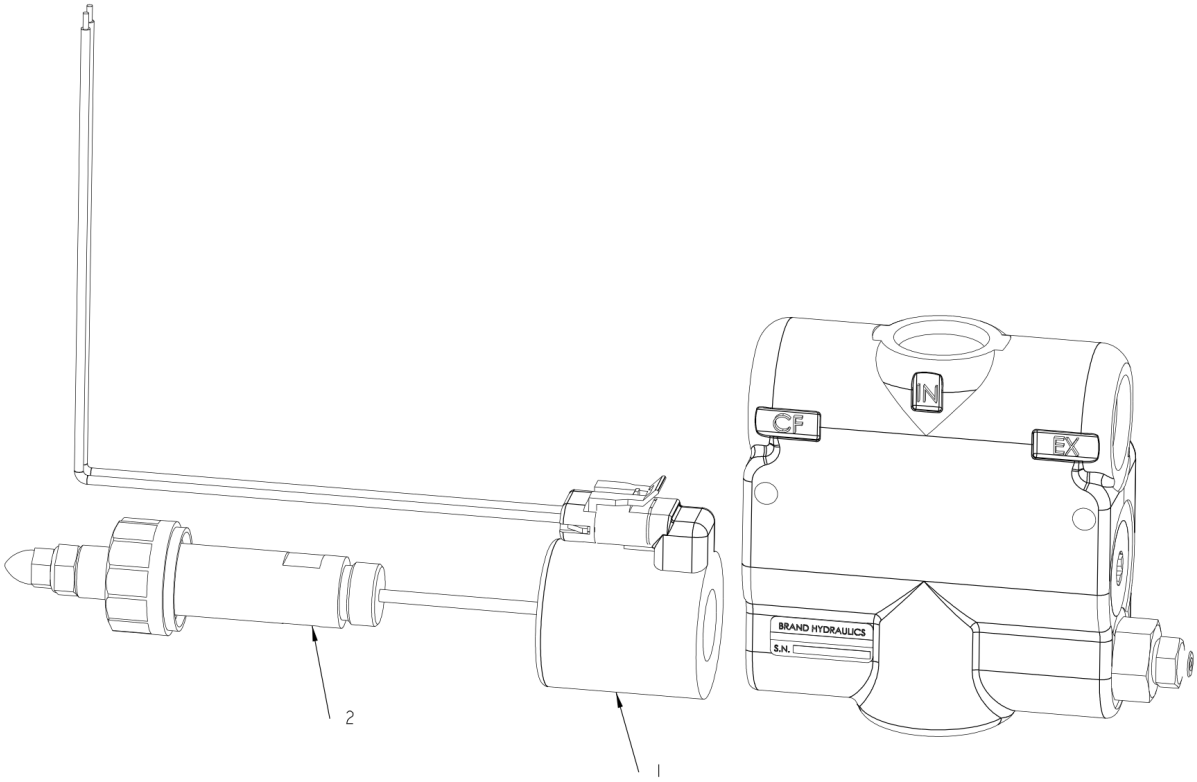
Item	Part No.	Name	Remarks	Qty	Uom
1	3800137	FTG\3/4MP\SIGHT:GLASS		1	EA
2	3800274	FTG\1-5/16MORX1-5/16MJIC\ST		1	EA
3	3800277	FTG\1-1/16MORX1-1/16MJIC\ST		1	EA
4	3800328	FTG\7/8MORX3/4MJIC\ADPT		1	EA.
5	3800480	FTG\1-1/16MORX3/4MJIC\ADPT		2	EA
6	3800536	FTG\1-1/16MORX3/4MJIC\90		3	EA
7	3800537	FTG\3/4MORX3/4MJIC\90		2	EA.
8	3800728	FTG\1-5/16MORX1-5/16MJIC\90		1	EA.
9	3800904	FTG\1-7/8MORX1-5/16MJIC\90		1	EA
10	3801017	FTG\1-1/16MORX1/2MJICX1/2MJIC\RUN;TEE		1	EA.
11	3900005	MTR\HYD\14.9\2000\SAE;A		1	EA
12	4000095	VALVE\HYD\1-SPL\W/DETENT\ O-Ring\1800PSI		1	EA
13	4200025	PUMP\HYD\1.87CU.IN.\RH\EATON\15		1	EA
14	4300078	VALVE\SERVO\15GPM\12V\BRAND		1	EA
15	4400067	FLTR\SCRN\2-1/2MORX1-7/8FOR\30GPM\ST30-100-RV3		1	EA
16	4400165	FLTR\COMP\10MICRON\3.7D\35GPM		1	EA
17	4500580	TANK\OIL\BOLTED		1	EA
18	4502671	BRKT\FILTER		1	EA.
19	3701076	HOSE\HYD\1/2X21\3/4FJICS		1	EA.
20	3701677	HOSE\HYD\3/4X9\1-5/16FJICX1-1/16FJIC		1	EA.
21	3701702	HOSE\HYD\1X27-1/2\1-5/16FJICX1-5/16FJIC		1	EA.
22	3701673	HOSE\HYD\1/2X22\3/4FJICX3/4FJIC\90		1	EA.
23	3700982	HOSE\HYD\1/2X 20\3/4FJICX3/4FJIC		1	EA.
24	3701674	HOSE\HYD\1/2X32\3/4FJICX5/8MBX		1	EA.
25	3701011	HOSE\HYD\1/2X31\3/4FJICSX3/4FJIC90		1	EA
26	3701676	HOSE\HYD\1/2X29\3/4FJICX5/8MBX		1	EA.
NS	7501030	OIL CAP\UNVENTED		1	EA
NS	3800253	FTG\3/4MP\VENT\>ABS-40		1	EA
NS	4800018	BOLT\HEX\1/2X1-1/4		5	EA.
NS	4900014	NUT\TPLCK\1/2\NC		5	EA.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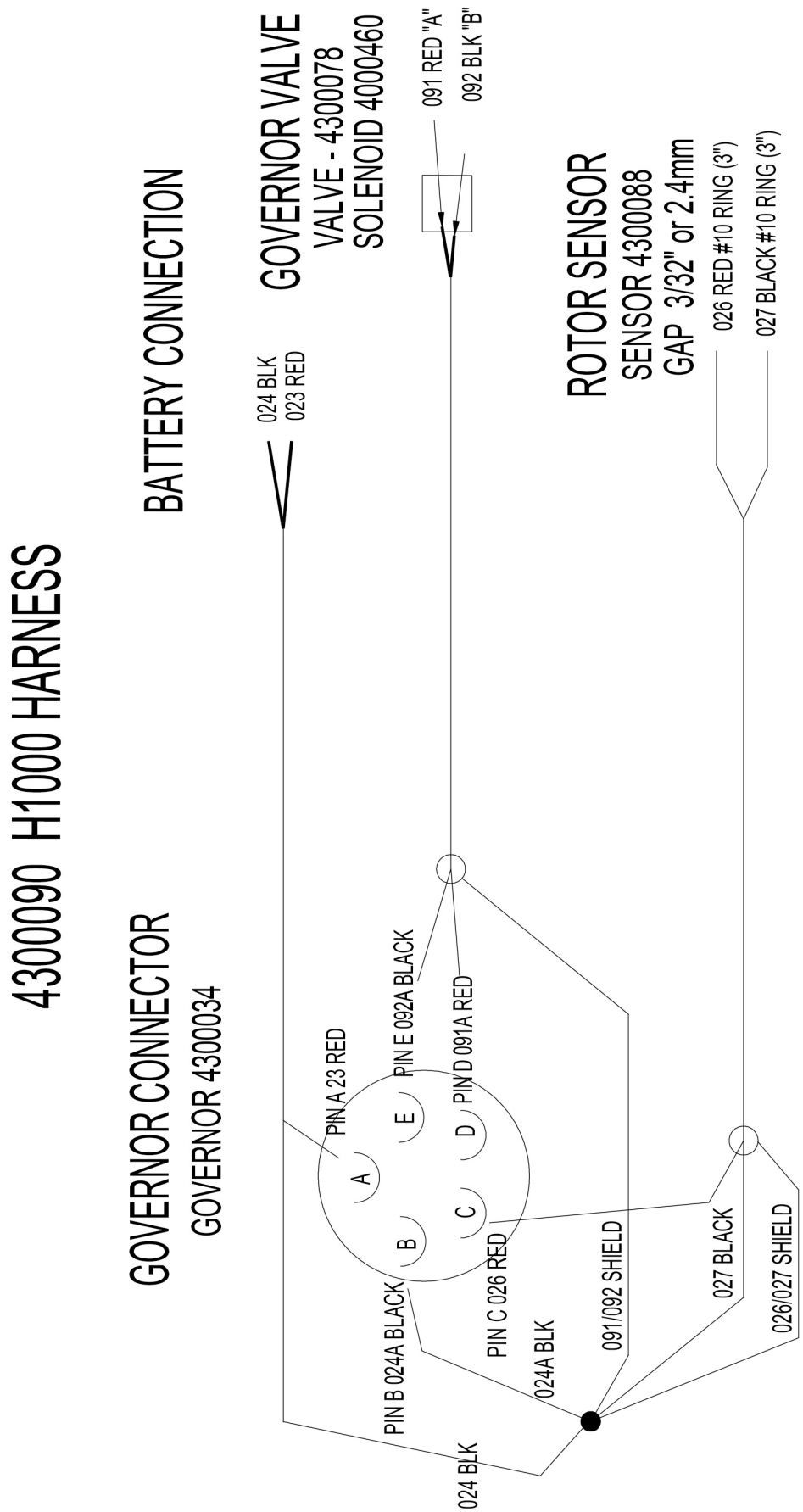
Item	Part No.	Name	Remarks	Qty	Uom
1	4000460	VALVE\HYD\SOL\12V\C961		1	EA
2	4000464	TUBE\COIL\ASSY\W/PUSHROD		1	EA
CA	4300078	VALVE\SERVO\15GPM\12V\BRAND			EA
NS	4300077	SEAL KIT			EA



Delivery Report

Delivery Date	Machine Model	Serial No.	
Dealer Name		Engine Serial No.	
Dealer Address		Invoice No.	
Dealer City		State	Zip
Dealer Email		Phone	

Customer Name		
Customer Address	Phone	
Customer City	State	Zip
Customer Email		

The following items are to be checked as they are explained to the owner / operator at the time of delivery

- ☐ Explain the delivery packet and present the operators manual(s) to the owner / operator.
- ☐ Review and inspect the machine safety signs (decals) and the operator's manual.
- ☐ Advise the owner that the dealer is the source to obtain operator training, and information regarding the correct application of the machine to the job, as well as service and warranty information.
- ☐ Explain the capabilities and restrictions of the machine as it applies to the owner's application as defined in the operator's manual.
- ☐ Explain the operation of the controls and start up and shut down procedures of the engine and power transmission components of the machine.
- ☐ Explain rated lift or carrying capacity and loading and unloading procedures of the machine to maintain safety and stability of the machine.
- ☐ Explain proper folding, unfolding, and transporting procedures to the owner / operator.
- ☐ Explain recommended fueling procedures on engine equipped machines.
- ☐ Explain proper loading and unloading of materials from the tub or grinding chamber of the machine.
- ☐ Objects thrown by shredding or spinning rotors may represent a hazard to personnel and property in the area. Minimize risks by planning and by keeping personnel and property clear of hazaard area.
- ☐ Explain the availability and use of the tub cover to further reduce risks of thrown objects.
- ☐ Review maintenance and lubrication procedures with the operator / maintenance person as defined in the operators manual.
- ☐ Advise never to use the machine in an environment with explosive or flammable materials present.
- ☐ Explain warranty policy and limitations to the owner / operator.

⚠ Warning

Misuse of the machine or modification or removal of the guards, safety devices, or control interlocks can cause injury or death.

The above delivery information has been explained to me. I understand the operation and maintenance of this machine. I also acknowledge the warranty conditions and limitations as outlined.	
Owner / Operator Signature	**Date**
Dealer Representative Signature	**Date**