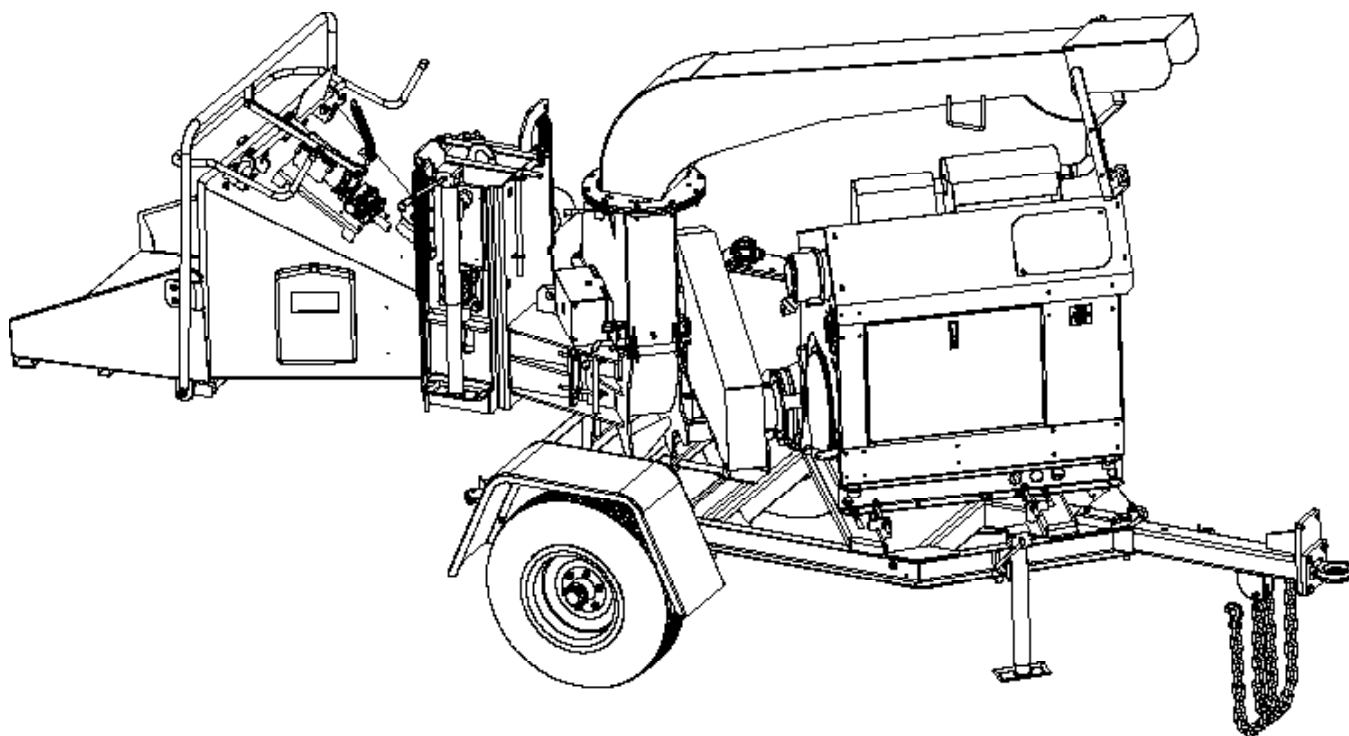




Model DC 912A



Maintenance/Parts Manual

Altec Environmental Products LLC. reserves the right to improve models and change specifications without notice.

704-482-4356
11-2009

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Preface

This unit is the result of Altec Environmental Products, LLC advanced technology and quality awareness in design, engineering and manufacturing. At the time of delivery from the factory, this unit met or exceeded all applicable requirements of the American National Standards Institute. All information, illustrations and specifications contained within this manual are based on the latest product information available at the time of publication. It is essential that all personnel involved in the use and/or care of this unit read and understand the Operator's Manual, all decals and placards.

Given reasonable care and operation, according to the guidelines set forth in the manuals provided, this unit will provide many years of excellent service before requiring major maintenance.

Impacts to and excessive forces on the equipment, though vehicular accidents, rollovers, excessive loading, and the like, may result in structural damage not obvious during a visual inspection. If the equipment is subjected to such impact forces, a qualified person may need to preform additional testing such as magnuflux or ultrasonic testing as applicable. If structural damage is suspected or found, contact Altec Environmental Products, LLC for additional instruction.

WARNING

Death or serious injury could result from component failure. Continued use of equipment with hidden damage could lead to component failure.

Never alter or modify this unit in any way that might affect the structural integrity or operational characteristics without the specific written approval of Altec Environmental Products, LLC. Unauthorized alterations or modifications will void the warranty. Of greater concern, is the possibility that unauthorized modifications could adversely affect the safe operation of this unit, resulting in personal injury and/or property damage.

DANGER

Death or serious injury will result from operation of a chipper, while coupled to an energized aerial device. Non-insulated aerial devices have no dielectric rating. When coupled, chipper to aerial lift and in the proximity of energized conductors, there shall be no operation or contact with the chipper.

Set-up requirements, work procedures, and safety precautions for each particular situation are the responsibility of the personnel involved in the use and/or care of this unit.

MODEL DC 912A

CHIPPER
SERIAL NUMBER

ENGINE MAKE
MODEL
SERIAL NUMBER

DISC
HEAD
NUMBER

CUSTOMER

NAME
ADDRESS
CITY
STATE ZIP CODE -
PHONE NUMBER - -
DELIVERY DATE - -

DEALER NAME

Altec Environmental Products, LLC
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Shelby, North Carolina 28150 Telephone:
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STANDARD LIMITED WARRANTY

New products manufactured by Altec Environmental Products, LLC ("AEP"), are warranted to be free from defects in materials and workmanship at the time of initial delivery to the original retail purchaser, subject to the following provisions:

For a period of one (1) year from the date of shipment to the original retail purchaser or two thousand hours of use, whichever comes

first, AEP will replace or repair, in its sole discretion and at a location it designates, any parts AEP determines, in its sole discretion to have been defective in workmanship or material upon initial delivery.

This Limited Warranty does not cover (a) equipment not operated and maintained in accordance with AEP operator's and maintenance manuals, (b) equipment and components not manufactured by AEP, (c) equipment damaged through abuse or accident, (d) equipment which has been subjected to unauthorized alteration or repair, or repaired using unauthorized parts, (e) equipment damaged through the failure to replace normal wear items (f) transportation or delivery to an AEP service facility or to the customer's location, and (g) the power unit for the equipment, which is warranted, if at all, by its manufacturer, according to its terms, and not by AEP.

Labor expenses incurred during approved warranty work will be reimbursed by AEP only when AEP has authorized such work in advance, in writing, and then only to the extent stated in the written authorization. Such approved labor credit will be based on reasonable labor rates and factory replacement time. Technician or transport travel time will not be reimbursed unless pre-approved in writing by an authorized AEP representative.

This Limited Warranty is non-transferable unless prior written authorization is obtained from AEP.

This Limited Warranty is expressly in lieu of any and all other warranties, express or implied, including, but not limited to, any warranty of merchantability or fitness for a particular purpose. Remedies under this Limited Warranty are expressly limited to the repair or replacement of parts, as specified above, and any claims for other loss or damages of any type (including, but not limited to, loss from failure of the equipment to operate for any period of time, other economic or moral loss, or direct, immediate, special, indirect, incidental, or consequential damage) are expressly excluded. AEP reserves the right to supply remanufactured replacement parts as it deems appropriate.

This Limited Warranty begins on the date the equipment is sold and shipped from a Ditch Witch dealer or any other authorized Altec shipping site.

Parts Warranty: Parts replaced in the warranty period will receive the balance of the Original Warranty. Replacement parts after the Original Warranty are warranted to be free of defects of material for (90) days or the part will be repaired or replaced, without labor coverage for removal or reinstallation.

Claims for coverage under this Limited Warranty should include the following information:

- 1) Location from which equipment was purchased.
- 2) Date of delivery.
- 3) Chipper serial number.
- 4) Chipper model number.
- 5) Engine make and serial number.
- 6) Length of time in use (number of hours shown).
- 7) Date of failure.
- 8) Nature of failure and events surrounding the failure.

For Information or claims contact:
Altec Environmental Products, LLC
512 North Post Road
Shelby NC 28150
704-482-4356

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Section 1 — Introduction

About This Manual...

This manual provides instruction for the operation of the unit. The operator must be familiar with the unit and its capabilities before using the unit on the job. This manual is written to provide an understanding of the unit, safety, proper set-up and operation.

Charts and figures are provided to support the text. Because options vary from one model to another, some figures may only be a representation of what is actually on the unit.

Contact the following organizations for additional information.

- American National Standards Institute (ANSI)
Z133.1 Pruning, Repairing, Maintaining, and Removing Trees, and Cutting Brush-Safety Requirements
- American Public Power Association
(Safety Manual for an Electric Utility)
- American Society for Testing and Materials (ASTM)
- American Welding Society (AWS)
- European committee for Standardization (CEN)
- Fluid Power Society (FPS)
- Hydraulic Tool Manufacturers Association (HTMA)
- International Electrotechnical Commission (IEC)
- International Organization for Standards (ISO)
- Occupational Safety and Health Administration (OSHA)
- Federal Motor Carrier Safety Administration (FMCSA)
- US Department of Transportation (DOT)
- Federal Highway Administration (FHWA)

Dealers, Installers, owners, users, operators, renters, lessors, and lessees must comply with the appropriate sections of the applicable ANSI standard.

The Appendix contains reference items to assist in unit operation. A glossary of industry terms is provided for your convenience. This glossary provides an understanding of the industry terms and phrases used in Altec manuals. Throughout the manual, the term unit is used to describe the Altec device, sub-base, and the associated interface with the vehicle.

Supply the model and serial number found on the serial number placard and the manual part number from the rear cover to assure that the correct manual will be supplied.

Unit Specifications

Purpose of the Unit

This unit has been designed and built to reduce brush and above ground tree components into uniformed wood chips.

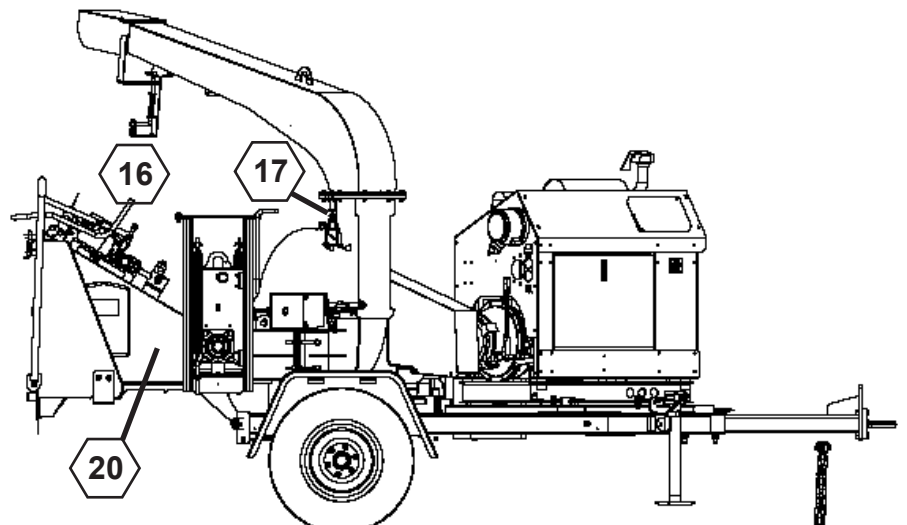
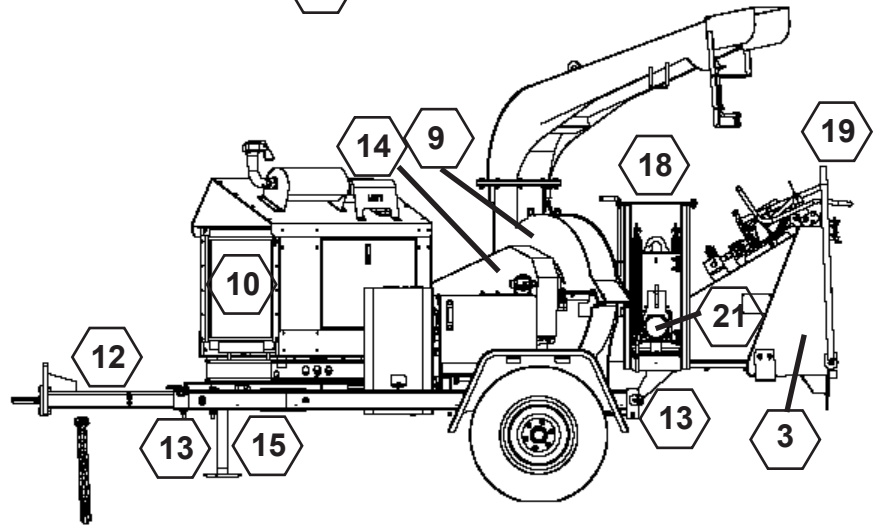
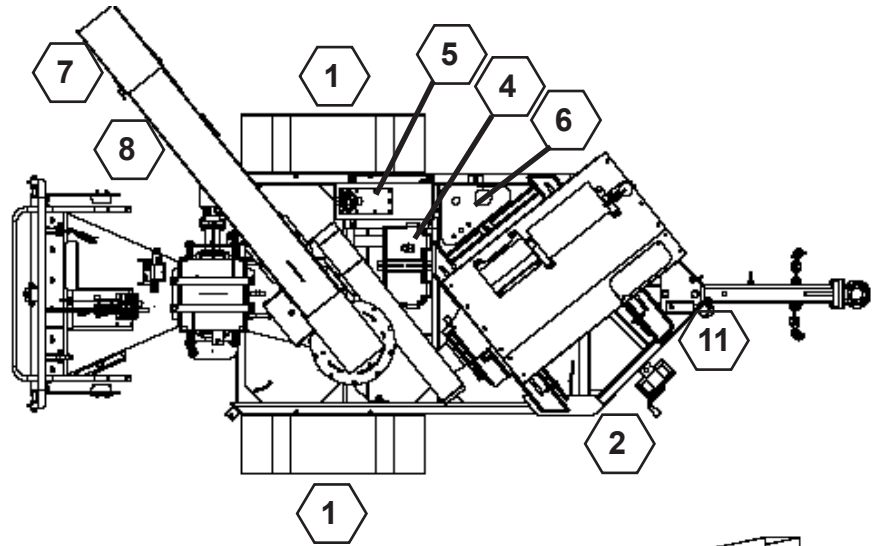
General Specifications

This unit is a 9 inch capacity, controlled feed disc chipper. The chipper mechanism is permanently mounted on the tow-able frame assembly. The chipper mechanism is belt driven through a self contained industrial engine. Material is fed utilizing a horizontally mounted, hydraulically controlled feed roll. Cutter head consists of a 30 inch diameter disc with 5.00 knives. Chip discharge is designed for 360 ° rotation for chip box and road side discharge applications.

Item	Standard Specifications
Chipping capacity	9 Inch
Engine horse power (Standard)	48 Hp
Noise level *1	80
Weight	3900 lb
Tongue weight (may vary)	350 lb
Travel height	8' 6" Inch
Width	6' Foot
Transport length	14 1" Inch
Operational length	16' 4" Inch
Feed roller opening	12 Inch Wide x 9 Inch Height
Feed table dimensions	40 Inch Wide x 28 Inch Deep
In-feed chute opening	37 Inch Wide x 30 Inch High
Length to feed roll nip point *2	85 Inch
Disc dimensions	1 ½ Inch Wide x 30 Inch Dia.
Disc Weight	399 lbs
Disc RPM	1460 RPM
Feed roll	11½ Inch Wide x 12¾ Inch Dia.
Feed Rate	150 Feet Per Minute
Feed roll motor rating	24.7 Cu. In. Displacement
Hydraulic pressure	3000 PSI
Hydraulic tank capacity	8 Gallon
Fuel tank capacity	15 Gallon
Trailer lighting	L.E.D
Discharge chute rotation	360 Degree

Major Component Identification

- 1) FENDERS
- 2) TRAILER FRAME
- 3) FOLDING FEED TABLE
- 4) BATTERY BOX
- 5) HYDRAULIC TANK
- 6) FUEL TANK
- 7) CHIP DEFLECTOR
- 8) DISCHARGE CHUTE
- 9) DISC HOUSING
- 10) ENGINE
- 11) BREAKAWAY SWITCH
- 12) TOW BAR
- 13) CLEARANCE LIGHTS
- 14) BELT GUARD
- 15) FRONT JACK-STAND
- 16) PANIC BAR
- 17) CHUTE ROTATION PIN
- 18) ROLLER SLIDE BOX
- 19) FEED CONTROL ARM
- 20) INFEED CHUTE
- 21) FEED ROLLER MOTOR



Safety

Safety Instructions

It is essential that all personnel involved in the care of this unit read and understand the Operator's and Maintenance Manuals. Safety alerts throughout the manuals highlight situations in which accidents can occur. Give special attention to all safety alerts.

The safety information in this manual applies only to the maintenance of this unit. Although procedures have been written to protect the mechanic and other personnel, there is no safety system to account for human error or negligence.

WARNING

Death or serious injury can result from careless or improper use of the unit. The mechanic bears ultimate responsibility for following all regulation and safety rules of their employer and/or any applicable state or federal laws.

Maintenance personnel must be trained in safe service procedures.

Work practices may expose maintenance personnel to hazardous materials. Before using any chemical, read and understand the manufacture's label and the material safety data sheet (MSDS). These sheets explain emergency first aid procedures and waste disposal methods. Properly dispose of oil and hazardous materials.

Safety Designations

This symbol is used throughout this manual to indicate danger, warning, and caution instructions. These instructions must be followed to reduce the likelihood of personal injury or death.



The terms danger, warning and caution represent varying degrees of personal injury and/or property damage that could result if the preventive instructions are not followed. The following paragraphs from ANSI publications explain each term.

DANGER

Indicates a hazardous situation which if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

WARNING

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

CAUTION

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

NOTICE

This signal word is used to address practices not related to personal injury.

Lock-Out Tag-Out Procedure (LOTO)

WARNING

Failure to properly Lock Out Tag Out the chipper may result in Personal Injury or Death.

LOTO procedures must be completed prior to performing maintenance or clearing debris from internal components of the chipper or engine.

Never leave the chipper unattended with the keys in the ignition.

1. Turn Ignition key off and remove key. Secure the key in a safe location with controlled access.
2. Insure chipper rotor or disc comes to a complete stop.
3. Remove negative battery cable.
4. Lock and tag battery box.
5. Follow all appropriate LOTO Procedures according to OSHA Standards 29 CFR Standard 1910.147 (The Control of Hazardous Energy).
6. Follow any addition Federal, State, Local or Controlling Agency Standards or Procedures that may apply.

General Maintenance Information

1. Read and understand the complete procedure before beginning.
2. If equipped with Hydraulics. Remove the pressure in a hydraulic circuit before disconnecting its components.
3. Use lifting devices of suitable capacity to support and handle components.
4. Insure all movement of components has come to a complete stop prior to accessing components.
5. Disconnect negative battery cable and lock out battery box when performing maintenance on components which may cause injury when movement occurs.
6. Be aware of your surroundings.
7. Complete the entire procedure before returning the unit to operation.
8. Insure all tools or foreign objects are removed prior to replacing guards.

9. If applicable. After completion of procedure, check oil level in the hydraulic reservoir and add oil if necessary.

Disclaimer of Liability

Altec Environmental Products, LLC will not be liable for unauthorized alterations or modifications of the unit. Altec Environmental Products, LLC will not be liable for improper or abusive operation of the unit.

Do not alter or modify this unit in any way that might affect its structural integrity or operational characteristics without specific written approval from Altec Environmental Products, LLC.

Unauthorized alterations or modifications will void the warranty. However of greater concern is the possibility that unauthorized changes could adversely affect the unit's operation that could endanger personnel and/or damage property. Altec will not be responsible for unauthorized alterations or modifications that cause death, serious injury, and/or property damage.

Altec Environmental Products, LLC assumes no liability for any personal injury and/or property damage related to the use of this manual when performing testing, operating, maintenance and/or repair procedure on this Altec unit.

Chipper Personnel Safety Devices

DANGER

Improper or careless use of this chipper can result in serious injury or death. All personnel using this chipper must be trained and qualified in all aspects of the operations, maintenance, repair and safety procedures defined in this manual prior to conducting any operations or procedures. All Maintenance Personnel and Operators SHALL Ensure the proper operation of each safety device prior to starting the engine or operating the chipper. Contact Altec Environmental Products for replacement parts.

WARNING

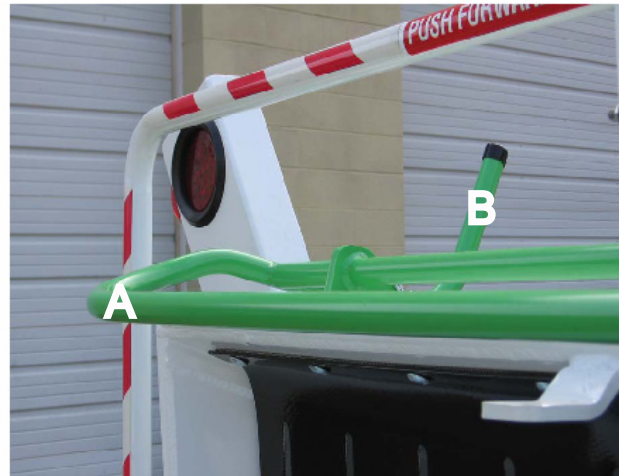
Serious injury or death may occur when operating this unit. Safety devices are not a substitution for proper operation. Read the entire manual and all safety decals and placards.

A) Panic Bar

See fig A-1 & A-2

In the event of an unforeseen emergency situation the panic bar can be activated by pulling down on bar "A".

This action will stop all movement of the feed roller. The panic bar may also be activated by pulling or pushing bar "B" towards the rear of the chipper.



Panic Bar Description

The Panic Bar Assembly consists of two bars (A & B), the hydraulic valve (C) and the bar linkage (D). When you pull down on bar A or push towards the rear of the chipper on bar B, the bar connecting linkage D activates the handle on valve C. This action stops all movement of the feed rollers. To continue operation you must manually reset the handle on valve C to the Run position.

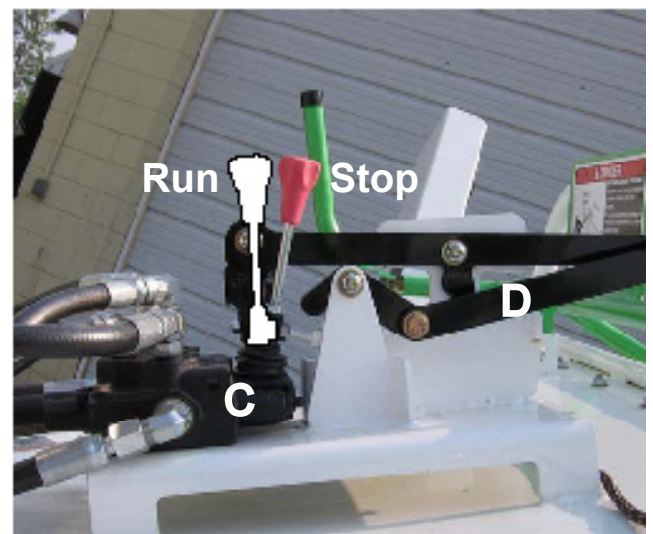


fig A-2

WARNING

Entrapment, loss of limb or life hazard. Serious injury or death can occur if entrapped in roller movement. Feed rollers begin movement as soon as valve handle is activated. Insure all operators are advised prior to your actions and that infeed

chute is clear of all personnel and tools before reactivation of feed system.

1. Test daily and whenever new personnel are assigned to the chipper.
2. After completing all appropriate safety and operational checks and with no material in the feed chute, pull or push the feed bar so as to activate the feed roller in the forward direction. Visually verify the rotation of the feed roller.
3. Push down on bar A or move bar B .
4. Feed roller movement must stop.
5. If feed rollers do not stop, repair as necessary prior to operating the chipper.

B) Chip Curtain

See Fig B

The kickback curtain stops or deflects chips and small debris from leaving the feed chute area. This also helps in decreasing the amount of clean up around the chipper.

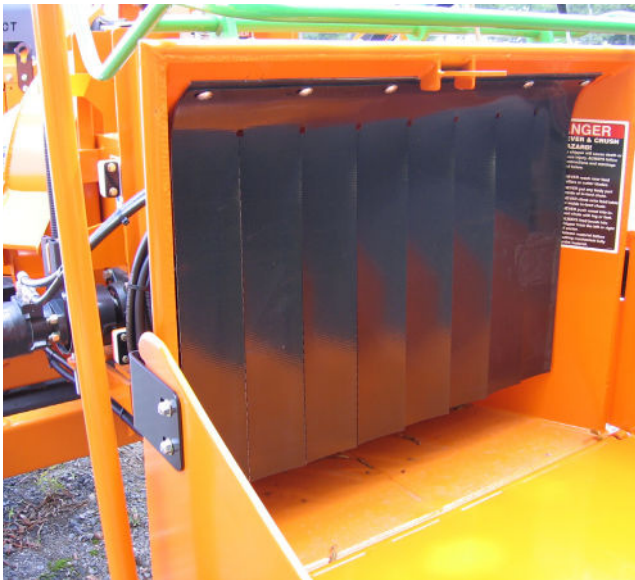


fig B

WARNING

Flying object hazard. Personal injury may occur from flying debris. Always insure the chip curtain is properly bolted in place and in good condition. Insure personal protective eye wear is always worn.

Inspect chip curtain for damage or missing segments.

C) Rotational Indicator

See fig C

The rotational indicator is located in the center of the disc bearing cover guard. Movement of the bolt head seen through this guard indicates movement of the disc and drive components.



fig C

DANGER

Crushing, cutting hazard. Equipment damage, serious injury or death can occur when attempting to access moving components. Never attempt access to moving components. Never attempt to replace covers on moving components. This is extremely critical on disc movement.

Inspect visibility of the rotational indicator. Insure no debris is blocking view.

D) Disc Cover Padlock

See fig D

This padlock is keyed different from other locks on the chipper. This allows management /supervisors to control access to the disc cutter area.

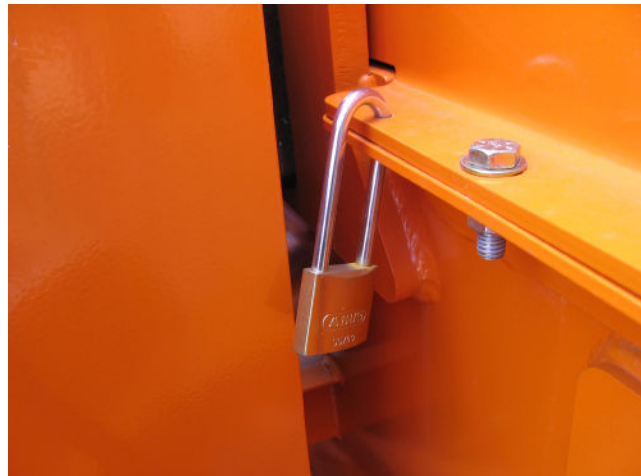


fig D

DANGER

Crushing, cutting hazard. Equipment damage, serious injury or death can occur when attempting to access moving components. Only trained personnel should access the cutter disc.

Verify padlock is in place and insure management control of hood lock key.

E) Disc Blade Change Pin

See fig E.

Complete LOTO procedures prior to preforming maintenance on the blades.

Pin is used to lock disc while preforming blade maintenance. After disc hood has been opened, place pin through disc housing pin tab. Slowly rotate the disc until the pin goes through the disc assembly, slide pin through the second pin housing tab. The disc will now be in the proper position for blade maintenance. Remove and rotate the disc 180° for proper access to the second blade. Remove prior to closing the disc hood.. Insure pin is in good condition and tethered to the chipper.



fig E

⚠ WARNING

Cutting hazard. Serious injury may occur while preforming blade maintenance. Always wear cut resistant gloves when preforming blade maintenance or inspections.

F) Disc Hood Switch

See fig F

The disc hood switch prohibits the starting of the engine while the disc is open. Test switch operation by removing the switch actuator plate and attempt to start the engine. Depending on your engine model, the starter may engage, but the engine must not start. If the engine starts, do not operate the chipper until the switch circuit is repaired.



fig F

⚠ DANGER

Crushing, cutting hazard. Equipment damage, serious injury or death can occur when attempting to access moving components. Only trained personnel should access the cutter disc.

G) Guards

See fig G

Your chipper is equipped with safety guards protecting you from personal injury. Do not start or operate the chipper with these guards removed. Inspect all guards to insure they are in place, in good condition, and properly secured. Never attempt to install a guard or close the disc hood while the chipper is running. Make any necessary repairs prior to starting the chipper.



fig G

⚠ DANGER

Crushing, cutting hazard. Equipment damage, serious injury or death can occur if starting or operating this chipper without the guards in place. Always insure all guards are in place prior to operation.

H) Upper Feed Roll Lock Pin

The feed roll lock pin is used to hold the roll in the raised position so as to assist operators in clearing infeed material clogs. Insure pin is in good condition and tethered to the chipper. If used, jackstand must be in good operating condition. Inspect jackstand attachment points for damage. If equipped with a lift cylinder, insure proper operation of the system.

If your chipper is equipped with a hydraulic lift cylinder: See fig H-1

1. Disengage clutch, Wait for all disc movement to stop.
2. With the lift cylinder controls, fully raise the upper feed roll. Hold while inserting pin.
3. Slide the pin through the feed roll slide-box and feed roll assembly. Insure the pin goes completely through both feed roll assembly and slide-box uprights.
4. Using the lift cylinder control, Slowly lower the feed roller. Do not apply down pressure.
5. Complete LOTO procedures.



fig H-1

If your chipper is not equipped with a hydraulic lift cylinder: See fig H-2

1. With chipper hitched to the tow vehicle.
2. Complete LOTO Procedures.
3. Remove the front jackstand and place on the jackstand mount located on the side of the slide-box.
4. Jack the feed roll assembly up until holes in the slide-box uprights and feed roll assembly are aligned.
5. Slide the pin through the feed roll slide-box and feed roll assembly. Insure the pin goes completely through both feed roll assembly and slide-box uprights.
6. Slowly lower the feed roller.



fig H-2

⚠ DANGER

Crushing, cutting and release of stored energy hazards. Serious injury or death can occur. Never place any part of your body in a potential pinch point.

I) Safety Tow Chains

Tow chains are to be utilized every time a chipper is transported. Chains must be routed under trailer tongue in an "X" pattern between tow vehicle and trailer.

Slack in chain should be adjusted by installing the hook in the proper chain link to permit turning but not dragging on the ground. Inspect chain, clevis and hook for damage or excessive wear.

J) Break-away Switch

In the event of a unwanted separation of the chipper from the tow vehicle, the tongue should drop into the cradle formed by the "X" pattern of the chains. The breakaway cable must pull the plunger from the switch before the entire tongue weight of the chipper comes to a rest in the chain cradle.

When the breakaway switch is activated full voltage from the chipper battery is applied to the brakes. The chipper will come to a complete stop, but will not lock up the wheels.

Testing of the breakaway can be accomplished by jacking up the chipper, spinning the wheel and pulling the plunger. The brakes should apply. This test only insures the basic braking circuit is properly functioning. For complete testing and tow vehicle controller set-up, refer to the chipper brake section in this manual.

NOTICE

The breakaway switch is to be used for emergencies only. The breakaway system rapidly discharges the battery when the plunger pin is removed. Reinstall plunger immediately after

completion of test.

K) Accident Prevention Decals

This unit was equipped with accident prevention decals at the time of manufacture, If any of these are lost or become illegible, obtain replacements from your Altec representative.

The location, part number and, description of all placards are listed in the Parts and Operations Manuals. Refer to the Accident Prevention Decals and Diagram for examples of the placards and their locations.

IT IS THE RESPONSIBILITY OF THE OWNERS OF THE CHIPPER TO ENSURE ALL DECALS ARE IN PLACE, LEGIBLE AND IN GOOD OVERALL CONDITION.

Decals are strategically located on your machine to provide important information that can help you operate the machine properly and safely.

Please insure that the decals remain in place and keep them in good condition by following the instructions listed below.

- Keep all decals clean. Use a mild soap and water to clean the decals. Never use chemical or abrasive cleaners on the decals.

- Before painting the unit, mask off the decals or replace the decals after painting.
- Inspect the decals on your unit daily and replace any missing or damaged decals immediately.
- You may purchase replacement decals from your authorized dealer.

Apply safety labels to a clean surface with temperature of at least 40° F (5° C). Spray a small amount of mild soapy water to the back of each safety label before placement. The soapy water will allow movement and positioning of the label, if necessary. After the correct placement of the safety label has been achieved, press out any excess water and air pockets on the safety label.

WARNING

Serious injury or death may occur if proper safety instructions are not provided and followed. Insure all safety, instructional decals, and placards are properly placed, legible and in good overall condition. Insure all operators and maintenance personnel are familiar with all decal messages.

Note:

Decals may vary according to model, options and engine supplied.

Chipper Personnel Safety Device Testing & Inspection Table		
Device	Frequency	Method
A) Panic Bar	Daily and New Operators	Activate Bar
B) Chip Curtain	Daily	Inspection
C) Rotational Indicator	Daily	Inspection
D) Disc Cover Padlock	Daily	Inspection
E) Disc Blade Change Pin	Prior to Performing Maintenance	Inspection
F) Disc Hood Switch	Daily	Activate Switch
G) Guards	Daily	Inspection
H) Upper Feed Roll Lock Pin	Prior to Performing Maintenance	Inspection
I) Safety Tow Chains	Daily	Inspection
J) Break-away Switch	Weekly	Test Activation
K) Accident Prevention Decals	Daily	Inspection

Maintenance and Inspection

Proper unit maintenance will reduce downtime, lower operating and repair cost and extend equipment life. Safety alone justifies a preventive maintenance program. This type of program is less expensive than making major repairs.

This section contains information on properly inspecting the hydraulic system, structures, individual unit components and lubrication. Use the Lubrication Chart and Diagram in this section when lubricating the unit.

A Preventive Maintenance and Inspection Checklist is provided in the Appendix. Use this checklist when performing routine maintenance and inspection to insure no areas are overlooked. Keep permanent written, and updated records of all service performed on the unit. In addition to the Preventive Maintenance and Inspection Checklist recommendations. More frequent maintenance may be necessary if the unit is operated under severe conditions.

Equipment Storage

Mobile hydraulic equipment needs maintenance when stored, or not used, for extensive periods of time. Depending upon the climate, lack of use may begin to have a negative effect in as little as two weeks. Storage for periods of several months will almost certainly produce some deterioration of the equipment.

Rust will form on unprotected ferrous metal surfaces very quickly and water will collect inside unit structures. In dry climates, gaskets will begin to shrink during long periods of non-use, and lubricants will lose their ability to provide lubrication. In cold climates, condensation may occur in fluid reservoirs and other components.

Even when protective measures have been taken prior to storage, some degradation of performance must be expected when the equipment is put back into use.

Protective Measures

If it is known that equipment will be stored for a month or more, some steps should be taken to preserve the equipment.

1. The best preservative is to fully cycle (operate) the equipment once weekly if even for a short time.
2. Coat exposed ferrous (iron or steel) bare metal surfaces with a light grease or heavy oil compatible with system hydraulic oil. This includes cylinder rods, shafts, gears, linkages and unpainted surfaces.
3. Top off fluid reservoirs to allow as little air space as possible, to limit the effects of condensation. Remove excess oil before operating to limit the chance of overflow from heat expansion and cylinder cycling.
4. Cover or wrap exposed rubber or neoprene parts

with an ultraviolet resistant covering to shield the parts from sun exposure.

5. Unplug electrical connectors and apply a dielectric grease or an aerosol product designed for protecting electrical connectors. Plug the connector back together.
6. Cover switch panels and control panels to prevent direct intrusion of rain or moisture, while allowing air to circulate over the panel.
7. While greasing slowly rotate all bearings until new grease is seen purging from the bearing.
8. Repack axle wheel bearings.
9. Refer to engine manufacturer's recommendations on storage procedures.
10. Insure the engine exhaust system and air intake system are protected from water intake.
11. Secure all padlocks and remove keys from ignition.
12. Disconnect or remove battery.

Chipper Electric Braking System

Overview

The primary activation of the braking system is through the brake controller of the tow vehicle to the electrical chipper/tow vehicle connection through the chipper wiring harness and into the electrically operated brake assemblies. A secondary system starts with the chipper battery through the breakaway switch, chipper wiring harness and into the electrically operated brake assemblies. This secondary system is only operational when the breakaway switch is activated. This system should never be activated except for testing or in an emergency chipper / tow vehicle separation.

Synchronizing Tow Vehicle Controller

To insure safe brake performance and synchronizing, read the brake controller manufacturer's instructions completely before attempting any synchronization procedure.

CAUTION

Before road testing, make sure the area is clear of vehicular and pedestrian traffic. Failure to brake safely could result in an accident and personal injury to yourself and others.

Make several hard stops from 20 mph on a dry paved road free of sand and gravel. If the trailer brakes lock and slide, slightly decrease the gain setting on the controller. If they do not slide, slightly increase the gain setting. Adjust the controller just to the point of impending brake lockup and wheel skid.

NOTICE

Not all trailer brakes are capable of wheel lockup. Loading conditions, brake type, wheel and tire size can all affect whether a brake can lock up. It is not generally considered desirable to lock up the brakes and slide the tires. This can cause unwanted spotting of tires and could also result in a loss of control.

If the controller is applying the trailer brakes before the tow vehicle brakes, then the controller adjustments should be made so the trailer brakes come on in synchronization with the tow vehicle brakes. For proper braking performance, it is recommended that the controller be adjusted to allow the trailer brakes to come on just slightly ahead of the tow vehicle brakes. When proper synchronization is achieved there will be no sensation of trailer “jerking” or “pushing” the tow vehicle during braking.

Breakaway Braking System

To ensure proper operation of the breakaway system, the chipper battery and charging system must be operating properly. The chipper must be properly hitched to the tow vehicle, this must include:

- The hitch properly fastened and all retaining pins secured.
- Safety chains crossed in an “X” pattern under the tongue and secured to the tow vehicle. Only enough slack in the chains to allow turning.
- Breakaway cable must be of shorter length than the chains.

In the event of a unwanted separation of the chipper from the tow vehicle, the tongue should drop into the cradle formed by the “X” pattern of the chains. The breakaway cable must pull the plunger from the switch before the entire tongue weight of the chipper comes to a rest in the chain cradle.

When the breakaway switch is activated full voltage from the chipper battery is applied to the brakes. The chipper will come to a complete stop, but will not lock up the brakes.

Testing of the breakaway can be accomplished by jacking up the chipper, spinning the wheel and pulling the plunger. The brakes should apply. Further testing can be done on a wet, icy, or gravel covered road surfaces. With the tow vehicle traveling at 10 to 15 miles per hour activate the breakaway switch. The tires should lock up on a slick or unstable surface.

NOTICE

The breakaway switch is to be used for emergencies only. The breakaway system rapidly discharges the battery when the plunger pin is removed. Reinstall plunger immediately after completion of test.

Inspection and Maintenance

Your chipper brakes must be inspected and serviced immediately if a loss of performance is indicated. With normal use, servicing at one year intervals is usually adequate. With increased usage, this work should be done more frequently as required. Magnets and shoes must be changed when they become excessively worn or scored, a condition which can reduce vehicle braking.

Clean the backing plate, magnet arm, magnet and brake shoes. Make certain that all the parts removed are replaced in the same brake and drum assembly. Inspect for any loose or worn parts, stretched or deformed springs and replace as necessary. For ease of maintenance Altec parts department can supply complete backing plate assemblies. This includes new shoes, magnets, springs, and connecting hardware already assembled, ready to bolt in place.

CAUTION

Potential Asbestos Dust Hazard. Some older brake linings may contain asbestos dust, which has been linked to serious or fatal illnesses. Certain precautions must be taken when servicing brakes:

Avoid creating or breathing dust.

Avoid machining, filling or grinding the brake linings.

Do not use compressed air or dry brushing for cleaning (dust can be removed with a damp brush)

Brake Adjustment

Brakes should be adjusted:

1. After the first 200 miles of operation when the brake shoes and drums have “seated”.
2. At 3,000 mile intervals.
3. As use and performance requires.

Brakes should be adjusted in the following manner:

1. Jack up chipper and secure on adequate capacity jack stands. Make sure the wheel and drum rotate freely.

DANGER

Do not lift or support the chipper on any part of the axle or suspension system. Never go under any chipper unless it is properly supported on jack stands which have been rated for the load. Improperly supported vehicles can fall unexpectedly and cause serious injury or death.

2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing

plate.

3. With a screw driver or standard adjusting tool, rotate the star wheel of the adjuster assembly to expand the brake shoe. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.
4. Then rotate the star wheel in the opposite direction until the wheel turns freely with a slight lining drag.
5. Replace the adjusting hole cover and lower the wheel to the ground.
1. Repeat the above procedure for all brakes. For best results, the brakes should all be set at the same clearance.

Magnet Amperage Chart			
Brake Size	Amps/ Magnet	Two Brakes	Magnet Ohms
12 x 2	3.0	6.0	3.2
12 ¼ x 2 ½	3.0	6.0	3.2
12 ¼ x 3 ⅜	3.0	6.0	3.2

- A high amperage reading indicates a short in the wiring or magnet.
- A low amperage reading indicates a open in the wiring or magnet.

Tires and Wheels:

- Refer to tire manufacturer specification for proper tire inflation. Insure tires are in good condition.
- Wheel lug nuts torqued to value in the Specific Application Fasteners Table.

Hydraulic System

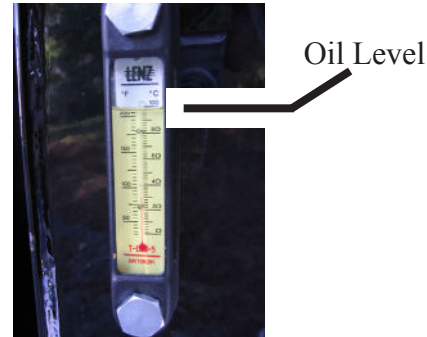
Maintaining the hydraulic system is critical to the proper operation of the unit. Using the proper type of oil helps to prevent many hydraulic system problems, Maintaining the oil is also important. If oil is dirty or contaminated components may be damaged.

NOTICE

Only use hydraulic oil as recommended. Other

fluids added to the hydraulic system can increase component wear and affect the lubricating characteristics of the oil.

Check the oil level in the reservoir with the vehicle level. The proper oil level is between two and three inches from the top of the tank.



Cleanliness Precaution

Contamination will ruin any hydraulic system, It is very important that no contamination enter the system, dirt, water and air are types of contaminants. They can enter the hydraulic system in many ways. Contaminants can enter the system when filling the reservoir or changing filters. They can also enter when changing components or performing other service procedures.

The following will help protect the cleanliness of the hydraulic system.

- Filter new oil with a 10 micron filter as it is added to the reservoir.
- Clean hydraulic connections before opening them.
- Cap or plug ports and lines opened for service.
- Keep replacement hoses and other components plugged while stored.
- Make sure components are clean before installation.
- Clean reservoir and return line filter covers before opening them.
- Clean the filler breather cap before opening it.

Hydraulic Oil Condition Table	
Condition	Possible Causes
Dark color	Oxidation; contamination
Cloudiness or milky appearance	Presence of water or wax
Rancid or burned odor	Oxidation
Increase in viscosity	Oxidation; addition of improper fluids; presence of water
Decrease in viscosity	Addition of improper fluids; additive deterioration
Separation of water or other fluids from the oil	Presence of water; addition of improper fluids
Foreign particles or other visible contamination	Contamination; emulsion of water with oil additives

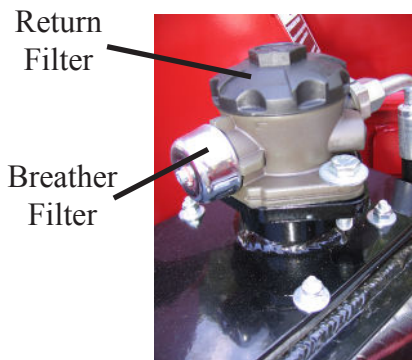
- After servicing the reservoir, immediately close all openings.
- Make sure quick disconnect couplers are clean before connecting them.
- Do not spray water on the reservoir filler breather cap. This could force contaminants into the reservoir.

Filtration

The unit is equipped with a complete filtration system. When properly maintained, this system will reduce contamination of the hydraulic system. The filtration system must be serviced regularly to be effective.

Breather

The breather is located within the fill cap on the reservoir. The breather allows air to flow in and out of the reservoir as the oil level changes. It contains a filter that cleans the air as it enters the hydraulic system.



NOTICE

When adding oil you should always pump oil thorough a 10 micron filter prior to adding.

Replace the filler breather as recommended by the Preventive Maintenance and Inspection Checklist. If the unit is operated in an extremely dusty environment, it may be necessary to replace the breather more often.

Suction Filter

Hydraulic oil leaving the reservoir through the suction line on its way to the pump, passes through a suction filter which is accessible from inside the hydraulic tank. The suction filter contains a 100 wire mesh element. Although the element may be cleaned, it is also available as a service part.

Clean the filter whenever the hydraulic oil is changed. Oil will not flow into the pump fast enough if the filter becomes clogged. If the pump does not receive sufficient oil flow, pump damage will result.

⚠ DANGER

Death or serious injury can result from improper use of solvents. Follow the manufacturer's label for proper use and disposal.

⚠ WARNING

Injury can result from airborne particles entering the eyes, Wear appropriate safety equipment.

Clean the filter element by flushing it with solvent, Blow it dry with an air hose from the inside of the screen to the outside. Check for holes or other damage.

Return Line Filter

During normal operation the return line filter is a cartridge type 10 micron filter that cleans the oil before it enters the reservoir.

The return line filter head contains a filter bypass valve. This bypass valve opens when there is a pressure drop of 25 psi (1.72 bar) across the filter cartridge. When the valve is open, oil flows directly into the reservoir by-passing the filter. This prevents the cartridge from bursting during cold start ups or if it is clogged. If the filter becomes clogged the oil flows directly into the reservoir by-passing the filter. The lack of filtration will eventually damage hydraulic components.

During the break-in period of a new unit, the hydraulic components will deposit break-in wear particles in the return line filter cartridge. Change the return line cartridge after the first 15 to 25 hours of operation. Then, change the cartridge as recommended by the Preventive Maintenance and Inspection Checklist. If the unit is operated in very dusty conditions, replace the return line filter more often. Also, replace the cartridge after new oil has circulated through the system for the first time.

Always replace the return line filter cartridge with a genuine Altec replacement part. Other filters may fit into the filter housing, but may not have the same micron rating or bypass configuration.

Oil Specifications

Use high quality oil in the hydraulic system. The oil should contain rust, oxidation, and corrosion inhibitors. It should also contain anti foam and anti wear additives.

Hydraulic oil is commonly classified by viscosity. The viscosity of hydraulic oil changes with temperature, The higher the viscosity index of an oil, the less the viscosity will change as the temperature changes. A multi-viscosity oil contains additives which increase the viscosity index, Multi-viscosity oils should have high

shear stability to maintain oil performance by avoiding excessive change in viscosity.

The ability of the hydraulic oil to provide adequate fluid at low temperatures is measured by its pour point. If the pour point is not low enough, oil will not flow into the pump at a fast enough rate when the pump is operated at low temperatures. This will cause cavitation, which can quickly destroy the pump.

NOTICE

Only use hydraulic oil as recommended. Other fluids added to the hydraulic system can increase component wear and affect the lubricating characteristics of the oil.

Only use oils meeting the viscosity rating for military specification MIL-5606 in extremely cold climates. These oils have fewer anti wear characteristics and are not recommended for full time use.

Most companies can supply equivalent or acceptable oils. The oil selected for the hydraulic system depends on the temperature during unit operation.

Oil Condition

An important part of the hydraulic system preventive maintenance includes checking the condition of the hydraulic oil.

Periodic laboratory analysis is the most accurate method of determining the condition of hydraulic oil and determining when it should be changed. A visual inspection may also be useful to check oil condition.

A hydraulic oil supplier should be able to do testing or recommend a test laboratory. The laboratory should provide the following information.

- Particle count.
- Trace element analysis (component wear, outside contaminants, and oil additive concentrations)
- Viscosity test.
- Water content test.

Before taking a sample of oil, operate the unit to circulate the oil. Warm it to operating temperature. Take the sample from the middle level of the reservoir using a clean hand pump, such as a disposable syringe and a piece of plastic tubing. If this not available, the sample can be drained from the bottom of the reservoir. Allow several quarts of oil to flow out before collecting the sample. This will remove any dirt and water that has collected in the reservoir near the drain.

If a sample container has not been provided by the laboratory use a wide mouth, screw top, clear glass container. Clean it with hot water and detergent. Rinse

it thoroughly and let it air dry before putting oil into it.

Once the report is received, compare it to previous oil analysis reports for the same unit. This information will provide trends toward oil deterioration. It may give early warnings of a problem developing within hydraulic system components.

NOTICE

Change the oil if the sample has any of the characteristics listed in the Hydraulic Oil Conditions Table.

If making a visual inspection, compare the sample of oil to a sample of new oil of the same type. Also, compare it to previous samples taken from the same unit. Look for the signs of oil deterioration listed.

There are fluid contamination detector kits available which allow for rapid, on-the-spot analysis of the hydraulic system's condition. Contact your Altec representative for further information.

Oxidation produces varnishes that bake onto hot surfaces. These oxidation products are acidic and tend to attack metal surfaces. This can damage pumps, motors, and valves.

High operating temperature will increase the rate of oxidation of the oil. The presence of water or air in hydraulic oil also causes oxidation.

The presence of water may cause rust and corrosion. If laboratory analysis or visual inspection indicates that the oil is deteriorating prematurely, determine the cause of the problem and correct it.

Changing Oil and Flushing the System

A properly maintained filtration system greatly extends the useful life of the hydraulic oil. However, the oil will eventually need to be replaced due to contaminants that form during normal operation to the unit.

It is impossible to recommend an exact time interval for oil changes due to varying conditions of unit use. Use the following guidelines to determine when the hydraulic oil should be changed,

- Change the oil as recommended by the Preventive Maintenance and Inspection Checklist.
- If a hydraulic component fails and contaminates the system with metallic particles, change the component and the oil immediately.
- In climates where there is a wide variation in operating temperatures between summer and winter months, change to the appropriate weight oil

each spring and fall.

Replace the return line filter cartridge and filler breather cap every time the hydraulic oil is changed, Also, clean or replace the suction filter.

A significant quantity of oil remains in the hydraulic system when the reservoir is drained. Flush the system when the oil is changed, This is especially important if the system is heavily contaminated with metal particles.

If the oil is contaminated with water it may not be necessary to change the oil and flush the system. Follow the instructions under Water Removal in this section.

The following equipment and supplies are necessary to properly flush the hydraulic system.

- Approximately 13 gallons (49 L) of proper hydraulic oil.
- Three return line filter cartridges.
- Clean lint-free rags
- Breather (if component has not been replaced within one year)

CAUTION

Spilled hydraulic oil creates slick surfaces and can cause personnel to slip and/or fall. Keep the unit and work areas clean.

Use the following procedure to flush the hydraulic system.

1. If the oil is being changed because of contamination due to hydraulic component failure, proceed to step 2. Otherwise, operate the unit to circulate the oil and warm to operating temperature. This will allow many of the impurities to drain off in suspension.
2. Drain the oil reservoir completely.
3. Wipe off the top of the reservoir and breather.

WARNING

Death or serious injury can result from improper use of solvents. Follow the manufacture's label for proper use and disposal.

4. Remove the inspection cover and inspect the inside of the reservoir. If sludge or other contamination are found, thoroughly clean the inside of the tank using lint free wipes and a solvent which leaves no residual. Change the return line filter and clean or change the suction

filter.

NOTICE

Only use hydraulic oil as recommended. Other fluids added to the hydraulic system can increase component wear and affect the lubricating characteristics of the oil.

5. Fill the reservoir with new hydraulic oil of the proper grade. Fill oil to within 2 inches of the top of the tank, Do not fill tank completely full so as to leave room for fluid expansion. Filter the oil through a 10 micron filter as it is put into the reservoir.
6. Install the filler breather cap. If the filler breather cap has not been replaced in one year, or is damaged, replace it.

NOTICE

Oil change has been completed at step #9 for routine oil changes. If changing oil due to contamination continue through step #14

7. Cycle all cylinders, hydraulic motor and all valves to flush contaminated oil from the lines and components of the hydraulic system.
8. Change the return line filter cartridge and clean the suction filter element.
9. Drain the reservoir completely.
10. Fill the reservoir with new hydraulic oil of the proper grade. Fill oil to within 2 inches of the top of the tank, Do not fill tank completely full so as to leave room for fluid expansion. Filter the oil through a 10 micron filter as it is put into the reservoir.
11. Change the return line filter cartridge after approximately 25 Hours.

Water Removal

If the hydraulic system was contaminated with water, special water removal filtration may be necessary. An oil supplier or a qualified laboratory can determine whether water has caused excessive oil oxidation or additive deterioration.

If analysis shows oil deterioration beyond an acceptable level, drain the reservoir and flush the system as described earlier in this section. Use a water removal filtration system during the flushing process to remove any residual water from the system.

If the condition of the oil is acceptable except for the water content, allow time for it to separate from the oil. Then drain the water off the bottom of the reservoir. Circulate the oil in the entire system through a separate water removal filter system.

Continue this process until the water content in the oil is reduced to an acceptable level. The preferred method of determining the water content in the oil is laboratory testing. Once the water content has been reduced to an acceptable level, replace the return line cartridge.

Lubrication

Proper lubrication will extend the life of the equipment and reduce maintenance problems. The frequency of lubrication required will depend on the amount of use and the conditions the unit is operated in. Operation in extremely dusty, sandy, or rainy environments will require more frequent lubrication. Lubricate the unit as recommended by the Preventive Maintenance and Inspection Checklist.

The Lubricating Chart and Diagram identifies each component, type of lubricant, and method of application. Any brand of lubricant that meets or exceeds the specifications of the products listed is acceptable. Select the appropriate interval and lubricate the components as identified in the lubrication chart.

Always wipe grease fittings clean before and after greasing to keep contaminants from entering the points of lubrication. To avoid bearing damage, use manually operated grease guns. Air-driven grease guns may have enough force to cause bearing damage.

If the unit is not used, or is stored for any length of time, apply fresh lubricant at all points shown on the lubrication chart and diagram. This will help prevent corrosion during the idle period.

Bearings

Spherical roller bearings are used on the cutter head and feed roll assemblies. They require periodic lubrication with a chassis lubricant. It is very important to grease this type of bearing regularly. If they are not greased properly, the usable life of the bearing will be greatly reduced. Remove any exposed grease from the bearing. Grease each bearing daily with (3) three or (4) four pumps with a standard grease gun.

Slide Box

Clean exposed existing grease from the outside areas of the way surfaces. Pump grease in all four ways until new grease is observed.

Chute Rotation

Clean exposed existing grease from the outside areas of the chute rotation area. Pump grease in all four grease fittings until new grease is observed.

Hinge and Friction Points

Chipper operation and longevity can be improved by keeping all hinges and friction points lubricated. Remove all dirt, corrosion or foreign matter. Re-lubricate with

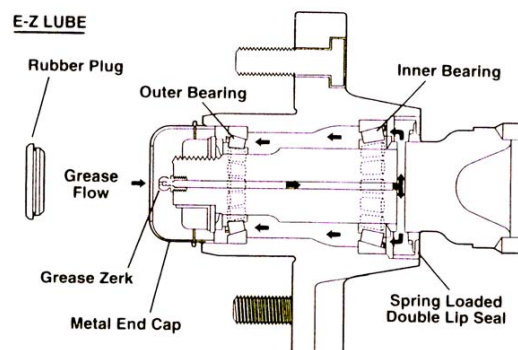
appropriate applicator.

Axle Bearings

Standard axles have the E-Z Lube feature. The figure below shows how this feature flushes and lubricates both the inner and outer wheel bearings. If your axle is equipped with the E-Z Lube feature, the bearings can be periodically repacked and lubricated without removing the hubs.

The procedure is as follows:

1. Remove the rubber plug from the end of the grease cap.
2. Place a standard grease gun onto the grease zerk located in the end of the spindle. Make sure the grease gun is fully engaged on the fitting.
3. Pump grease into the zerk. The old, displaced grease will begin to flow back out the cap around the grease gun nozzle.
4. When the new, clean grease is observed, remove the grease gun, wipe off any excess, and replace the rubber plug in the cap.



Jack stand

Depending on the model jack stand supplied with your chipper there may be a grease zerk fitting, if so lubricate with one or two pumps.

Engine Power Takeoff (PTO)

The engine power takeoff (PTO) clutch mechanism is supplied by the engine manufacturer. It is very important to lubricate the PTO bearings, clutch levers and linkage. For specific information and lubrication interval requirements refer to your Power Take Off/Clutch Owners Manual.

Engine

Due to varying engine models and engine specifications, check the Engine Operation Manual (EOM) for the specific lubrication requirements of your supplied engine.

Lubrication Chart

			Lubrication Interval			
Component	Lubricant Type	Applicator	10 Hrs Daily	50 Hrs Weekly	200 Hrs Monthly	1000 Hrs Yearly
Cutter Bearings	A	Grease Gun	■			
Feed Roll Bearings	A	Grease Gun		■		
Slide Box	A	Grease Gun		■		
Chute Rotation	A	Grease Gun		■		
Hinges, Friction Points	B, C	Spray, Brush		■		
Linkages	B, C	Spray, Brush		■		
Axle Bearings	A	Grease Gun				■
Jack	A	Grease Gun			■	
Hydraulic Oil	ISO 46		■			
PTO		As Req.	As Required by PTO Manufacturer			
Engine		As Req.	As Required by Engine Manufacturer			
A — Use a premium grade, high temperature lithium based grease. Some suggested greases are: Mobile Mobilith AW 2, Shell Alvaina Grease 2, Texaco 1939 Premium RB, Amoco Ryko Premium Grease #2 or an equivalent.						
B — General purpose spray lubricant						
C — Anti-seize compound. Extreme pressure lubrication that prevents seizure, corrosion, rust and galvanic pitting.						

Structure

The structural components of the unit are identified in the Component Identification Section. The unit has been designed to meet or exceed the ANSI Specifications for Z133.1 Safety Requirements.

Regular inspection of the welds and structure is required to insure that components maintain their strength. Periodic cleaning of the structure is also recommended. This will prevent damage that can occur from dirt accumulation.

CAUTION

Injury can result from slipping or falling. Use care when cleaning the unit.

Periodic inspection of the structure is recommended to be certain there is no deformation, abnormal wear or abrasion, interference between moving parts, or cracking of the welds on structural members.

Inspect the structure and welds as recommended by the Preventive Maintenance and Inspection checklist.

Cleaning

Accumulated dirt can damage the unit and cause it to malfunction. Dirt buildup also accelerates wear on the components.

CAUTION

Spilled hydraulic oil creates slick surface and can cause personnel to slip and/or fall. Keep the unit and work areas clean.

If pressure washer or steam cleaner is used to clean the unit, be careful where the spray is directed. Do not direct the spray where the cleaning liquid might get into electrical components, switches or lights. Even though all electrical components on the unit are designed for all weather use, it is possible for water pressure from the nozzle to push a seal out of position. Do not direct the spray at the filler breather cap of the reservoir. The high pressure can force water and cleaning liquid into the reservoir and contaminate the hydraulic oil. Do not clean any of the hydraulic valve spool ends or near cylinder rod seals with direct pressure from a pressure washer. Do not spray directly on bearing grease seal areas. Limit the water pressure to 500 psi (34.47 bar) and keep the spray tip at least 18" (45.72 cm) from these components while washing. After washing and cleaning the unit, re-lubricate as necessary.

Welds

All welds on the unit are originally applied in conformance to AWS standards. Every weld on the unit is important and should be periodically inspected.

WARNING

Death or serious injury can result from improper use of solvents. Follow the manufacturer's label for proper use and disposal.

If paint has lifted off of weld, or if rust is found, a closer inspection is required. Remove any loose paint or rust with a wire brush. Clean the area with a solvent such as acetone. Closely inspect the area for cracks in the welds. Dye penetration and magnetic particle testing are simple processes that may be used to verify or disprove a suspected problem.

Visual inspections can be very effective if conducted properly. Clean the area to be inspected. Look for visible cracks in the weld and at the weld-to-parent material joint. Use a bright light to provide adequate visibility of the inspection area.

Pay close attention to welds that are located where changes in cross section take place and near the attachment points of highly loaded components. If any cracks or unacceptable conditions are discovered, report them to your Altec representative.

Any welds added in the field should be done by qualified personnel and also conform to AWS standards.

After doing repair work on the unit, such as weld repair, some testing of the unit may be required.

Fasteners

A variety of fasteners are used on the unit different fasteners have different inspection and installation requirements depending on their use and design. This section explains different fasteners used on the unit, torque specifications, and the use of thread locking and anti-seize compounds.

The standard grade of fastener used on the unit is a zinc plated, SAE Grade 8 steel cap screws. A variety of fasteners such as hex socket head, flat countersunk head, button head cap screws, eye bolts and carriage bolts are also used on the unit.

Check all fasteners for tightness as recommended by the Preventive Maintenance and Inspection Checklist.

When inspecting fasteners, pay particular attention to the following fasteners.

- Blade fasteners
- Anvil fasteners
- Hitch and/or tongue fasteners
- Cutter bearing fasteners
- Control bar linkage fasteners
- Panic bar linkage fasteners

Refer to Torque Values in the appendix as a guide to determine the proper cap screw torque value. The proper value is necessary to overcome the friction of the threads and develop the required clamping force.

A properly installed fastener applies a clamping force equal to or greater than the load applied to it. A fastener installed at less than the recommended torque value does not provide enough clamping force. The fastener may fatigue, causing it to loosen or fail. If the fastener is torqued beyond the recommended torque value, the elastic range of the fastener may be exceeded. This may result in premature failure of the fastener.

When checking fastener torque value, check at 90 percent of the original value. For example, if the torque value for a fastener is 100 foot-pounds (136 N•m), check the fastener for tightness at 90 foot-pounds (122 N•m).

Certain types of fasteners or fasteners used in special applications often require torque values that differ from common torque charts. Check the fastener table for fastener torque values.

Blade Installation and Adjustment

WARNING

Do not operate the chipper with damaged or chipped knives. Failure to change damaged or chipped knives may result in the breakage and discharge of knives during operation and possible equipment damage, severe injury or death.

WARNING

Knife failure can result in equipment damage severe injury or death. Always use Altec supplied chipper knives. These knives are manufactured using special chipper knife steel and selectively hardened to reduce the possibility of knives shattering.

1. Follow shutdown lock out procedure.

DANGER

Never start the engine with the disc hood open. Never attempt to open or close the disc hood with the disc moving. Failure to insure the disc has come to a complete stop prior to opening or closing the disc hood may cause equipment damage serious injury or death.

2. Remove six .375" bolts from the discharge chute/disc cover assembly.
3. Rotate the chute to the left side of the chipper.
4. Remove the disc cover padlock.
5. Carefully open the upper disc housing/discharge chute assembly.



6. Secure the disc cover open using the disc cover padlock.
7. Position the disc and install disc locking pin.



8. Loosen anvil screws (do not remove) and push anvil back so as to achieve maximum blade/anvil clearance.
9. Remove blade bolts, Do not use impact tool to remove or install bolts. Remove blades
10. Ensure all mating surfaces between the cutter blades and disc are clean and free of debris and corrosion.

Blade Mounting Surface

- When a blade is removed from the disc, the blade mounting surfaces must be clean of any debris or corrosion and inspected for any damage. An uneven or damaged surface may cause blade separation.

11. Inspect blades for cracks or distortion. Replace if cracks or distortion are found.

Blade Inspection

- Thoroughly clean the blades and inspect both sides of each knife for cracks. If any cracks are found, discard the blade.
- Using a straightedge against the blade mounting surface. Check for any blade distortion by sliding the straightedge both perpendicular and parallel to the bolt holes. Any light seen between the blade and the straightedge indicates a distorted blade. Any distorted blade must be discarded.
- 12. Inspect bolts for damage or corrosion. Replace as necessary. Blade bolts can be used twice. Always replace blade bolts when using re-sharpened or new blades.

NOTICE

- The knives used in your chipper are designed with (2) two cutting edges. After the first edge becomes dull you simply remove the knives from their mounting pocket and turn them 180 degrees and reinstall.
- Operation with worn or dull blades will result in poor chip quality, stringy material output, possible discharge chute clogging, additional fuel consumption, unnecessary stress on structural components, engine overheating and excessive wear on drive components i.e. drive belt, drive pulleys, bearings, drive clutch and engine. Equipment damage that results from the use of worn or damaged blades will not be considered for warranty. Operators and others are exposed to unnecessary risk by operating a unit in this negligent condition. Owners subject themselves to increased operating costs, significant downtime and premature equipment wear as a result of improper blade maintenance.
- 13. Place blades in blade pockets with the sharp edge protruding. Install all of the bolts and nuts and torque to the specifications listed in the fastener torque table.

⚠ WARNING

DO NOT over-torque bolts. This will overstress the knife and may cause knife breakage. Knife breakage may result in equipment damage, serious injury or death.

14. Adjust anvil (See Anvil installation and adjustment).

Anvil Installation and Adjustment

1. If cutter knife change is required this procedure

should be completed prior to anvil adjustment or replacement.

⚠ WARNING

Do not operate the chipper with damaged or chipped knives. Failure to change damaged or chipped knives may result in the breakage and discharge of knives during operation and possible equipment damage, severe injury or death.

2. Follow shutdown lock out procedure.

⚠ DANGER

Never start the engine with the disc hood open. Never attempt to open or close the disc hood with the disc moving. Failure to insure the disc has come to a complete stop prior to opening or closing the disc hood may cause equipment damage serious injury or death.

With no anvil currently installed:

3. Follow disc hood opening procedure as described in the accessing the cutter head procedure.

⚠ WARNING

Never place any part of the body in a potential pinch point This not only applies to the head and feed roller, but also disc and engine sheave/belt contacts.

Blades are extremely sharp. Care must be taken to avoid contact with the blades and blade pinch points. Always wear appropriate hand protection When performing inspections or replacing blades. Failure to do so will result in severe injury.

4. Slide the anvil into the anvil slot with the sharpest edge to the right and away from you.
5. Install the Two 5/8 inch hex head cap bolts. Slide the head of the two bolts with the anvil to the far left position in the slotted holes. This allows ample clearance for the initial knife/anvil gap adjustment.
6. Place the anvil adjusting angle against the left side of the anvil and install the (2) two adjusting bolts.
7. Snug the 5/8 bolts until the anvil is secure but still capable of sliding using the adjusting bolts.



8. Carefully rotate the disc while observing the clearance between the knives and the anvil. Stop the disc when the anvil and one set of the knives are adjacent to each other.
9. Slide the anvil gauge into position between the anvil and the knives.
10. Slide the anvil forward until the anvil, gauge and knives are pressed together. Anvil/knife gap should be 1/16 inch (0.0625)
11. Snug the hex head cap bolts holding the anvil.
12. Remove the anvil gauge.
13. Torque the hex head cap bolts holding the anvil to the specifications listed in the fastener torque table.
14. Tighten the adjusting bolts/adjusting angle against the anvil.
15. Tighten the adjusting bolt jam nuts.
16. Using a light, look between the anvil and knives and note the approximate clearance.
17. SLOWLY AND CAREFULLY rotate the disc ensuring consistent gap between the anvil and all knives. Never use pry bars or other tools against the disc paddles while rotating the disc.
18. Replace all guards and covers. Reinstall hood lock pin, pin padlock and hood switch plug.

⚠ WARNING

Ensure that all tools and hardware are removed from the head and discharge chutes or any other area where maintenance, inspection or service was performed.

Ensure that all fasteners and adjustments are secured properly before starting the unit.

Do not operate the equipment until the hood pin is secured and padlocked, and all covers and guards are in place and properly secured.

Re-sharpening Knives

Altec Environmental Products, LLC strongly recommends

that severely worn or damaged cutter knives be replaced rather than ground. Any knives with chips greater than 1/8 " in depth, or knives having any signs of cracks on the cutting edges extending into the body of the blade, or cracks located around the bolt holes must be immediately replaced. Proper knife edges can be maintained using hand honing or filing procedures. The proper frequency of "dressing " or sharpening the knife edges varies greatly with the amount and type of material being chipped, experience will determine the proper dressing frequency necessary. Any sharpening of the knives decreases the amount of cutting action per revolution, and may increase the overall wear on the disc surface. If you should choose to re-grind worn cutter knives, consult with the cutter knife manufacturer for proper procedures. For knives supplied by Altec Environmental Products, LLC as original equipment or replacement knives refer to sharpening instructions contained in this manual.

⚠ DANGER

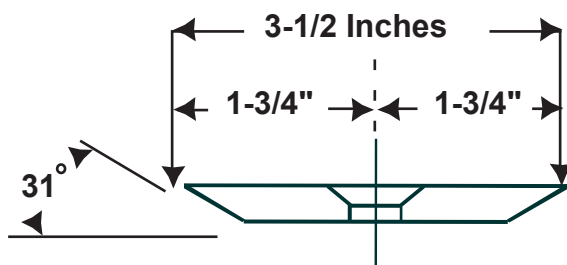
Improper grinding procedures can result in blade failure and cause extensive equipment damage and serious personal injury or death. Always ensure knife sharpening is completed by a qualified facility.

NOTICE

Operation with worn or dull knives will result in poor chip quality, stringy material output, possible discharge chute clogging, additional fuel consumption, unnecessary stress on structural components and excessive wear on drive components ie. drive belt, drive pulleys, bearings, drive clutch and engine.

Equipment damage that results from the use of worn, damaged or dull blades will not be considered for warranty. Operators and others are exposed to unnecessary risk by operating a unit in this negligent condition. Owners subject themselves to increased operating costs, significant downtime and premature equipment wear as a result of improper blade maintenance.

Minimum knife dimensions



Engine/Clutch

Check engine/clutch operations manuals for specific bearing lubrication, maintenance and replacement procedures.

Bearings Replacement

Spherical Bearings

Spherical roller bearings are used on both sides of the cutter assembly and all feed roll bearings. Self-aligning bearings such as these are used in areas where perfect alignment is difficult to maintain. This type of bearing allows the component to follow the movements of the structure without applying a side load to the internal components of the cylinder. Daily lubrication of these bearing is required to prevent the inner rim that maintains the alignment from seizing to the outer rim of the bearing. Daily lubrication insures contamination is flushed from the bearings inner components.

Cutter Bearing Replacement

1. Follow proper shutdown and lock out/tag out procedure.
2. Remove blades.
3. Remove top cutter housing, belt guard and bearing cover.

⚠ WARNING

Death or serious injury may occur when using improper lifting rigging. Use properly rated hoist, and lifting chains or straps.

4. Support the cutter assembly using an overhead crane or hoist. See unit specifications for weight of cutter assembly.
5. Remove any pulleys or auxiliary equipment from the out board sections of the cutter shaft.
6. Clean and de-bur the exposed sections of the shaft.
7. Remove the eight bearing flange bolts.
8. Lift the disc/bearing assembly from the disc housing.
9. Remove the two set screws on each bearing assembly and the remaining four bearing bolts.
10. It may be necessary to cut the old bearings from the shaft. When doing this caution must be taken to prevent damage to the cutter shaft.
11. Clean and remove any burrs from the shaft after removing the bearings.
12. Install the non-driven bearing ensuring the bearing inner race is firmly seated against the cutter shaft bearing shoulder. Bearing may need to be heated before installation.
13. Bolt the 3 inch bearing keeper/sprocket to the end of the cutter shaft, tighten securely.
14. Apply locktite removable #242 to both bearing

set screws and tighten.

15. Ensure all bearing mounting surfaces are clean.
16. Install the disc assembly into the disc housing.
17. Install the bearing to the chipper housing using four 5/8"-11 x 2 1/4" SHSC bolts with #242 Locktite on the bolt threads. Do not tighten at this time.

Note: To ensure bolts do not protrude past bearing mounting plate, use hardened flat washers or shims as required.

18. Install the bearing support plate using locktite #242 on four 5/8"-11 x 1 1/2" bolts with hardened flat washers, Torque to the specifications listed in the fastener torque table.
19. Install the second bearing using #242 locktite on four 1/2-13 x 2" bolts, torque bearing flange bolts on both bearings to the specifications listed in the fastener torque table.
20. Using #242 locktite, tighten the two set screws on the driven bearing.
21. Reinstall blades and adjust the anvil/blade gap.
22. Reinstall pulleys or auxiliary equipment previously removed.
23. Reinstall all guards and covers.

Hydraulic System

System Operation

The chipper operates as an open center hydraulic system. There is limited pressure in the system until the actuators demand additional pressure. The system then responds with a maximum of 3000 PSI. Standard flow rate is approximately 5 gallon per minute. This may vary with engine selection and customer drive speed specifications.

The normal flow of hydraulic fluid is from the pump to the main control valve. The second spool from the right on the main control valve routes the fluid to the feed roller in either the forward or reverse direction. Fluid then flows through the return filter and returns to the tank.

The first spool in the main control valve is for the panic bar. This spool, when activated routes all fluid directly back to the return filter bypassing the directional valve. It is used to stop feed roll motion in an emergency mode of operation.

Oil Reservoir

The reservoir will hold 8 Gallons. A 100 micron suction filter is located at the outlet of the reservoir, A breather is located in the fill cap on the reservoir. The breather contains a filter that cleans the air as it enters the reservoir. The return filter is located under the fill cap. When filling the reservoir remove the return filter cartridge.

Oil Pump

Standard hydraulic pump is a .30 cubic inch per revolution displacement gear pump. This pump is

normally directly coupled to the engine auxiliary drive.

Hydraulic Motor

One 24.7 cubic inch displacement motors drive and control the brush feeding rate to the cutter. The motor tapered shafts are directly coupled to the feed rolls.

Valves

When describing hydraulic valves, "position" identifies the number of operating positions of the valve spool. A two-position blocking valve has two operating positions, open and closed.

The word "way" identifies the number of ports in a valve section. A four-way control valve has four ports, One port is for a pressure connection, one is for a return line connection and the other two ports are the working ports.

Leakage

If components and connections are installed properly leakage can be kept to a minimum. Small external leaks are usually easy to find because dust will collect on the hydraulic oil film.

External leakage is the escape of hydraulic oil outside the hydraulic system, improperly tightened fittings are a primary cause of external leakage.

WARNING

Death or serious injury can result from hydraulic oil being injected into the flesh. Do not use hands or other body parts to check hydraulic lines and fittings for leaks. Seek immediate medical attention if injured by escaping hydraulic oil. Serious infection or reaction can result if medical treatment is not given immediately. Spilled hydraulic oil creates slick surfaces and can cause personnel to slip and or fall. Keep the unit and work areas clean.

If a connection is properly tightened but continues to leaks disassemble the connection. Seal the necessary parts and or replace the defective part.

Worn or damaged parts such as scratched cylinder rods can cause leaks. A worn or scratched output shaft on a hydraulic motor can also cause a leak. Such conditions must be repaired or replaced. A new seal should also be installed.

Internal leaks allow pressurized hydraulic oil to escape to tank or another hydraulic circuit. Most hydraulic components have a small internal leak due to machining tolerances.

An internal leak can cause a variety of problems in a hydraulic system, An internal leak in a cylinder can cause drifting or malfunction of a cylinder.

After extended hours of operation hydraulic motors will increase the internal leakage until a noticeable loss of power is apparent. At this time you must replace the motor. To minimize motor wear it is essential to maintain clean filtered oil in the system.

Heat Generation

Heat is the result of pressurized fluid escaping to the reservoir. Most hydraulic components have a small internal leak due to machining tolerances. This type of leak generates a very small amount of heat that is taken into account when the component is designed.

Internal leaks in the system may be caused by internal housing cracks, bad relief valves, or leaking seats. This type of leak allows a large volume of pressurized oil to return to the reservoir, creating excessive heat in the hydraulic system. Continuous operation with excessive heat will damage the hydraulic oil, seals, and O-rings throughout the system.

The following conditions cause heat generation;

- Excessive pump speed.
- Worn or defective pump.
- Defective, or improperly adjusted relief valve cartridges.
- Low hydraulic oil level.
- Improper hydraulic oil.
- Internal component leakage.

Hydraulic Lines

Hydraulic lines provide a passageway for fluid flow between components in the hydraulic system. Fluid is transmitted through the lines from the pump to the actuator to operate the unit. A variety of lines may be used on the unit depending on the specific application,

Most hoses have a lay on them. The lay line contains the following information.

- Manufacturer's name
- Manufacturer's part number
- SAE rating
- Burst pressure
- "Non conductive" appears on hoses which do not conduct electricity.

When replacing a hose use one the same size, length, and pressure rating. If hose size is doubled, four times the amount of oil will flow at the same pressure. If hose size is decreased, the flow in the circuit will decrease and back pressure will increase. The increase in back pressure will cause heat to build up and system malfunction.

WARNING

Death or serious injury can result from hydraulic oil being injected into the flesh when loosening or disconnecting hydraulic component. Remove the pressure before loosening or disconnecting hydraulic components. Seek immediate medical attention if injured by escaping hydraulic oil. Serious infection or reaction can result if medical treatment is not given immediately. Spilled hydraulic oil creates slick surfaces and can cause personnel to slip and or fall. Keep the unit and work areas clean.

CAUTION

Injury can result from airborne particles entering the eyes and lungs. Wear appropriate safety equipment. Injury can result from being pinched or trapped between moving components. Keep hands clear.

- Use caution when access covers have been removed to service the unit, Pinch points and shear points may exist between moving parts, Replace the access covers immediately after serving.
- Remove all fluid pressure from a hydraulic circuit before disconnecting lines or fittings.
- Mark all hydraulic line fittings before disconnecting them to ease installation later. Place a container under the hoses to catch the hydraulic oil. Cap or plug all open ports, hose, and fittings to prevent contamination.
- Warranty will be denied on components returned to Altec if ports are not plugged and cylinder rods are not retracted.
- After completing a procedure, check the oil level in the hydraulic oil reservoir and add oil if necessary.

Drive Belt/Pulleys

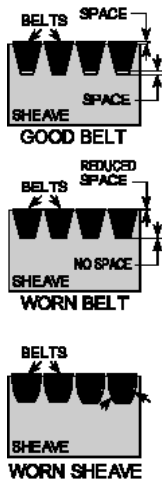
WARNING

Serious injury or death may occur from contact with moving parts.

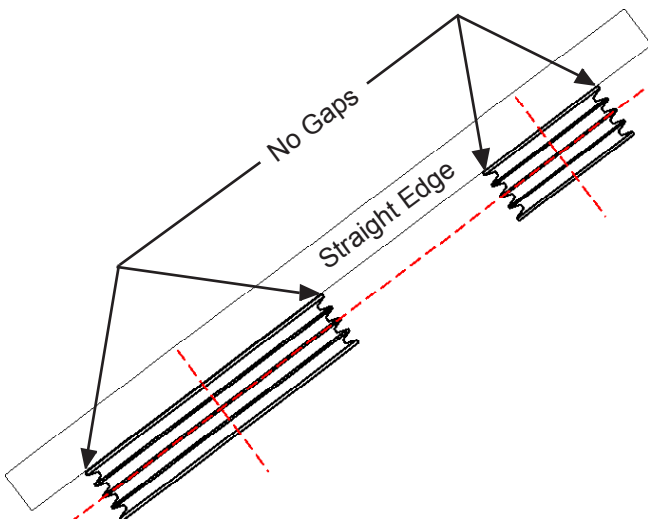
Never place any part of the body in a potential pinch point. This not only applies to the heads and chutes, but also drum and engine sheave/belt contacts.

Disengage clutch and the hydraulic feed system. Remove keys from the ignition switch and place in pocket. Lock out chipper. Drum and drive system continue to move after the clutch has been disengaged and the engine has been cut off. Insure that the drum and drive system have come to a complete stop before attempting any maintenance in this area!

Inspect belt/pulley condition per illustration below. Replace as necessary.



1. Remove belt guard.
2. Visually inspect drive belt for cracks or fraying. Visually inspect sheaves for signs of wear, cracks or loose bushings.
3. Inspect belt tension. At the center point between the sheaves, the belt should deflect 3/8" with 8 pounds of pull. Under-tensioning can cause unnecessary belt wear.
4. Over-tensioning can cause premature PTO and or bearing failure.
5. Check drum cutter head/engine alignment by placing a non-flexible straight edge against the outside surface of the disc cutter head sheave and the engine sheave. Alignment is correct when both inner and outer surfaces of both sheaves are in contact with the straight edge.
6. Refer to figure below



No gaps between straight edge and sheave on both sheaves

Belt Adjustment

1. Back-off the engine mounting adjustment screws.
2. Loosen all of the engine mounting bolts.
3. Tighten or loosen the adjustment screws, as appropriate, while monitoring the sheave alignment and belt tension.
4. When the proper sheave alignment and belt tension have been achieved, retighten the engine mounting bolts.
5. Retighten the adjustment screw locking nuts.
6. Reinstall the belt guard and tighten all fasteners securely.

! WARNING

Serious injury or death may occur if maintenance procedures are not completed.

Ensure that all tools and hardware are removed from the head and discharge chutes or any other area where maintenance, inspection or service was performed.

Ensure that all fasteners and adjustments are secured properly before starting the unit.

Do not operate the equipment unless all covers and guards are in place and properly secured.

Paddle, Fan and Disc Inspection

This inspection must include a visual examination of Fasteners, Welds, Structural Integrity and Overall Condition of the Paddles, Fans and Disc.

NEVER PRY AGAINST THE PADDLES OR FAN BLADES. Although damage may not be apparent at the time, this prying action may cause a future failure of the paddles or fans. Damage may also occur if foreign objects are fed through the chipper. As always, if any unusual sounds or if known foreign objects are fed through the chipper, the unit must be immediately shut down and thoroughly inspected. Paddles, fans and blades vary in design and weight. To ensure proper disc balance whenever one paddle is replaced, both paddles must be replaced. Whenever one fan or blade is replaced, all fans or blades must be replaced.

! DANGER

Failure to inspect and replace damaged fans, paddles or disc will cause excessive equipment vibration or component separation which will cause severe equipment damage, injury or possible death. Always inspect and replace damaged equipment.

Welds: Inspect all welds for signs of cracks on the welds or between the weld and base metals.

Structural Integrity: The paddles/fans must not be bent or distorted in any fashion. Examine all fans for possible cracking. Paddles/fans must fit tightly against the face of the disc; there should be no signs of the paddle/fan lifting off the disc surface. If any of these structural defects are found, the damaged components must be replaced prior to operating the chipper. Never attempt to repair or weld damaged or cracked fans or paddles.

Feed Sense

Maintaining proper operating RPM is a critical part of efficient chipper operation. If RPM is allowed to fall below design parameters the velocity of discharging chipped material will fall. This will result in discharge chute clogging.

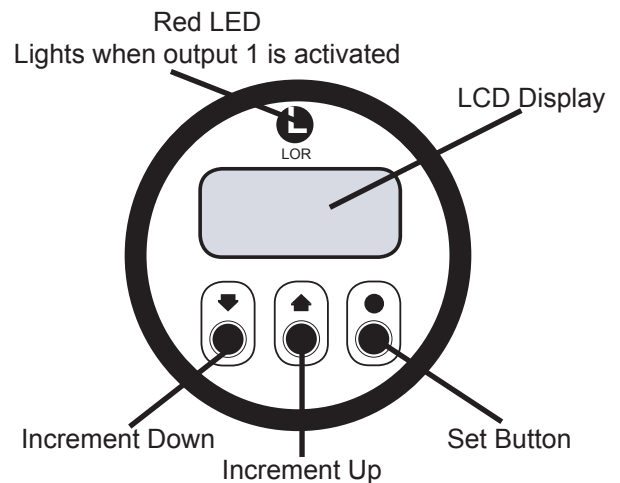
The Feed Sense system automatically controls RPM through control of the hydraulically driven feed roller(s). When the system is on the controller senses cutter speed. When the cutter drops to a preset minimum RPM, the feed roller(s) is temporarily stopped until the engine recovers to its preset operating RPM. After engine recovery the Feed Sense automatically begins the forward feeding process and continues as long as RPM is maintained above the low set point.

DANGER

Serious injury or death may occur when entangled with material being feed into the chipper. Sudden and automatic advancement of the material will occur when the Feed Sense is activated. After material has been engaged by the chipper always stay clear of possible entanglement hazards.

Operating sequence

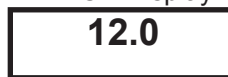
- The Feed Sense controller automatically comes on when starting the engine. The chipper will operate in the Feed Sense "On" mode of operation.
- Turning your Feed Sense off, press and hold the left button for 4 seconds, then release.
- To turn it back on, press and hold the right button for 4 seconds.



Operation:

To View Battery Voltage:

LCD Display

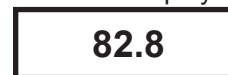


Press and Hold Both Buttons



To View Total Hours:

LCD Display



Press and Hold



To Disable Output:

LCD Display



Press and Hold For 4 Seconds



In this mode the LCD will alternate displaying engine RPMs for 9 to 10 seconds and "off" for 1 second. To revert to ENABLE OUTPUTS simply press Set Button  once.

Restoring Factory Settings:

Press and hold  +  while turning ignition key to the "ON" position. Continue to hold until the display reads 

Release buttons.

Scroll Feature:

The scroll briefly displays each of the OEM program settings once. This allows the user to view every parameter without risking an inadvertent programming change.

Press and hold  while turning ignition key to

"ON" position.
Release buttons

After each of the OEM Program settings have been displayed once, the gauge reverts back to normal operation.

OEM Programing Sequence:

1. Press and hold  +  while turning ignition key to the "ON" position.

Continue to hold until the display reads 
Release buttons.

2. Use the  or  button to select the "UNLOCK" number 747.

3. Press the  button until the display reads either P1 or P2

4. Use the  or  button to select P2
Press the  button

5. Use the  or  button to select MODE

OPTION 1

oPt 1

Press the  button

6. Use the  or  button to set PPr Value.

Set to:

See Decal No.
970220771

Press the  button

7. Use the  or  button to set the Hi RPM Value.

Set to:

See Decal No.
970220771

Press the  button

8. Use the  or  button to set the Lo RPM Value

Set to:

See Decal No.
970220771

Press the  button

9. Use the  or  button to set the ALr Value to "0".

Press the  button

10. Use the  or  button to set the value for the BACK-UP TIME. Set to:

See Decal No.
970220771

Press the  button

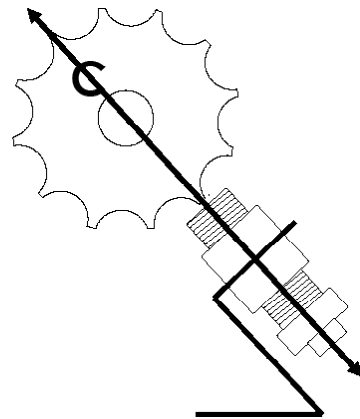
11. Use the  or  button to set "in hi" (output mask) to be OFF
Press the  button.

DONE

Magnetic Sensor Pick-up

The magnet sensor is located under the bearing guard opposite the drive pulley on the end of the disc shaft.

Proper alignment and gap setting must be maintained for accurate Feed Sense operation. Variations in tooth height may be present, always adjust the gap setting using the highest tooth.



Trouble Shooting Pick-up

Insure proper gap setting and alignment. Correct as necessary.

Unhook the two wire connector plug. Using a multi-meter measure the resistance across the two wires going to the pick-up. You should measure approximately 690 Ohms. Normally a faulty pick-up will read "0" Ohms (an open) or infinite resistance (a short). In either case the pick-up must be replaced.

Trouble Shooting Controller		
PROBLEM:	CAUSE:	SOLUTION:
No Display	Gauge not getting power Gauge not properly grounded	•Check continuity or RED wire to clean power source. •Check 7.5 Amp fuse. Check continuity of BLACK wire to ground connection.
Feed does not reengage after stopping	Cutter RPM not reaching HI set point on gauge.	•Stretched or out of adjustment throttle cable. •Clogged air or fuel filters Check HI RPM setting on gauge to make sure it is not set too close to the top RPM of the cutter.
	Engine not running White wire not connected Open connection in WHITE wire No Signal from Magnetic Pick-up	Normal operating condition Check connection of WHITE wire to Magnetic pick-up Check continuity of WHITE wire from connector at gauge to magnetic Pick-up •See "Trouble Shooting Pick-up"
Gauge won't set properly	Error made during programming sequence	Restore factory settings

Trouble diagnostics

The following chart lists possible chipper malfunctions along with the probable causes. Refer to the Engine Owner's Manual (EOM) for repair of the heavy-duty industrial engine supplied with your chipper.

CONDITION	POSSIBLE CAUSE
Starter will not crank engine.	• Battery discharged. • Battery terminals corroded or poor ground connection. • Defective ignition switch or starter solenoid. • Malfunctioning starter. • Hood safety switch not engaged or damaged.
Engine will not start.	• Automatic shutdown button not pushed in. • Fuel tank empty. • Engine flooded. • Choke inoperative. (Gasoline Engines Only) • Battery partially discharged. • Faulty engine carburetion or ignition. • Air in fuel line. (Diesel Only) • Pre-heater not working. (Diesel Only) • Hood safety switch not engaged or damaged.
Engine runs but disc doesn't turn	• Material wedged against disc. • Slipping or broken drive belt. • Defective clutch.
Chipper cuts too slowly.	• Cutter head not operating proper at proper RPM • Dull knives. • Hydraulic system not operating properly. • Material is too large for the chipper. • Drive System not properly adjusted or damaged.
Feed rollers do not turn.	• Ensure proper control bar position and operation. • Engine RPM's too low. (EFC option only) • Debris jammed in roller area. • Improper Hydraulic Fluid Level. • Damaged feed wheel coupler.
Engine Overheats	• Radiator fins clogged. • Improper coolant level or mixture. • Damaged fan or fan belt.
Chute Clogging	• Cutter head not operating at proper RPM • Dull knives. • Hydraulic system not operating properly. • Material is too large for the chipper. • Drive System not properly adjusted or damaged. • EFC not engaged. • Disc Vents covered.

Appendix

Glossary

access hood — hinged part of the disc housing used to access the cutter disc
actuator — a device for converting hydraulic energy into mechanical energy, such as a or cylinder.
adapter — a device used to connect two parts of different type or diameter.
allen wrench — a six sided wrench that fits into the hex socket of a cap screw or set screw.
ANSI — American National Standards Institute.
antifoam additive — an agent added to hydraulic fluid to inhibit air bubbles from forming and collecting together on the surface of the fluid.
antiwear additive — an agent added to hydraulic fluid to improve the ability of the fluid to prevent wear on internal moving parts in the hydraulic system.
anvil — The stationary blade on a chipper cutting mechanism
ASTM — America Society for Testing Materials
AWS — American Welding Society
back pressure — existing in the discharge flow from an actuator or hydraulic system. It adds to the pressure required to operate an actuator under a given load.
baffle — a device, usually a plate, installed in a reservoir to separate the return line inlet from the suction line outlet.
bearing — a machine part that is installed between two adjacent machine parts to allow those parts to rotate or slide with respect to each other. Commonly used to decrease friction or wear on components
bolt — a cylindrical fastener with external screw threads at one end and a head configuration such hexagonal, square, or round at the other end, which conforms to the dimensional and material specifications published for bolts. (These specifications are different from those for cap screws.)
bore — the inside diameter of a pipe, tube, cylinder barrel, or cylindrical hole in any of various other components.
brake controller — interface between tow vehicle and electric trailer brakes. Can be inertia activated or based on time delay from activation of vehicle brakes. Typically in the tow vehicle's driving compartment with electrical line running to the trailer wiring connector. Most require the user to adjust brake gain to compensate for varying trailer load. Necessary for the use of electric trailer brakes.

break-away switch — a device which automatically activates the breaking system of a towed unit when unintentionally separated from the towing vehicle
breather — a device that permits air to move in and out of a container or component to maintain atmospheric pressure.
burst pressure — the minimum internal pressure that will cause a hose, tube, cylinder, or other hydraulic or pneumatic component to rupture or split open.
button head — a type of cap screw with a rounded head containing a socket into which a tool can be inserted to turn the cap screw.
bypass — a secondary passage for fluid flow.
bypass valve — a hydraulic valve that allows for an alternate passage for fluid flow.
cap screw — a cylindrical fastener with external screw threads at one end and a head configuration such as hexagonal, hex socket, flat countersunk, round, or slotted at the other end, which conforms to the dimensional and material specifications published for cap screws.
cartridge — 1: the replaceable element of a fluid filter. 2: the replaceable pumping unit of a vane pump, composed of the rotor, ring, vanes and side plates. 3: A removable hydraulic valve that is screwed into place in a cavity in a hydraulic manifold or cylinder.
caution — a signal word which indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
cavitation — the formation of gaseous voids in hydraulic fluid caused by a low pressure condition which typically occurs when inlet starvation prevents the pump from filling completely with fluid. The characteristic sound of cavitation is a high pitched scream.
charge — to fill an accumulator with fluid under pressure.
charge pressure — the pressure, above atmospheric pressure, at which replenishing fluid is forced into the hydraulic system.
chassis — a vehicle on which a unit is mounted, such as a truck, trailer, or all-terrain vehicle.
check valve — a valve that permits flow of fluid in one direction, but not in the reverse direction.
chip curtain — rubberized deflection curtain attached to the infeed chute
chip deflector — directs chip discharge
circuit — the complete path of flow in a hydraulic or electrical system.

circuit breaker — a form of electrical switch which opens (trips) to interrupt a circuit when it senses excessive current flow that may be caused by a short circuit, to protect wiring and components from damage. Some types of circuit breakers reset automatically when the excessive current discontinues and others must be reset manually.
clean out — clean out area under the lower feed roll
clevis — a U-shaped fastening device secured by a pin or bolt through holes in the ends of two arms.
closed center — a directional valve design in which pump output is blocked by the valve spool(s) when the valve spool(s) is in the center or neutral operating condition.
clutch — the device on a reel lifter which allows the connection and disconnection of the arbor bar and the driver.
clutch — controlled transfer of rotational power from engine to output pto shaft
compensator — a valve spool that is used to maintain a constant pressure drop regardless of supply or load pressure.
compensator control — a control for a variable displacement pump that alters displacement in response to pressure changes in the system as related to its adjusted pressure setting.
component — a single part or self-contained assembly.
compressibility — the change in volume of a unit volume of a fluid when it is subjected to a unit change in pressure.
conductive — having the ability to act as a transmitter of electricity. Electricity will flow through metal, therefore metal is conductive.
contaminate — to render unfit or to soil by introduction of foreign or unwanted material.
control — a device, such as a lever or handle, which is actuated by the operator to regulate the direction and speed of one or more functions of a unit.
control bar — when manually activated controls the movement of feed roll(s) on a chipper
control feed — a wood-chipper which controls the infeed rate to the cutting mechanism
control station — a position where controls for unit operation are located.
control valve — a directional valve controlled by an operator, used to control the motion or function of an actuator or system.
cooler — a heat exchanger used to remove heat from the hydraulic fluid.

counterbalance valve — a load holding valve that can be opened to allow flow in the normally blocked direction by applying hydraulic pressure to a pilot port, and which contains a relief capability to allow flow from the blocked direction if the blocked pressure exceeds a certain value.
courtesy cut — partial cut through limbs so as to allow limbs to fold towards tree trunks and allow ease of feeding chipper
cracking pressure — the pressure at which a pressure actuated valve, such as a relief valve, begins to pass fluid.
cross-ported — a hydraulic path connected between the two opposite flow paths of a hydraulic circuit that allows a route for flow between the two paths in lieu of flow thru an actuator. To allow sensing of the pressure in one path by a component installed in the other path.
curb side — the side of a vehicle which is opposite from oncoming traffic when the vehicle is traveling forward in the normal direction in a lane of traffic.
curb weight — the empty weight of a vehicle full of fuel and all fluids. Curb weight does not include passengers or payload.
cushion — a device built into a hydraulic cylinder that restricts the flow of fluid at the outlet port to slow the motion of the rod as it reaches the end of its stroke.
custom option — an option which is not shown on a standard order form and which requires additional engineering work to supply.
cylinder — a device that converts fluid power into linear mechanical force and motion. It usually consists of a moveable piston and rod, or plunger, operating within a cylindrical bore.
danger — a signal word which indicates a hazardous situation which, if not avoided, will result in death or serious injury.
dead band — the area or range near the center rest position of a hand control where the function does not respond to movement of the lever or handle.
decal — a thin sheet of flexible material which is attached to another surface by adhesive, and is used to convey instructions, information and warnings.
deenergize — to remove electrical power from a device, as from the coil of a solenoid valve.
delivery — the volume of fluid discharged by a pump in a given time, usually expressed in gallons per minute (gpm).
demulsibility — the ability of a liquid to expel another type of liquid. Commonly used to describe a fluid's ability to cause water to separate out rather than being held in suspension.

detent — a device for positioning and holding one mechanical part in relation to another so that the device can be released by force applied to one of the parts.
diagnostic — relating to the practice of investigation or analysis of the cause or nature of a condition, situation, or problem.
dial indicator — a meter or gauge with a calibrated circular face and a spring-loaded plunger, used as a measuring device.
digital signal — an electrical signal that communicates information by the use of two distinct levels of voltage or current, a high “on” level and a low “off” level, which are sent in a series of pulses. The timing of the pulses is used to indicate the level of an input parameter such as control lever position, or information such as the address setting of a radio control transmitter linking it to its receiver.
directional valve — a valve that selectively directs or prevents fluid flow through desired passages.
disc — the rotating component, housing the knives on a disc chipper
disc chipper — a wood-chipper which utilizes a disc shaped, rotating cutter mechanism
disc housing — weldment housing the cutting disc, comprising of the base, stationary hood and access hood
discharge chute — directs chip discharge from the cutter mechanism in the desired direction
displacement — the quantity of fluid that can pass through a pump, motor or cylinder in a single revolution or stroke.
double-acting cylinder — a cylinder in which fluid pressure can be applied to either side of the piston to move the rod in either direction.
double-pole, double-throw (DPDT) switch — a six-terminal electrical switch or relay that connects, at the same time, one pair of terminals to either of two other pairs of terminals.
double-pole, single-throw (DPST) switch — a four-terminal electrical switch or relay that, at the same time, opens or closes two separate circuits or both sides of the same circuit.
drain — a passage or a line from a hydraulic component that returns leakage fluid to the reservoir.
drive pulley — directly coupled to a power source output shaft.
driven pulley — requires a belt connection to achieve rotation.
drum — the rotating component, housing the knives on a drum chipper.

drum chipper — a wood-chipper which utilizes a drum shaped, rotating cutter mechanism
dump valve — a normally open, two-position, two-way valve that sends pump flow through a path going directly to the reservoir or bypassing hydraulic circuit when it is not actuated, preventing operation of the hydraulic system or circuit. When it is actuated, it closes off this path, redirecting flow to the hydraulic system or circuit to allow operation.
EFC — (Electronic Feed Control) Automatically maintains cutter mechanism speed
efficiency — the ratio of output to input. Volumetric efficiency of a pump is the actual output in gpm divided by the theoretical or design output. The overall efficiency of a hydraulic system is the output power divided by the input power. Efficiency is usually expressed as a percent.
electrical harness — an assembly of electrical wires that is used to deliver electrical current between components.
electro hydraulic — a combination of electric and hydraulic control mechanisms in which an electrically controlled actuator is used to shift the spool in a hydraulic control valve.
electro hydraulic control system — a control system in which the function control handles are connected to electric controls. The electric controls actuate electro hydraulic valves to operate the functions of the unit.
electro hydraulic valve — a directional valve that receives a variable or controlled electrical signal which is used to control or meter hydraulic flow.
electrocution — receiving an electrical shock resulting in death.
end gland — a hollow, cylindrical part that screws into or is retained in the open end of a hydraulic cylinder barrel, through which the rod protrudes.
energize — to send electrical power to a device, as to the coil of a solenoid valve.
energized conductor — an apparatus that is transmitting electric current.
energy — the ability or capacity to do work, measured in units of work.
engine protection system — a system which detects when the auxiliary engine oil pressure or temperature is out of the proper range and shuts the engine off.
fan — part of the disc or drum chipper which propels chipped debris and increases airflow into the discharge chute
feed box — assembly housing the feed roll(s)

feed roll — a mechanical controlled roll or rollers used to control the feed rate to the cutter mechanism
feed table — folding or fixed position guard which restricts operators access to the cutter mechanism
feedback (feedback signal) — the return of part of an output signal to the input for the purpose of modification and control of the output.
filler breather cap — the component on the top of a reservoir that allows air to enter and exit the reservoir as the fluid level changes, and which can be removed to access a fill hole when adding hydraulic fluid to the reservoir.
filter — a device through which fluid is passed to remove and retain insoluble contaminants from a fluid.
filter cart — a portable device which can be connected to a unit's hydraulic system to filter water and/or other contaminants out of the hydraulic system fluid.
filter cartridge — a component containing filtration material which is installed within a filter housing or attached to a filter receptacle for use, and can be removed and replaced as a self-contained unit.
firm footing — positioning of the unit in accordance with the instructions in a unit's operator's manual to ensure proper leveling of the vehicle and adequate stability when operating the unit.
fixed displacement pump — a pump in which displacement is constant, so that the output flow can be changed only by varying the drive speed.
flow — the movement of fluid generated by pressure differences.
flow control valve — a valve that regulates the rate of fluid flow.
flow rate — the volume, mass or weight of a fluid passing through any conductor per unit of time.
flowmeter — an instrument used to measure the flow rate of fluid in a hydraulic tube or hose.
fluid — a liquid that is specially compounded for use as a power transmitting medium in a hydraulic system.
force — any push or pull measured in units of weight.
four-way valve — a valve having four ports for direction of fluid flow.
FPS — Fluid Power Society.
frequency — the number of times an action occurs in a unit of time.
gasket — a packing made of a formable material, usually in the form of a sheet or ring, used to make a pressure tight fit between stationary parts.

gate valve — see shutoff valve.
gauge pressure — a pressure scale that ignores atmospheric pressure by establishing atmospheric pressure as its zero point. Its zero point is 14.7 psi absolute.
gauge snubber — see snubber valve.
gearbox — an assembly with internal speed changing gears; a transmission. Gearboxes are commonly used to transmit power from a hydraulic motor to operate a function through an output shaft.
gib assembly — secures cutter knives in place on drum chippers
gpm — gallons per minute.
grease fitting — a small fitting that acts as the connection between a grease gun and the component to be lubricated.
gross combined vehicle weight — (GCVW) total combined weight of the two coupled vehicles, including all passengers and payload.
gross trailer weight — (GTW) the total weight of a trailer including all of its contents.
gross vehicle weight — (GVW) the total weight of a vehicle including all of its contents and passengers.
gross vehicle weight rating — (GVWR) the weight specified by a manufacturer as the recommended maximum weight of a vehicle when fully loaded.
ground — 1: a large conducting body with a potential of zero volts used as a common current return for an electric circuit. 2: an object that makes an electrical connection with a ground or with the earth.
hand control — a hand operated control lever or handle located at a control station used to regulate a function of a unit, where the speed of the function is proportional to the distance the control is moved.
heat — the form of energy that has the capacity to create warmth or to increase the temperature of a substance. Any energy that is wasted or used to overcome friction is converted to heat. Heat is measured in calories or British thermal units (Btu). One Btu is the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.
heat exchanger — a device that transfers heat through a conducting wall from one fluid to another or into the atmosphere.
hertz (Hz) — a unit of frequency equal to one cycle per second.
holding valve — see load holding valve.
hood pin — in conjunction with bolts, secures the two top halves of the disc housing together

horsepower (HP) — the power required to lift 550 pounds one foot in one second or 33,000 pounds 1 foot in one minute. One horsepower is equal to 746 watts or to 42.4 British thermal units per minute.
HTMA — Hydraulic Tool Manufacturer's Association.
hydraulic control — a control that is actuated by hydraulically induced forces.
hydraulic schematic — a drawing that uses common hydraulic symbols to represent the hydraulic system of the unit.
hydraulics — an engineering science pertaining to liquid pressure and flow.
hydrostatic hydraulic system — any hydraulic drive in which a positive displacement pump and motor transfer rotary power by means of fluid under pressure.
infeed chute — tapered weldment attached prior to the feed/cutter mechanisms, assisting in the centering of the tree canopy
in-line — the installation of a component in series between two portions of a hydraulic line or electrical conductor so that flow in the line or conductor toward the component passes through the component and continues on in the line or conductor on the other side.
insulated aerial device — an aerial device with dielectric components designed and tested to meet the specific electrical insulating rating consistent with the manufacturer's name plate.
ISO — International Standards Organization.
jackknife — an extreme turning maneuver that risks damage to the tow vehicle and the trailer when the trailer tongue or body swings into the contact with the tow vehicle. Jackknife accidents usually occur while backing up.
jam nut — a nut that is screwed down firmly against another nut to prevent loosening.
junction box — an enclosed central connecting point for electrical wiring.
key — a parallel-sided piece that fits into grooves in two adjacent parts to prevent movement between the parts. Often used as the driving member between a shaft and a sheave or winch drum.
keyway — a groove that is cut in a shaft or bore for a key to fit into.
knife — the rotating blade on a chipper cutting mechanism
lift cylinder — a hydraulic cylinder assembly used to raise the top feed roll on a controlled feed chipper

light emitting diode (LED) — a semiconductor diode that emits light when subjected to an applied voltage. LEDs are used for electronic display.
line — a tube, pipe or hose used as a passageway to move hydraulic fluid.
live hydraulics — hydraulic system is operational as soon as engine is started.
load holding valve — a hydraulic valve which blocks fluid flow from a hydraulic actuator, such as a cylinder or motor, to prevent motion when the control valve is not being operated or in case of a hydraulic line failure.
lock washer — a solid or split washer that is placed underneath a nut or cap screw to help prevent loosening by exerting pressure against the fastener.
locknut — see self-locking nut.
lockwire — a wire that is installed to prevent loosening of fasteners or components.
lunette eye — a round metal ring used in place of a ball coupler on a trailer. It attaches to a pintle hook on the towing vehicle.
magnetic suction strainer — a suction filter consisting of a strainer which contains one or more magnets to trap ferrous metallic contaminants that are small enough to pass through the strainer.
manual override — a means of manually actuating an automatically or remotely controlled device.
master cylinder — a cylinder in which motion of the piston under an external force transfers hydraulic fluid to a slave cylinder to produce corresponding motion.
may — this word is understood to be permissive
meter — to regulate the amount of fluid flow.
meter-in — to regulate the amount of fluid flow into an actuator or system.
meter-out — to regulate the flow of the discharge fluid from an actuator or system.
micro switch — a small electrical device that is used to turn an electrical current on or off, or to change the connections in a circuit.
micron (micrometer) — one-millionth of a meter or about 0.00004".
micron rating — the minimum size of the particles that a filter is designed to remove.
moly — see molybdenum disulfide.
molybdenum disulfide — a black inorganic chemical that is used as a dry lubricant and as an additive for grease and oils. Molybdenum disulfide has a very high melting point and is insoluble in water.

motor — a device that converts hydraulic or electrical energy into continuous rotary motion and torque.
multiviscosity — the viscosity characteristic of a fluid which contains additives that increase the viscosity index. The fluid does not become as thin at high temperatures or as thick at low temperatures as a fluid without these additives. This allows the fluid to be used over a wider temperature range.
Nm — Newton Meter. The unit of moment (torque) in the SI (International System or Units) system.
normally closed switch — a switch which is closed to allow current to flow through it when it is not actuated, and opens to interrupt current flow when actuated.
normally closed valve — a two-way valve which is closed to block fluid from flowing through it when it is not actuated, and opens to allow flow when actuated.
normally open switch — a switch which is open to prevent current from flowing through it when it is not actuated, and closes to allow current flow when actuated.
normally open valve — a two-way valve which is open to allow fluid to flow through it when it is not actuated, and closes to block flow when actuated.
notice — the preferred signal word to address practices not related to personal injury.
NPT — National Pipe Thread.
NPTF — National Pipe Thread Fluid, a pipe thread form which is modified from the NPT form to improve the resistance to fluid leakage through the threads in a connection.
ohmmeter — an instrument used to measure the resistance in ohms between two points in an electrical component or circuit.
on/off circuit — circuit that supplies constant electrical power to a solenoid or other component when a relay or switch is closed and removes the power when the relay or switch is opened.
open center — a directional valve design in which pump output returns freely to the reservoir when the valve spool(s) is in the center or neutral position.
open circuit — an electric circuit that has infinitely high resistance, resulting in no current flow. An open circuit may be caused by a loose connection, broken wire, corrosion or poor contact where an electrical component is grounded to the unit structure.
operational area — the area surrounding a chipper effected by chip discharge, noise, or any chipper operations
operator — a person trained, authorized and engaged in the operation of the unit.

orifice — a restriction in a hydraulic or pneumatic circuit, the length of which is small in respect to its diameter.
O-ring — a ring of material with a circular cross section that is used as a gasket, usually made of synthetic rubber.
OSHA — Occupational Safety and Health Administration.
over tighten — to torque a threaded fastener beyond the recommended torque value.
over travel — movement of a mechanism beyond its normal stopping point.
overload — the condition existing when a load greater than the rated capacity or design load is applied to a unit or component.
paddle — part of the disc assembly which propels chipped debris into the discharge chute
panic bar — a safety system which when manually activated stops movement of the feed roll(s) on a chipper
particle count — a visual count of the numbers of particulate contaminants in a quantity of a hydraulic fluid.
passage — a machined or cored fluid conducting path that lies within or passes through a component.
payload — any tools, materials, fuel and occupants carried by the mobile unit that are not permanently attached.
pilot operated — condition in which a valve is actuated by hydraulic fluid pressure.
pilot operated check valve — a check valve that can be opened to allow flow in the normally blocked direction by applying hydraulic pressure to a pilot port.
pilot pressure — auxiliary pressure used to actuate or control hydraulic components.
pilot valve — an auxiliary valve used to control the operation of another valve.
pin — a cylindrical structural device used to allow a pivoting joint or to connect mating parts.
pin retainer — a device which is used to hold a pin in place in an assembly.
pinch point — a particular location in which a human body or a part of the body may become pinched or pinned between moving mechanical parts.
pinion — a gear with a small number of teeth that has been designed to mesh with a larger gear.
pintle hitch — a common heavy-duty coupling type which utilizes a pintle hook attached to a tow vehicle to pull a trailer having a lunette eye.

pintle hook — the “jaw” portion of a pintle hitch which attaches to the tow vehicle.
piston — a cylindrically shaped part that fits within a cylinder or cylindrical bore and transmits or receives linear motion by means of a connecting rod or other component.
piston pump — a pump in which motion and force are applied to fluid by a reciprocating piston(s) in cylindrical bore(s).
placard — 1: a thin sheet of rigid material which is attached to another surface by adhesive and/or mechanical fasteners, and is used to convey instructions, information and warnings. 2: May also refer to a decal.
plunger — a cylindrically shaped part that is used to transmit thrust; a ram.
polyethylene — a moisture proof plastic.
poppet — that part of certain valves that prevents flow when it closes against a seat and allows flow when it moves away from the seat.
port — an internal or external opening for intake or exhaust of fluid in a component.
position — a term which describes the number of possible positions a valve spool or mechanism can be shifted to.
pour point — the lowest temperature at which a fluid will flow or pour under specific conditions.
power — work per unit of time, measured in horsepower (HP) or watts.
power take-off (PTO) — a supplementary mechanism enabling vehicle engine power to be used to operate non-automotive apparatus such as a pump, or auxiliary driven apparatus
precharge pressure — the pressure of compressed gas in an accumulator before any fluid is added.
pressure — the force applied in a given area. It can be expressed in pounds per square inch (psi).
pressure compensator — a device on a variable displacement pump that adjusts pump output flow to develop and maintain a preset maximum pressure.
pressure differential — the difference in pressure between two points in a system or component.
pressure drop — the reduction in pressure between two points in a line or passage due to the energy required to maintain flow.
pressure gauge — an instrument which displays the hydraulic or pneumatic pressure sensed at a port on the device.
pressure line — the line carrying fluid from a pump outlet to the pressurized port of a valve or actuator.

pressure override — the difference between the cracking pressure of a valve and the pressure reached when the valve is passing full flow.
pressure reducing valve — a pressure control valve whose primary function is to limit its outlet pressure.
pressure switch — an electric switch which is actuated when the hydraulic or pneumatic pressure applied to a port on the switch reaches a specified value.
pressure transducer — a pressure measuring device which produces a variable electrical signal that is proportional to the hydraulic pressure applied to a port on the device.
proportional circuit — a circuit that supplies a varying voltage to a coil in a pilot valve as electrical current applied to the circuit is varied by a hand control.
proximity alarm — a system which measures the distance from a detector to another object, and sounds an alarm when this distance is less than a specified value. Commonly used to inform the operator of an HLIW of the distance between the boom tip nozzle and a power line insulator or support structure.
psi — pounds per square inch.
PTO — see power take-off.
PTO — (Power Take Off) out-put drive shaft assembly attached to the clutch assembly
pump — a device that converts mechanical force and motion into hydraulic flow and pressure.
quick disconnect couplings — hydraulic fittings designed for fast and easy attachment and separation.
radial ball bearing — an anti friction bearing with rolling ball contact in which the direction of action of the load transmitted is perpendicular to the axial center line of the bearing.
rear jack stand — adjustable rear support used when the chipper is in operation and not coupled to the tow vehicle
relay — an automatic switch with contacts that can be closed or opened by electrical current in a coil.
relief valve — a pressure operated valve that bypasses pump delivery to the reservoir to limit system pressure to a predetermined maximum value.
reservoir — a container for storage of liquid in a fluid power system.
resistance — the opposition to the flow of electricity or hydraulic fluid.

restriction — a reduced cross-sectional area in a line or passage that produces a pressure drop.
retaining ring — a hardened, washer-like ring that may be spread apart or compressed and installed into a groove or recess to serve as a retaining device.
return line — a hydraulic line used to carry discharge flow from a hydraulic system or actuator back to the reservoir at low pressure.
return line filter — a filter located in a hydraulic system return line or at the inlet of a hydraulic reservoir which cleans fluid flowing from the hydraulic system to the reservoir.
reversing valve — a four-way directional valve used to change the direction of movement of a double-acting cylinder or reversible motor.
rod — the cylindrically shaped part of a cylinder which extends and retracts from the barrel to actuate or move a component.
rod end — the end of a cylinder that the extending component or rod is on.
rope — a stout, flexible cord, which consists of many strands of wire or fibers that are twisted or braided together.
rpm — revolutions per minute.
SAE — Society of Automotive Engineers.
safety alert symbol — a symbol that indicates a potential personal injury hazard. It is composed of an equilateral triangle surrounding an exclamation mark.
safety chains — the chains that are attached to the trailer tongue with hooks on their free ends. These chains keep the trailer connected to the tow vehicle should the coupler or hitch ball detach from the tow vehicle. Safety chains must be secured every time you tow.
safety messages — a word message that provides information primarily about the nature of a hazardous situation, the consequence of not avoiding a hazard situation, and/or methods(s) for avoiding a hazardous situation, or that direct readers to such information. Safety symbols and other graphics may be used to supplement or substitute for part or all of a word message.
safety symbol — a graphic representation intended to convey a message without the use of words. It may represent a hazard, a hazardous situation, a precaution to avoid a hazard, a result of not avoiding a hazard, or any combination of these messages.
saybolt universal viscosity — A measure of viscosity equal to the time it takes in seconds for 60 milliliters of fluid to flow through a capillary tube in a Saybolt universal viscosimeter at a given temperature.

seating in — an initial microscopic surface deformation of components that are clamped together with threaded fasteners. This causes a slight reduction in the dimension of the components, reducing the clamping force applied by the fasteners.
selector switch — a switch which is used to direct electrical current to one of two or more electrical circuits.
selector valve — a valve which is used to direct hydraulic fluid to one of two or more hydraulic circuits.
self feed — a wood-chipper with no control of the infeed rate to the cutting mechanism
self-locking nut — a nut which contains a built-in device or shape to increase thread friction so as to resist loosening due to vibration or repeated loading.
self-lubricating bearing — an anti friction bearing in which lubricating material is incorporated in the bearing.
sense line — a line that carries a hydraulic pressure signal from a valve or actuator to the compensator control on a variable displacement pump.
sense selector valve — a valve which prevents hydraulic fluid in the sense line from reaching the pump until a certain function(s) is operated.
sequence — 1: the order of a series of operations or movements. 2: to divert flow to accomplish a subsequent operation or movement.
set screw — a short screw, typically with an Allen type head, that is used as a clamp to bind parts together.
shackle — see clevis.
shall — this word is understood to be mandatory
shear — an action or stress resulting from opposing applied forces that attempt to separate a part into two pieces that would then slide along each other in opposite directions along the plane of separation.
shear stability — resistance of a hydraulic fluid viscosity index improver additive to shearing.
short circuit — an inadvertent path of low resistance established between two points of an electrical circuit. A short circuit will result in excessive current flow.
should — this word is understood to be advisory
shutoff valve — a device which is used to stop hydraulic fluid flow.

shuttle valve — a three-port valve that accepts hydraulic fluid pressure from two inlets and allows only the highest pressure fluid to pass through it to a single outlet while keeping the inlet fluid pressure isolated from one another.
signal — a command or indication of a desired position, velocity, flow or pressure.
signal word — a word that calls attention to a safety message or messages, or a property damage message or messages, and designates a degree or level of hazard seriousness.
single-pole, double-throw (SPDT) switch — a three-terminal electrical switch or relay that connects one terminal to either of two other terminals.
single-pole, single-throw (SPST) switch — a two-terminal electrical switch or relay that opens or closes one circuit.
slave cylinder — a cylinder in which motion of the piston is produced by the transfer of hydraulic fluid from a master cylinder, resulting in corresponding motion.
snubber valve — a two-port valve with a manually adjustable orifice that restricts the flow of fluid through the valve.
socket head — a cylindrical cap screw head design containing a hexagonal (six-sided) female socket into which an Allen wrench can be inserted to turn the cap screw.
solenoid — a coil of insulated wire that produces a magnetic field within the coil when electrically energized. When attached to a hydraulic valve, the magnetic field acts upon the valve to move internal valve parts.
solenoid valve — a valve which is actuated by a solenoid to controlling the flow of hydraulic fluid.
spherical bearing — a bearing with a spherically shaped inner race that is allowed to move freely inside a stationary outer race to accommodate misalignment.
spline — one of a number of equally spaced, load carrying teeth that have been cut on the outside diameter of a shaft or inside diameter of a bore, parallel to the shaft or bore center line.
spool — a moving, cylindrically shaped part of a hydraulic valve that moves to direct flow through the valve.
sprocket — a wheel with teeth along the circumference which are shaped so as to engage with a chain, used to support and guide the chain at a point of change in the direction of motion of the chain.
SSU (Saybolt Second Universal) — the unit of measure for Saybolt universal viscosity.

stability — a condition of a mobile unit in which the sum of the moments which tend to overturn the mobile unit is less than the sum of the moments tending to resist overturning; the mobile unit's ability to resist tipping.
stabilize — to provide adequate stability for a mobile unit to allow operation of the vehicle-mounted device(s).
stake — to slightly deform the threads of a fastener or material at the joint between two components by placing the blade of punch or chisel on the threads or joint and tapping on the handle with a hammer. The deformed material serves to prevent loosening of the components.
stall torque — the torque produced by a rotating device such as a motor or gearbox at zero rotational speed.
standard option — an option which can be ordered from a standard order form and can be supplied without additional engineering work.
stationary hood — normally non-removable part of the disc housing in which the discharge chute attaches
strainer — a coarse filter.
strainer basket — a coarse, basket shaped filter which is mounted in the fill hole of a reservoir and projects into the reservoir.
strand — 1: one of the groups of individual fibers or wires within a synthetic winch line or wire rope. 2: see suspension strand.
street side — the side of a vehicle toward oncoming traffic when the vehicle is traveling forward in the normal direction in a lane of traffic.
stroke — 1: total linear movement in either direction of a piston or plunger. 2: to change the displacement of a variable displacement pump or motor.
sub weldment — a smaller welded subassembly used within a more complex welded structure.
suction filter — a filter located in a hydraulic system suction line or at the outlet of a hydraulic reservoir which cleans fluid flowing from the reservoir to the pump inlet.
suction line — the hydraulic line connecting the pump inlet port to the reservoir outlet.
surge — a momentary rise of pressure in a circuit.

surge brake system — a surge brake system is entirely self-contained on the trailer and is activated when the tow vehicle decelerates. The momentum of the trailer pushes the surge brake housing forward. This drives the push rod that is connected to the coupler into the master cylinder. Brake fluid is then forced out of the master cylinder into the wheel cylinders or pistons that apply the trailer brakes. The entire activation process is completed in less than one second.	tow vehicle (towing vehicle) — the vehicle that pulls a trailer or towed vehicle.
swage — to taper or reduce the diameter of a rod, tube or fastener by forging, squeezing or hammering.	trace element analysis — analysis of a small sample of hydraulic fluid to determine contamination level and condition of additives.
synthetic winch line — a winch line made from nonmetallic synthetic fibers which are formed into strands that are then braided together to make a complete rope.	transducer — a device that converts input energy of one form into output energy of another, such as hydraulic pressure into an electrical signal.
tachometer — an instrument used for displaying the speed of rotation of an engine output shaft.	transition — the area between the feed box and the cutter mechanism
tank — the hydraulic reservoir.	troubleshoot — to locate and diagnose problems in a system or a component.
tension spring — springs controlling downward force of the upper feed roll	trunnion — a mounting device consisting of a pair of opposite, projecting cylindrical pivots on which something can be rotated or tilted.
terminal block — an insulating mounting used for making electrical terminal connections.	trunnion bearing — a bearing that a trunnion pin pivots in.
test block — a manifold with ports for connecting a hydraulic pressure source, pressure gauge and a cartridge valve such as a counterbalance valve or relief valve used for testing and adjusting the relief setting of the valve.	trunnion pin — a cylindrical pivot pin that is a part of a trunnion.
thread locking adhesive — an anaerobic adhesive that is applied to fastener threads to prevent loosening due to vibration or repeated loading.	turnbuckle — a link with screw threads at both ends that is turned to bring the ends closer together for tightening purposes.
three-position valve — a valve having three positions for direction of fluid flow, such as neutral, flow in one direction, and flow in the opposite direction.	turns from finger tight (T.F.F.T.) — a method of counting the number of turns of a hydraulic adapter to establish a torque value.
three-way valve — a valve having three ports for direction of fluid flow.	two-position valve — a valve having two positions for direction of fluid flow, such as open and closed.
throttle control — a manual, hydraulic, or electrical device used to regulate vehicle or auxiliary engine speed.	two-way valve — a valve having two ports for direction of fluid flow, with one internal flow path which can be open or blocked.
toggle switch — an electrical switch operated by a short projecting lever combined with a spring to quickly open or close a circuit when the lever is pushed through a small arc.	UNC — Unified National Coarse, a thread description.
tongue weight — the downward weight applied by the towable equipment on the hitch ball. Generally tongue weight should not be more than 10% of the gross trailer weight.	under tighten — to torque a threaded fastener below the recommended value.
torque — 1: a rotational twisting force. 2: to preload a threaded fastener by application of a rotational twisting force.	UNF — Unified National Fine, a thread description.
	unit — the Altec device(s), sub base, outriggers, body and associated interface items mounted on a chassis.
	unload — to release hydraulic flow, usually directly to the reservoir, to prevent pressure buildup.
	unloaded vehicle weight — the total weight of the completed mobile unit without payload.
	unloading valve — a valve that bypasses flow to the reservoir when a set pressure is maintained on its pilot port.
	vacuum — the absence of pressure. A perfect vacuum is the total absence of pressure; a partial vacuum is some condition less than atmospheric pressure. Vacuum is measured in inches of mercury (in. Hg.).

valve — a device that controls fluid flow direction, pressure or flow rate.
vane pump — a type of pump with a rotor and several sliding vanes in an elliptical chamber. Hydraulic fluid enters the expanding area and is forced out as the fluid is moved to the decreasing chamber area.
variable displacement pump — a pump in which the size of the pumping chamber(s) can be changed, so that the output flow can be changed by moving the displacement control or varying the drive speed or both.
vehicle — a carrier for a unit.
velocity — the speed of linear motion in a given direction.
vent — an air breathing device on a fluid reservoir or hydraulic line.
VI — see viscosity index.
viscosity — a measure of the internal friction or resistance to flow of a fluid.
viscosity index (VI) — a measure of the resistance to change in viscosity of a fluid with change in temperature. The higher the number, the less the viscosity will change as the temperature changes.
voltmeter — an instrument used to measure the potential difference in volts between two points in an electrical circuit.
volume — 1: the size of a space or chamber in cubic units. 2: loosely applied to the output flow of a pump in gallons per minute (gpm).
vortex — a whirlpool of liquid.
warning — a signal word which indicates a hazardous situation which, if not avoided, may result in death or serious injury.
water removal filter cartridge — a special filter cartridge designed to absorb and remove water from hydraulic fluid. It is not intended for use during normal operation, but is for use when water removal is required.
way — a term which describes how many ports are in a valve or valve section.
weldment — a structural unit formed by welding together an assembly of pieces.
wheel chock — a wedge or block placed on the ground in front of or behind the wheel of a vehicle to block the movement of the wheel.
winch — a mechanism consisting of a gearbox with a cylindrical rotating drum on which to coil a line for load hoisting or line tensioning.

winch capacity — the maximum load, specified by the manufacturer, that can be pulled on the first layer of line on the winch drum at rated system pressure.
winch line — a load hoisting line consisting of a synthetic or wire rope.
winch line rated working load — the average breaking strength of a winch line (as specified by the line manufacturer) divided by the appropriate design factor as specified by ANSI.
wire rope — a rope made from steel wires which are formed into strands that are then twisted about each other in a spiral configuration.
wood chipper — reduces above ground tree materials to uniform chips
work — the exertion of a force moving through a definite distance. Work is measured in units of force multiplied by distance; for example, pound feet.
worm gearbox — a gearbox that utilizes a gear which has a continuous helix tooth or teeth similar to a large screw thread along shaft (worm), that drives a gear which has teeth cut at an angle along a its outside diameter (worm gear). The rotational axis of the worm is perpendicular to the rotational axis of the worm gear.
wrap — a single coil of winch line on a winch drum.
zerk — see grease fitting.

Fastener Torque Values

GENERAL FASTENER TORQUES:	Torque (ft- lbs)		
Bolt Size - Thread Pitch	Grade 5 Hex Head Cap Screw	Grade 8 Hex Head, Socket Head, and Twelve Point Cap Screw	Button Head Cap Screw and Flat Head Socket Screw
1/4" - 20	5	7	6
5/16" - 18	10	15	13
3/8" - 16	19	26	22
7/16" - 14	30	42	36
1/2" - 13	45	64	55
9/16" - 12	65	92	79
5/8" - 11	90	127	109
3/4" - 10	160	226	193
7/8" - 9	258	364	312
1" - 8	386	545	467
1. Values are lbs-ft. 2. Values apply for both lubed and non-lubed applications with any style nut or threaded hole 3. Values apply for torque applied to either the head of the bolt or the nut			
STANDARD NUMBER Parts extracted from: SDS-0018-B REVISION DATE 03-18-09			

BUSHING-SHEAVE TORQUES:		
Bushing Size	Cap Screw Size & Thread	Torque (ft-lbs)
SK	5/16-18	15
SF	3/8-16	30
E	1/2-13	60
F	9/16-12	75
J	5/8-11	135

Fastener Specific Torque Application									
		Torque in Foot Pounds (N*m)							
Item Description	Fastener	WC126A, 166A	CFD 1217	DC 912A	DC 1317	DC 1317 HP	DC 1419	DC 1820 2 Axle	
Blade /Anvil									
Anvil Bolts	Hex Head	226 (306)	160 (217)	107 (145)	107 (145)	107 (145)	160 (217)	160 (217)	
Blade Bolts	Flat Socket Holo-Krome	N/A	N/A	70 (95)	70 (95)	70 (95)	140 (190)	140 (190)	
Blade Bolts	Hex Head, Bowmally	N/A	210 (285)	N/A	N/A	N/A	N/A	N/A	
Blade Gib Screws	Square Head	105 (142)	N/A	N/A	N/A	N/A	N/A	N/A	
Bearings									
Cutter Bearing Bolts	Ferry Cap or Hex Head	226 (306)	160 (217)	160 (217)	160 (217)	160 (217)	160 (217)	160 (217)	
Feed Roller Bearing Bolts	Hex Head 5/8-11	N/A	127 (172)	127 (172)	127 (172)	127 (172)	127 (172)	127 (172)	
Structural									
Pinle Ring Bolts	Hex Head 5/8-11	211 (286)	211 (286)	211 (286)	211 (286)	211 (286)	211 (286)	211 (286)	
Removable Tongue	Hex head	200 (271)	N/A	N/A	N/A	N/A	N/A	N/A	
Engine/Frame Bolts	Hex Head 1/2-13	107 (145)	107 (145)	107 (145)	107 (145)	107 (145)	107 (145)	107 (145)	
Head/Frame Bolts	Hex Head 3/4-10	376 (510)	N/A	N/A	N/A	N/A	N/A	N/A	
Disc Paddle Bolts	Hex Head 5/8-11	N/A	N/A	160 (217)	160 (217)	160 (217)	160 (217)	160 (217)	
Disc Draw Ring Bolts	Hex Head	N/A	N/A	127 (172)	315 (427)	315 (427)	315 (427)	315 (427)	
Feed Plate	U Bolt 1/2-13	107 (145)	N/A	N/A	N/A	N/A	N/A	N/A	
Axle									
Axle Mounting Bolts	Hex Head	115 (156)	160 (217)	160 (217)	160 (217)	160 (217)	160 (217)	160 (217)	
Axle Spindle Nut	Hex Nut	150 (203)	150 (203)	150 (203)	150 (203)	150 (203)	150 (203)	*150 (203)	
Wheel Lug Nuts	Wheel Lug	105 (142)	105 (142)	105 (142)	105 (142)	105 (142)	300 (407)	*105 (142)	
Specific Component									
Hydraulic Motor Shaft Nut	Hex Nut	N/A	265 (359)	265 (359)	150 (203)	265 (359)	N/A	N/A	
*DC 1820 Single 10K Axle - Wheel Lug 200 (271) / Spindle Nut 125 (170)									

Checklist

DAILY PRE-OPERATIONAL CHECK LIST	
Equipment #	
VIN #	Completed
Chip Curtain is properly fastened and in good repair.	
Rotation Indicator is clear of debris and fully visible.	
Disc Cover Padlock is in place and key is in responsible parties possession.	
Disc Hood Switch is working properly.	
Inspect Safety Tow Chains for wear or damage.	
Check engine fuel, coolant and oil levels. (See Engine Operating Manual).	
Check radiator fluid level (See Engine Operating Manual).	
Check clutch handle free play	
Check radiator fins and ensure free passage of air through the radiator.	
Check all bolts and nuts to ensure they are tight.	
Inspect anvil to ensure all attachment and adjustment bolts are secure.	
Check all controls for free and proper operation.	
Inspect the chipper frame and structure for any bent, broken, cracked, missing or loose parts.	
Check all guards to ensure they are undamaged, in place and properly secured.	
All decals must be in place and legible prior to operating the chipper.	
Hydraulic fluid level must be within 2" to 3" of top of the tank when the fluid is cold.	
Inspect for hydraulic leaks	
Lubricate cutter bearings.	
Inspect and operate panic bar	
Insure that the tires are secure and properly inflated.	
Insure a complete AEP Operations Manual is available for all Operators to review.	
Signature	Date

WEEKLY CHECK LIST

Equipment #	
VIN #	Completed
Complete daily pre-operational checklist	☐
Test break-away switch system	☐
Check general condition of tires and tire pressure.	☐
Lubricate clutch bearings (See Clutch Operation Manual).	☐
Check the engine air filter. (See Engine Operating Manual).	☐
Inspect hitch for wear, or damaged components.	☐
Check cutting knives to ensure all attachment bolts are tight and knives are in good condition.	☐
Lubricate all hydraulic valve connecting linkages	☐
Signature	Date

MONTHLY CHECKLIST

Equipment #	
VIN #	Completed
Complete weekly checklist	
Where applicable check battery water level.	
Check drive belt tension and alignment.	
Where applicable check pump belt and alignment.	
Lubricate clutch lever and linkage (See Clutch Operation Manual).	
Lubricate drive roller bearings.	
Lubricate chute rotation and slide box.	
Lubricate all pivot points and pins.	
Signature Date	

YEARLY CHECKLIST

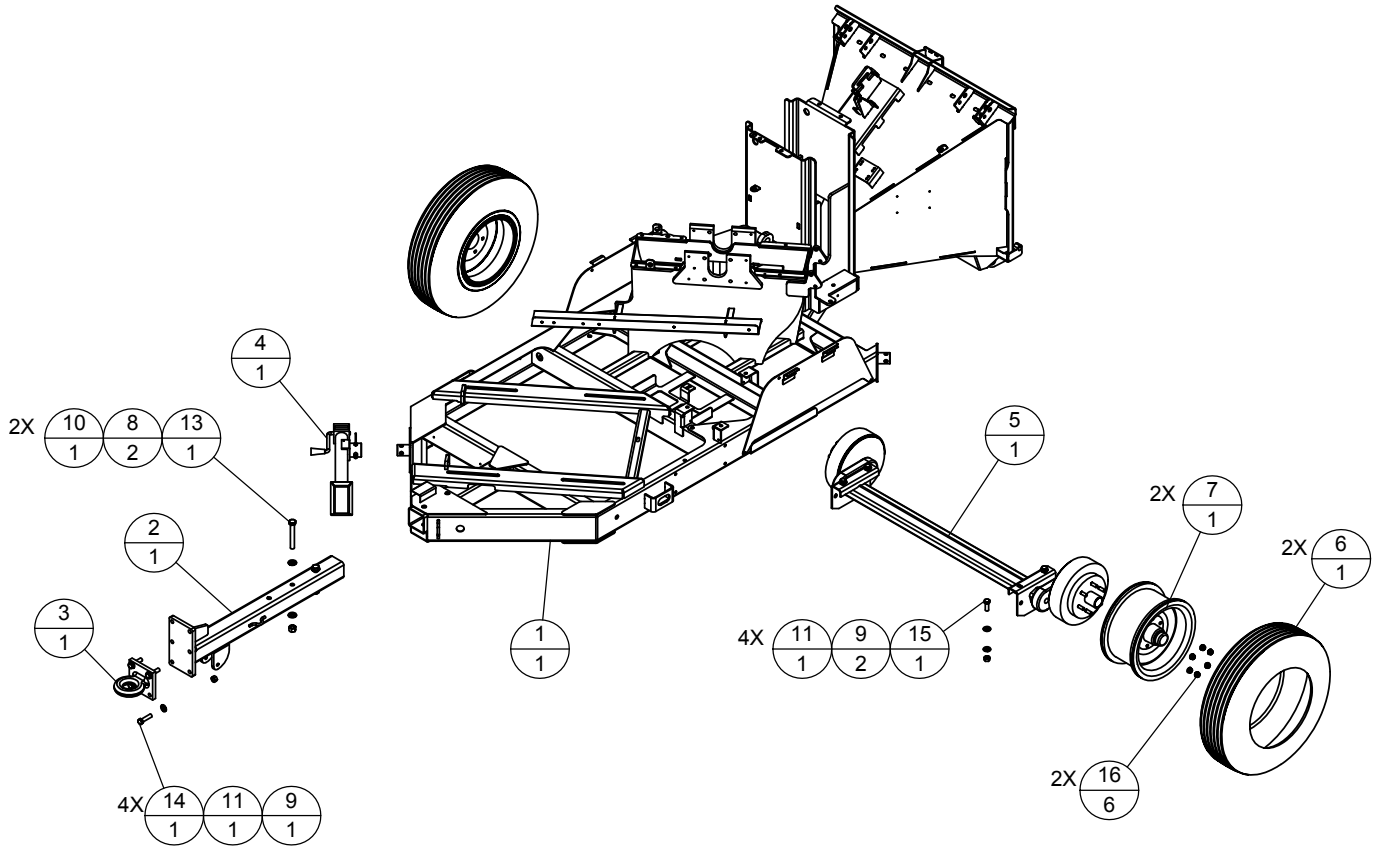
Equipment #	
VIN #	Completed
Complete monthly checklist	
Change hydraulic oil filter.	
Lubricate trailer wheel bearings.	
Replace fuel filter (see Engine Operating Manual).	
Flush and replace engine coolant (see Engine Operating Manual).	
Flush and replace hydraulic fluid.	
Signature Date	

Parts

DC 912A Assemblies

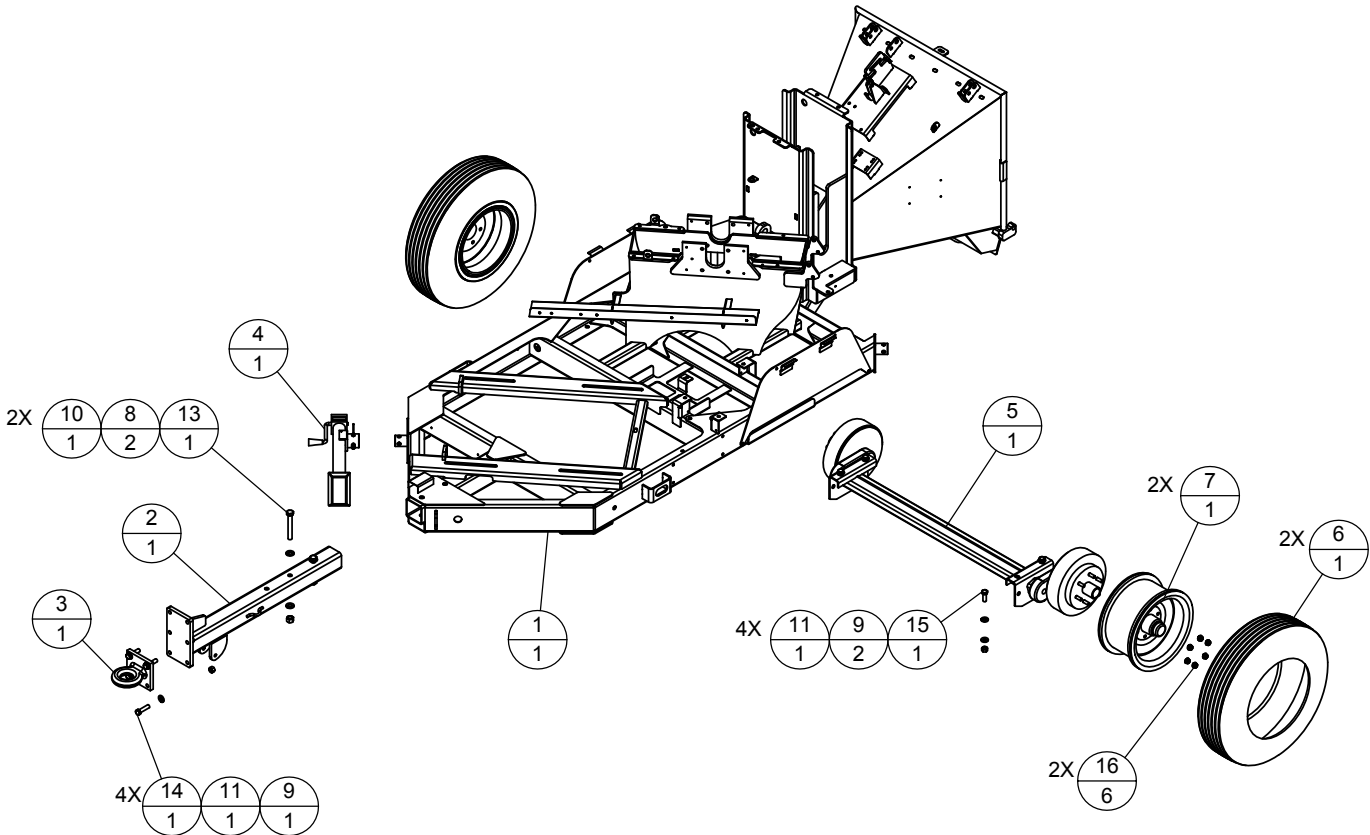
1A - 970270084-A - Head and Frame Assembly, 42" Feedhorn
1B - 970190822-C - Head and Frame Assembly
1B - 970278764-B - Head and Frame Assembly, 42" Feedhorn, Surge Brakes
2A - 970190879-C - Feed Roller and Disc Manual Lift
2B - 970191407-C - Feed Roller and Disc Assembly Hydraulic Lift
3A - 970191403-C - Feed Control Assembly 37 In Manual Lift
3B - 970190935-C - Feed Control Assembly 37 In Single Control Lift
3B - 970258764-A - Feed Control Assembly 42 In Single Control Lift
3C - 970191500-C - Feed Control Assembly 37 In Dual Control Lift
4A - 970191000-C - Discharge Assembly Manual Rotation
4A - 970191555-C - Discharge Assembly Fixed Height Hand Crank Rotation
4C - 970191594-D - DC 912A Discharge Assembly Height Adjustable Hand Crank Rotation
4E - 970213108-B - Height Adjustable Discharge Chute
4F - 970288504-A - Height Adjustable, Hydraulic Rotation Discharge Assembly
5A - 970191016-A - Power System Assembly
5B1 - 970278231-B - Power System, DC912A, 48HP Teir 3 Caterpillar or Perkins Engine
6A - 970191023-C - Final Assembly
7A - 970191252-A - Placard Orientation
10A - 970191260-C - Feed Sense
15A - 970215828-A - Disc Assembly 30.00 In. Dia. 4 Slot 8 Blade
15A - 970216818-A - Disc Assembly, 30 In. Dia. 2 Slot 4 Blade
20A - 970277313-A - Strobe Light Assembly
31A - 970203090-B - Plumbing Assembly
31A - 970203093-B - Plumbing Diagram With Lift
31B - 970290537-A - Plumbing Assembly With Lift Cylinder, EFC, and Hydraulic Chute Rotation
79A - 970237960-A - Fuel Tank Assembly
100.1A - 970229249-A - 3 Spool Manual Hydraulic Valve Assembly
100.1B - 970229381-A - 2 Spool Manual Hydraulic Valve Assembly
106C - 970301335-A - Electronic Feed Control (EFC) Valve Assembly

DC912A HEAD AND FRAME ASSEMBLY, 42" FEEDHORN



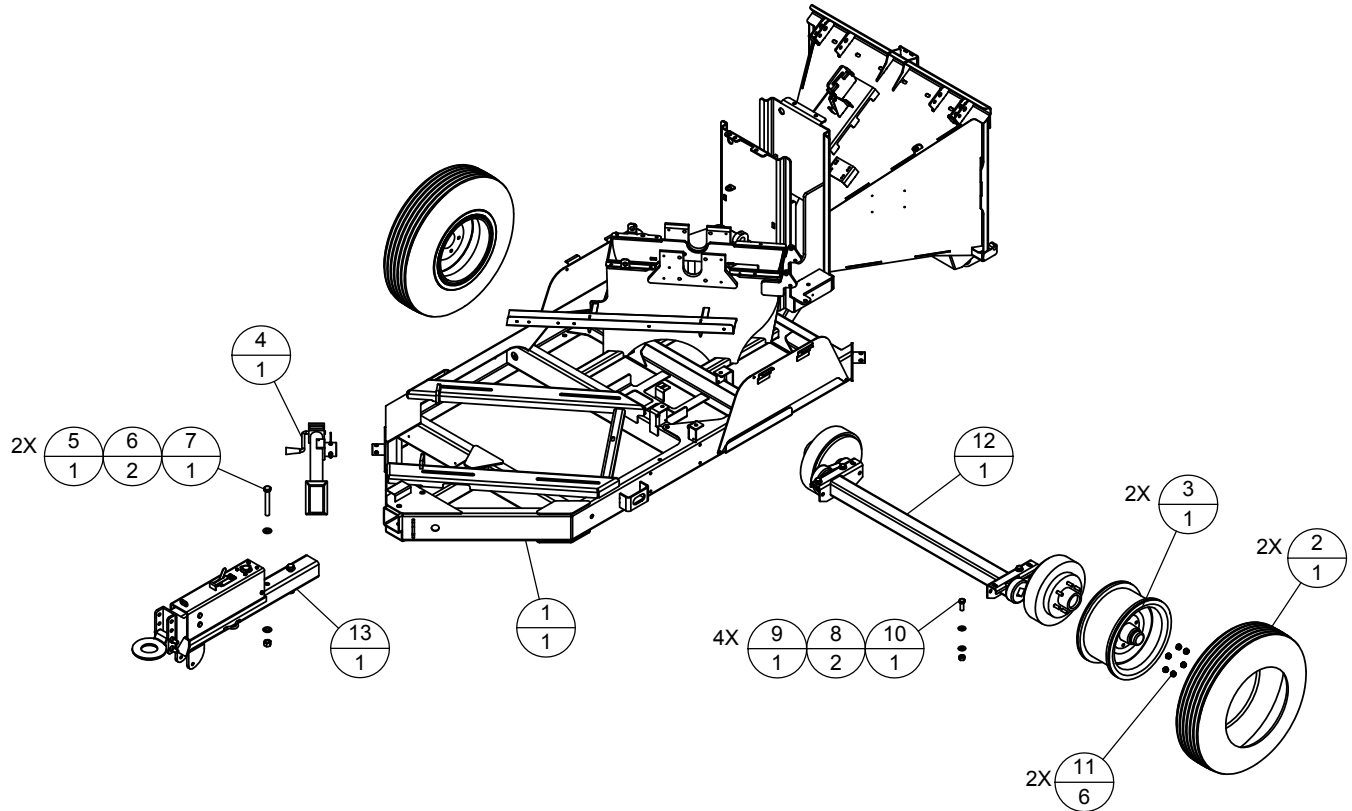
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970247532	ASSEMBLY, HEAD FRAME ASSEMBLY, 42.00 IN FEED HORN, DC912A
1	1	970239814	HEAD AND FRAME WELDMENT, DC912A, 42 IN HORN
2	1	970176714	TONGUE, EXTENDABLE, 3.50 IN X 3.50 IN SQUARE, 912A, 126/A/166/A
3	1	970122563	DRAWBAR, 4-BOLT MOUNT, 42, 000 LBS MGTW, 7, 000 LBS VERT LOAD, FORGED
4	1	970116490	JACKSTAND SIDEWIND, TAIL HITCH, 5000 LB CAPACITY, 15 IN TRAVEL, ROUND TUBE
5	1	970232891	TORSION AXLE, TOP MOUNT, 4400 LB, 48.00 IN OB, 63.00 IN HF, .50-20 UNF, 6 STUDS ON
6	2	970116225	TIRE, ST 225/75R15, DYNATRIL
7	2	970116224	RIM, 15X6JJ, 6 LUG ON 5.50 IN DIA, .50-20 STUD 60 DEG TAPER, 0.00 IN OFFSET, BLACK
8	4	970116555	WASHER, STEEL, FLAT, .750 IN DIA, THRU-HARD HIGH STRENGTH, PLATED 18,
9	12	020401706	WASHER, STEEL, FLAT, .63 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
10	2	020391706	NUT, STEEL, TOP LOCK, .75-10 UNC, GR C, PLATED,
11	8	020391609	NUT, STEEL, TOP LOCK, .63-11 UNC, GR C, PLATED 18,
13	2	970180084	CAPSCREW, STEEL, HEX HEAD, .75-10 UNC, 5.50 IN L, GR 8, MTS 16, 18
14	4	020031635	CAPSCREW, STEEL, HEX HEAD, .63-11 UNC, 2.50 IN L, GR 8, MTS 16, 18
15	4	970116562	CAPSCREW, STEEL, HEX HEAD, .63-11 UNC, 1.75 IN L, GR 8, MTS 16 18
16	12	970130501	NUT, STEEL, TAPERED LUG, .50-20 UNF, PLATED 18,

DC912A HEAD AND FRAME ASSEMBLY, 37" FEEDHORN



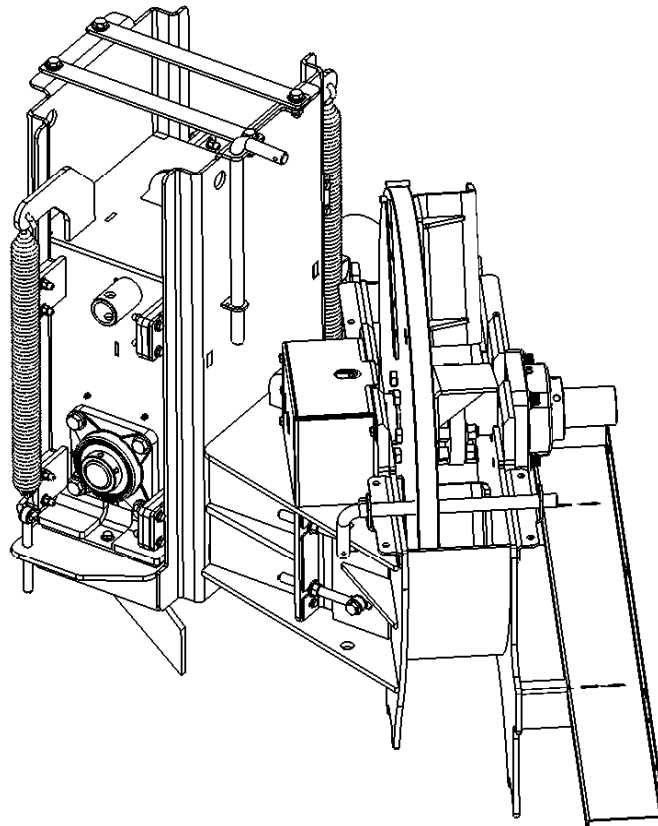
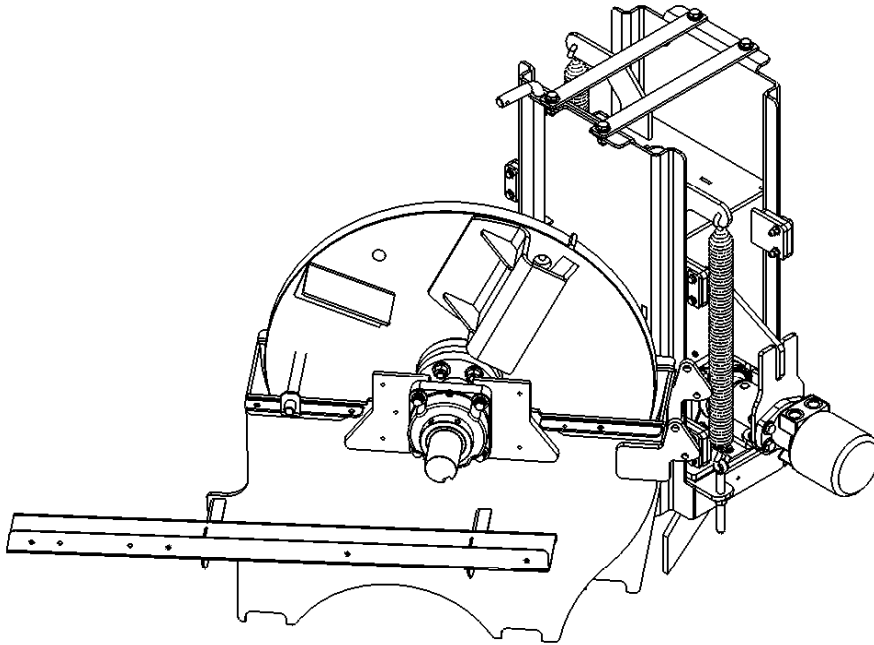
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180449	ASSEMBLY, HEAD FRAME, 37 IN W FEED HORN, DC-912A
1	1	970211922	HEAD AND FRAME, WELDMENT, DC-912A, 6.00 IN FORMED CHANNEL,
2	1	970176714	TONGUE, EXTENDABLE, 3.50 IN X 3.50 IN SQUARE, 912A, 126/A/166/A
3	1	970122563	DRAWBAR, 4-BOLT MOUNT, 42, 000 LBS MGTW, 7, 000 LBS VERT LOAD, FORGED
4	1	970116490	JACKSTAND SIDEWIND, TAIL HITCH, 5000 LB CAPACITY, 15 IN TRAVEL, ROUND TUBE
5	1	970232891	TORSION AXLE, TOP MOUNT, 4400 LB, 48.00 IN OB, 63.00 IN HF, .50-20 UNF, 6 STUDS ON
6	2	970116225	TIRE, ST 225/75R15, DYNATRAIL
7	2	970116224	RIM, 15X6JJ, 6 LUG ON 5.50 IN DIA, .50-20 STUD 60 DEG TAPER, 0.00 IN OFFSET, BLACK
8	4	970116555	WASHER, STEEL, FLAT, .750 IN DIA, THRU-HARD HIGH STRENGTH, PLATED 18,
9	12	020401706	WASHER, STEEL, FLAT, .63 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
10	2	020391706	NUT, STEEL, TOP LOCK, .75-10 UNC, GR C, PLATED,
11	8	020391609	NUT, STEEL, TOP LOCK, .63-11 UNC, GR C, PLATED 18,
13	2	970180084	CAPSCREW, STEEL, HEX HEAD, .75-10 UNC, 5.50 IN L, GR 8, MTS 16, 18
14	4	020031635	CAPSCREW, STEEL, HEX HEAD, .63-11 UNC, 2.50 IN L, GR 8, MTS 16, 18
15	4	970116562	CAPSCREW, STEEL, HEX HEAD, .63-11 UNC, 1.75 IN L, GR 8, MTS 16 18
16	12	970130501	NUT, STEEL, TAPERED LUG, .50-20 UNF, PLATED 18,

DC912A HEAD AND FRAME ASSEMBLY, 42" FEEDHORN, SURGE BRAKES

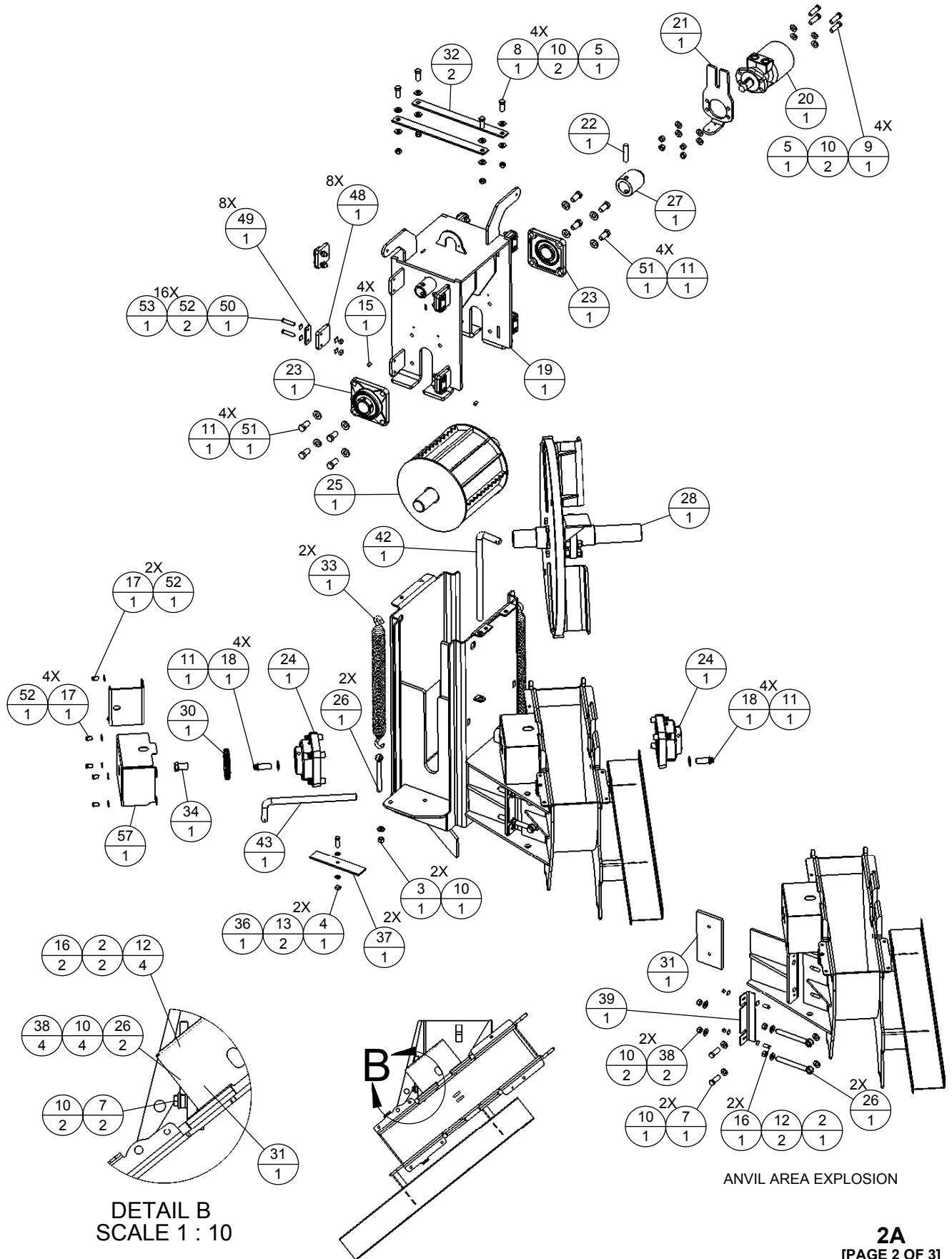


ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970277368	ASSEMBLY, HEAD FRAME ASSEMBLY, 42.00 IN FEED HORN, HYDRAULIC SURGE BRAKES,
1	1	970239814	HEAD AND FRAME WELDMENT, DC912A, 42 IN HORN
2	2	970116225	TIRE, ST 225/75R15, DYNA TRAIL
3	2	970116224	RIM, 15X6JJ, 6 LUG ON 5.50 IN DIA, .50-20 STUD 60 DEG TAPER, 0.00 IN OFFSET, BLACK
4	1	970116490	JACKSTAND SIDEWIND, TAIL HITCH, 5000 LB CAPACITY, 15 IN TRAVEL, ROUND TUBE
5	2	020391711	NUT, STEEL, TOP LOCK, .75-10 UNC, GR C, PLATED,
6	4	020401702	WASHER, STEEL, FLAT, .750 IN DIA, THRU-HARD HIGH STRENGTH, PLATED 18,
7	2	970180084	CAPSCREW, STEEL, HEX HEAD, .75-10 UNC, 5.50 IN L, GR 8, MTS 16, 18
8	8	020401706	WASHER, STEEL, FLAT, .63 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
9	4	020391609	NUT, STEEL, TOP LOCK, .63-11 UNC, GR C, PLATED 18,
10	4	970116562	CAPSCREW, STEEL, HEX HEAD, .63-11 UNC, 1.75 IN L, GR 8, MTS 16 18
11	12	970130501	NUT, STEEL, TAPERED LUG, .50-20 UNF, PLATED 18,
12	1	970277746	TORSION AXLE, TOP MOUNT, 6000 LB, 48.00 IN OB, 63.00 IN HF, .50-20 UNF, 6 STUDS ON
13	1	970278686	WELDMENT, REMOVABLE TONGUE, WITH SURGE BRAKE ACTUATOR, DC912A
14	1 QT	701052101	BRAKE FLUID, DOT 3
15	1	970277877	TRAILER, HYDRAULIC BRAKE LINE KIT, 1 AXLE, HYDRAULIC DRUM BRAKES
16	2	970277878	TRAILER, HYDRAULIC BRAKE LINE KIT, 1 AXLE, TORSION AXLE CONVERSION KIT, REQUIRES

DC-912A FEED ROLLER AND DISC ASSEMBLY MANUAL LIFT



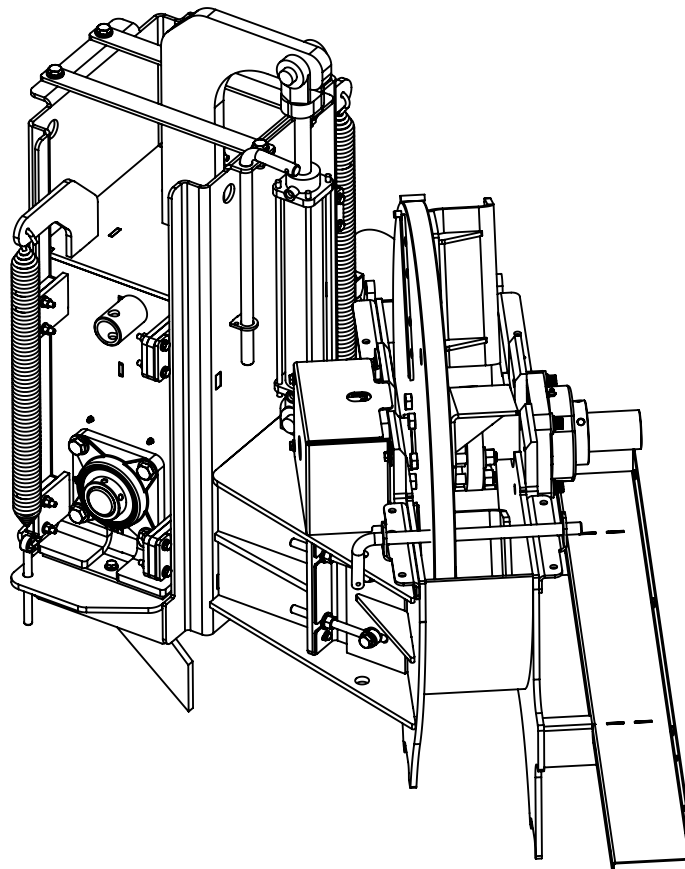
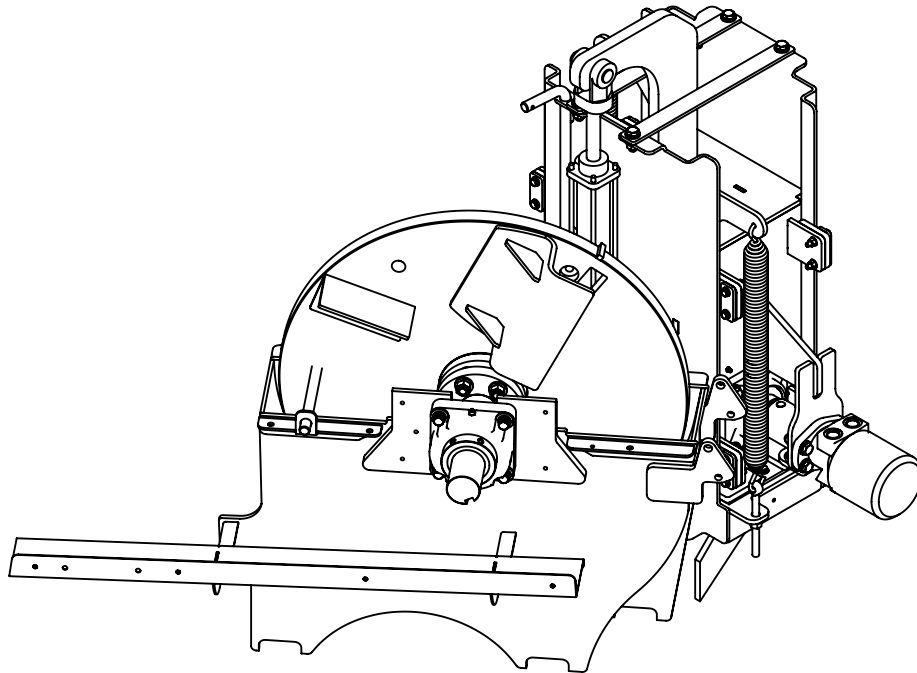
DC-912A FEED ROLLER AND DISC ASSEMBLY MANUAL LIFT



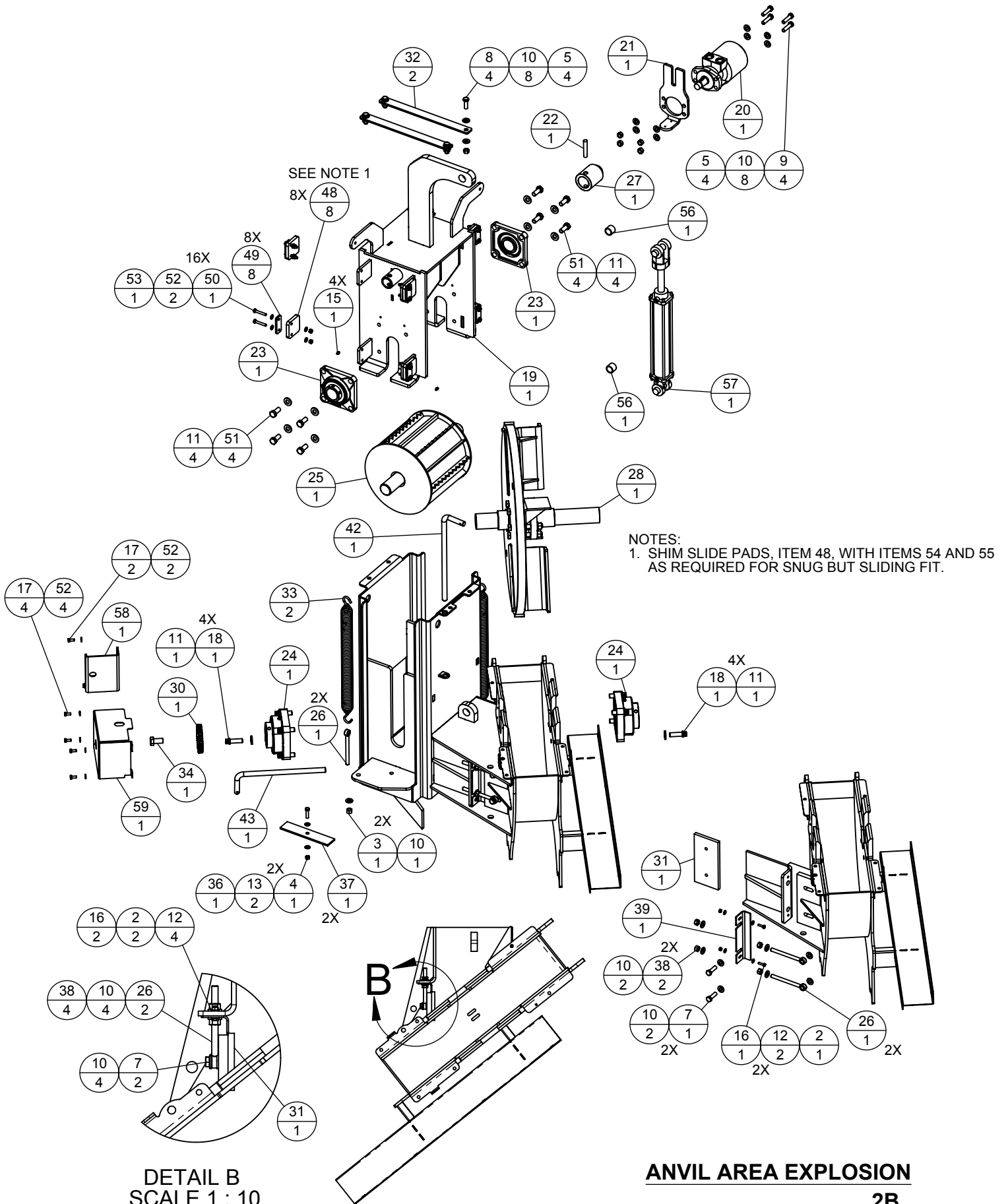
DC912A FEED ROLLER AND DISC ASSEMBLY MANUAL LIFT

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180443	FEED ROLLER AND DISC, MANUAL LIFT, DC912A COMPLETE ASSEMBLY
2	2	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
3	2	020391411	NUT, STEEL, HEX, .50-13 UNC, NYLOCK, PLATED 18
4	2	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
5	8	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
7	2	970196033	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 1.75 IN L, GR 8, PLATED, W/PATCHLOCK
8	4	970116560	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 1.50 IN L, GR 8, PLATED 18,
9	4	020041427	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 2.00 IN L, GR 8, PLATED 18,
10	26	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
11	16	020401706	WASHER, STEEL, FLAT, .63 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
12	4	970137805	WASHER, STEEL, FLAT, .250 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
13	4	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
15	4	040050008	GREASE ZERK, STRAIGHT, .25 NPT
16	2	020031006	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.00 IN L, GR 5, PLATED,
17	6	970224886	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, .75 IN L, GR 8, W/PATCH LOCK,
18	8	970179927	CAPSCREW, STEEL, FERRY CAP, 2.00 IN L, .63 IN DIA, .63-11 UNC, GR 8, PLATED,
19	1	970176624	SLIDEBOX, MANUAL LIFT, UPPER, DC-912A
20	1	970157667	HYDRAULIC MOTOR, GEROLLER, 24.7 CU IN, 4 BOLT MAGNETO MOUNT, 1.25 IN TAPERED
21	1	970177405	MOUNT, FEED ROLLER MOTOR, DC-912A
22	1	970122547	PIN, STEEL, TAPER #9, 3.00 IN L, .59 IN OD,
23	2	970113602	BEARING, ROLLER, STEEL, 2.000 IN BORE, 2.188 IN L, 5.125 BOLT PATTERN,
24	2	970116846	BEARING, ROLLER, STEEL, 2.4375 IN BORE, 3.500 IN L, 4.77 BOLT PATTERN,
25	1	970177166	FEED ROLLER, 12.50 IN OD, ALTERNATING SERRATED BLADES, DC-912A
26	4	970116493	ROD END EYE BOLT, STEEL, FULLY THREADED, .50-13 UNC, 6.00 IN L, PLATED 18, .50 IN
27	1	970110754	COUPLER, FEED ROLLER/ 1.25IN TAPERED, DC-1217 HP
28	1	970176709	ASSEMBLY, 30IN DISC, DC-912,
30	1	970202502	SPROCKET, EFC/SPACER, 4.50 IN DIA, 20 TOOTH, DC-1317, CFD-1217, DC-912A
31	1	970179519	ANVIL, BAR, 4.50IN W X 9.00IN H X .50IN T, .50-13UNC THRD, DC-912A
32	2	970179402	BRACE, TOP, LOWER SLIDEBOX, DC-912A
33	2	970116592	SPRING-EXTENSION, STEEL, OTMB, 22.0 IN L, .250 IN WIRE DIA, 1.760 IN OD, 24.2, CLASS 2
34	1	970224878	CAPSCREW, STEEL, HEX HEAD, .75-10 UNC, 1.50 IN L, GR 8, W/PATCH LOCK,
36	2	020041208	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.50 IN L, GR 8, PLATED 18,
37	2	970179825	RUBBER, .250 IN T, 2.00 IN W, 9.00 IN L, DC-912A, LOWER SLIDEBOX
38	4	020301401	NUT, STEEL, HEX, .50-13 UNC,
39	1	970180583	GAURD, ANVIL, FORMED, DC-912A
42	1	970179386	PIN, SLIDEBOX LOCKING, .750 IN DIA, 16.00 IN L, DC-912A
43	1	970179388	PIN, DISC & SLIDEBOX LOCK, .750 IN DIA, 14.00 IN L, DC-912A, DC-1317
48	8	970185106	WEAR PAD, SLIDE BOX, DC-912, CFD-1217, DC-1317HP, PLASTIC
49	8	970185107	PLATE, WEAR PAD, COVER, DC-1317HP, DC-912A, CFD-1217
50	16	020041110	CAPSCREW, STEEL, HEX HEAD, .31-16 UNC, 2.00 IN L, GR 8, PLATED,
51	8	970032732	CAPSCREW, STEEL, HEX HEAD, .63-11 UNC, 1.50 IN L, GR 8, W/LOCKING PATCH PLATED,
52	38	970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
53	16	020391105	NUT, STEEL, TOP LOCK, .31-18 UNC, GR C, PLATED 18,
54	A/R	970185108	SPACER, WEAR PAD, SLIDE BOX, 16GA, DC-912A
55	A/R	970186429	SPACER, WEAR PAD, SLIDEBOX, 10GA, DC-912A
56	1	970197333	BRACKET, EFC SENSOR MOUNT, DC-1317, DC-912A
57	1	970201701	BEARING GUARD, FEED SIDE, CUTTER HOUSING, DC-912A

DC-912A FEED ROLLER AND DISC ASSEMBLY HYDRAULIC LIFT



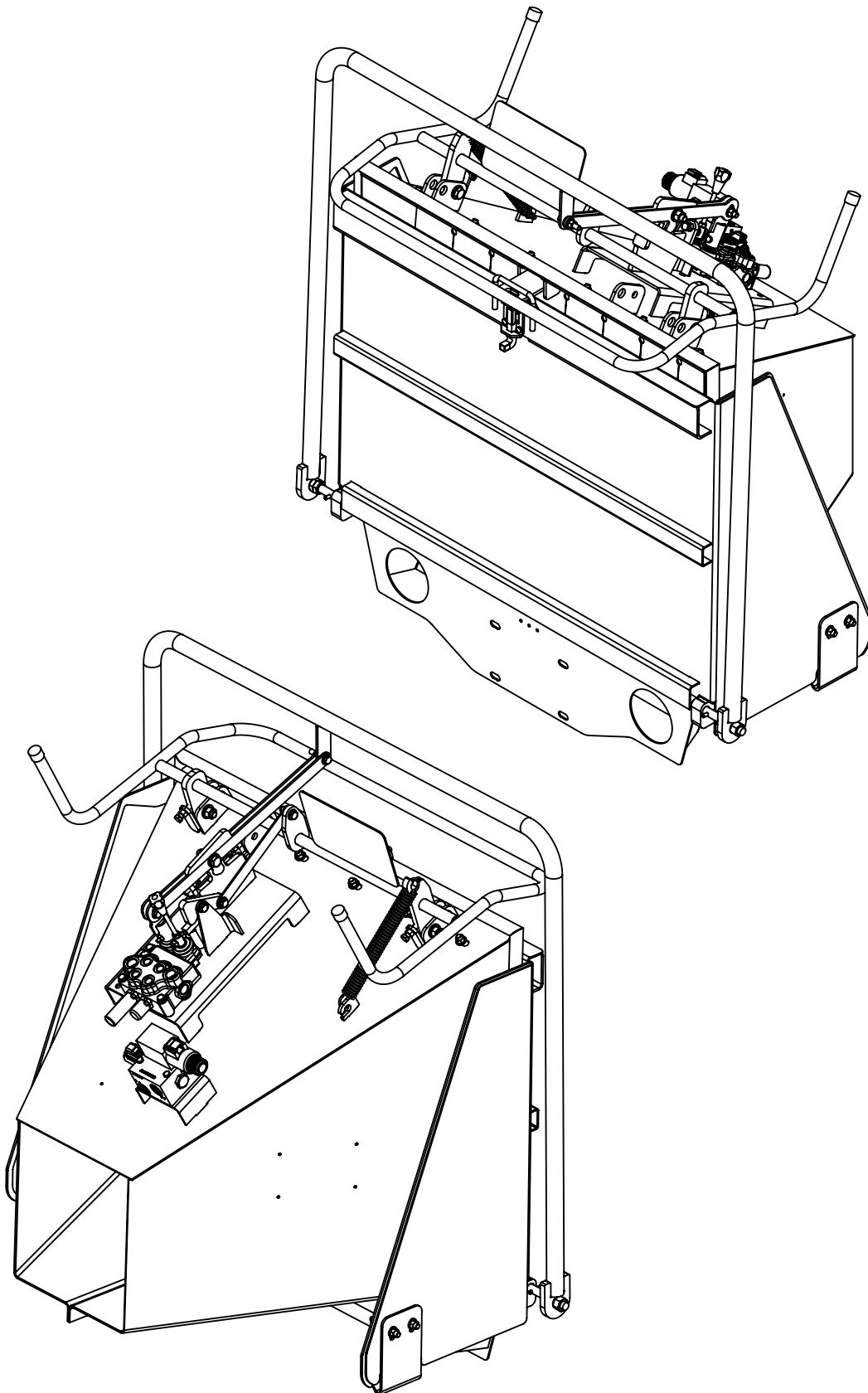
DC-912A FEED ROLLER AND DISC ASSEMBLY HYDRAULIC LIFT



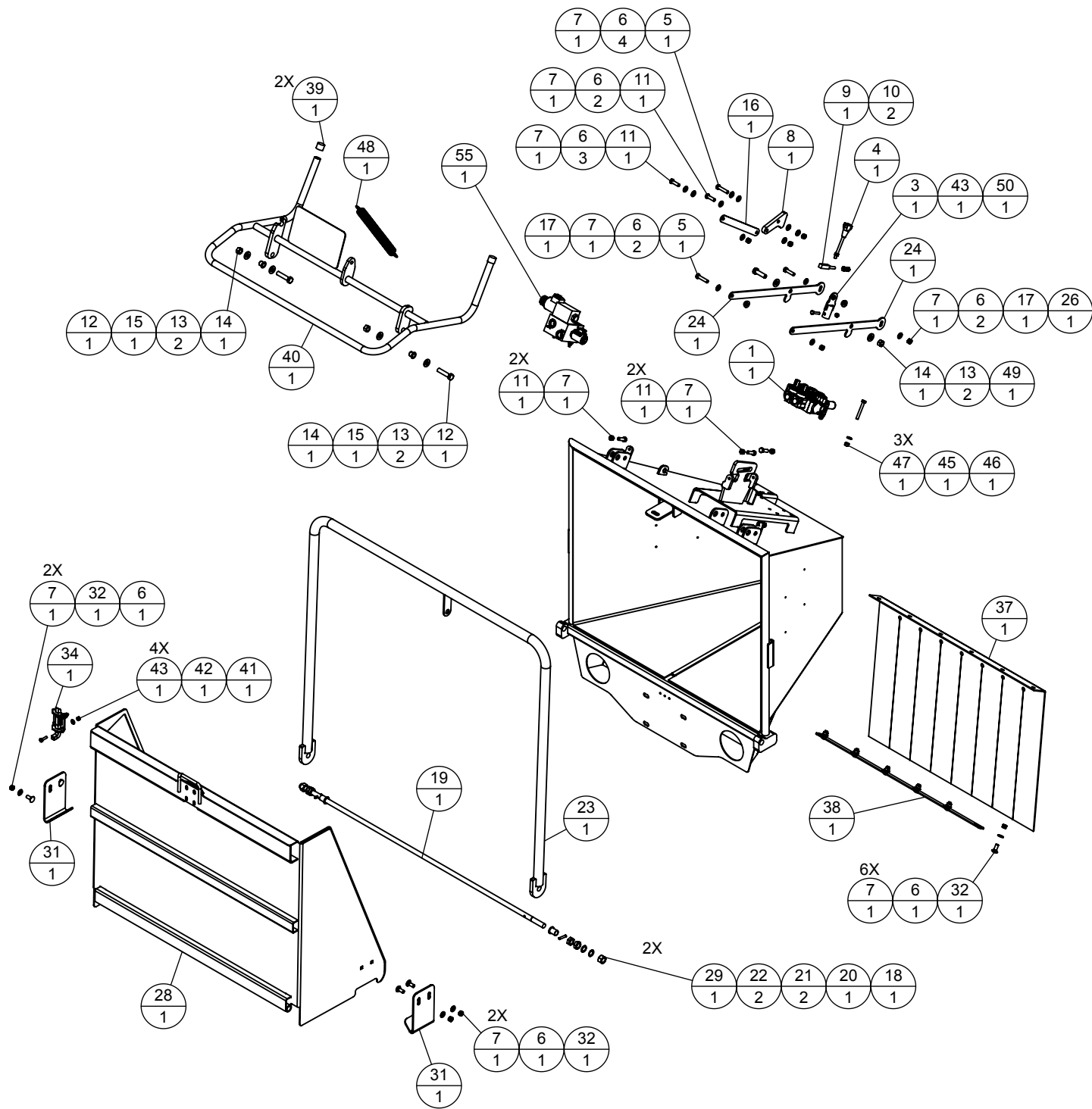
DC-912A FEED ROLLER AND DISC ASSEMBLY HYDRAULIC LIFT

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180444	DC912A FEED ROLLER AND DISC COMPLETE ASSEMBLY
2	2	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
3	2	020391411	NUT, STEEL, HEX, .50-13 UNC, NYLOCK, PLATED 18
4	2	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
5	8	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
7	2	970196033	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 1.75 IN L, GR 8, PLATED, W/PATCHLOCK
8	4	970116560	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 1.50 IN L, GR 8, PLATED 18,
9	4	020041427	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 2.00 IN L, GR 8, PLATED 18,
10	26	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
11	16	020401706	WASHER, STEEL, FLAT, .63 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
12	4	970137805	WASHER, STEEL, FLAT, .250 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
13	4	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
15	4	040050008	GREASE ZERK, STRAIGHT, .25 NPT
16	2	020031006	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.00 IN L, GR 5, PLATED,
17	6	970224886	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, .75 IN L, GR 8, W/PATCH LOCK,
18	8	970179927	CAPSCREW, STEEL, FERRY CAP, 2.00 IN L, .63 IN DIA, .63-11 UNC, GR 8, PLATED,
19	1	970186006	SLIDEBOX, HYDRAULIC LIFT, UPPER, DC-912A
20	1	970157667	HYDRAULIC MOTOR, GEROLLER, 24.7 CU IN, 4 BOLT MAGNETO MOUNT, 1.25 IN TAPERED
21	1	970177405	MOUNT, FEED ROLLER MOTOR, DC-912A
22	1	970122547	PIN, STEEL, TAPER #9, 3.00 IN L, .59 IN OD,
23	2	970113602	BEARING, ROLLER, STEEL, 2.000 IN BORE, 2.188 IN L, 5.125 BOLT PATTERN,
24	2	970116846	BEARING, ROLLER, STEEL, 2.4375 IN BORE, 3.500 IN L, 4.77 BOLT PATTERN,
25	1	970177166	FEED ROLLER, 12.50 IN OD, ALTERNATING SERRATED BLADES, DC-912A
26	4	970116493	ROD END EYE BOLT, STEEL, FULLY THREADED, .50-13 UNC, 6.00 IN L, PLATED 18, .50 IN
27	1	970110754	COUPLER, FEED ROLLER/ 1.25IN TAPERED, DC-1217 HP
28	1	970176709	ASSEMBLY, 30IN DISC, DC-912,
30	1	970202502	SPROCKET, EFC/SPACER, 4.50 IN DIA, 20 TOOTH, DC-1317, CFD-1217, DC-912A
31	1	970179519	ANVIL, BAR, 4.50IN W X 9.00IN H X .50IN T, .50-13UNC THRD, DC-912A
32	2	970179402	BRACE, TOP, LOWER SLIDEBOX, DC-912A
33	2	970116592	SPRING-EXTENSION, STEEL, OTMB, 22.0 IN L, .250 IN WIRE DIA, 1.760 IN OD, 24.2, CLASS 2
34	1	970224878	CAPSCREW, STEEL, HEX HEAD, .75-10 UNC, 1.50 IN L, GR 8, W/PATCH LOCK,
36	2	020041208	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.50 IN L, GR 8, PLATED 18,
37	2	970179825	RUBBER, .250 IN T, 2.00 IN W, 9.00 IN L, DC-912A, LOWER SLIDEBOX
38	4	020301401	NUT, STEEL, HEX, .50-13 UNC,
39	1	970180583	GAURD, ANVIL, FORMED, DC-912A
42	1	970179386	PIN, SLIDEBOX LOCKING, .750 IN DIA, 16.00 IN L, DC-912A
43	1	970179388	PIN, DISC & SLIDEBOX LOCK, .750 IN DIA, 14.00 IN L, DC-912A, DC-1317
48	8	970185106	WEAR PAD, SLIDE BOX, DC-912, CFD-1217, DC-1317HP, PLASTIC
49	8	970185107	PLATE, WEAR PAD, COVER, DC-1317HP, DC-912A, CFD-1217
50	16	020041110	CAPSCREW, STEEL, HEX HEAD, .31-16 UNC, 2.00 IN L, GR 8, PLATED,
51	8	970032732	CAPSCREW, STEEL, HEX HEAD, .63-11 UNC, 1.50 IN L, GR 8, W/LOCKING PATCH PLATED,
52	36	970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
53	16	020391105	NUT, STEEL, TOP LOCK, .31-18 UNC, GR C, PLATED 18,
54	A/R	970185108	SPACER, WEAR PAD, SLIDE BOX, 16GA, DC-912A
55	A/R	970186429	SPACER, WEAR PAD, SLIDEBOX, 10GA, DC-912A
56	2	044112003	BEARING, CYLINDRICAL, FRP, 1.00 IN BORE, 1.25 IN OD, 1.00 IN L,
57	1	970116221	HYDRAULIC CYLINDER, 2.00 IN BORE, 12.00 IN STROKE, 1.125 IN ROD, 2500 PSI
58	1	970197333	BRACKET, EFC SENSOR MOUNT, DC-1317, DC-912A
59	1	970201701	BEARING GUARD, FEED SIDE, CUTTER HOUSING, DC-912A

DC-912A FEED CONTROL ASSEMBLY 37 IN MANUAL LIFT



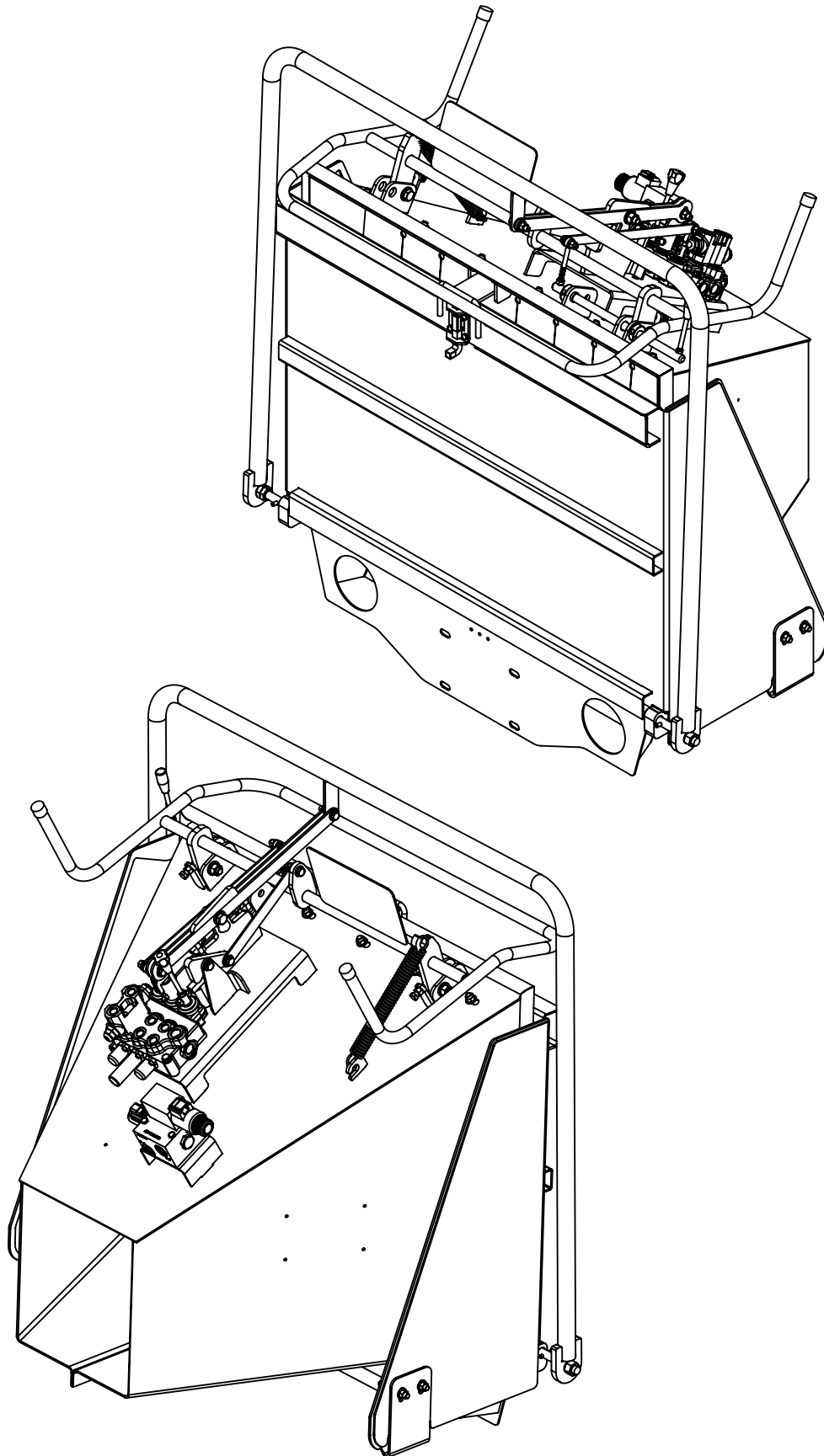
DC-912A FEED CONTROL ASSEMBLY 37 IN MANUAL LIFT



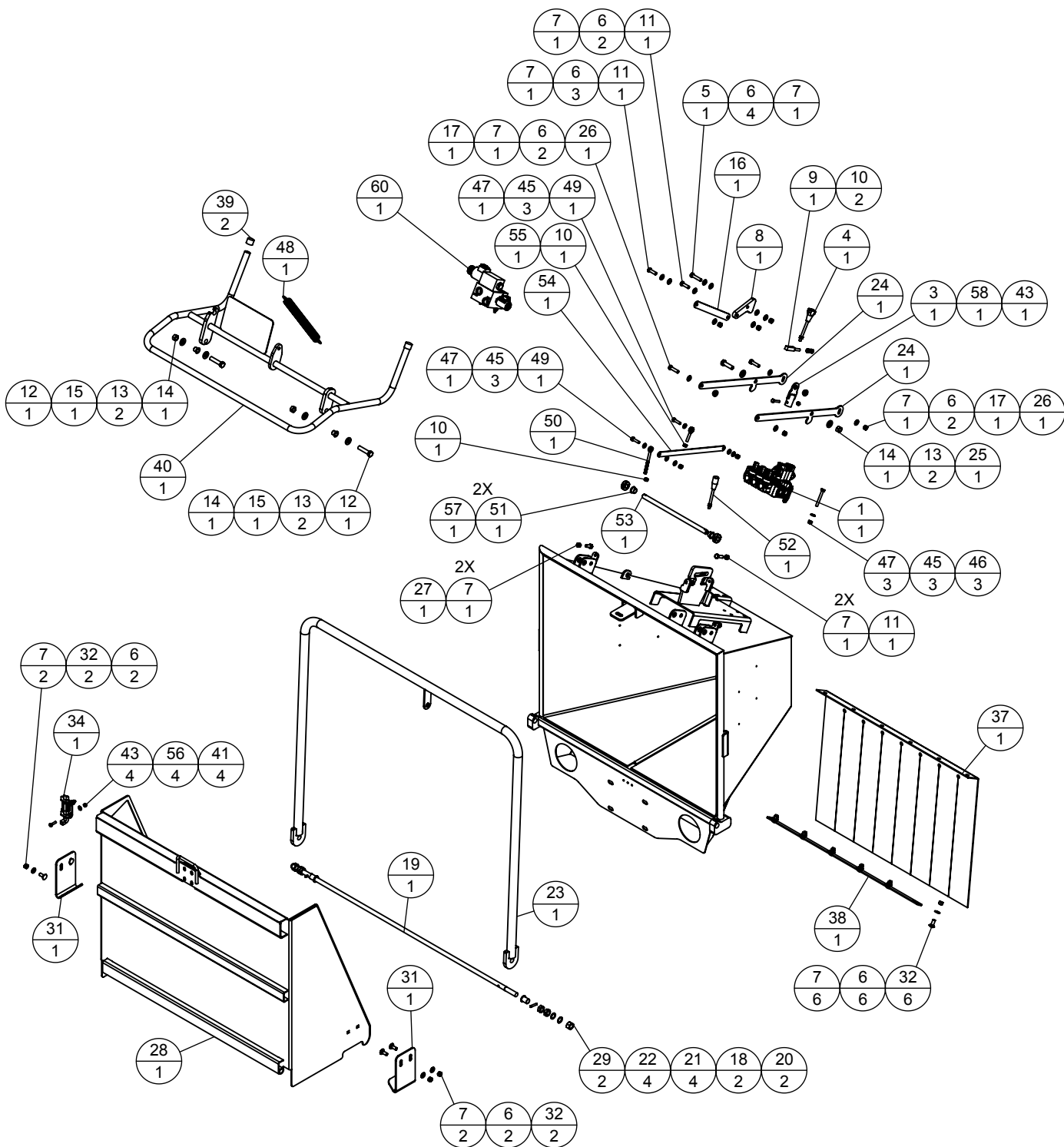
DC-912A FEED CONTROL ASSEMBLY 37 IN MANUAL LIFT

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970178293	DC-912A 37 IN FEED HORN, MANUAL LIFT, COMPLETE ASSEMBLY
1	1	970113323	HYDRAULIC VALVE, MANUAL, 2 SPOOLS, 3600 PSI, 12 GPM, HEAVY DETENT, 1ST SPOOL
3	1	970111145	HANDLE, FEED CONTROL, VALVE, WALVOIL
4	1	035200294	HYDRAULIC VALVE HANDLE KIT, RED KNOB
5	2	970116572	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.75 IN L, GR 8, PLATED 18,
6	23	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
7	19	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
8	1	970116518	PANIC BAR, VALVE CAM PIVOT, LOWER MOUNT,
9	1	970114999	CAM HANDLE, PIVOT, WALVOIL VALVE, PANIC BAR EN-GAUGE
10	2	020394003	NUT, STEEL, HEX, M8 x 1.25, PLATED 18,
11	6	020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
12	2	201436600	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 2.25 IN L, GR8, PLATED,
13	6	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
14	3	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
15	2	970114853	BEARING, FLANGED, FRP, .50 IN BORE, .63 IN OD, .63 IN L,
16	1	970177732	LINKAGE, PANIC BAR, 1.00 IN W, 7.50 IN CD, 36.00 IN W FEEDHORN,
17	2	970111152	BUSHING, RUBBER, FLANGED, .38 IN ID .66 IN OD, .88 IN FLANGE,
18	2	970152303	BEARING, FLANGED BEARING, PLASTIC, .625 IN BORE, .750 IN OD, 1.00 IN L, .062 IN T,
19	1	970178723	HINGE ROD, 37 IN INFEED TABLE, .625 IN DIA, DC-912A
20	2	970214464	PIN, STEEL, COILED, 1.25 IN L, .250 IN DIA, STANDARD DUTY PLAIN OILED,
21	4	020311601	NUT, STEEL, HEX JAM, .63-11 UNC, PLATED 18,
22	4	970156323	WASHER, STEEL, BELLEVILLE, .625 IN DIA, PLATED, BLACK-PHOSPHATE STEEL
23	1	970177737	HANDLE FEED CONTROL, 36.00 IN INFEED CHUTE,
24	2	970114898	BRACKET, CONTROL LINK, WAVOIL, .250 X 1.75 X 19.87,
26	1	020041208	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.50 IN L, GR 8, PLATED 18,
28	1	970177714	TABLE ASM, FEED, DC912, WELDMENT,
29	2	020391609	NUT, STEEL, TOP LOCK, .63-11 UNC, GR C, PLATED 18,
31	2	970184860	CATCH, FEED TABLE, POSITIVE, FORMED,
32	10	970116553	CARRIAGE BOLT, STEEL, .38-16 UNC, 1.00 IN L, .38 IN DIA, GR 5, PLATED 18,
34	1	970114795	LATCH, FEED TABLE, .500 IN SQ, LOCKING MECANISM, SLAM LATCH
37	1	970128276	BRUSH CURTAIN, .141 IN T X 32 IN W X 25 IN L, 166, 126, 912, 1217, 1317
38	1	970121714	ROD, REAR CURTAIN, FEED TABLE, 32.00 IN L X 1.00 IN W,
39	2	970157227	CAP, RUBBER, .875 IN ID, 1.00 IN H, BLACK, TURN-UP PANIC BAR,
40	1	970177162	PANIC BAR, 36 IN INFEED CHUTE,
41	4	020031006	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.00 IN L, GR 5, PLATED,
42	4	970137805	WASHER, STEEL, FLAT, .250 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
43	5	020391011	NUT, STEEL, HEX OVALATED, .25-20 UNC, GR C, PLATED 18,
45	3	970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
46	3	020041112	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 2.50 IN L, GR 8, PLATED,
47	3	020391105	NUT, STEEL, TOP LOCK, .31-18 UNC, GR C, PLATED 18,
48	1	970122395	EXTENSION SPRING, STEEL, 8.00 IN, 0.125 DIA, 1.00 IN OD, PANIC BAR
49	1	020041409	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 1.75 IN L, GR 8, PLATED
50	1	020031008	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.50 IN L, GR 5, PLATED,
55	1	970116573	HYDRAULIC VALVE, MANIFOLD, ELECTRONIC FEED CONTROL, WITH REVERSING

DC-912A FEED CONTROL ASSEMBLY 37 IN SINGLE CONTROL LIFT



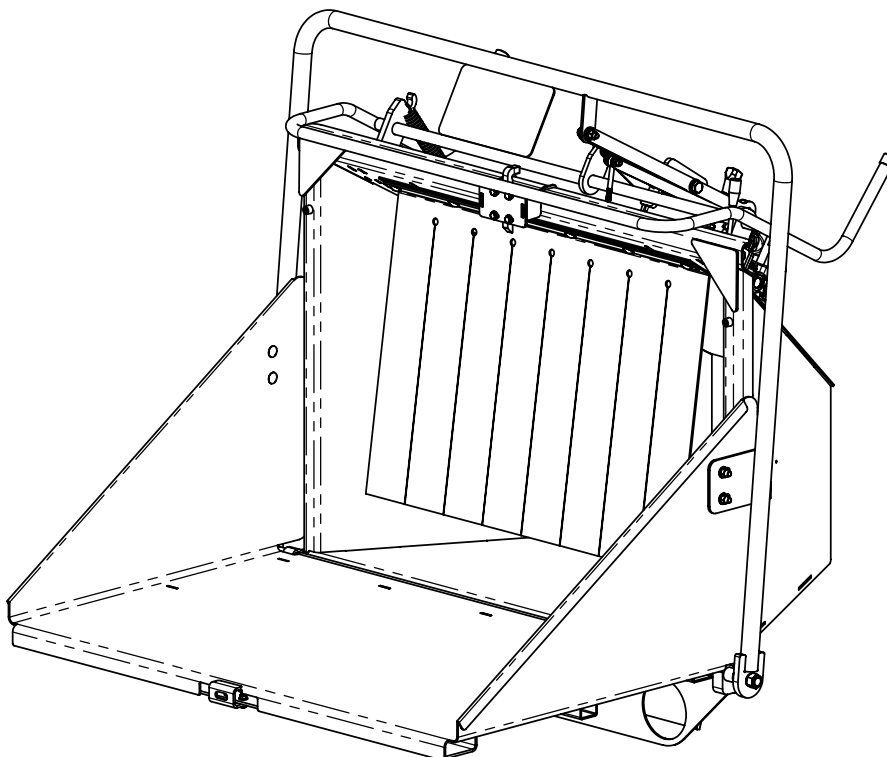
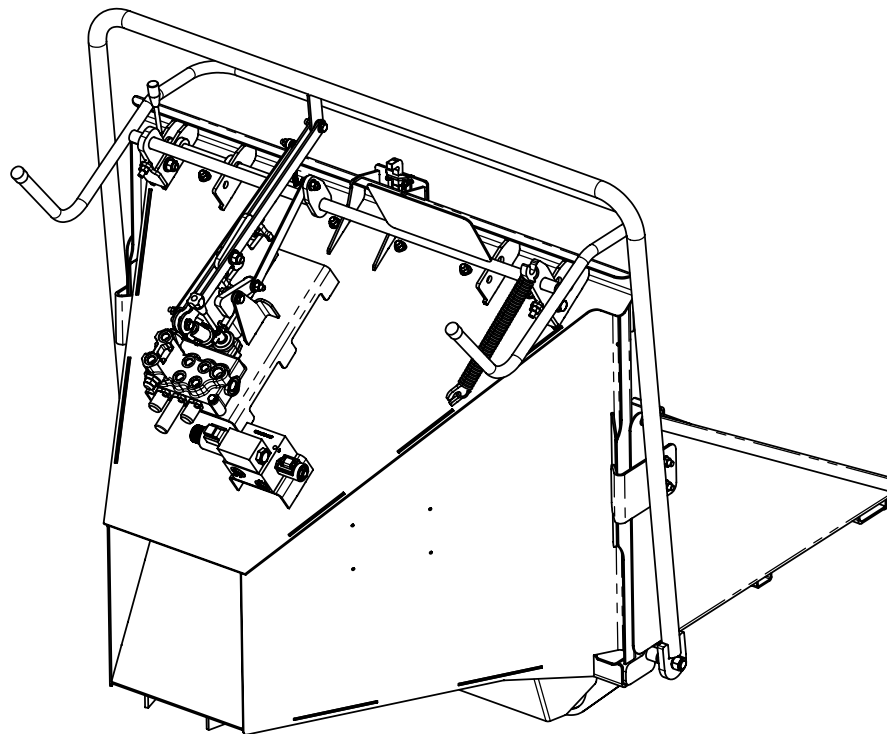
DC-912A FEED CONTROL ASSEMBLY 37 IN SINGLE CONTROL LIFT



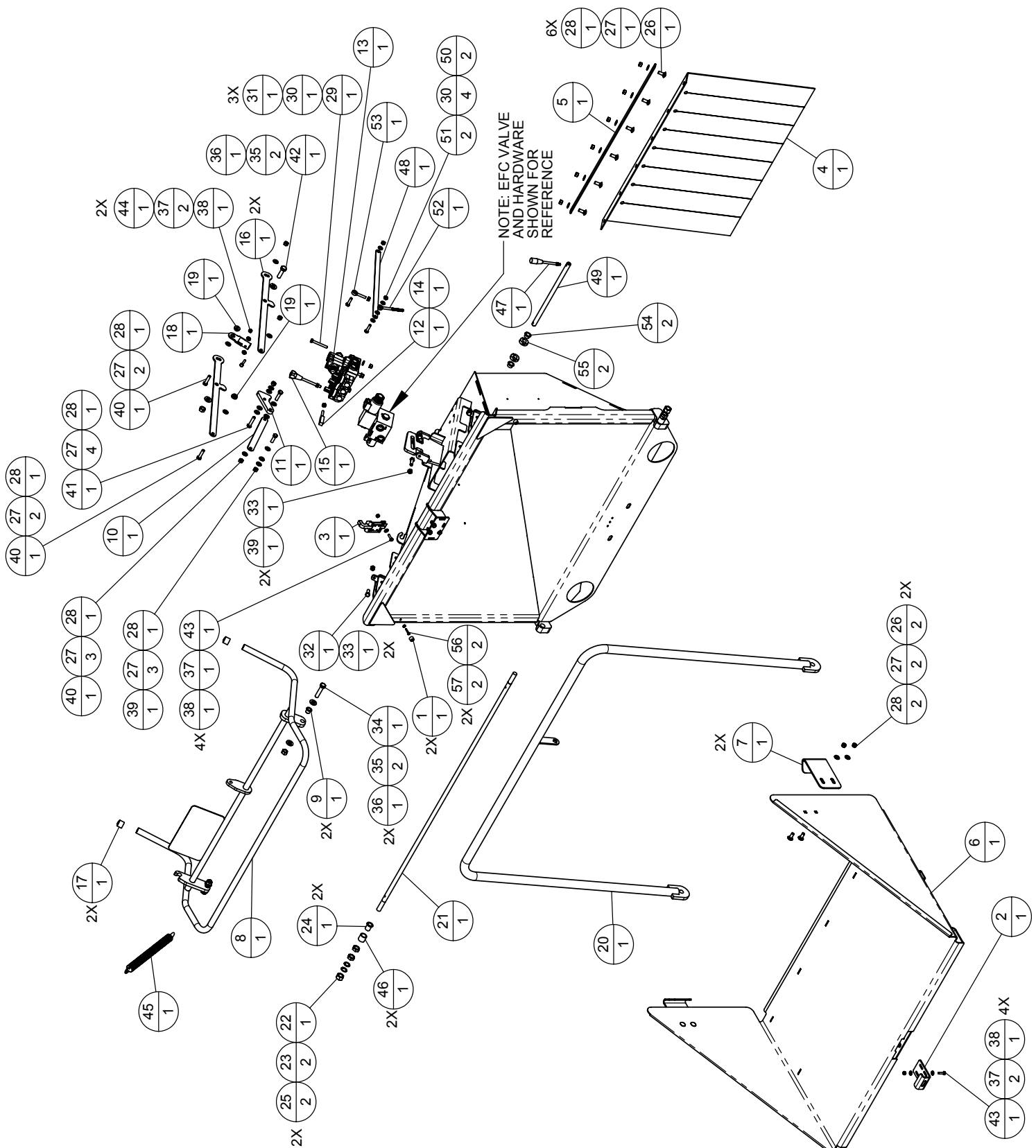
DC-912A FEED CONTROL ASSEMBLY 37 IN SINGLE CONTROL LIFT

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180440	DC-912A FEED CONTROL ASSEMBLY, SINGLE LIFT CONTROL, COMPLETE ASSEMBLY
1	1	970151945	HYDRAULIC VALVE, MANUAL, 3 SPOOLS, 3000 PSI, SERIES VALVE, RELIEF ON THIRD
3	1	970111145	HANDLE, FEED CONTROL, VALVE, WALVOIL
4	1	035200294	HYDRAULIC VALVE HANDLE KIT, RED KNOB
5	1	970116572	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.75 IN L, GR 8, PLATED 18,
6	23	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
7	19	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
8	1	970116518	PANIC BAR, VALVE CAM PIVOT, LOWER MOUNT,
9	1	970114999	CAM HANDLE, PIVOT, WALVOIL VALVE, PANIC BAR EN-GAUGE
10	4	020394003	NUT, STEEL, HEX, M8 x 1.25, PLATED 18,
11	4	020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
12	2	201436600	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 2.25 IN L, GR8, PLATED,
13	6	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
14	3	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
15	2	970114853	BEARING, FLANGED, FRP, .50 IN BORE, .63 IN OD, .63 IN L,
16	1	970177732	LINKAGE, PANIC BAR, 1.00 IN W, 7.50 IN CD, 36.00 IN W FEEDHORN,
17	2	970111152	BUSHING, RUBBER, FLANGED, .38 IN ID .66 IN OD, .88 IN FLANGE,
18	2	970152303	BEARING, FLANGED BEARING, PLASTIC, .625 IN BORE, .750 IN OD, 1.00 IN L, .062 IN T,
19	1	970178723	HINGE ROD, 37 IN INFEED TABLE, .625 IN DIA, DC-912A
20	2	970214464	PIN, STEEL, COILED, 1.25 IN L, .250 IN DIA, STANDARD DUTY PLAIN OILED,
21	4	020311601	NUT, STEEL, HEX JAM, .63-11 UNC, PLATED 18,
22	4	970156323	WASHER, STEEL, BELLEVILLE, .625 IN DIA, PLATED, BLACK-PHOSPHATE STEEL
23	1	970177737	HANDLE FEED CONTROL, 36.00 IN INFEED CHUTE,
24	2	970114898	BRACKET, CONTROL LINK, WAVOIL, .250 X 1.75 X 19.87,
25	1	020041409	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 1.75 IN L, GR 8, PLATED
26	2	020041208	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.50 IN L, GR 8, PLATED 18,
27	2	020049206	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.00 IN L, GR 8, PLATED 18,
28	1	970177714	TABLE ASM, FEED, DC912, WELDMENT,
29	2	020391609	NUT, STEEL, TOP LOCK, .63-11 UNC, GR C, PLATED 18,
31	2	970184860	CATCH, FEED TABLE, POSITIVE, FORMED,
32	10	970116553	CARRIAGE BOLT, STEEL, .38-16 UNC, 1.00 IN L, .38 IN DIA, GR 5, PLATED 18,
34	1	970114795	LATCH, FEED TABLE, .500 IN SQ, LOCKING MECHANISM, SLAM LATCH
37	1	970128276	BRUSH CURTAIN, .141 IN T X 32 IN W X 25 IN L, 166, 126, 912, 1217, 1317
38	1	970121714	ROD, REAR CURTAIN, FEED TABLE, 32.00 IN L X 1.00 IN W,
39	2	970157227	CAP, RUBBER, .875 IN ID, 1.00 IN H, BLACK, TURN-UP PANIC BAR,
40	1	970177162	PANIC BAR, 36 IN INFEED CHUTE,
41	4	020031006	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.00 IN L, GR 5, PLATED,
43	5	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
45	9	970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
46	3	020041112	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 2.50 IN L, GR 8, PLATED,
47	5	020391105	NUT, STEEL, TOP LOCK, .31-18 UNC, GR C, PLATED 18,
48	1	970122395	EXTENSION SPRING, STEEL, 8.00 IN, 0.125 DIA, 1.00 IN OD, PANIC BAR
49	2	970121347	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 1.25 IN L, GR 8, PLATED,
50	1	970173350	ROD END, STEEL, PLAIN, M8-1.25, 4.00 IN L, C1030,
51	2	970156828	BEARING, FLANGED, .63 IN BORE, .75 IN OD, .50 IN L, IGLIDE R-PLAIN
52	1	035200209	HYDRAULIC VALVE HANDLE KIT, 4.75 IN LG, M8X1.25 THREAD,
53	1	970184513	SHAFT LINKAGE, 42, 50, & 65 IN INFEED CHUTE, SINGLE LIFT, HYDRAULIC CYLINDER
54	1	970181094	ARM, LEVER, 14.00 IN L, STEEL,
55	1	970171421	ROD END, STEEL, SWIVEL BALL JOINT, M8X1.25, 42 MM L,
56	4	970137805	WASHER, STEEL, FLAT, .250 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
57	2	970171383	LOCKING COLLAR, ALUMINUM, CLAMP, .44 IN L, .63 IN DIA SHAFT,
58	1	020031008	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.50 IN L, GR 5, PLATED,
60	1	970116573	HYDRAULIC VALVE, MANIFOLD, ELECTRONIC FEED CONTROL, WITH REVERSING

**ASSEMBLY,FEED CONTROL,42 IN FEED HORN,HYDRAULIC LIFT,SINGLE
CONTROL,DC912A**



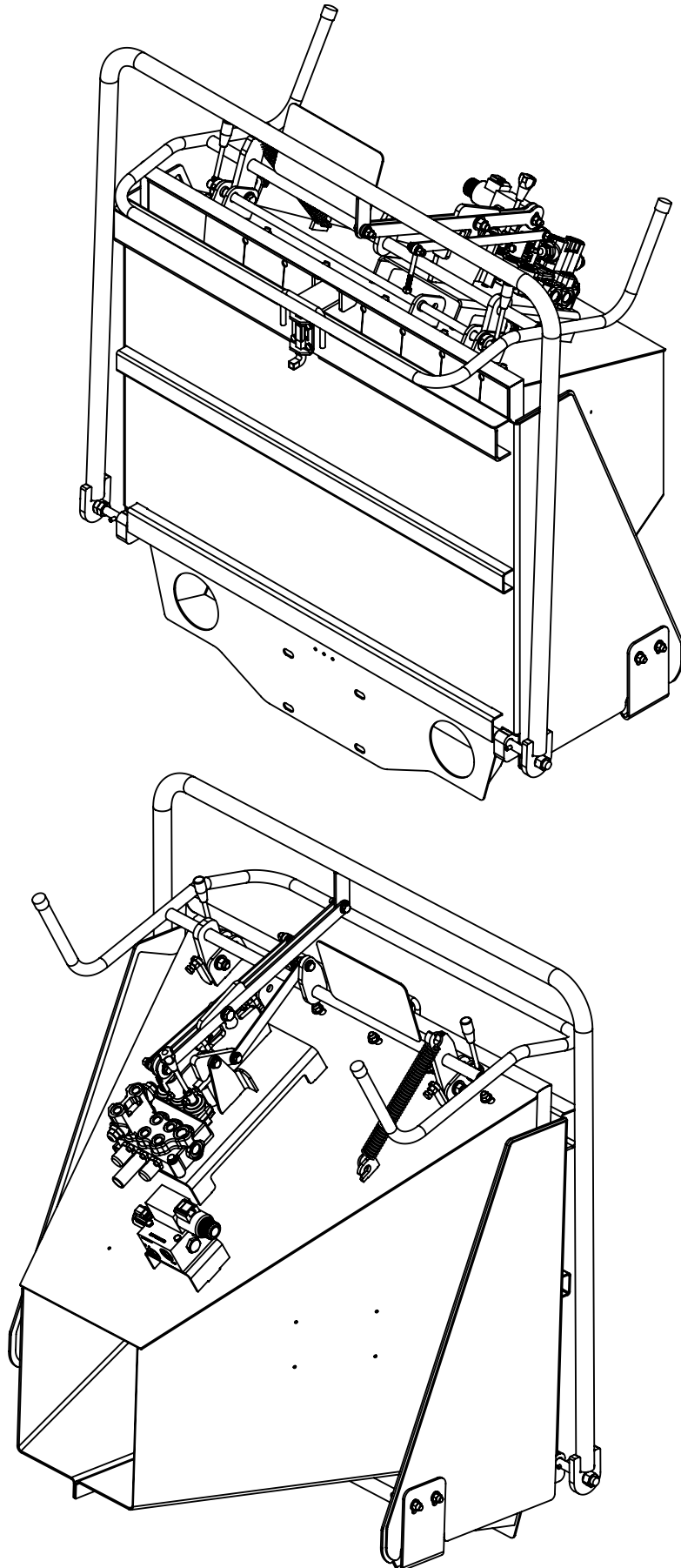
ASSEMBLY,FEED CONTROL,42 IN FEED HORN,HYDRAULIC LIFT,SINGLE CONTROL,DC912A



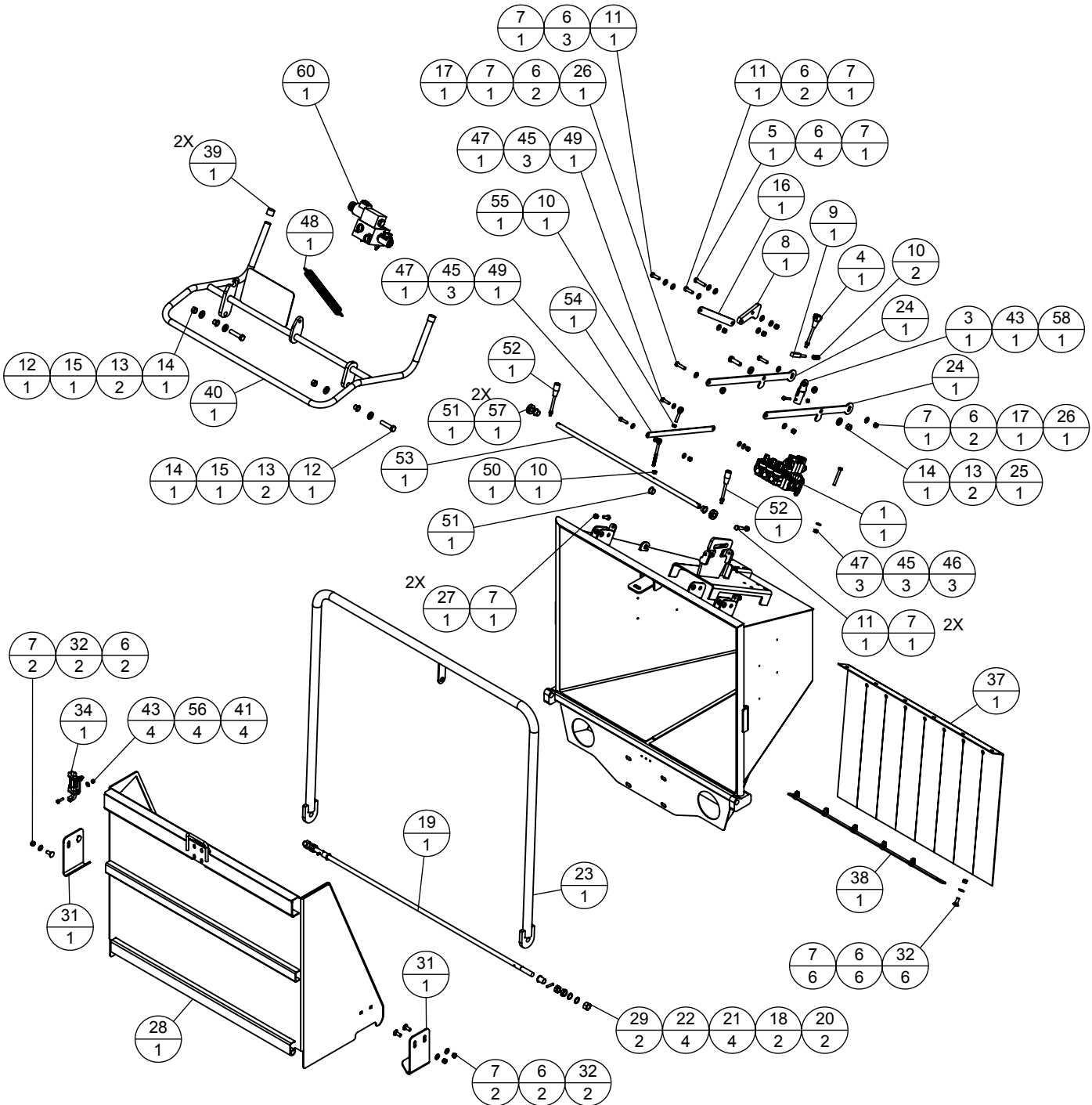
ASSEMBLY, FEED CONTROL, 42 IN FEED HORN, HYDRAULIC LIFT, SINGLE CONTROL, DC912A

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970258601	ASSEMBLY, FEED CONTROL, 42 IN FEED HORN, HYDRAULIC LIFT, SINGLE CONTROL, DC912A
1		970238971	RUBBER, BUMPER, ROUND, .63 IN DIA, .44 IN L, #10 DIA THRU HOLE, 60A DUROMETER,
2		970215468	FORMED PLATE, LATCH ADJUSTMENT, FEED TABLE, DC1820A
3		970114795	LATCH, FEED TABLE, .500 IN SQ, LOCKING MECANISM, SLAM LATCH
4		970128276	BRUSH CURTAIN, .141 IN T X 32 IN W X 25 IN L, 166, 126, 912, 1217, 1317
5		970121714	ROD, REAR CURTAIN, FEED TABLE, 32.00 IN L X 1.00 IN W,
6		970238506	FEEDTABLE, WELDMENT, 42.00IN,
7		970184860	CATCH, FEED TABLE, POSITIVE, FORMED,
8		970186242	PANIC BAR, 42 IN INFEED CHUTE, 2.44 LINKAGE TAB,
9		970114853	BEARING, FLANGED, FRP, .50 IN BORE, .63 IN OD, .63 IN L,
10		970177732	LINKAGE, PANIC BAR, 1.00 IN W, 7.50 IN CD, 36.00 IN W FEEDHORN,
11		970116518	PANIC BAR, VALVE CAM PIVOT, LOWER MOUNT,
12		970114999	CAM HANDLE, PIVOT, WALVOIL VALVE, PANIC BAR EN-GAUGE
13		970151945	HYDRAULIC VALVE, MANUAL, 3 SPOOLS, 3000 PSI, SERIES VALVE, RELIEF ON THIRD SPOOL,
14		020394003	NUT, STEEL, HEX, M8 x 1.25, PLATED 18,
15		035200294	HYDRAULIC VALVE HANDLE KIT, RED KNOB
16		970114898	BRACKET, CONTROL LINK, WAVOIL, .250 X 1.75 X 19.87,
17		970157227	CAP, RUBBER, .875 IN ID, 1.00 IN H, BLACK, TURN-UP PANIC BAR,
18		970111145	HANDLE, FEED CONTROL, VALVE, WALVOIL
19		970111152	BUSHING, RUBBER, FLANGED, .38 IN ID .66 IN OD, .88 IN FLANGE,
20		970186244	HANDLE FEED CONTROL, 42 IN INFEED CHUTE, 2.44 IN LINKAGE,
21		970151559	HINGE ROD, 42 IN INFEED TABLE, .625 IN DIA,
22		020391609	NUT, STEEL, TOP LOCK, .63-11 UNC, GR C, PLATED 18,
23		970156323	WASHER, STEEL, BELLEVILLE, .625 IN DIA, PLATED, BLACK-PHOSHATE STEEL
24		970152303	BEARING, FLANGED BEARING, PLASTIC, .625 IN BORE, .750 IN OD, 1.00 IN L, .062 IN T,
25		020311601	NUT, STEEL, HEX JAM, .63-11 UNC, PLATED 18,
26		970116553	CARRIAGE BOLT, STEEL, .38-16 UNC, 1.00 IN L, .38 IN DIA, GR 5, PLATED 18,
27		020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
28		020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
29		020041112	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 2.50 IN L, GR 8, PLATED,
30		970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
31		020391105	NUT, STEEL, TOP LOCK, .31-18 UNC, GR C, PLATED 18,
32		020041206	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.00 IN L, GR 8, PLATED/PLATED,
33		020301201	NUT, STEEL, HEX, .38-16 UNC, GR 5, PLATED 18
34		201436600	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 2.25 IN L, GR8, PLATED,
35		020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
36		020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
37		970137805	WASHER, STEEL, FLAT, .25 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
38		020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
39		020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
40		020041208	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.50 IN L, GR 8, PLATED 18,
41		970116572	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.75 IN L, GR 8, PLATED 18,
42		020041409	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 1.75 IN L, GR 8, PLATED
43		020031006	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.00 IN L, GR 5, PLATED,
44		020031008	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.50 IN L, GR 5, PLATED,
45		970122395	EXTENSION SPRING, STEEL, 8.00 IN, 0.125 DIA, 1.00 IN OD, PANIC BAR
46		970241241	TUBE, PIVOT, DC-912A 42.00 IN TABLE, .75 IN ID, .125 IN T, .93 IN L,
47		035200209	HYDRAULIC VALVE HANDLE KIT, 4.75 IN LG, M8X1.25 THREAD,
48		970185918	LINKAGE, HYDRAULIC LIFT, 42 IN & 50 IN FEEDHORNS,
49		970184513	SHAFT LINKAGE, 42, 50, & 65 IN INFEED CHUTE, SINGLE LIFT, HYDRAULIC CYLINDER
50		970121347	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 1.25 IN L, GR 8, PLATED,
51		020301102	NUT, STEEL, HEX, .31-18 UNC,
52		970173350	ROD END, STEEL, PLAIN, M8-1.25, 4.00 IN L, C1030,
53		970171421	ROD END, STEEL, SWIVEL BALL JOINT, M8X1.25, 42 MM L,
54		970156828	BEARING, FLANGED, .63 IN BORE, .75 IN OD, .50 IN L, IGLIDE R-PLAIN
55		970171383	LOCKING COLLAR, ALUMINUM, CLAMP, .44 IN L, .63 IN DIA SHAFT,
56		020120813	MACHINE SCREW, STEEL, PAN HEAD SLOTTED, #10-24 UNC, 1.00 IN L, PLATED 18,
57		020300801	NUT, STEEL, HEX, #10-24 UNC, PLATED,

DC-912A FEED CONTROL ASSEMBLY 37 IN DUAL CONTROL LIFT



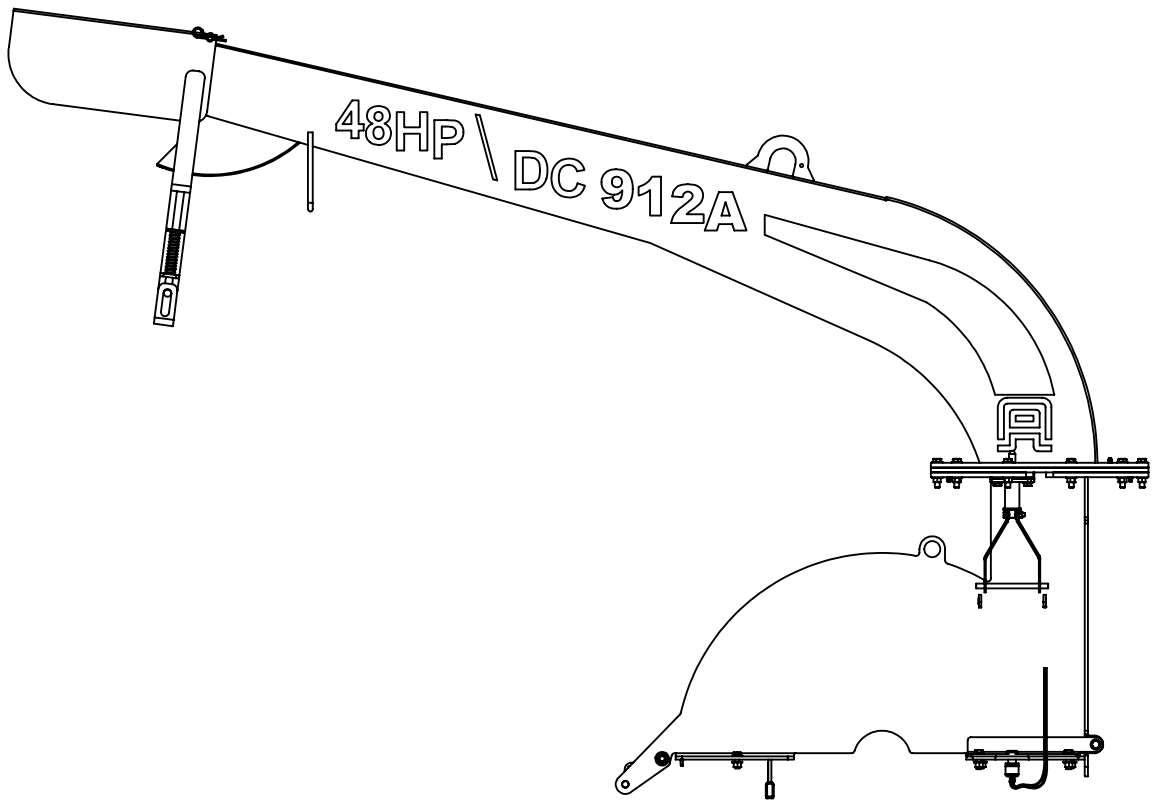
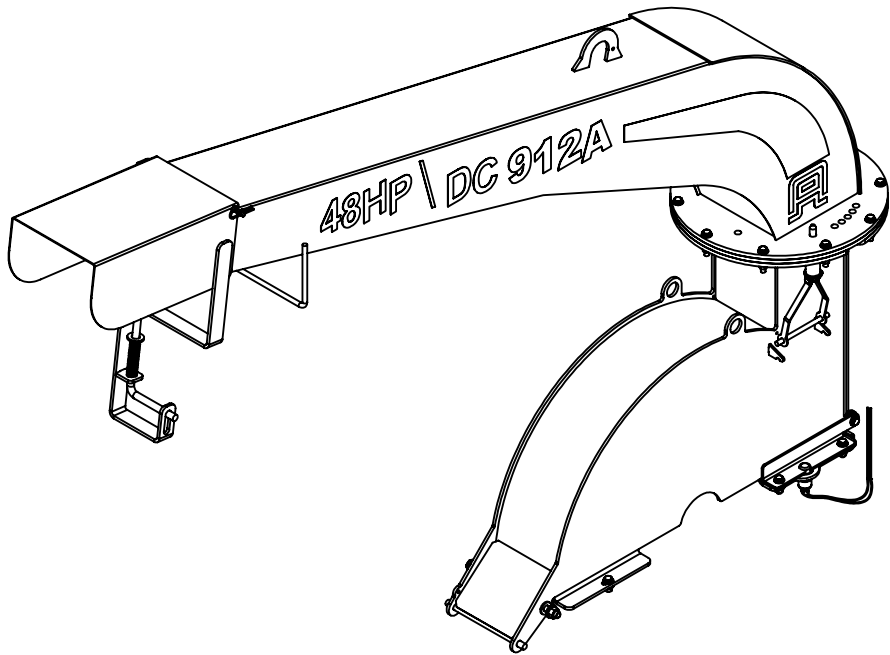
DC-912A FEED CONTROL ASSEMBLY 37 IN DUAL CONTROL LIFT



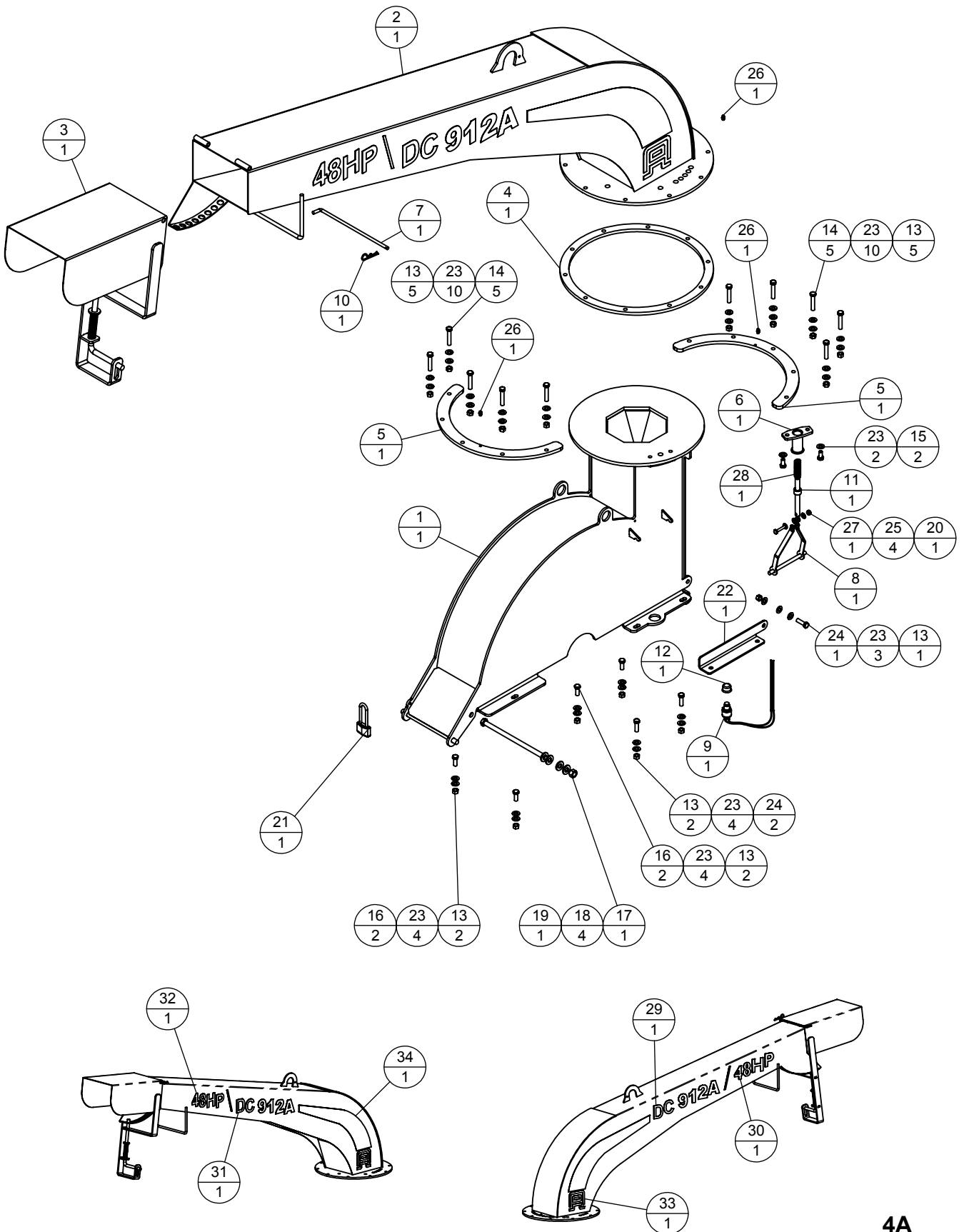
DC-912A FEED CONTROL ASSEMBLY 37 IN DUAL LIFT CONTROL

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970181441	DC-912A FEED CONTROL ASSEMBLY, DUAL LIFT CONTROL, COMPLETE ASSEMBLY
1	1	970151945	HYDRAULIC VALVE, MANUAL, 3 SPOOLS, 3000 PSI, SERIES VALVE, RELIEF ON THIRD
3	1	970111145	HANDLE, FEED CONTROL, VALVE, WALVOIL
4	1	035200294	HYDRAULIC VALVE HANDLE KIT, RED KNOB
5	1	970116572	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.75 IN L, GR 8, PLATED 18,
6	23	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
7	19	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
8	1	970116518	PANIC BAR, VALVE CAM PIVOT, LOWER MOUNT,
9	1	970114999	CAM HANDLE, PIVOT, WALVOIL VALVE, PANIC BAR EN-GAUGE
10	4	020394003	NUT, STEEL, HEX, M8 x 1.25, PLATED 18,
11	4	020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
12	2	201436600	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 2.25 IN L, GR8, PLATED,
13	6	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
14	3	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
15	2	970114853	BEARING, FLANGED, FRP, .50 IN BORE, .63 IN OD, .63 IN L,
16	1	970177732	LINKAGE, PANIC BAR, 1.00 IN W, 7.50 IN CD, 36.00 IN W FEEDHORN,
17	2	970111152	BUSHING, RUBBER, FLANGED, .38 IN ID .66 IN OD, .88 IN FLANGE,
18	2	970152303	BEARING, FLANGED BEARING, PLASTIC, .625 IN BORE, .750 IN OD, 1.00 IN L, .062 IN T,
19	1	970178723	HINGE ROD, 37 IN INFEED TABLE, .625 IN DIA, DC-912A
20	2	970214464	PIN, STEEL, COILED, 1.25 IN L, .250 IN DIA, STANDARD DUTY PLAIN OILED,
21	4	020311601	NUT, STEEL, HEX JAM, .63-11 UNC, PLATED 18,
22	4	970156323	WASHER, STEEL, BELLEVILLE, .625 IN DIA, PLATED, BLACK-PHOSHATE STEEL
23	1	970177737	HANDLE FEED CONTROL, 36.00 IN INFEED CHUTE,
24	2	970114898	BRACKET, CONTROL LINK, WAWOIL, .250 X 1.75 X 19.87,
25	1	020041409	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 1.75 IN L, GR 8, PLATED
26	2	020041208	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.50 IN L, GR 8, PLATED 18,
27	2	020041206	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.00 IN L, GR 8, PLATED/PLATED,
28	1	970177714	TABLE ASM, FEED, DC912, WELDMENT,
29	2	020391609	NUT, STEEL, TOP LOCK, .63-11 UNC, GR C, PLATED 18,
31	2	970184860	CATCH, FEED TABLE, POSITIVE, FORMED,
32	10	970116553	CARRIAGE BOLT, STEEL, .38-16 UNC, 1.00 IN L, .38 IN DIA, GR 5, PLATED 18,
34	1	970114795	LATCH, FEED TABLE, .500 IN SQ, LOCKING MECANISM, SLAM LATCH
37	1	970128276	BRUSH CURTAIN, .141 IN T X 32 IN W X 25 IN L, 166, 126, 912, 1217, 1317
38	1	970121714	ROD, REAR CURTAIN, FEED TABLE, 32.00 IN L X 1.00 IN W,
39	2	970157227	CAP, RUBBER, .875 IN ID, 1.00 IN H, BLACK, TURN-UP PANIC BAR,
40	1	970177162	PANIC BAR, 36 IN INFEED CHUTE,
41	4	020031006	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.00 IN L, GR 5, PLATED,
43	5	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
45	9	970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
46	3	020041112	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 2.50 IN L, GR 8, PLATED,
47	5	020391105	NUT, STEEL, TOP LOCK, .31-18 UNC, GR C, PLATED 18,
48	1	970122395	EXTENSION SPRING, STEEL, 8.00 IN, 0.125 DIA, 1.00 IN OD, PANIC BAR
49	2	970121347	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 1.25 IN L, GR 8, PLATED,
50	1	970173350	ROD END, STEEL, PLAIN, M8-1.25, 4.00 IN L, C1030,
51	3	970156828	BEARING, FLANGED, .63 IN BORE, .75 IN OD, .50 IN L, IGLIDE R-PLAIN
52	2	035200209	HYDRAULIC VALVE HANDLE KIT, 4.75 IN LG, M8X1.25 THREAD,
53	1	970181095	SHAFT, LIFT CYLINDER, 0.63 IN DIA, 29.50 IN L, STEEL, COLD ROLLED
54	1	970181094	ARM, LEVER, 14.00 IN L, STEEL,
55	1	970171421	ROD END, STEEL, SWIVEL BALL JOINT, M8X1.25, 42 MM L,
56	4	970137805	WASHER, STEEL, FLAT, .250 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
57	2	970171383	LOCKING COLLAR, ALUMINUM, CLAMP, .44 IN L, .63 IN DIA SHAFT,
58	1	020031008	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.50 IN L, GR 5, PLATED,
60	1	970116573	HYDRAULIC VALVE, MANIFOLD, ELECTRONIC FEED CONTROL, WITH REVERSING

DC-912A DISCHARGE ASSEMBLY MANUAL ROTATION



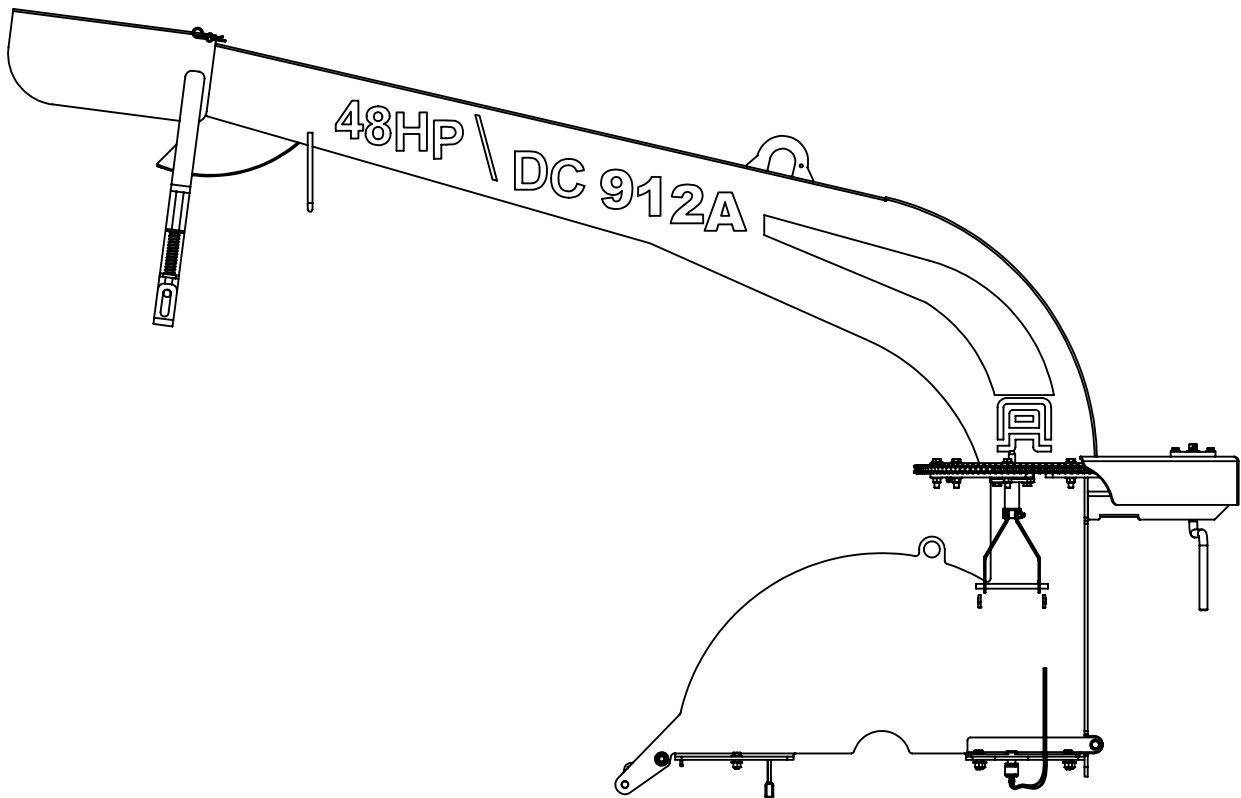
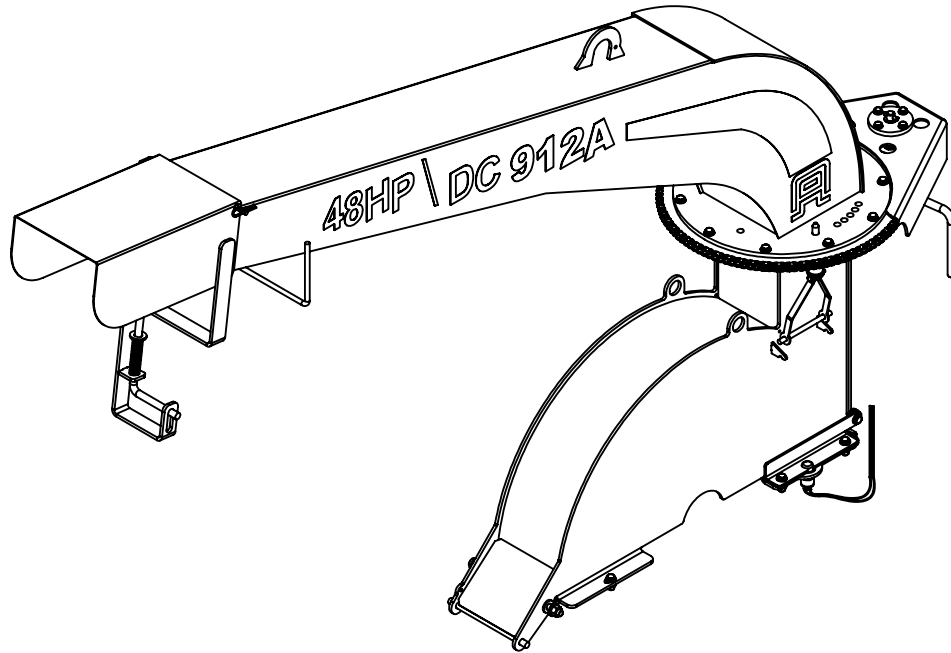
DC-912A DISCHARGE ASSEMBLY MANUAL ROTATION



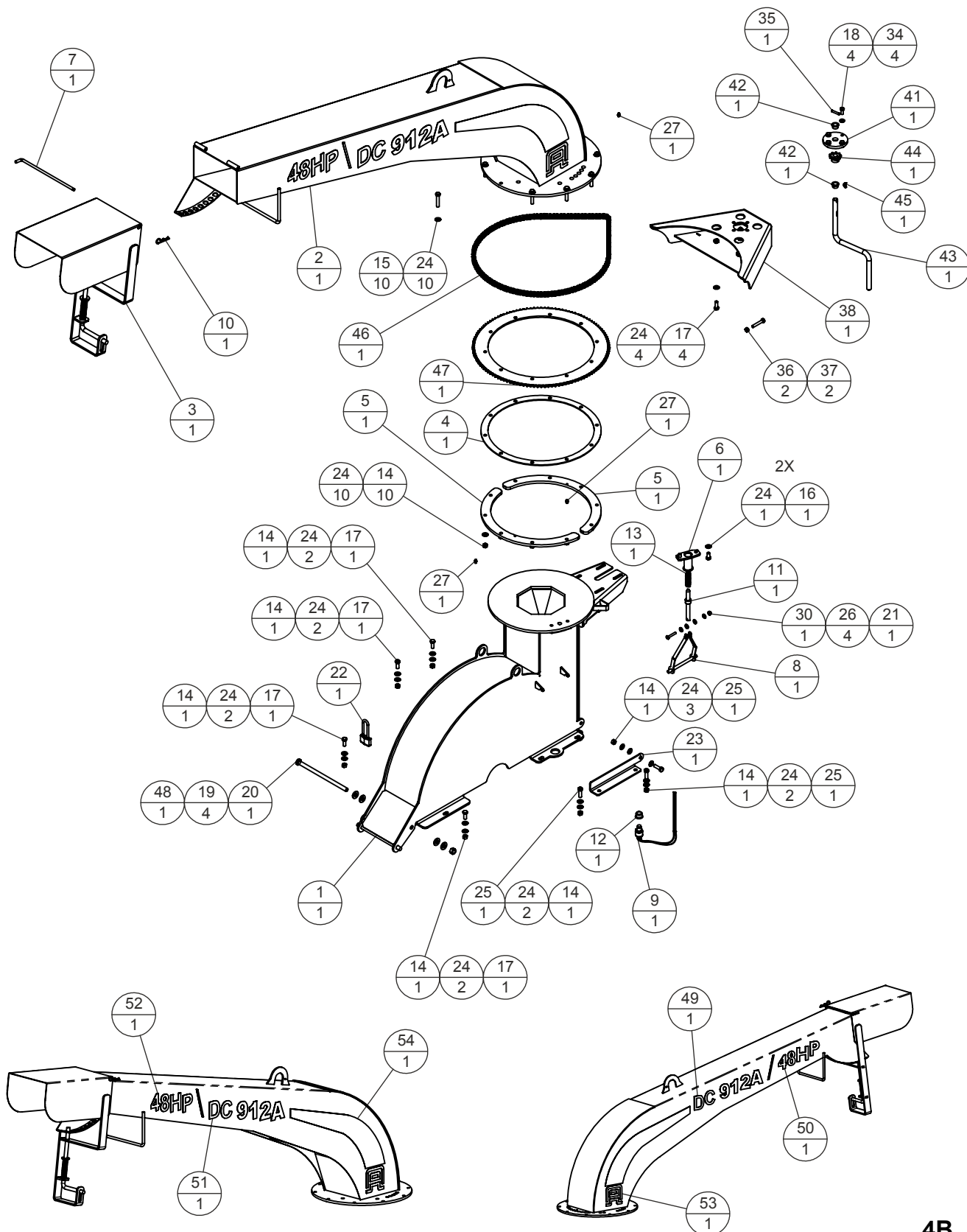
DISCHARGE ASSEMBLY MANUAL ROTATION

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180447	ASSEMBLY,DISCHARGE,FIXED HEIGHT CHUTE,MANUAL CHUTE ROTATION,DC-912A
1	1	970178305	COVER, DISC, DISCHARGE & INSPECTION, DC-912A
2	1	970179042	CHUTE, DISCHARGE, G-SERIES STYLE, DC912A, DC-1317
3	1	970177631	DEFLECTOR, CHUTE, 9.00 IN OPENING, 23.00 IN HANDLE
4	1	970154261	SPACER, CHUTE RING, 17.00IN OD X 15.00IN ID, 0.375IN T
5	2	970154265	RETAINER RING, CHUTE ROTATION, HAND CRANK,
6	1	970181307	WELDMENT, PLUNGER, CHUTE ROTATION,
7	1	970121064	PIN, DEFLECTOR PIVOT, .31 IN DIA, 10.00 IN GRIP, CROSS DRILLED
8	1	970180820	WELDMENT, PULL HANDLE, CHUTE ROTATION
9	1	970121289	SWITCH, PUSH BUTTON, HOOD PIN, DISC
10	1	970121057	PIN, STEEL, HAIRPIN, 2.63 IN L, .13 IN DIA, PLATED 18,
11	1	970179819	PIN, CHUTE ROTATION LOCK, .50 IN DIA, WITH .81 IN COLLAR,
12	1	970184568	SAFETY SWITCH CAP, RUBBER, .625-32, BLACK, HOOD PIN SWITCH, ALL CHIPPERS
13	17	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
14	10	970121424	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 2.00 IN L, GR 8, PLATED 18,
15	2	970196094	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, .75 IN L, GR 8, W/PATCH LOCK,
16	4	020041206	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.00 IN L, GR 8, PLATED/PLATED,
17	1	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
18	4	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
19	1	970185167	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 9.50 IN L, GR 8, PLATED,
20	1	020031008	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.50 IN L, GR 5, PLATED,
21	1	970122490	PADLOCK, LONG NECK, KEYED, .25 IN DIA SHACKLE, 1.50 IN W, .81 IN X 2.44 IN CLEARANCE,
22	1	970185155	LATCH, SAFETY SWITCH, INSPECTION/DISCHARGE COVER, DC-912A
23	37	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
24	3	020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
25	4	970137805	WASHER, STEEL, FLAT, .25 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
26	3	040050021	GREASE FITTING, STRAIGHT ZERK, .25-28 SELF TAPPING,
27	1	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
28	1	970207765	SPRING-COMPRESSION, 316 SS, 2.25IN L, .065IN DIA, .72 OD, 11.00 LB/IN, SOLID LENGTH/.60IN
29	1	970228799	DECAL, DC 912A, BLACK,
30	1	970213634	DECAL, / 48HP, BLACK, CURB SIDE,
31	1	970229476	DECAL, DC 912A, BLACK, STREET SIDE,
32	1	970213901	DECAL, / 48HP, BLACK, STREET SIDE,
33	1	970228800	DECAL, SWOOSH W/ WALKING A, BLACK, STREET SIDE,
34	1	970228801	DECAL, SWOOSH W/ WALKING A, BLACK, CURB SIDE,

DC-912A DISCHARGE ASSEMBLY FIXED HEIGHT HAND CRANK ROTATION



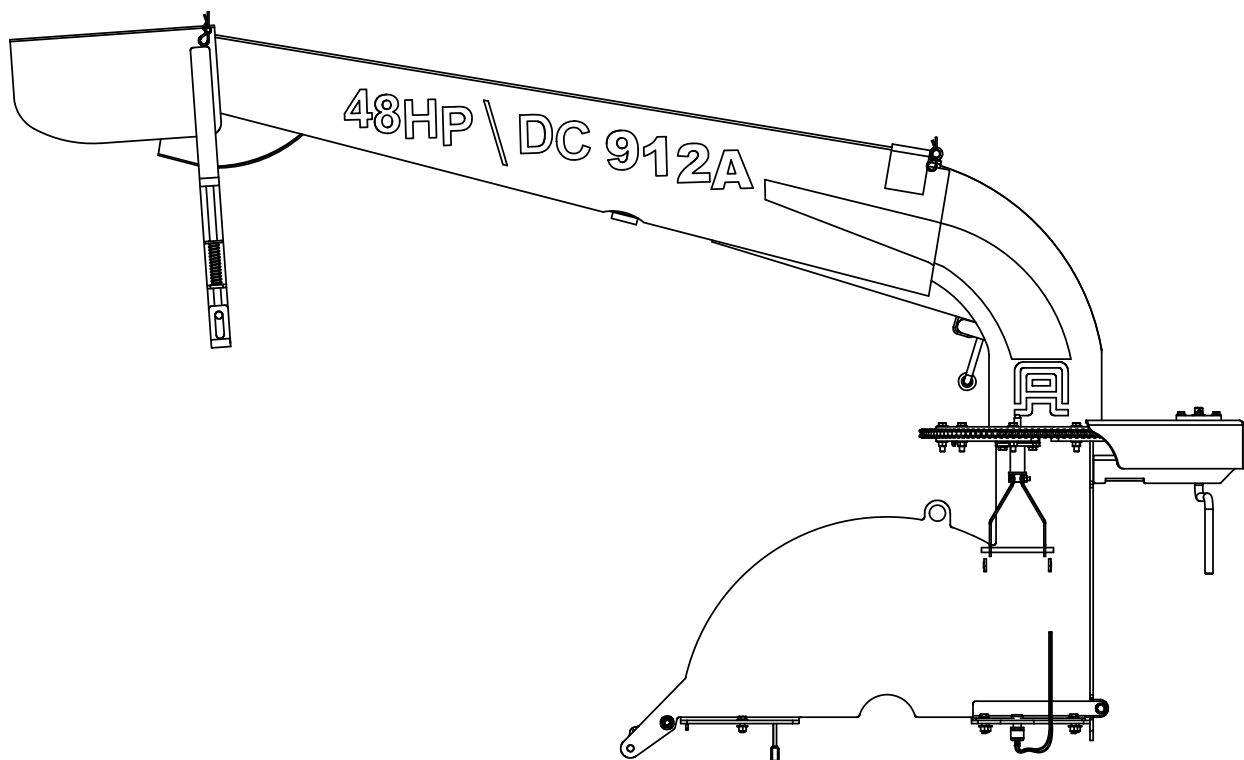
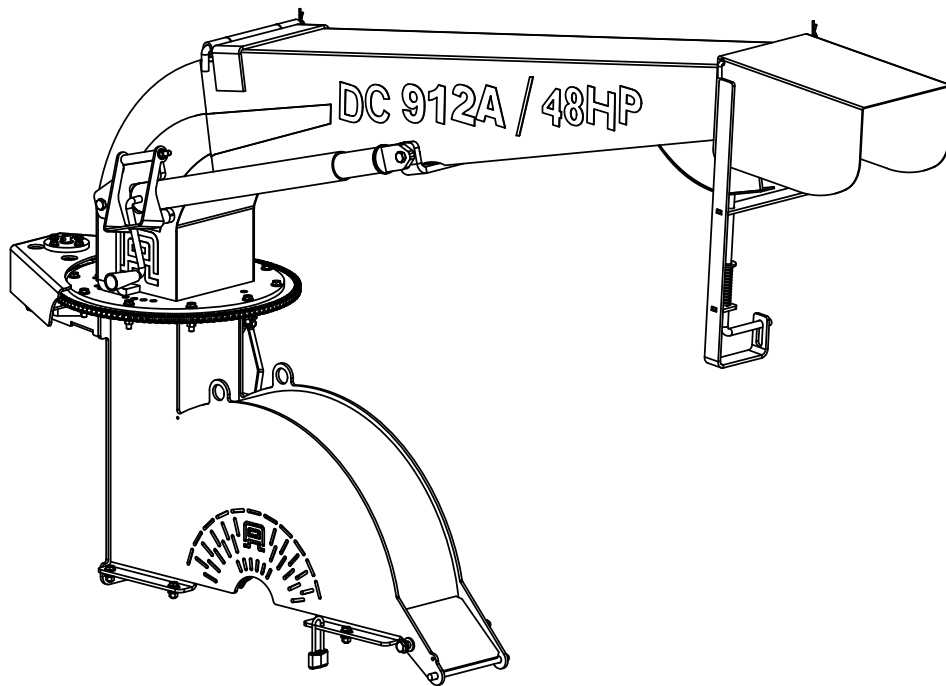
DC-912A DISCHARGE ASSEMBLY FIXED HEIGHT HAND CRANK ROTATION



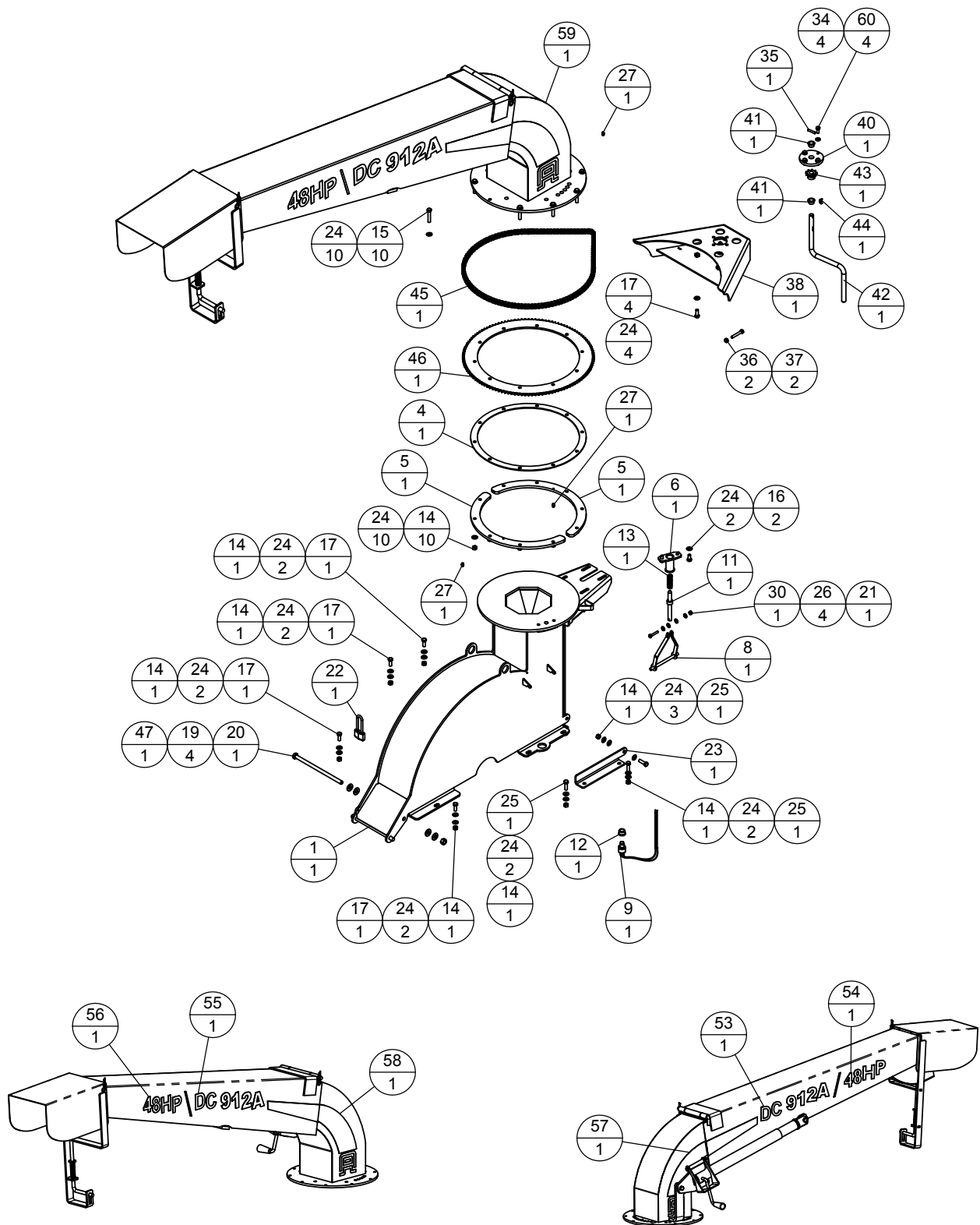
DC-912A DISCHARGE ASSEMBLY FIXED HEIGHT HAND CRANK ROTATION

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180448	ASSEMBLY,DISCHARGE,FIXED HEIGHT CHUTE,HAND CRANK CHUTE ROTATION,DC-912A
1	1	970189040	COVER, DISCHARGE & INSPECTION, HAND CRANK CHUTE ROTATION, DC-912A
2	1	970179042	CHUTE, DISCHARGE, G-SERIES STYLE, DC912A, DC-1317
3	1	970177631	DEFLECTOR, CHUTE, 9.00 IN OPENING, 23.00 IN HANDLE
4	1	970156982	SPACER, CHUTE RING, 17.00 IN OD X 15.00 IN ID, 10 GA
5	2	970154265	RETAINER RING, CHUTE ROTATION, HAND CRANK,
6	1	970181307	WELDMENT, PLUNGER, CHUTE ROTATION,
7	1	970121064	PIN, DEFLECTOR PIVOT, .31 IN DIA, 10.00 IN GRIP, CROSS DRILLED
8	1	970180820	WELDMENT, PULL HANDLE, CHUTE ROTATION
9	1	970121289	SWITCH, PUSH BUTTON, HOOD PIN, DISC
10	1	970121057	PIN, STEEL, HAIRPIN, 2.63 IN L, .13 IN DIA, PLATED 18,
11	1	970179819	PIN, CHUTE ROTATION LOCK, .50 IN DIA, WITH .81 IN COLLAR,
12	1	970184568	SAFETY SWITCH CAP, RUBBER, .625-32, BLACK, HOOD PIN SWITCH, ALL CHIPPERS
13	1	970207765	SPRING-COMPRESSION, 316 SS, 2.25IN L, .065IN DIA, .72 OD, 11.00 LB/IN, SOLID LENGTH/.60IN
14	17	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
15	10	970121424	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 2.00 IN L, GR 8, PLATED 18,
16	2	970196094	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, .75 IN L, GR 8, W/PATCH LOCK,
17	8	020041206	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.00 IN L, GR 8, PLATED/PLATED,
18	4	020041104	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, .75 IN L, GR 8, PLATED,
19	4	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
20	1	970185167	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 9.50 IN L, GR 8, PLATED,
21	1	020031008	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.50 IN L, GR 5, PLATED,
22	1	970122490	PADLOCK, LONG NECK, KEYED, .25 IN DIA SHACKLE, 1.50 IN W, .81 IN X 2.44 IN CLEARANCE,
23	1	970185155	LATCH, SAFETY SWITCH, INSPECTION/DISCHARGE COVER, DC-912A
24	41	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
25	3	020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
26	4	970137805	WASHER, STEEL, FLAT, .25 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
27	3	040050021	GREASE FITTING, STRAIGHT ZERK, .25-28 SELF TAPPING,
30	1	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
34	4	970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
35	1	970214464	PIN, STEEL, COILED, 1.25 IN L, .250 IN DIA, STANDARD DUTY PLAIN OILED,
36	2	020301102	NUT, STEEL, HEX, .31-18 UNC,
37	2	020041110	CAPSCREW, STEEL, HEX HEAD, .31-16 UNC, 2.00 IN L, GR 8, PLATED,
38	1	970156356	COVER, HAND CRANK, CHUTE ROTATION, DC-1317
41	1	970156560	BOSS, ADAPTER PLATE, 3.50 IN DIA X .38 IN T,
42	2	970156828	BEARING, FLANGED, .63 IN BORE, .75 IN OD, .50 IN L, IGLIDE R-PLAIN
43	1	970156427	HAND CRANK, ROD, FORMED/18.57 IN L, NO 606 WOODRUFF KEY
44	1	970156368	SPROCKET, ROLLER CHAIN, .50 IN PITCH, NO 40, 9 TEETH, .19 IN WIDE KEY
45	1	970156419	WOODRUFF KEY #606
46	1	970227270	CHAIN ASSEMBLY, 5.29 FT, WITH CONNECTOR LINK, HAND CRANK CHUTE ROTATION
47	1	970156367	SPROCKET, ROLLER CHAIN, .50 IN PITCH, NO 40, 120 TEETH,
48	1	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
49	1	970228799	DECAL, DC 912A, BLACK,
50	1	970213634	DECAL, / 48HP, BLACK, CURB SIDE,
51	1	970229476	DECAL, DC 912A, BLACK, STREET SIDE,
52	1	970213901	DECAL, / 48HP, BLACK, STREET SIDE,
53	1	970228800	DECAL, SWOOSH W/ WALKING A, BLACK, STREET SIDE,
54	1	970228801	DECAL, SWOOSH W/ WALKING A, BLACK, CURB SIDE,

**DC-912A DISCHARGE ASSEMBLY HEIGHT ADJUSTABLE
HAND CRANK ROTATION**



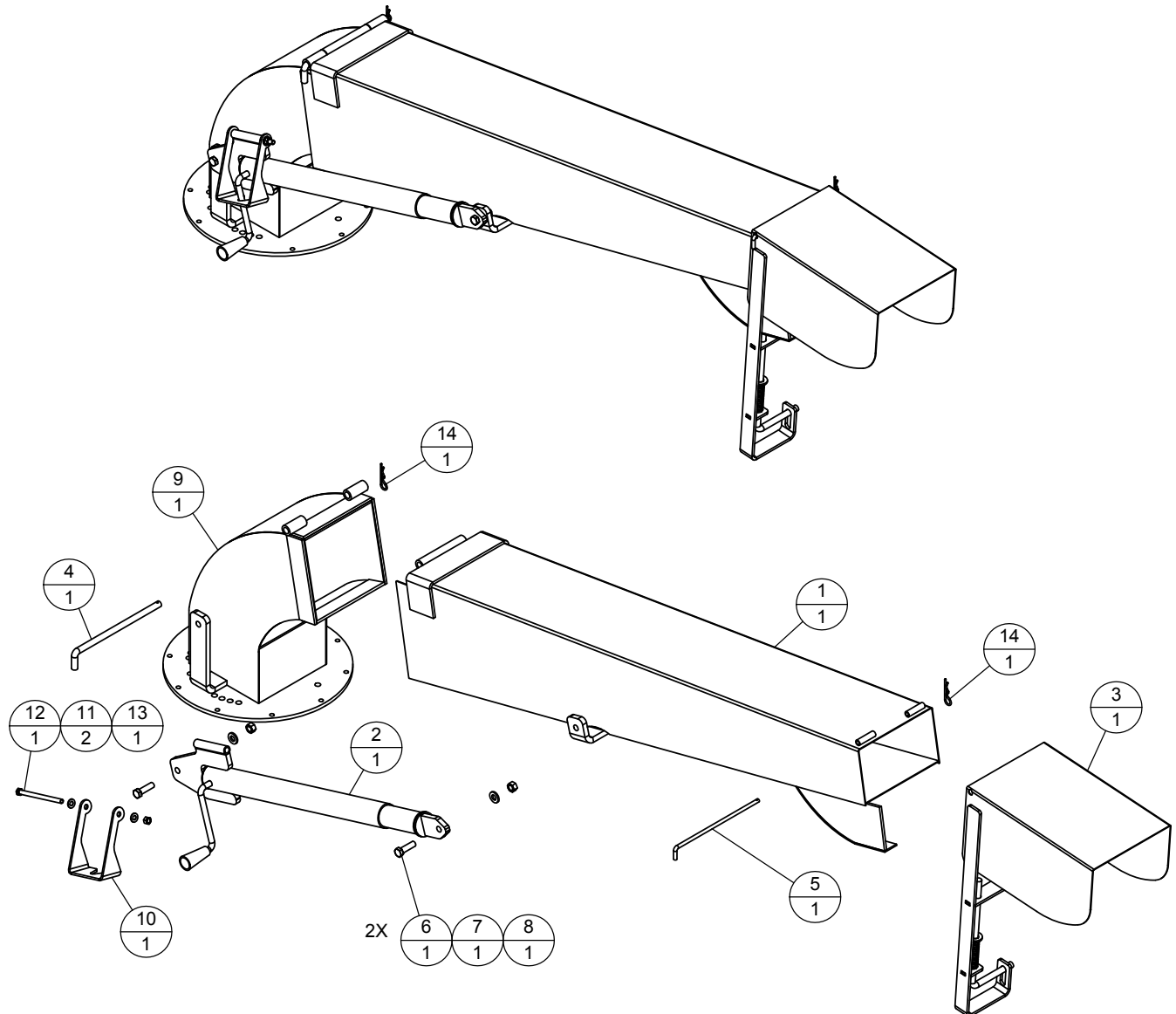
DC-912A DISCHARGE ASSEMBLY HEIGHT ADJUSTABLE HAND CRANK ROTATION



DC-912A DISCHARGE ASSEMBLY HEIGHT ADJUSTABLE HAND CRANK ROTATION

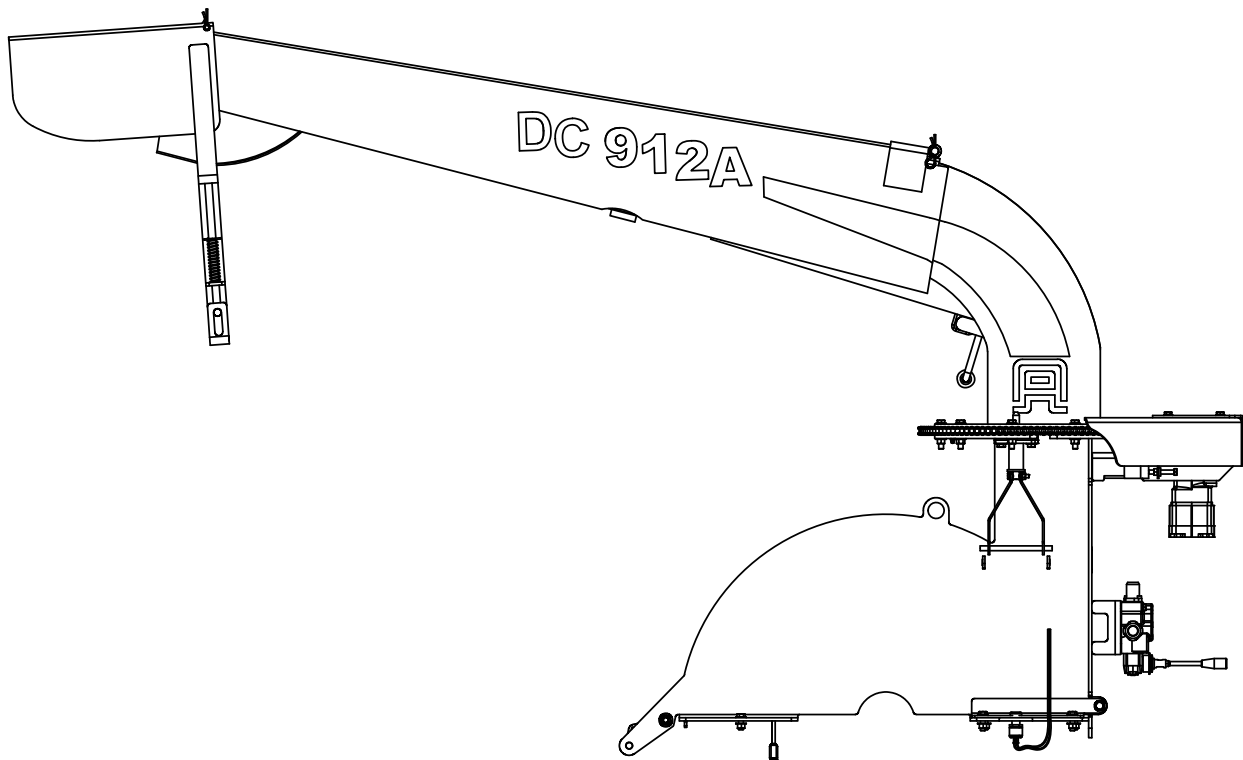
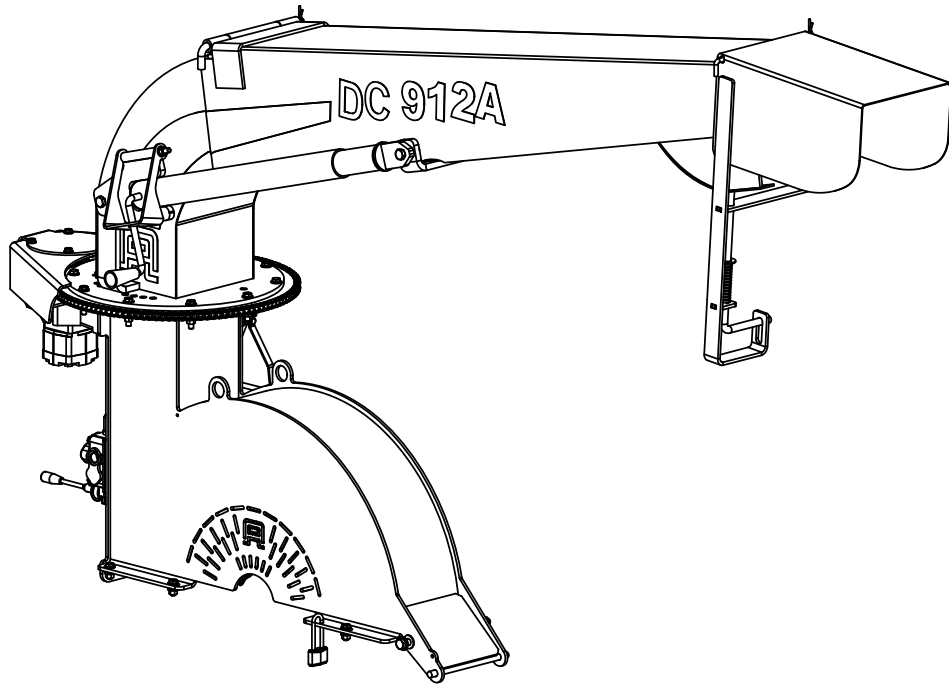
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180455	ASSEMBLY,DISCHARGE,HEIGHT ADJUSTABLE CHUTE,HAND CRANK CHUTE
1	1	970189040	COVER, DISCHARGE & INSPECTION, HAND CRANK CHUTE ROTATION, DC-912A
4	1	970156982	SPACER, CHUTE RING, 17.00 IN OD X 15.00 IN ID, 10 GA
5	2	970154265	RETAINER RING, CHUTE ROTATION, HAND CRANK,
6	1	970181307	WELDMENT, PLUNGER, CHUTE ROTATION,
8	1	970180820	WELDMENT, PULL HANDLE, CHUTE ROTATION
9	1	970121289	SWITCH, PUSH BUTTON, HOOD PIN, DISC
11	1	970179819	PIN, CHUTE ROTATION LOCK, .50 IN DIA, WITH .81 IN COLLAR,
12	1	970184568	SAFETY SWITCH CAP, RUBBER, .625-32, BLACK, HOOD PIN SWITCH, ALL CHIPPERS
13	1	970207765	SPRING-COMPRESSION, 316 SS, 2.25IN L, .065IN DIA, .72 OD, 11.00 LB/IN, SOLID LENGTH/.60IN
14	17	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
15	10	970121424	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 2.00 IN L, GR 8, PLATED 18,
16	2	970196094	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, .75 IN L, GR 8, W/PATCH LOCK,
17	8	020041206	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.00 IN L, GR 8, PLATED/PLATED,
19	4	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
20	1	970185167	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 9.50 IN L, GR 8, PLATED,
21	1	020031008	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.50 IN L, GR 5, PLATED,
22	1	970122490	PADLOCK, LONG NECK, KEYED, .25 IN DIA SHACKLE, 1.50 IN W, .81 IN X 2.44 IN CLEARANCE,
23	1	970185155	LATCH, SAFETY SWITCH, INSPECTION/DISCHARGE COVER, DC-912A
24	41	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
25	3	020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
26	4	970137805	WASHER, STEEL, FLAT, .25 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
27	3	040050021	GREASE FITTING, STRAIGHT ZERK, .25-28 SELF TAPPING,
30	1	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
34	4	970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
35	1	970214464	PIN, STEEL, COILED, 1.25 IN L, .250 IN DIA, STANDARD DUTY PLAIN OILED,
36	2	020301102	NUT, STEEL, HEX, .31-18 UNC,
37	2	020041110	CAPSCREW, STEEL, HEX HEAD, .31-16 UNC, 2.00 IN L, GR 8, PLATED,
38	1	970156356	COVER, HAND CRANK, CHUTE ROTATION, DC-1317
40	1	970156560	BOSS, ADAPTER PLATE, 3.50 IN DIA X .38 IN T,
41	2	970156828	BEARING, FLANGED, .63 IN BORE, .75 IN OD, .50 IN L, IGLIDE R-PLAIN
42	1	970156427	HAND CRANK, ROD, FORMED/18.57 IN L, NO 606 WOODRUFF KEY
43	1	970156368	SPROCKET, ROLLER CHAIN, .50 IN PITCH, NO 40, 9 TEETH, .19 IN WIDE KEY
44	1	970156419	WOODRUFF KEY #606
45	1	970227270	CHAIN ASSEMBLY, 5.29 FT, WITH CONNECTOR LINK, HAND CRANK CHUTE ROTATION
46	1	970156367	SPROCKET, ROLLER CHAIN, .50 IN PITCH, NO 40, 120 TEETH,
47	1	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
53	1	970228799	DECAL, DC 912A, BLACK,
54	1	970213634	DECAL, / 48HP, BLACK, CURB SIDE,
55	1	970229476	DECAL, DC 912A, BLACK, STREET SIDE,
56	1	970213901	DECAL, / 48HP, BLACK, STREET SIDE,
57	1	970228800	DECAL, SWOOSH W/ WALKING A, BLACK, STREET SIDE,
58	1	970228801	DECAL, SWOOSH W/ WALKING A, BLACK, CURB SIDE,
59	1	970177842	ASSEMBLY,HEIGHT ADJ CHUTE, FOR DISC STYLE
60	4	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,

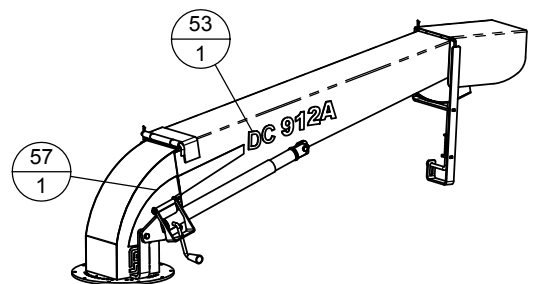
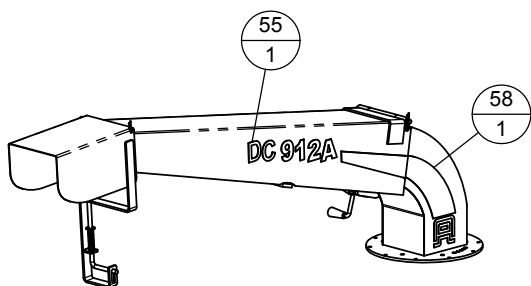
HEIGHT ADJUSTABLE DISCHARGE CHUTE - DISC CHIPPER



ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970177842	ASSEMBLY, HEIGHT ADJ CHUTE, FOR DISC STYLE
1	1	970130123	DISCHARGE CHUTE, ADJUSTABLE, UPPER, DC-1217, 1317, 912, 1419, 1820
2	1	970130134	WELDMENT, JACK, HEIGHT ADJUSTABLE CHUTE, 33.00 IN MIN PIN TO PIN, 15.00 IN STROKE
3	1	970116528	CHUTE DEFLECTOR, 9.75 IN OPENING, G-SERIES STYLE
4	1	970130131	PIN, ADJUSTABLE CHUTE PIVOT, .56 IN DIA, 10.00 IN GRIP, CROSS DRILLED
5	1	970121064	PIN, DEFLECTOR PIVOT, .31 IN DIA, 10.00 IN GRIP, CROSS DRILLED
6	2	020041409	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 1.75 IN L, GR 8, PLATED
7	2	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
8	2	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED
9	1	970177844	ASSEMBLY, DISCHARGE CHUTE, LOWER, DC1317,
10	1	970111369	LOCKDOWN LATCH, CHUTE ROTATION, DISCHARGE SPOUT
11	2	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, MTS 16 18
12	1	020031221	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 5.50 IN L, GR 5, MTS 16 18
13	1	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, MTS 16, 18
14	2	970121057	PIN, STEEL, HAIRPIN, 2.63 IN L, .13 IN DIA, MTS 16 18

**DC912A HEIGHT ADJUSTABLE HYDRAULIC ROTATION
DISCHARGE ASSEMBLY**

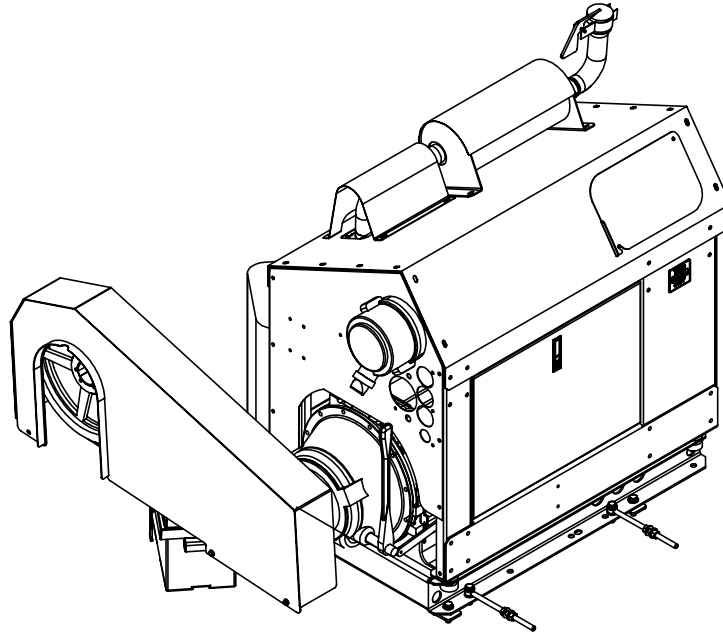




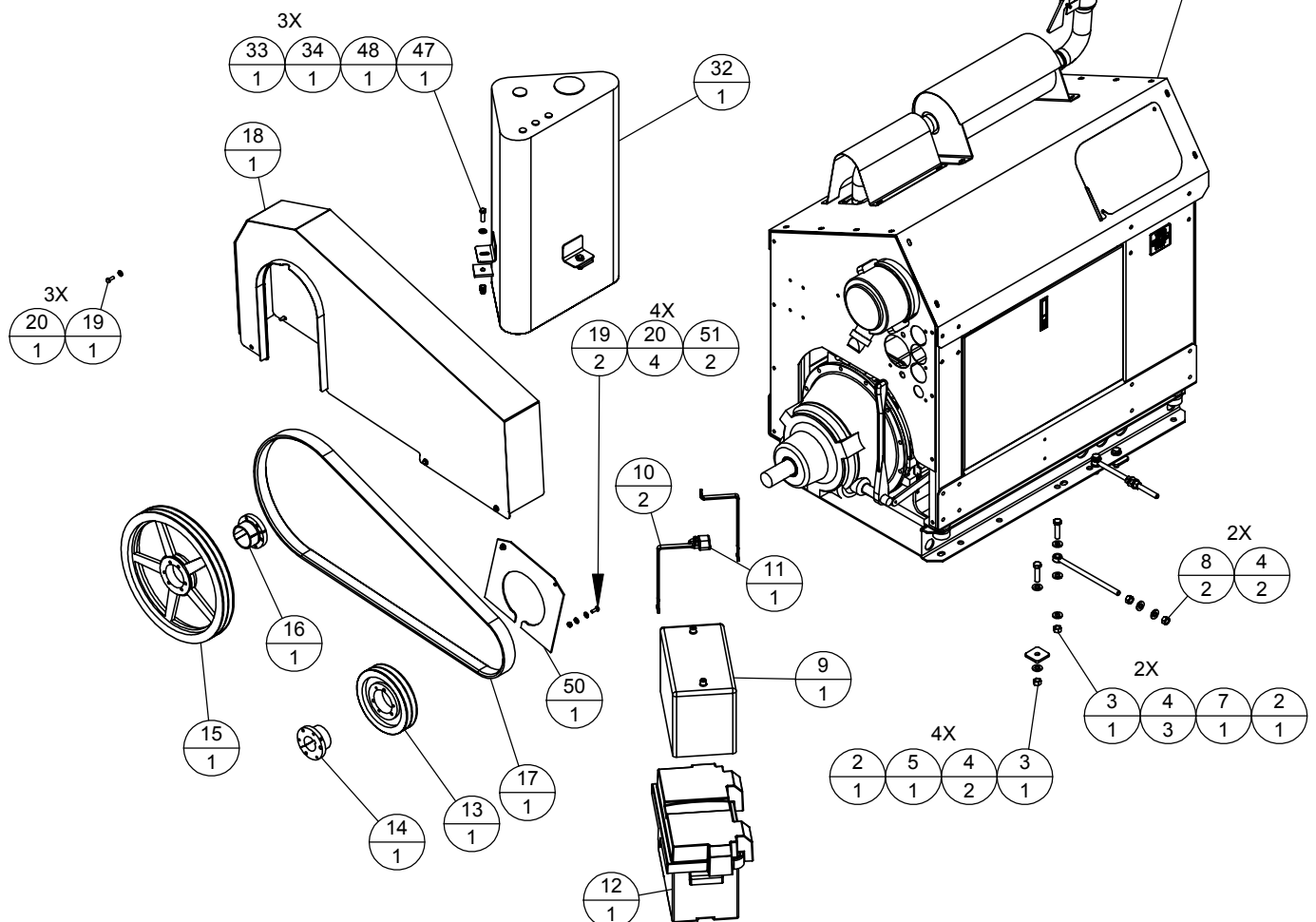
DC912A HEIGHT ADJUSTABLE HYDRAULIC ROTATION DISCHARGE CHUTE

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970287000	ASSEMBLY, DISCHARGE, HEIGHT ADJUSTABLE CHUTE, HYDRAULIC CHUTE ROTATION,
1	1	970289041	WELDMENT, INSPECTION AND DISCHARGE COVER, HYDRAULIC CHUTE ROTATION, DC912A
4	1	970156982	SPACER, CHUTE RING, 17.00 IN OD X 15.00 IN ID, 10 GA
5	2	970154265	RETAINER RING, CHUTE ROTATION, HAND CRANK,
6	1	970181307	WELDMENT, PLUNGER, CHUTE ROTATION,
8	1	970180820	WELDMENT, PULL HANDLE, CHUTE ROTATION
9	1	970121289	SWITCH, PUSH BUTTON, HOOD PIN, DISC
11	1	970179819	PIN, CHUTE ROTATION LOCK, .50 IN DIA, WITH .81 IN COLLAR,
12	1	970184568	SAFETY SWITCH CAP, RUBBER, .625-32, BLACK, HOOD PIN SWITCH, ALL CHIPPERS
13	1	970207765	SPRING-COMPRESSION, 316 SS, 2.25IN L, .065IN DIA, .72 OD, 11.00 LB/IN, SOLID LENGTH/.60IN
14	17	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
15	10	970121424	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 2.00 IN L, GR 8, PLATED 18,
16	2	970196094	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, .75 IN L, GR 8, W/PATCH LOCK,
17	7	020041206	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.00 IN L, GR 8, PLATED/PLATED,
18	1	020391006	NUT, STEEL, HEX OVALATED, .25-20 UNC, GR C YZ8, PLATED 18,
19	4	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
20	1	970185167	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 9.50 IN L, GR 8, PLATED,
21	1	020031008	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 1.50 IN L, GR 5, PLATED,
22	1	970122490	PADLOCK, LONG NECK, KEYED, .25 IN DIA SHACKLE, 1.50 IN W, .81 IN X 2.44 IN CLEARANCE,
23	1	970185155	LATCH, SAFETY SWITCH, INSPECTION/DISCHARGE COVER, DC-912A
24	44	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
25	3	020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
26	4	970137805	WASHER, STEEL, FLAT, .25 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
27	3	040050021	GREASE FITTING, STRAIGHT ZERK, .25-28 SELF TAPPING,
33	4	020049206	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.00 IN L, GR 8, PLATED 18,
34	7	970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
35	3	020041112	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 2.50 IN L, GR 8, PLATED,
36	2	020301102	NUT, STEEL, HEX, .31-18 UNC,
37	2	020041110	CAPSCREW, STEEL, HEX HEAD, .31-16 UNC, 2.00 IN L, GR 8, PLATED,
38	1	970288049	WELDMENT, COVER, DISCHARGE HYDRAULIC ROTATION,
39	3	020391105	NUT, STEEL, TOP LOCK, .31-18 UNC, GR C, PLATED 18,
40	1	970288012	ACCESS COVER, FORMED, ROTATIONAL DISCHARGE CHUTE, HAND CRANK AND HYDRAULIC
42	1	970121968	HYDRAULIC MOTOR, ROLLER STATOR, 15.50 CU IN, RH, 1.00 IN KEYED SHAFT, 4 BOLT
43	1	970287976	SPROCKET, ROLLER CHAIN, .50 IN PITCH, NO 40, 17 TEETH, 1.00 BORE WITH KEYWAY
45	1	970227270	CHAIN ASSEMBLY, 5.29 FT, WITH CONNECTOR LINK, HAND CRANK CHUTE ROTATION
46	1	970156367	SPROCKET, ROLLER CHAIN, .50 IN PITCH, NO 40, 120 TEETH,
47	1	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
48	1	970116696	HYDRAULIC VALVE, MANUAL, 1 SPOOL, 2000 PSI, 12 GPM, OPEN CENTER, CHECK VALVE,
49	1	035200209	HYDRAULIC VALVE HANDLE KIT, 4.75 IN LG, M8X1.25 THREAD,
50	1	970288258	PLACARD, ENGLISH, INSTRUCTION, HYDRAULIC CHUTE ROTATION, 6.00 IN W X 2.00 IN H,
53	1	970228799	DECAL, DC 912A, BLACK,
55	1	970229476	DECAL, DC 912A, BLACK, STREET SIDE,
57	1	970228800	DECAL, SWOOSH W/ WALKING A, BLACK, STREET SIDE,
	1	970228809	DECAL, SWOOSH W/ WALKING A, YELLOW "SWOOSH" BLACK "A", STREET SIDE,
58	1	970228801	DECAL, SWOOSH W/ WALKING A, BLACK, CURB SIDE,
	1	970228811	DECAL, SWOOSH W/ WALKING A, YELLOW "SWOOSH" BLACK "A", CURB SIDE,
59	1	970177842	ASSEMBLY, HEIGHT ADJ CHUTE, FOR DISC STYLE
60	4	020041104	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, .75 IN L, GR 8, PLATED,

POWER SYSTEM ASSEMBLY



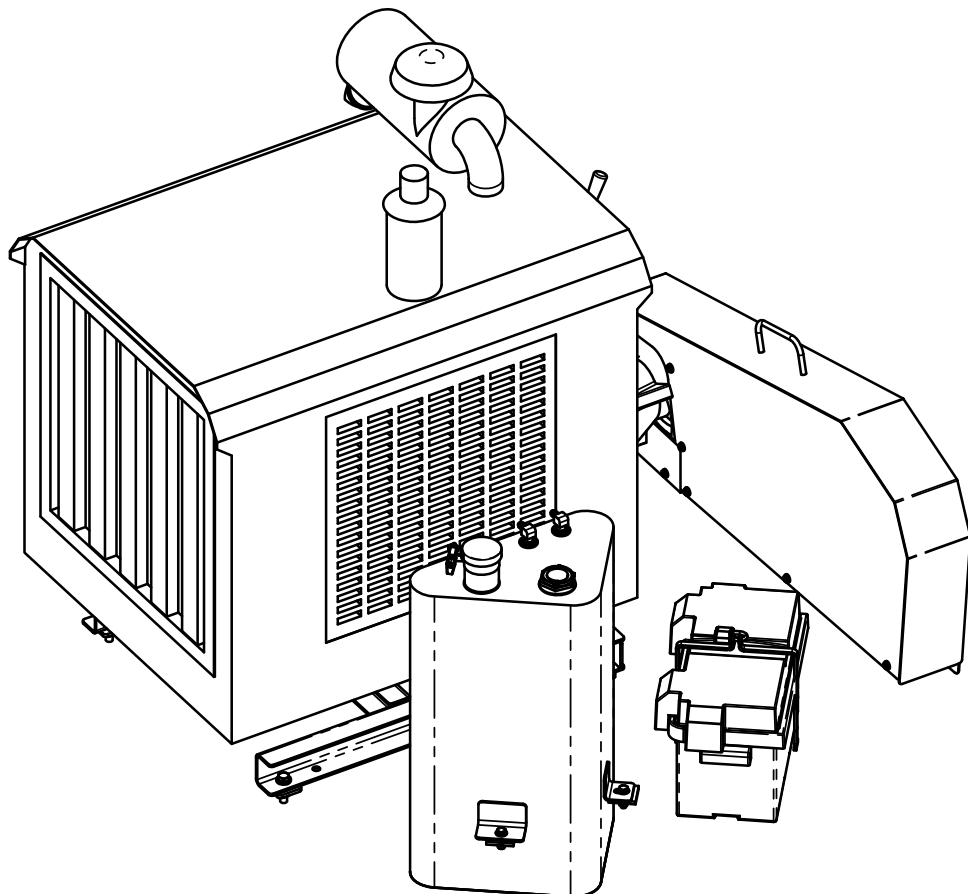
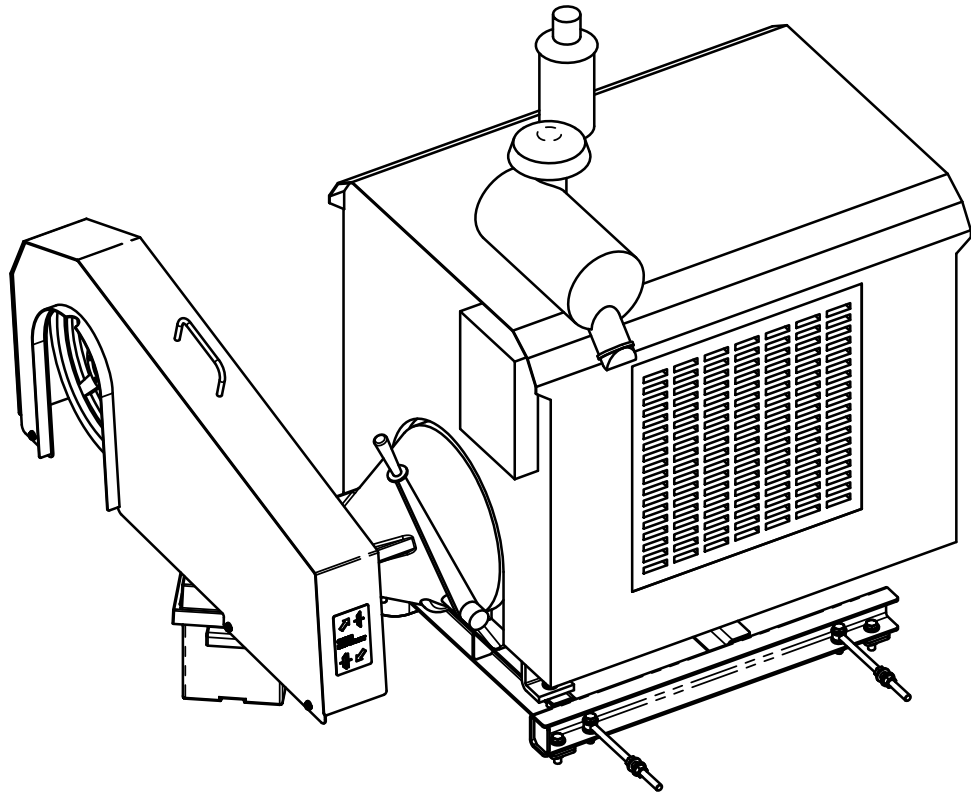
FOR REFERENCE ONLY
SEE ITEM #1:



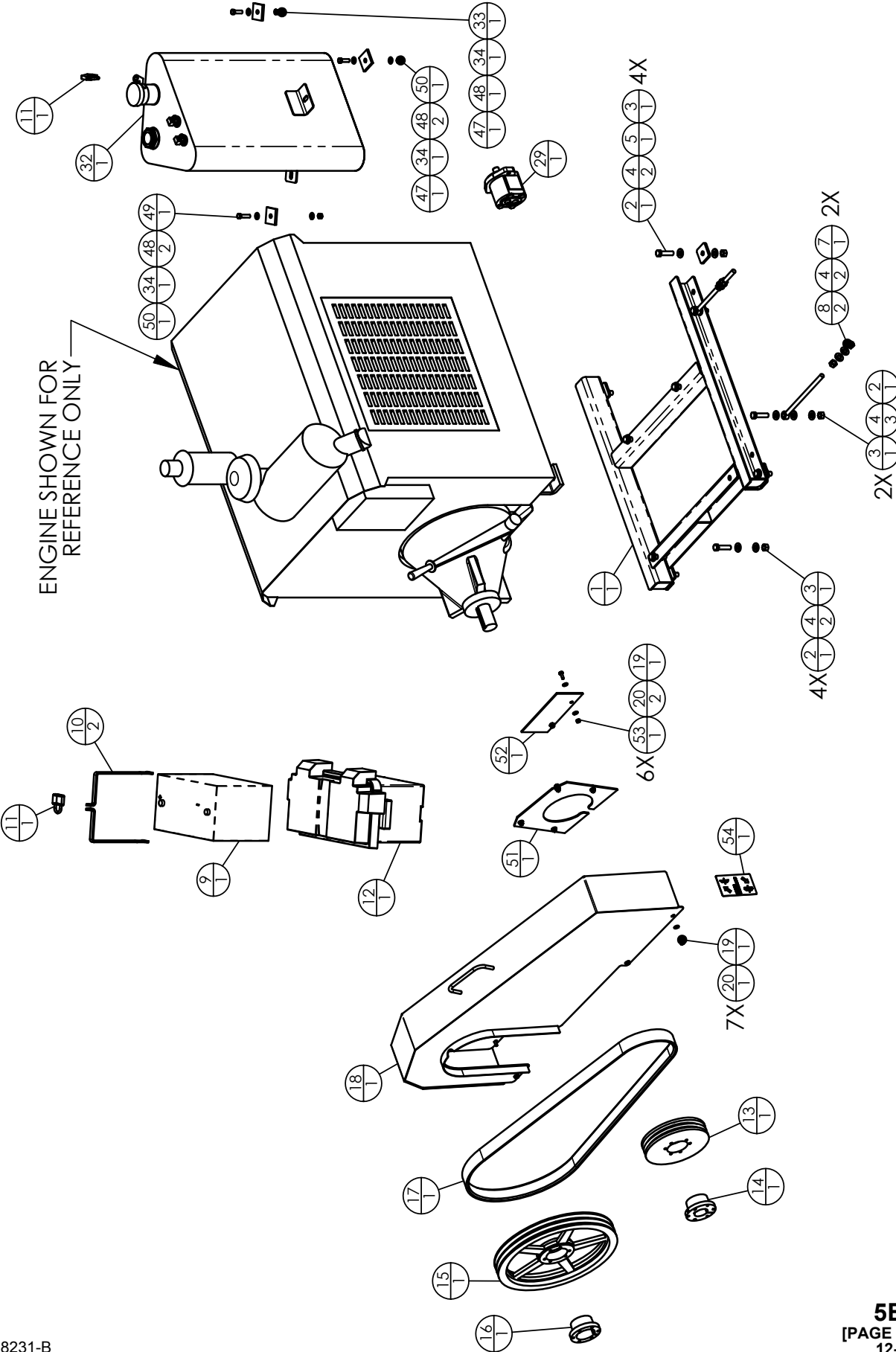
POWER SYSTEM ASSEMBLY

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970181463	POWER SYSTEM;49 HP TIER 3;KUBOTA;WHITE;WITH AUX DRIVE;DC912A;WITH SPARK
		970181465	POWER SYSTEM;49 HP TIER 3;KUBOTA;ORANGE;WITH AUX DRIVE;DC912A;WITH SPARK
		970181467	POWER SYSTEM;49 HP TIER 3;KUBOTA;RED;WITH AUX DRIVE;DC912A;WITH SPARK
		970181473	POWER SYSTEM;49 HP TIER 3;KUBOTA;YELLOW;WITH AUX DRIVE;DC912A;WITH SPARK
		970181475	POWER SYSTEM;49 HP TIER 3;KUBOTA;CONSTRUCTION YELLOW;WITH AUX
		970181476	POWER SYSTEM;70 HP GAS;FORD;WHITE;WITH AUX DRIVE;DC912A;WITH SPARK
		970181477	POWER SYSTEM;70 HP GAS;FORD;ORANGE;WITH AUX DRIVE;DC912A;WITH SPARK
		970181476	POWER SYSTEM;70 HP GAS;FORD;WHITE;WITH AUX DRIVE;DC912A;WITH SPARK
		970181478	POWER SYSTEM;49 HP TIER 3;PERKINS;WHITE;WITH AUX DRIVE;DC912A;WITH SPARK
1	1	REF. ONLY	SEE ENGINE MANUAL SUPPLIED WITH CHIPPER
2	6	020041427	CAPSCREW, STEEL, HEX HEAD, 2.00 IN L, IN DIA, .50-13 UNC, GR 8, PLATED,
3	6	020391404	NUT, STEEL, HEX, OVALATED LOCK, .50-13 UNC
4	18	020401405	WASHER, STEEL, SAE, .50 IN DIA, THRU-HARD HIGH STRENGTH, PLATED
5	4	970116595	PLATE, ENGINE SUPPORT, 2.00 IN W, 2.00 IN H, 7 GA, .563 HOLE IN CENTER
7	2	970122657	ROD EYE, THREADED, STEEL, .50 DIA EYE, 9.50 IN L BASE TO CENTER, .50 IN DIA, .50-13
8	4	020301401	NUT, STEEL, HEX, .50 IN DIA, .50-13 UNC, PLATED
9	1	970116580	BATTERY, 12 VDC, DIESEL
10	2	970116627	BAR, FORMED, BATTERY BOX, LOCK
11	1	970116628	PADLOCK, KEYED, .25 IN DIA SHACKLE, 1.50 IN W, .81 IN X .81 IN CLEARANCE, BRASS,
12	1	970113585	BOX, BATTERY BOX, PLASTIC, 9.00 IN H, 9.50 IN W, 17.00 IN L, PLASTIC, DIESEL,
13	1	970116508	SHEAVE, SK, 7.4, 4-GROOVE,
14	1	970116509	BUSHING, SK, 1.75 BORE,
15	1	970179445	PULLEY, SK, 2B, 15.4 IN,
16	1	970159505	BUSHING, SK, 2.44 IN BORE, SHALLOW KEY SET
17	1	970179447	BELT, KEVLAR, 2V, B90,
18	1	970177742	GUARD, DRIVE, DC912A
19	7	020031004	CAPSCREW, STEEL, HEX HEAD, .75 IN L, .25-20 UNC, GR 5, PLATED
20	11	970137805	WASHER, STEEL, FLAT, .25 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
21	1	970121242	TERMINAL, 2/0 BATTERY, POSITIVE,
22	1	970121296	CAP, PLASTIC, RED, POSITIVE TERMINAL,
23	5	970130177	BATTERY CABLE, 2/0, POSITIVE
24	1	970121243	TERMINAL, 2/0 BATTERY, NEGATIVE,
25	5	970130178	BATTERY CABLE, 2/0, NEGATIVE
26	1	970121244	LUG, HEAVY WALL, 2/0 WIRE, POSITIVE,
27	1	970121248	LUG, HEAVY WALL, 2/0 WIRE, POSITIVE,
28	10	970149311	LOOM, 3/4 IN DIA, WIRE LOOM, PLASTIC,
29	1	970183606	HYDRAULIC PUMP, GEAR TYPE, .30 CU IN, RH, 9 TOOTH SPLINE 16-32, SAE TYPE A MOUNT
30	1	027400064	ADAPTER, STRAIGHT, -10 SAE, -8 JIC
31	1	027420065	ADAPTER, 90 DEG ELBOW, -12 SAE, -12 JIC
32	1	970177653	RESERVOIR, DIESEL, STEEL, 15 GAL, FUEL GAUGE, FLAT TOP, TRIANGULAR, 23.00 IN H
33	3	970157334	NUT, STEEL, RIVET, .38 IN ID, .38-16, OPEN END KNURLED, .53 IN OD
34	3	970122462	RUBBER, .250 IN T, 2.00 IN W, 2.00 IN L, RUBBER SHOCK ISO TANKS, 60 DUROMETER
35	3	970147336	DIESEL, FUEL,
36	10	970147349	HOSE, .31 IN ID, LOW PERMEATION FUEL LINE, CARB 2006 APPROVED,
38	2	970147717	VINYL, CLEAR, TUBE, .38 IN ID,
39	3	970122097	FITTING, HYDRAULIC 4290-5-6 90 DEG MALE PIPE
43	5	970179959	CLAMP, HOSE, WORM GEAR, .31 MAX ID, .13 MIN ID, .31 IN WIDE, STAINLESS STEEL,
47	3	020041207	CAPSCREW, STEEL, HEX HEAD, 1.25 IN L, .38 IN DIA, .38-16 UNC, GR 8, PLATED,
48	3	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED,
50	1	970185382	SHIELD PTO DRIVE, RUBBER, DRIVE GUARD, DC-912A
51	2	020301001	NUT, STEEL, HEX, .25 IN DIA, .25-20 UNC, PLATED,

POWER SYSTEM, DC912A, 48 HP TIER 3 CATERPILLAR OR PERKINS ENGINE



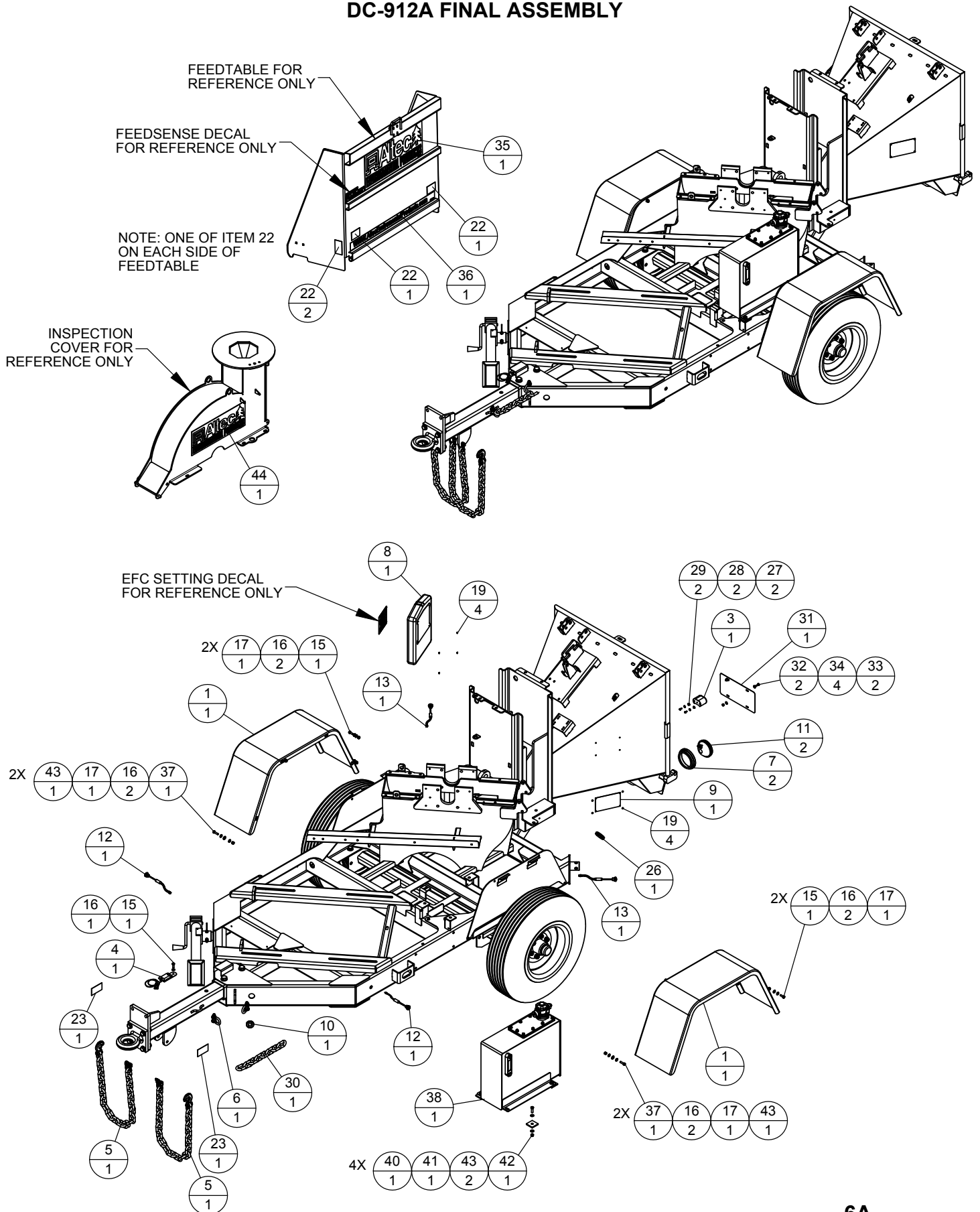
POWER SYSTEM, DC912A, 48 HP TIER 3 CATERPILLAR OR PERKINS ENGINE



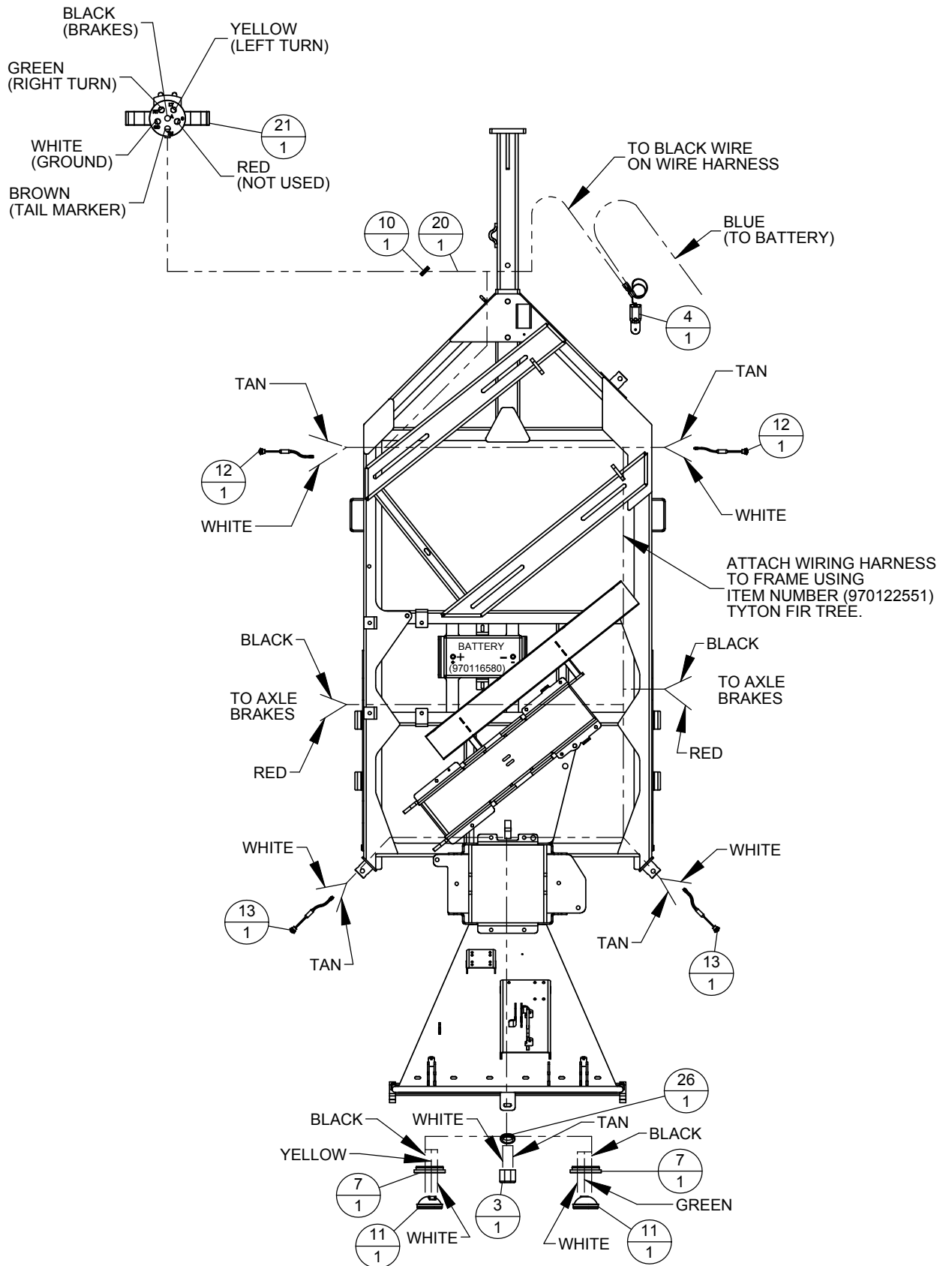
POWER SYSTEM, DC912A, 48 HP TIER 3 CATERPILLAR OR PERKINS ENGINE

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970277471	POWER SYSTEM, 48 HP TIER 3, CATERPILLAR OR PERKINS, DC912A
1	1	970282597	SUPPORT, ENGINE MOUNT, CATERPILLAR 48 HP, DC912A
2	10	020041427	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 2.00 IN L, GR 8, PLATED 18,
3	10	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
4	26	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
5	4	970116595	PLATE, ENGINE SUPPORT, 2.00 IN W, 2.00 IN H, 7 GA, .563 HOLE IN CENTER
7	2	970122657	ROD EYE THREADED, STEEL, .50 DIA EYE, .50-13 UNC, 9.50 IN L BASE TO CENTER, GR 5,
8	4	020301401	NUT, STEEL, HEX, .50-13 UNC,
9	1	970116580	BATTERY, 12 VDC, BCI GROUP 31, 1030 CCA, DIESEL, TOP POST
10	2	970116627	BAR, FORMED, BATTERY BOX, LOCK
11	2	970116628	PADLOCK, KEYED, .25 IN DIA SHACKLE, 1.50 IN W, .81 IN X .81 IN CLEARANCE, BRASS,
12	1	970113585	BOX, BATTERY BOX, PLASTIC, 9.00 IN H, 9.50 IN W, 17.00 IN L, PLASTIC, DIESEL,
13	1	970182712	SHEAVE, B, SK, 2 GROOVE, 8.00, 2B80SK
14	1	970116509	BUSHING, QD, SK, 1.75 IN DIA, .38 IN X .19 IN KEYWAY,
15	1	970179445	SHEAVE, B, SK, 2 GROOVE, 15.40, 2B154SK
16	1	970159505	BUSHING, QD, SK, 2.44 IN DIA, SHALLOW KEYWAY,
17	1	970179447	BELT, B, KEVLAR, 2 GROOVE, 90 IN, 2/B90
18	1	970177742	GUARD, DRIVE, DC912A
19	13	020031004	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, .75 IN L, GR 5, PLATED,
20	19	970137805	WASHER, STEEL, FLAT, .25 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
21	1	970121242	TERMINAL, 2/0 CABLE, POSITIVE, BATTERY END,
22	1	970121296	CAP, PLASTIC, RED, POSITIVE TERMINAL,
23	4 FT	970130177	BATTERY CABLE, 2/0, POSITIVE
24	1	970121243	TERMINAL, 2/0 CABLE, NEGATIVE, BATTERY END,
25	3 FT	970130178	BATTERY CABLE, 2/0, NEGATIVE
26	1	970121244	LUG, .38 IN DIA, HEAVY WALL, 2/0 WIRE, POSITIVE,
27	1	970121248	LUG, .50 IN DIA, HEAVY WALL, 2/0 WIRE, NEGATIVE,
28	10 FT	970149311	LOOM, 3/4 IN DIA, WIRE LOOM, PLASTIC,
29	1	970283308	HYDRAULIC PUMP, GEAR TYPE, .61 CU IN, RH, REAR PORTS, .75 IN DIA, 11 TOOTH SPLINE
30	1	027400064	ADAPTER, STRAIGHT, -10 SAE, -8 JIC
31	1	027420065	ADAPTER, 90 DEG ELBOW, -12 SAE, -12 JIC
32	1	970177653	TANK, FUEL, DC-912A, ASSEMBLED,
33	1	970157334	NUT, STEEL, RIVET, .38-16 UNC, OPEN END KNURLED, .53 IN OD
34	3	970122462	RUBBER, .250 IN T, 2.00 IN W, 2.00 IN L, RUBBER SHOCK ISO TANKS, 60 DUROMETER
36	10 FT	970147349	HOSE, .31 IN ID, LOW PERMEATION FUEL LINE, CARB 2006 APPROVED,
43	4	970179959	CLAMP, HOSE, WORM GEAR, .31 MAX ID, .13 MIN ID, .31 IN WIDE, STAINLESS STEEL,
47	2	020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
48	5	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
49	1	020041208	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.50 IN L, GR 8, PLATED 18,
50	2	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
51	1	970185382	SHIELD PTO DRIVE, RUBBER, DRIVE GUARD, DC-912A
52	1	970122470	GUARD, RUBBER DEUTZ BELTGUARD
53	6	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
54	1	970220771	PLACARD, ENGLISH, INSRUCTION, CLUTCH ENGAGEMENT, 3.00 IN W X 5.00 IN H,

DC-912A FINAL ASSEMBLY



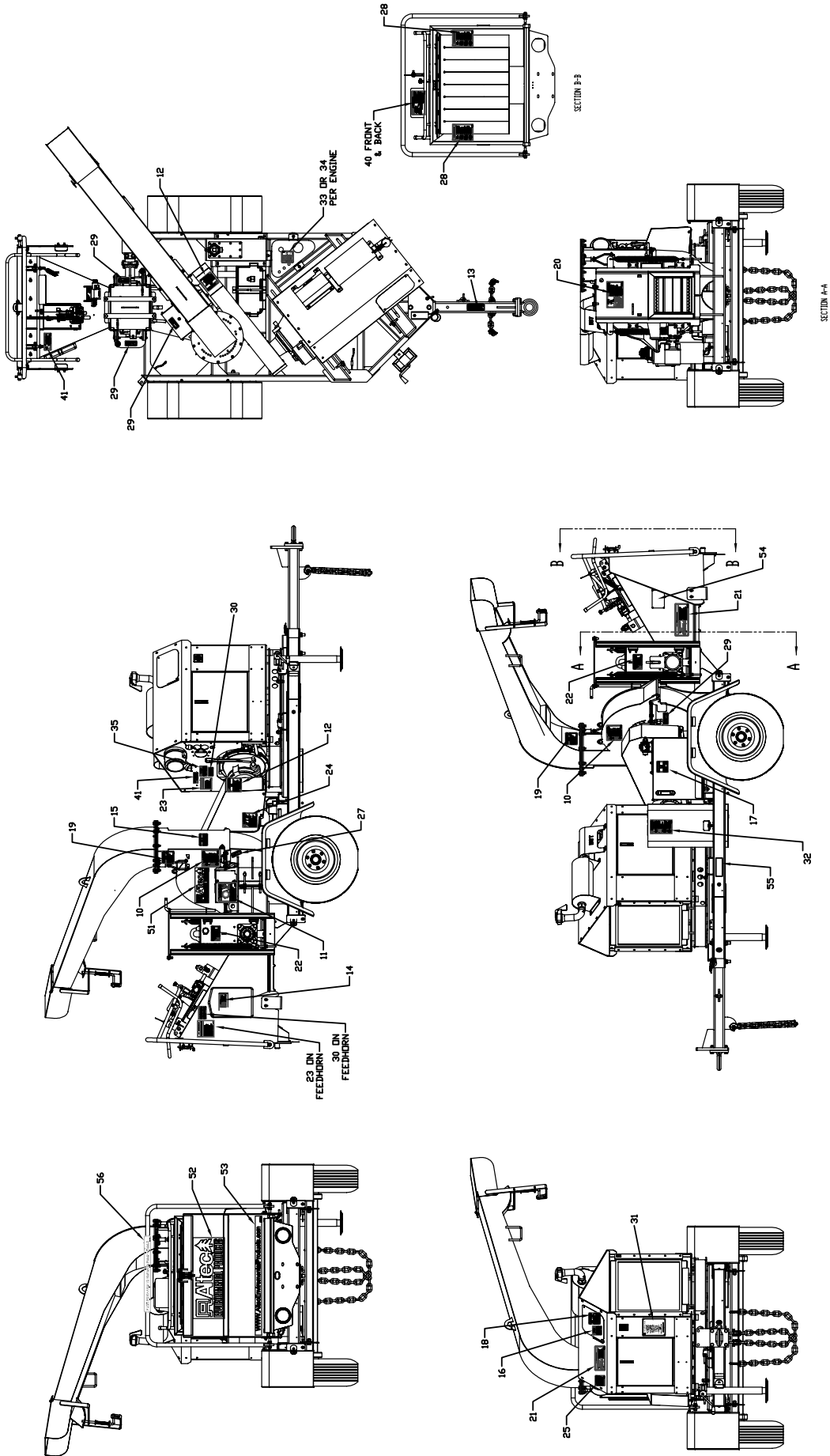
DC-912A FINAL ASSEMBLY



DC-912A FINAL ASSEMBLY

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180450	ASSEMBLY;FINAL;37 IN W FEED HORN;DC912A
1	2	970116496	FENDER, ALUMINUM, WHEEL, 12 IN WIDE, DIAMOND TREAD PLATE
3	1	970185104	LIGHT, LICENSE TAG, 1.63 IN T, 1.75 IN W MOUNT, 12VDC, GRAY,
4	1	970158259	SWITCH, BREAK AWAY, WITH CONNECTOR, MATE BAGGED,
5	2	970116608	CHAIN, .38 IN DIA, 42 IN L, GRADE 43, CLEVIS SLIP HOOK WITH LATCH,
6	2	023421068	SHACKLE, .38 IN, 1.5 TON, SCREW PIN TYPE
7	2	970190038	RUBBER, GROMMET, 5.38 IN OD, 1.06 IN T, 4 IN LIGHTS,
8	1	970122573	HOLDER, MANUAL, INSTRUCTION, PLASTIC,
9	1	970122677	PLATE, ENGLISH, INFORMATION, HEAD, SERIAL NUMBER,
10	1	970116626	GROMMET, RUBBER, 1.00 IN ID, 1.375 IN OD, .500 IN T, BLACK,
11	2	970192098	LIGHT, STOP TURN TAIL, 4.31 IN DIA, 12 VDC, RED, LED, ROUND,
12	2	970190075	LIGHT, INDICATOR, 1.80 IN H, .75 IN DIA, 12.8 VDC, AMBER, LED,
13	2	970190078	LIGHT, INDICATOR, 1.80 IN H, .75 IN DIA, 12.8 VDC, RED, LED,
15	9	020041106	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 1.00 IN L, GR 8, PLATED,
16	17	970116551	WASHER, STEEL, FLAT, .31 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
17	8	020391105	NUT, STEEL, TOP LOCK, .31-18 UNC, GR C, PLATED 18,
19	8	980039825	RIVET, ALUMINUM, AB6-4A, .13-.25 IN GRIP RANGE, .19 IN DIA,
20	1	970190255	ELECTRICAL HARNESS, 6 COND, DC-912A,
21	1	970116579	CONNECTOR, 6-WAY, TRAILER SIDE, PLUG,
22	4	970063824	REFLECTOR, 2.00 IN H, 3.50 IN L, RED, REFLECTIVE TAPE,
23	2	970063845	REFLECTOR, 2.00 IN H, 3.50 IN L, AMBER, REFLECTIVE TAPE,
24	2	970122658	TAG, AEP KEYCHAIN, PLASTIC, 5.00 IN L, 1.50 IN W, .19 IN T,
25	17	970122551	TYTON FIR TREE, HELLERMAN, .25 IN DIA, 150-31090,
26	1	970186539	RUBBER, GROMMET, 0.50 IN T, 1.75 IN ID, 11GA FIT, 2.00 IN PANEL ID
27	2	020120808	MACHINE SCREW, PAN HEAD SLOTTED, #10-24 UNC, .50 IN L, PLATED,
28	2	020400808	WASHER, STEEL, FLAT, #10, GR8, PLATED,
29	2	020390804	NUT, STEEL, KEP, #10-24 UNC, PLATED,
30	1	970221010	CHAIN, 11 IN L, .38 IN DIA, 8 LINKS, GRADE 70, .38 SHACKLE, .38 SHACKLE,
32	2	020031004	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, .75 IN L, GR 5, PLATED,
33	2	020391011	NUT, STEEL, HEX OVALATED, .25-20 UNC, GR C, PLATED 18,
34	4	970137805	WASHER, STEEL, FLAT, .25 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
35	1	970116665	PLACARD, ENGLISH, AEP LOGO, FEED TABLE, YELLOW "A" BLACK LETTERS, 8 IN W X 23 IN L,
36	1	970116666	PLACARD, ENGLISH, WEBSITE, FEED TABLE,
37	4	970121347	CAPSCREW, STEEL, HEX HEAD, .31-18 UNC, 1.25 IN L, GR 8, PLATED,
38	1	970156811	RESERVOIR, HYDRAULIC, STEEL, 8 GAL, INTERNAL, INTERNAL, TUBE, 20.00 IN L, 6.50 IN W,
39	9	970149432	HYDRAULIC OIL, AW ISO 46,
40	4	970122462	RUBBER, .250 IN T, 2.00 IN W, 2.00 IN L, RUBBER SHOCK ISO TANKS, 60 DUROMETER
41	4	020041207	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.25 IN L, GR 8, PLATED 18,
42	4	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,
43	12	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
44	1	970116662	PLACARD;ENGLISH;AEP LOGO;6 IN W X 17 IN L;YELLOW "A" BLACK LETTERS;;

PLACARD ORIENTATION



PLACARD ORIENTATION

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970191095	ASSEMBLY,PLACARD,ORIENTATION,DC-912A
1	1	970176549	PLACARD KIT, ENGLISH, DRUM AND DISC CHIPPERS,
2	1	970176550	PLACARD KIT, ENGLISH, PANIC BAR,
51	1	970116665	PLACARD, ENGLISH, ALTEC LOGO, FEED TABLE, YELLOW "A" BLACK LETTERS, 8 IN W X 23
52	1	970116662	PLACARD, ENGLISH, ALTEC LOGO, 6 IN W X 17 IN L, YELLOW "A" BLACK LETTERS,
53	1	970116666	PLACARD, ENGLISH, WEBSITE, FEED TABLE,
54	1	970122677	PLATE, ENGLISH, INFORMATION, HEAD, SERIAL NUMBER,
55	1	970122676	PLATE, ENGLISH, SERIAL, GVWR,
56	1	970116644	PLACARD,ENGLISH,OPERATION,FEED CONTROL HANDLE,PUSH FORWARD TO REVERSE

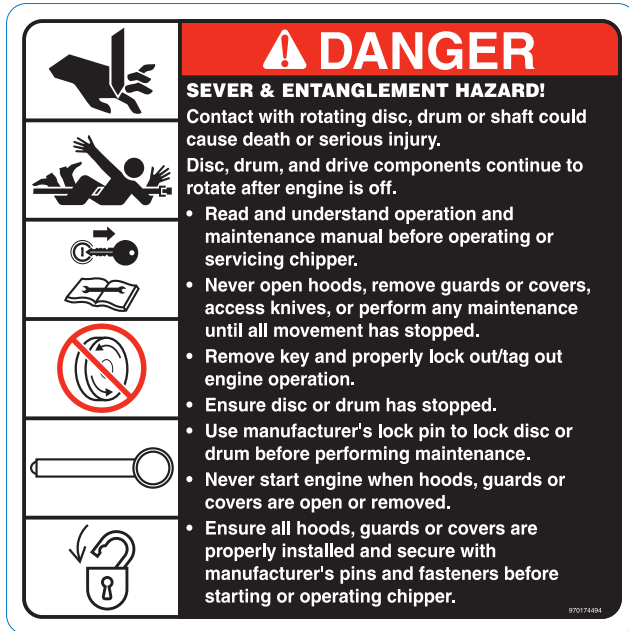
PLACARD ORIENTATION

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970176549	PLACARD KIT, ENGLISH, DRUM AND DISC CHIPPER
10	2	970174494	PLACARD, ENGLISH, DANGER, SEVER AND ENTANGLEMENT, HAZARD,
11	1	970174727	PLACARD, ENGLISH, WARNING, ROTATING SHAFT,
12	2	970176501	PLACARD, ENGLISH, WARNING, ENTANGLEMENT HAZARD, DRIVE BELTS,
13	1	970174780	PLACARD, ENGLISH, WARNING, TOWING HAZARDS,
14	1	970174545	PLACARD, ENGLISH, CAUTION, READ AND UNDERSTAND, 6.00 IN L X 4.25 IN W
15	1	970174484	PLACARD, ENGLISH, NOTICE, OPERATION AND MAINTENANCE, 6.25 IN L X 2.75 IN W,
16	1	970116651	PLACARD, ENGLISH, NOTICE, ENGINE, EQUIPMENT DAMAGE HAZARD,
17	1	970174568	PLACARD, ENGLISH, NOTICE, HYDRAULIC OIL ONLY,
18	1	970116652	PLACARD, ENGLISH, WARNING, ENGINE, BURN HAZARD,
19	2	970174499	PLACARD, ENGLISH, WARNING, FLYING OBJECT HAZARD,
20	1	970174486	PLACARD, ENGLISH, DANGER, CRUSH HAZARD, SLIDEBOX,
21	2	970174552	PLACARD, ENGLISH, DANGER, ELECTROCUTION HAZARD,
22	2	970174489	PLACARD, ENGLISH, WARNING, SLIDEBOX CRUSH AND SEVER,
23	2	970174538	PLACARD, ENGLISH, DANGER, OPERATION BY QUALIFIED PERSON,
24	1	970116649	PLACARD, ENGLISH, WARNING, EXPLOSION HAZARD, BATTERY,
25	1	970116653	PLACARD, ENGLISH, WARNING, ENGINE, CALIFORNIA PROPOSITION G5,
26	1	970116640	PLACARD, ENGLISH, WARNING, DISC HOUSING, SEVER HAZARD,
28	2	970174493	PLACARD, ENGLISH, DANGER, SEVER AND CRUSH HAZARD, INFEED CHUTE,
29	4	970116642	PLACARD, ENGLISH, NOTICE, BEARINGS, LUBRICATE DAILY,
30	2	970176388	DANGER, SPANISH/FRENCH, OPERATION,
31	1	970122659	PLACARD, ENGLISH, WARNING, ENGINE, DO NOT REMOVE THIS TAG, ALTEC LABEL,
32	1	970116654	PLACARD, ENGLISH, WARNING, FUEL TANK, EXPLOSION & BURN HAZARD,
33	1	970174511	PLACARD, ENGLISH, NOTICE, DIESEL FUEL ONLY,
34	1	970176387	PLACARD, ENGLISH, NOTICE, GASOLINE ONLY,
35	1	970174543	PLACARD, ENGLISH, NOTICE, READ AND UNDERSTAND, OPERATION MANUAL,

PLACARD ORIENTATION

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970176550	PLACARD KIT,ENGLISH,PANIC BAR
40	2	970116658	PLACARD, DANGER, PANIC BAR, ENTANGLEMENT HAZARD,
41	2	970121130	PLACARD, ENGLISH, WARNING, PANIC BAR TEST,

Accident prevention signs



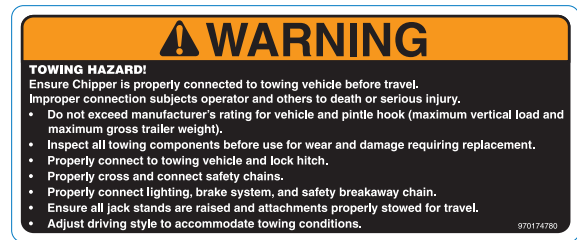
Item #10 / Part # 970174494
7½" Wide x 7½" Tall



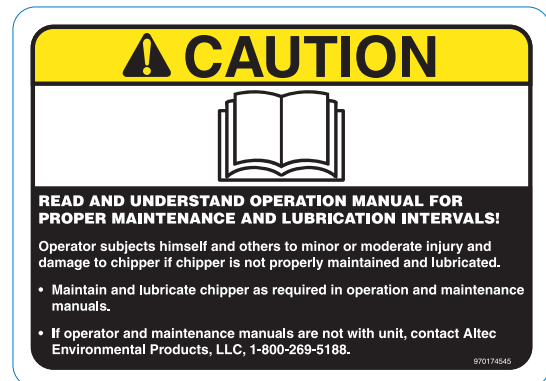
Item # 11 / Part # 970174727
5½" Wide x 5¼" Tall



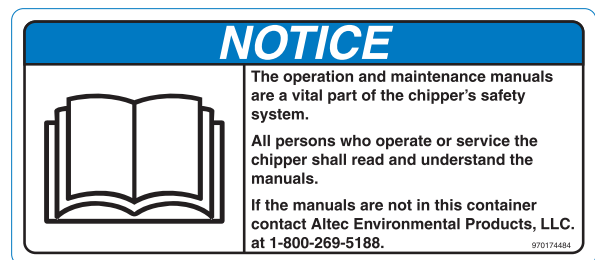
Item # 12 / Part # 970176501
4½" Wide x 4¾" Tall



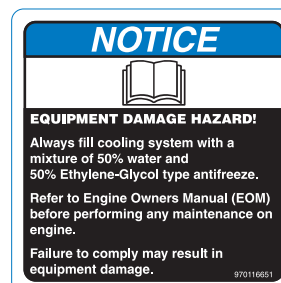
Item # 13 / Part # 970174780
5¾" Wide x 2¼" Tall



Item # 14 / Part # 970174545
5½" Wide x 3¾" Tall



Item # 15 / Part # 970174484
6" Wide x 2½" Tall

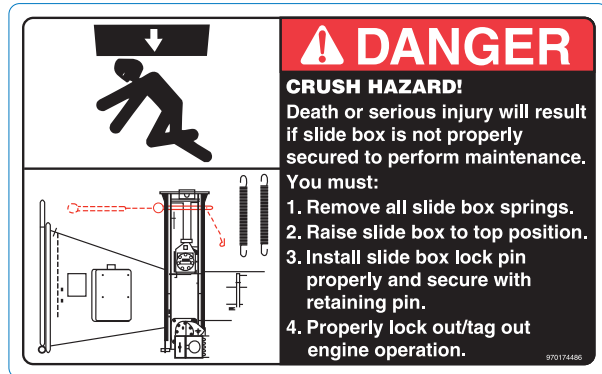


Item # 16 / Part # 970116651
2¾" Wide x 2¾" Tall

Accident prevention signs



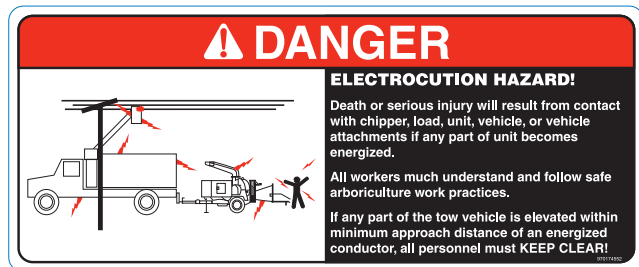
Item # 17 / Part # 970174568
2 $\frac{3}{4}$ " Wide x 2 $\frac{3}{4}$ " Tall



Item # 20 / Part # 970174486
6 $\frac{3}{4}$ " Wide x 4" Tall



Item # 18 / Part # 970116652
4 $\frac{1}{2}$ " Wide x 4 $\frac{1}{2}$ " Tall



Item # 21 / Part # 970174552
4 $\frac{1}{2}$ " Wide x 4 $\frac{1}{2}$ " Tall



Item # 19 / Part # 970174499
4 $\frac{1}{2}$ " Wide x 4 $\frac{1}{2}$ " Tall

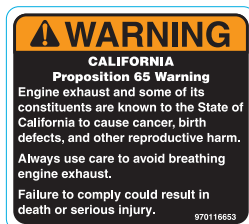


Item # 23 / Part # 970174538
6 $\frac{1}{2}$ " Wide x 6 $\frac{1}{2}$ " Tall

Accident prevention signs



Item # 24 / Part # 970116649
4½" Wide x 4½" Tall



Item # 25 / Part # 970116653
2¼" Wide x 2" Tall



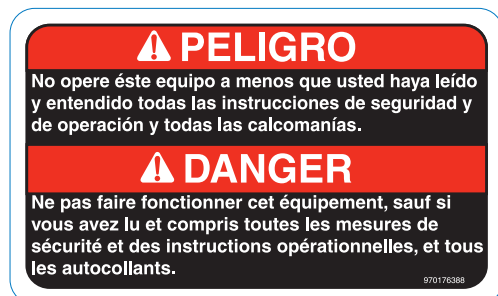
Item # 26 / Part # 970116640
3¾" Wide x 1¼" Tall



Item # 28 / Part # 970174493
7½" Wide x 9½" Tall



Item # 29 / Part # 970116642
2¾" Wide x 1" Tall



Item # 30 / Part # 970176388
4½" Wide x 2¾" Tall

WARNING

ALL DECALS AND PLACARDS SHALL BE PROPERLY POSITIONED ON THE EQUIPMENT, COMPLETELY LEGIBLE AND UNDERSTOOD BY ALL OPERATIONAL AND MECHANICAL PERSONNEL PRIOR TO OPERATION OR MAINTENANCE OF THIS EQUIPMENT. FAILURE TO INSURE THIS COULD RESULT IN EQUIPMENT DAMAGE, SERIOUS INJURY OR DEATH. TO OBTAIN DECAL & PLACARD PLACEMENT GUIDES OR REPLACEMENT DECALS & PLACARDS, CONTACT
ALTEC ENVIRONMENTAL PRODUCT
AT:
1-800-269-5188
OR ONLINE AT:
www.alteceenvironmentalproducts.com

DO NOT REMOVE THIS TAG

970122659

Item # 31 / Part # 970122659
5" Wide x 6¾" Tall



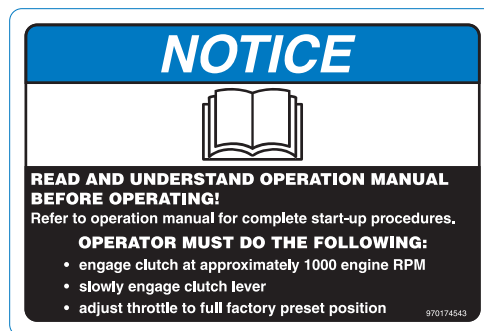
Item # 32 / Part # 970116654
4½" Wide x 7½" Tall



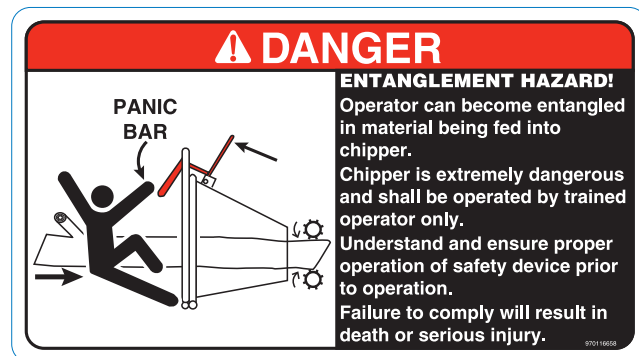
Item #33 Part # 970174511
2¾" Wide x 2¾" Tall



Item #34 Part # 970176387
2¾" Wide x 2¾" Tall



Item # 35 / Part #9701745433
4½" Wide x 3" Tall



Item #40 / Part # 970116658
8" Wide x 4½" Tall

Accident prevention signs



Item #41/ Part # 970121130
6½" Wide x 2½" Tall

PUSH FORWARD TO REVERSE FEED WHEELS

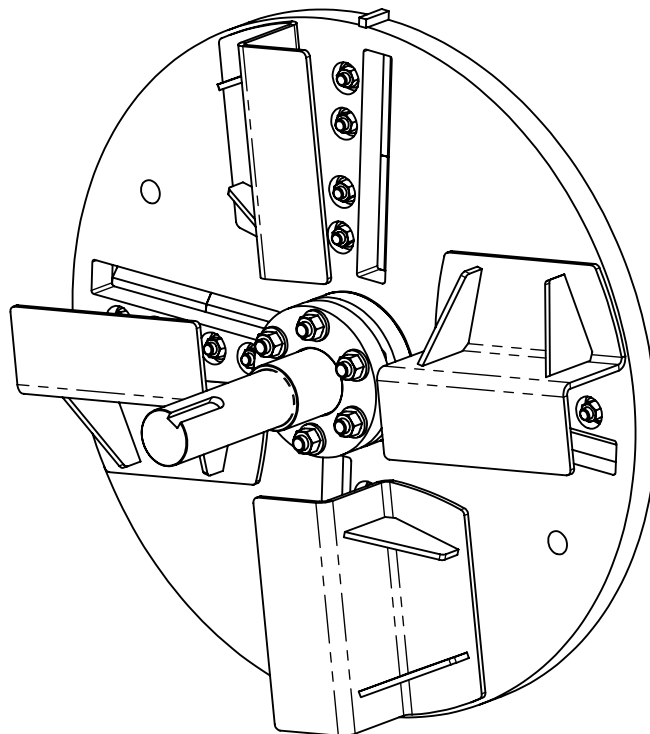
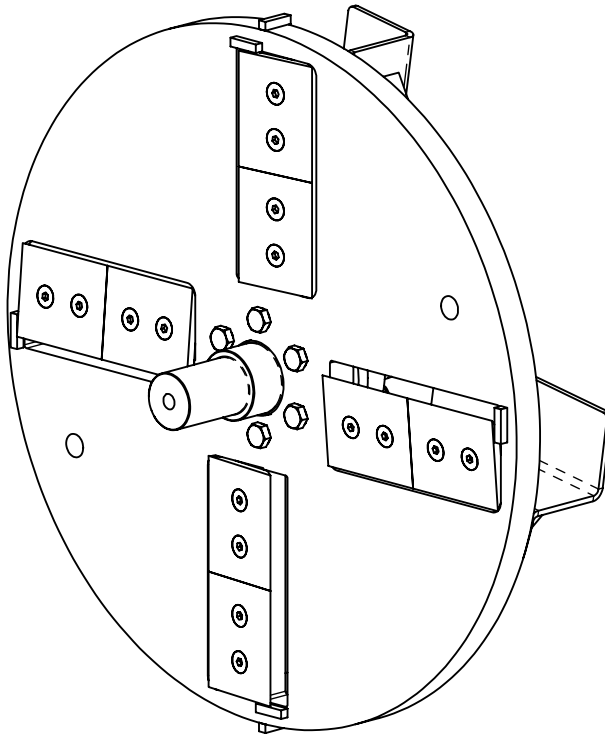
Item #56 / Part # 970116644
18" Wide x 1½" Tall

[illegible]

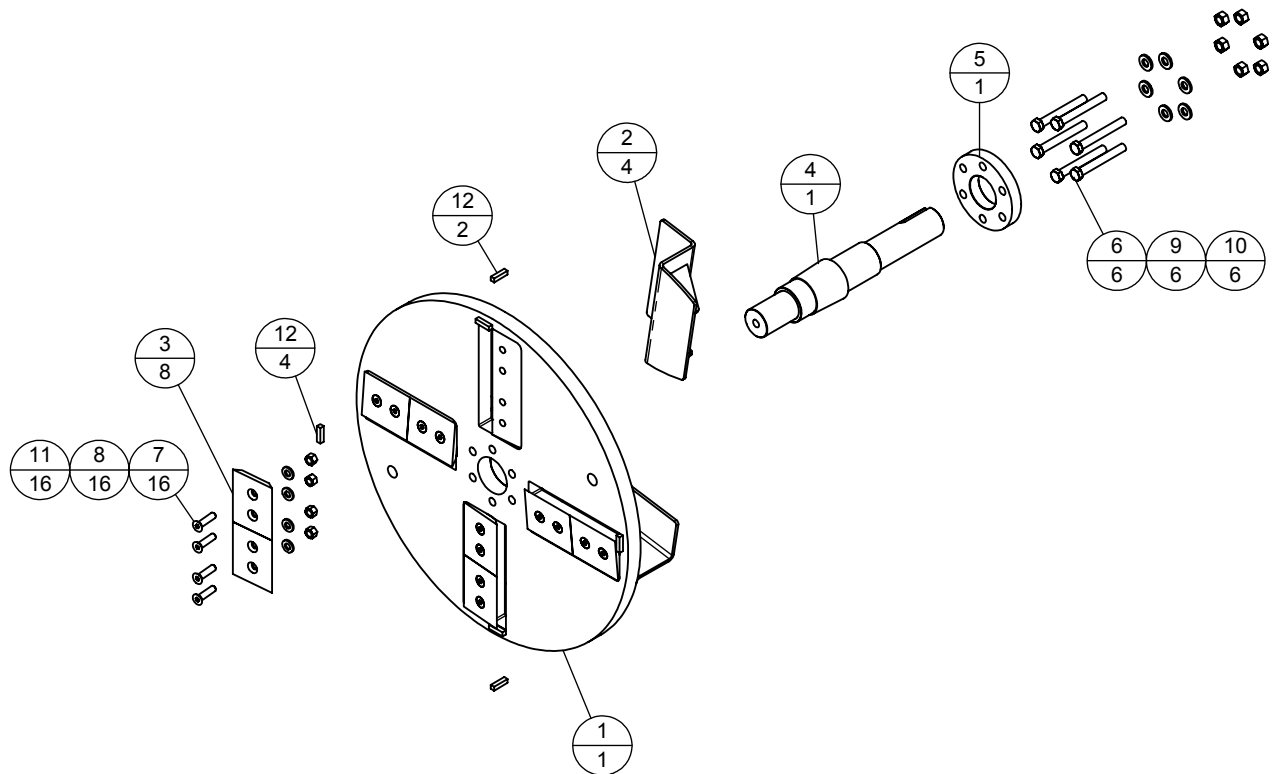
ELECTRONIC FEED CONTROL

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970116774	ASSEMBLY,ELECTRONIC FEED CONTROL (EFC),WITH REVERSING
1	1	970116581	GAUGE, FEED CONTROL, EFC CONTROL AUTO FEED
2	1	970116573	HYDRAULIC VALVE, MANIFOLD, SOLENIOD OPERATED, 3000 PSI, 10 GPM, DUMP VALVE
4	1	970115785	SENSOR, MAGNETIC PICKUP, .75-16 UNF, 1.79 IN LONG THREADS,
5	1	970116593	NUT, STEEL, HEX JAM, .75-16 UNF,
6	9	059833021	TERMINAL, BUTT SPLICE, 14-16 GA
7	10	970130186	WIRE, #16 GREEN
8	10	970130192	WIRE, 16 GA, WHITE,
9	10	970130190	WIRE, 16 GA, BLACK,
10	10	970130187	WIRE, #16 BROWN
11	2	970158258	SEAL, GREEN,
12	1	970158075	CONNECTOR, 2 CIRCUIT, WITH PLUG
13	2	970158073	TERMINAL, SOCKET, FEMALE,
14	2	879060072	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, 3.25 IN L, GR 5, PLATED,
15	4	970137805	WASHER, STEEL, FLAT, .250 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
16	2	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
17	1	970121218	CONNECTOR, BUTT CRIMP, 10-12 GA, HEAT

DISC ASSEMBLY 30.00IN DIA 4 SLOT 8 BLADE



DISC ASSEMBLY 30.00IN DIA 4 SLOT 8 BLADE

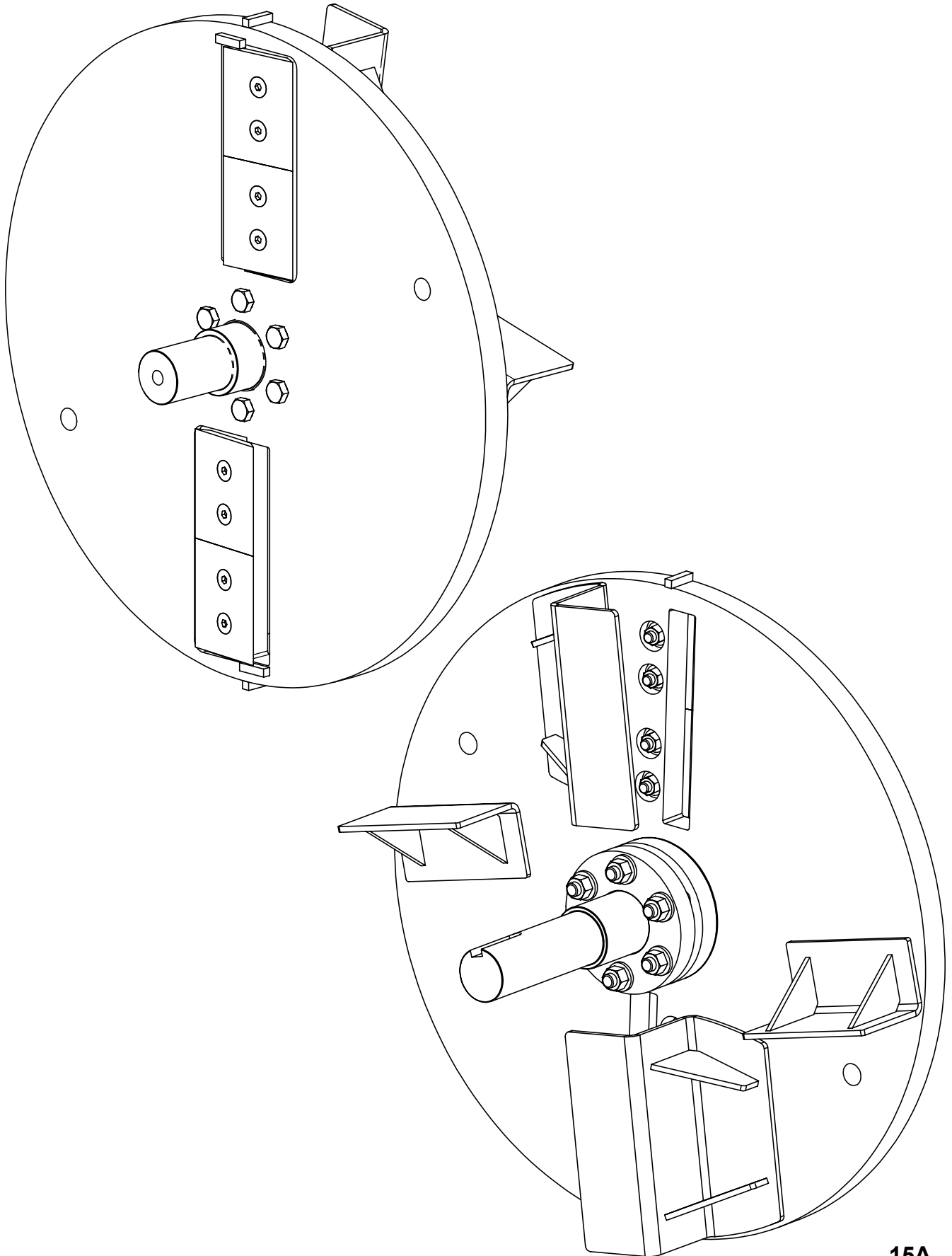


NOTE:
 1) TORQUE ITEM #6 "127 FT/LB"
 2) TORQUE ITEM #7 "70 FT/LB"

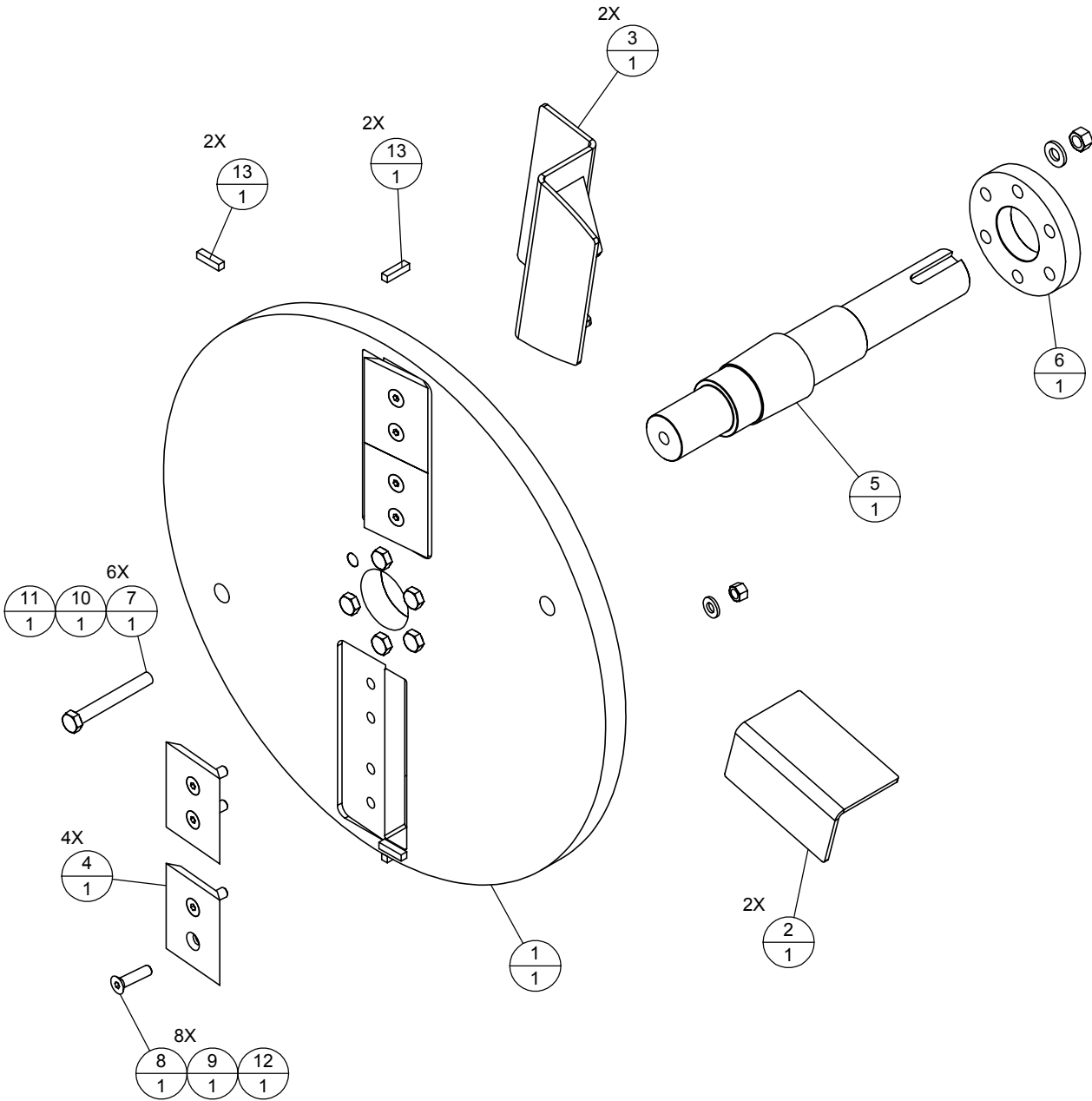
DISC ASSEMBLY 30.00IN DIA 4 SLOT 8 BLADE

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970215707	ASSEMBLY,DISC,8 BLADE,4 SLOT,DC-912A
1	1	970215580	WELDMENT, DISC, 30.00IN DIA, 8 BLADE/4 SLOT, DC-912A
2	4	970176971	WELDMENT, POWER PADDLE, DISC, DC-912A, W/O HOLES
3	8	970122275	BLADE, STEEL, DISC, MACHINED, DC912,
4	1	970175060	SHAFT, KEYED, 2.44IN ID BEARING, 19.563 IN L, 1.00 IN TAPER/FT, DC-912
5	1	970175554	DISC, DRAW RING, 6.50IN OD X 2.86IN ID, 5.38IN BOLT CIRCLE, DC-912A
6	6	970121359	CAPSCREW, STEEL, HEX HEAD, .63-11 UNC, 5.00 IN L, BOWMALLOY, PLATED 18,
7	16	970177382	CAPSCREW, STEEL, FLAT HEAD SOCKET, .50-13 UNC, 2.00 IN L, UNBRAKO,
8	16	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
9	6	020401706	WASHER, STEEL, FLAT, .63 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
10	6	020391609	NUT, STEEL, TOP LOCK, .63-11 UNC, GR C, PLATED 18,
11	16	020391411	NUT, STEEL, HEX, .50-13 UNC, NYLOCK, PLATED 18
12	6	970185433	KEY STOCK, .38IN X .38IN X 1.50IN L, CLEAN OUT, DC-912A

DISC ASSEMBLY, 30 IN DIA 2 SLOT



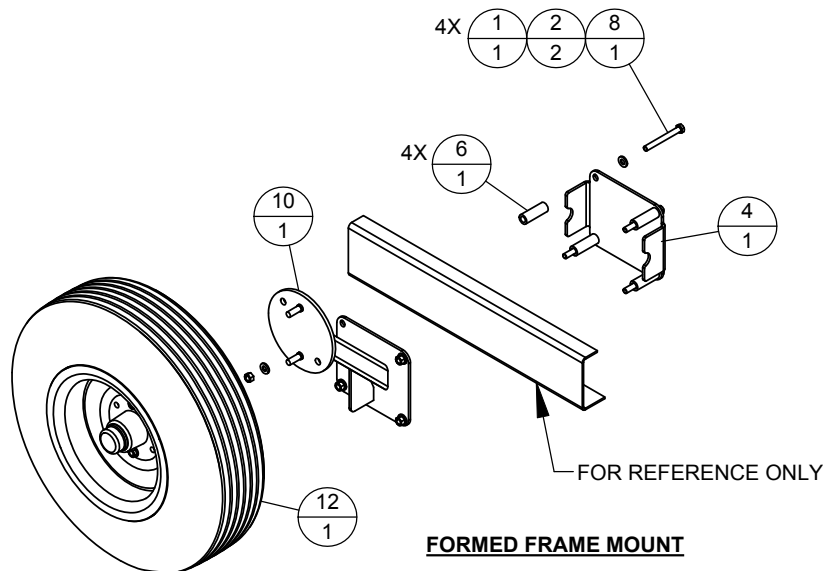
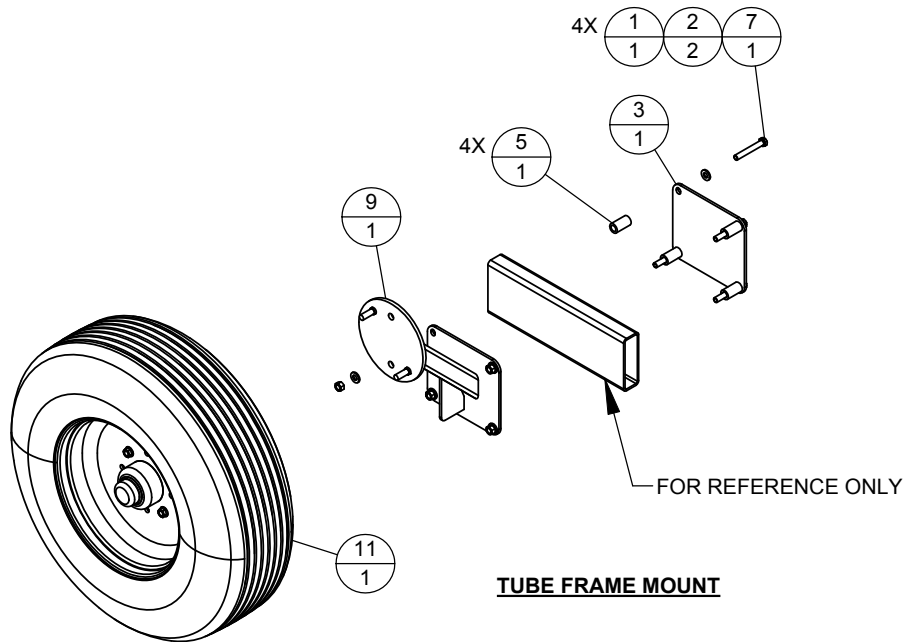
DISC ASSEMBLY,30 IN DIA 2 SLOT



DISC ASSEMBLY, 30 IN DIA, 2 SLOT

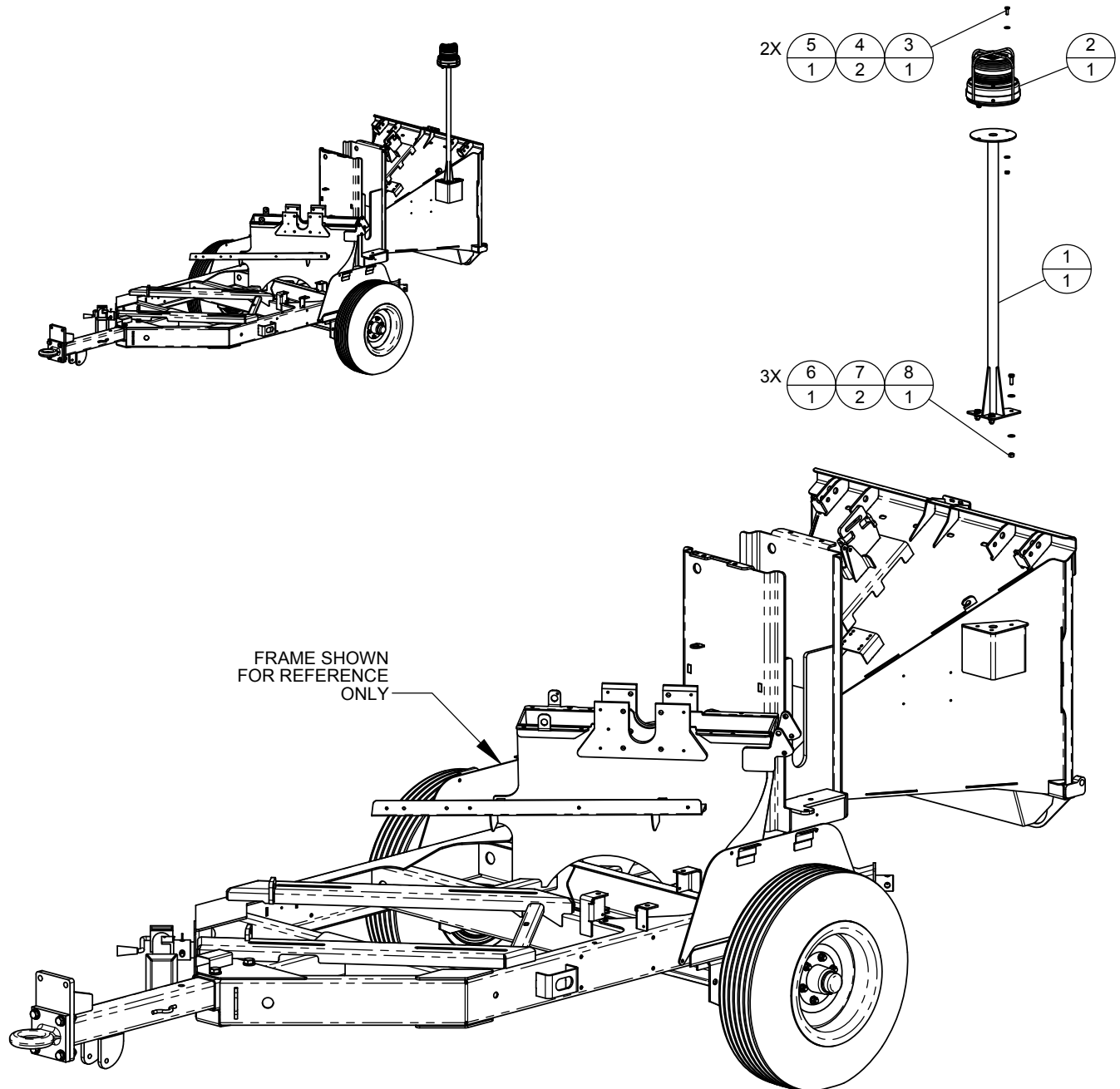
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970176709	ASSEMBLY,30IN DISC,DC-912
1	1	970174346	DISC, MACHINED, 30.00IN OD, DC-912
2	2	970176984	WELDMENT, ANGLE PADDLE, DISC, DC-912A, W/O HOLES
3	2	970176971	WELDMENT, POWER PADDLE, DISC, DC-912A, W/O HOLES
4	4	970122275	BLADE, STEEL, DISC, MACHINED, DC912,
5	1	970175060	SHAFT, KEYED, 2.44IN ID BEARING, 19.563 IN L, 1.00 IN TAPER/FT, DC-912
6	1	970175554	DISC, DRAW RING, 6.50IN OD X 2.86IN ID, 5.38IN BOLT CIRCLE, DC-912A
7	6	970121359	CAPSCREW, STEEL, HEX HEAD, .63-11 UNC, 5.00 IN L, BOWMALLOY, PLATED 18,
8	8	970177382	CAPSCREW, STEEL, FLAT HEAD SOCKET, .50-13 UNC, 2.00 IN L, UNBRAKO,
9	8	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
10	6	020401706	WASHER, STEEL, FLAT, .63 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
11	6	020391609	NUT, STEEL, TOP LOCK, .63-11 UNC, GR C, PLATED 18,
12	8	020391411	NUT, STEEL, HEX, .50-13 UNC, NYLOCK, PLATED 18
13	4	970185433	KEY STOCK, .38IN X .38IN X 1.50IN L, CLEAN OUT, DC-912A

SPARE TIRE MOUNT ASSEMBLY



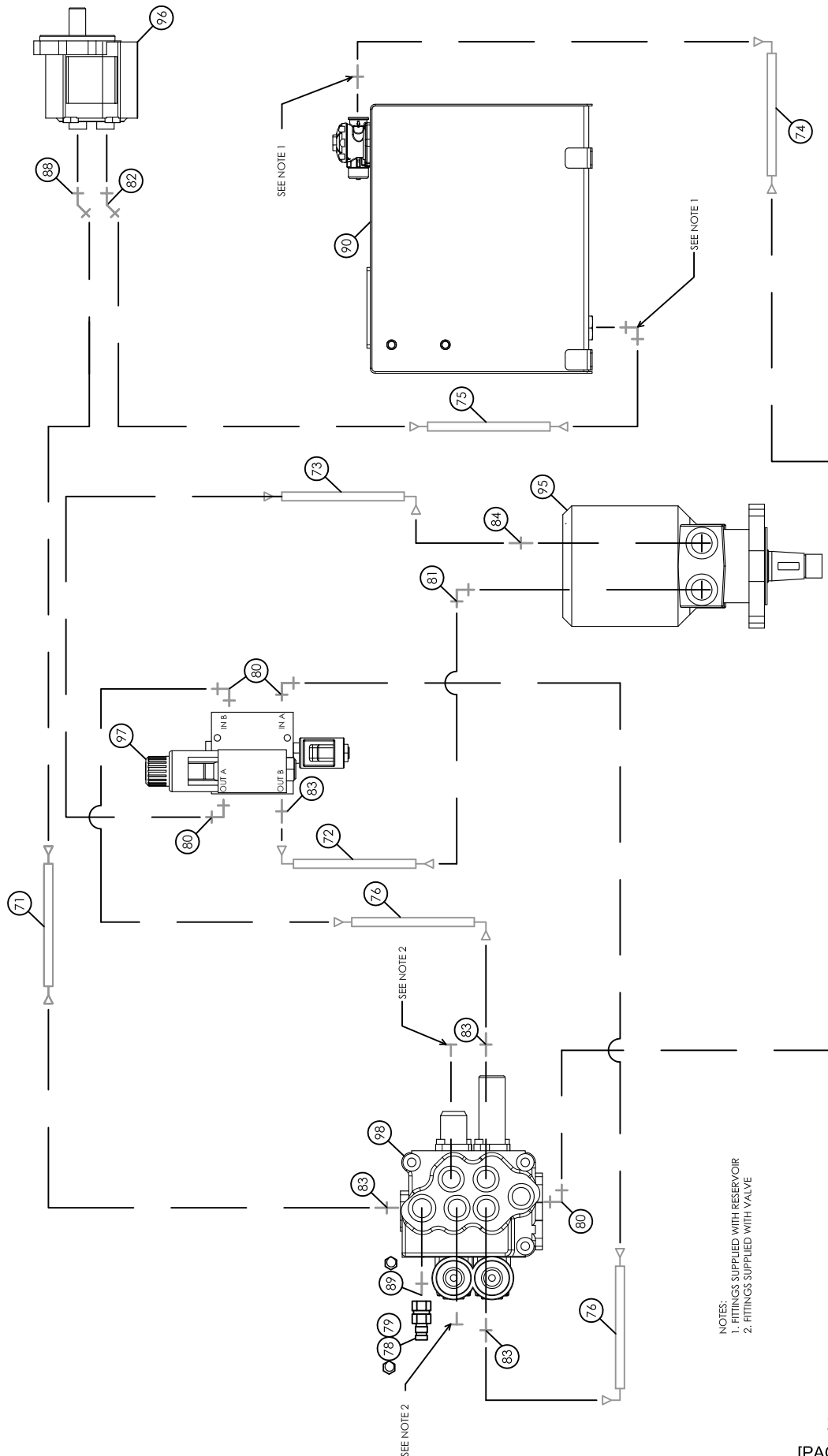
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	4	020391404	NUT, STEEL, TOP LOCK, .50-13 UNC, GR C, PLATED,
2	8	020401405	WASHER, STEEL, FLAT, .50 IN DIA, THRU HARD HIGH STRENGTH, PLATED
3	1	970208490	PLATE, MOUNTING, SUPPORT, SPARE TIRE
4	1	970220108	BACKING PLATE, SPARE TIRE HOLDER, DC-912A
5	4	970208789	SPACER, TUBE, SPARE TIRE MOUNT, 1.844 IN L, DC-1317, CFD-1217
6	4	970220121	SPACER, TUBE, SPARE TIRE MOUNT, 2.84 IN L, DC-912A,
7	4	020041416	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 3.50 IN L, GR 8, MTS 16, 18
8	4	201437210	CAPSCREW, STEEL, HEX HEAD, .50-13 UNC, 4.50 IN L, GR 8, PLATED,
9	1	970220221	MOUNT, SPARE TIRE, BOLT-ON, 8 LUG 6.50 IN B.C., DC-1317, CFD-1217
10	1	970208494	MOUNT, SPARE TIRE, BOLT-ON, 6 LUG 5.50 IN B.C., DC-912A, WC-126A
11	1	970181371	KIT, SPARE TIRE AND RIM, SHIPPED LOOSE, 245/75 R16, 8 LUG
12	1	970181373	KIT, SPARE TIRE AND RIM, SHIPPED LOOSE, 225/75 R15, 6 LUG,

STROBE LIGHT ASSEMBLY, DC912A WITH 42.00 IN FEEDHORN, STREETSIDE MOUNT, 7.00 FT TALL



ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970277072	KIT, STREETSIDE STROBE MOUNT, 7.00 FT TALL, DC912A, 42.00 IN FEEDHORN
1	1	970277174	WELDMENT, STROBE LIGHT MOUNT, 36.36 IN L, BOLT ON
2	1	068451218	STROBE BEACON, STROBE, 6.19 IN, 7.25 IN DIA, 12 VDC, AMBER, LED, WITH BRACKET
3	2	020031004	CAPSCREW, STEEL, HEX HEAD, .25-20 UNC, .75 IN L, GR 5, PLATED,
4	4	970137805	WASHER, STEEL, FLAT, .250 IN DIA, THRU-HARD HIGH STRENGTH, PLATED,
5	2	020391011	NUT, STEEL, HEX OVALATED, .25 -20 UNC, GR C, PLATED 18,
6	3	020041206	CAPSCREW, STEEL, HEX HEAD, .38-16 UNC, 1.00 IN L, GR 8, PLATED/PLATED,
7	6	020401207	WASHER, STEEL, FLAT, .38 IN DIA, SAE THRU-HARD HIGH STRENGTH, PLATED 18,
8	3	020391225	NUT, STEEL, TOP LOCK, .38-16 UNC, GR C, PLATED,

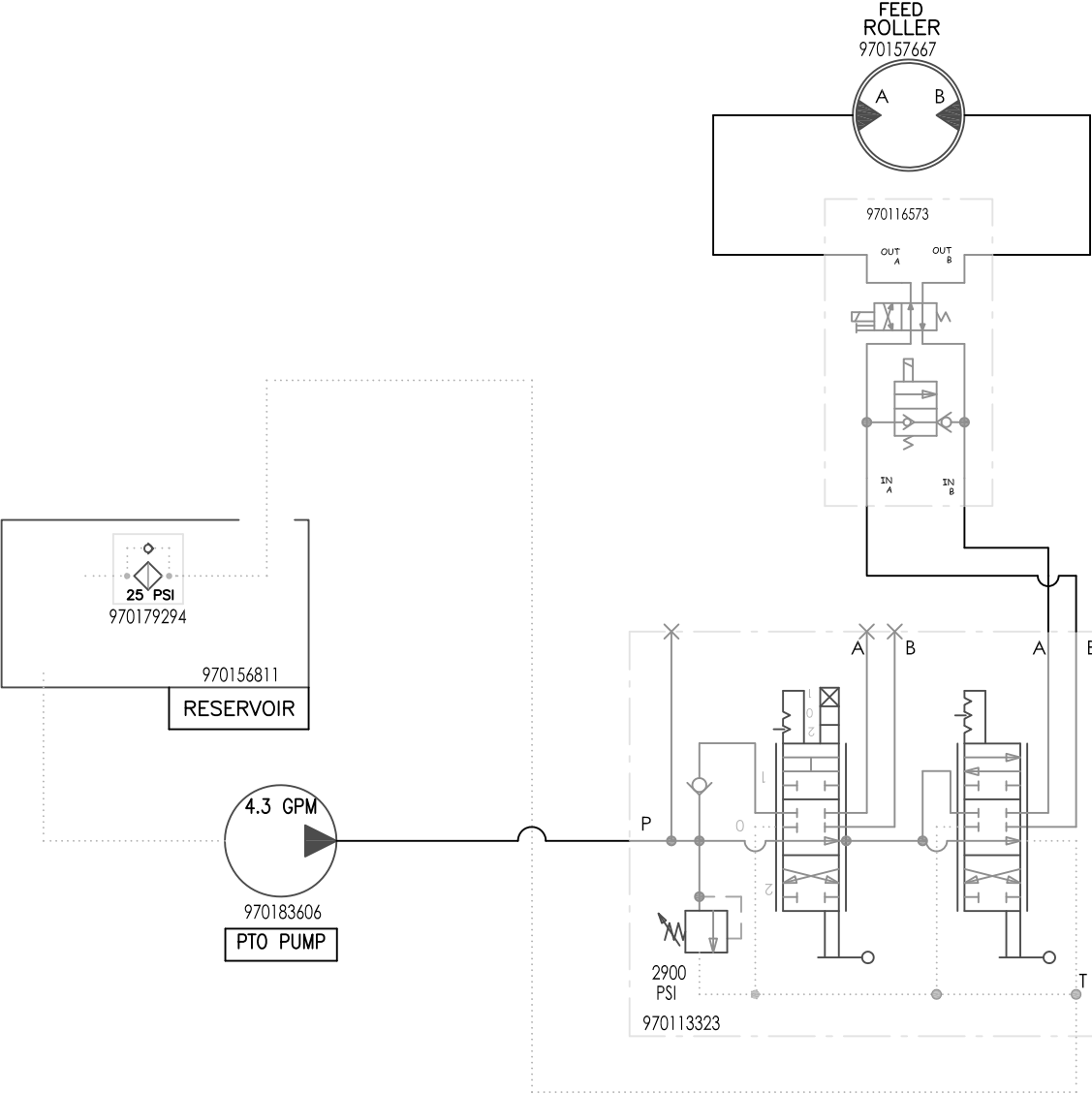
DC-912A, PLUMBING ASSEMBLY



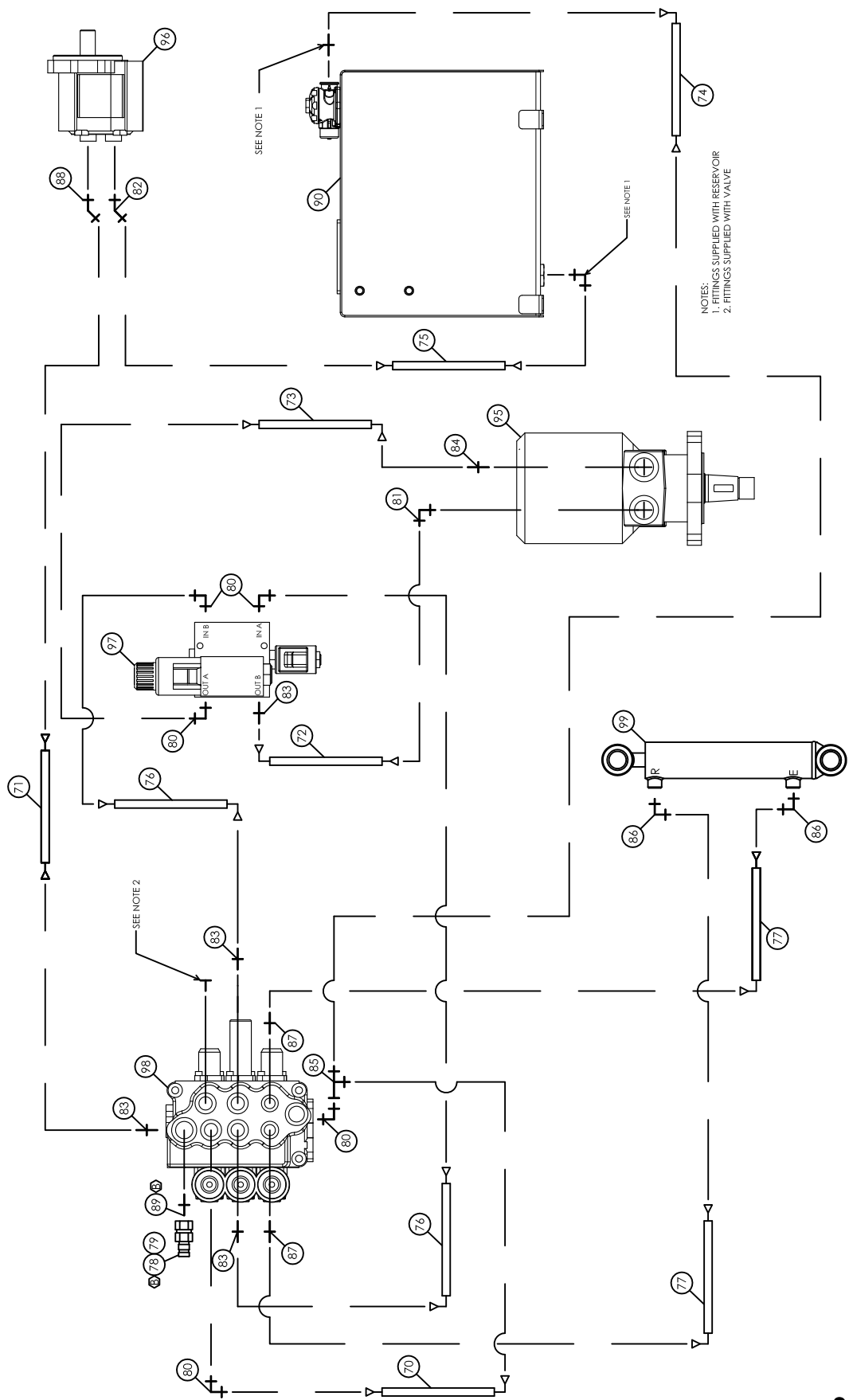
DC-912A, PLUMBING DIAGRAM

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180445	HYDRAULIC PLUMBING ASSEMBLY, MANUAL ROLLER LIFT, EFC
71	1	970188870	HOSE ASSEMBLY, .50 IN OD, 122.74 IN L, 100R17, 1-8, 1-8, 120.00 IN L,
72	1	970202132	HOSE ASSEMBLY, .38 IN ID, 24.95 IN L, 100R17, 1-8, 4-8, 22.00 IN L,
73	1	970188874	HOSE ASSEMBLY, .38 IN ID, 26.73 IN L, 100R17, 1-8, 4-8, 24.00 IN L,
74	1	970202141	HOSE ASSEMBLY, .50 IN ID, 98.73 IN L, 100R17, 1-8, 4-8 LONG, 96.00 IN L,
75	1	970224859	HOSE ASSEMBLY, .75 IN ID, 75.46 IN L, 100R4, 1-12, 1-12, 72.00 IN L,
76	2	970188871	HOSE ASSEMBLY, .38 IN ID, 15.23 IN L, 100R17, 1-8, 4-8, 12.50 IN L,
78	1	035620155	QUICK DISCONNECT, NIPPLE, 0.13 MALE BODY, -6 JIC FEMALE, DIAGNOSTIC
79	1	035620102	DUST CAP, DIAGNOSTIC QUICK DISCONNECT, FITS .13 IN DIA MALE BODY,
80	4	027420058	ADAPTER, 90 DEG ELBOW, -8 SAE, -8 JIC
81	1	027420060	ADAPTER, 90 DEG ELBOW, -10 SAE, -8 JIC
82	1	027410057	ADAPTER, 45 DEG ELBOW, -12 JIC, -12 SAE
83	4	027400060	ADAPTER, STRAIGHT, -8 SAE, -8 JIC
84	1	027400064	ADAPTER, STRAIGHT, -10 SAE, -8 JIC
88	1	981715876	FITTING, ELBOW, 45 DEG, 1/2 I MJIC, 1/2 IN M O-RING
89	1	027400059	ADAPTER, STRAIGHT, -8 SAE, -6 JIC
90	1	970156811	RESERVOIR, HYDRAULIC, STEEL, 8 GAL, INTERNAL, INTERNAL, TUBE, 20.00 IN L, 6.50 IN W,
91	9	970149432	HYDRAULIC OIL, AW ISO 46,
95	1	970157667	HYDRAULIC MOTOR, GEROLLER, 24.7 CU IN, 1.25 IN TAPERED SHAFT
96	1	970183606	PUMP, .30 CU IN, RIGHT HAND, SAE TYPE A, 9 TOOTH SPLINE 16-32
97	1	970116573	HYDRAULIC VALVE, SOLENOID, WITH REVERSING
98	1	970113323	HYDRAULIC VALVE, 2 SPOOLS, 3000 PSI, INTERNAL DUMP

DC-912A, PLUMBING ASSEMBLY



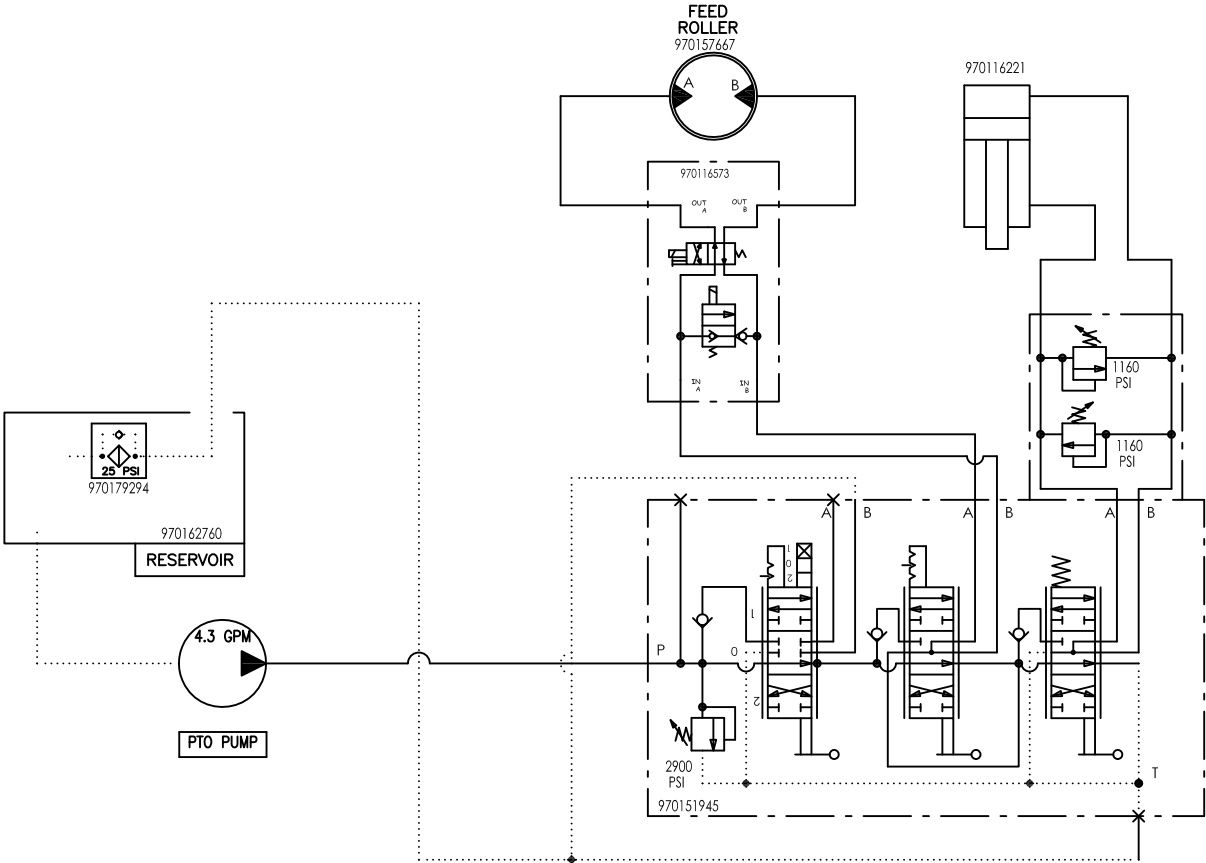
DC-912A, WITH LIFT, PLUMBING DIAGRAM



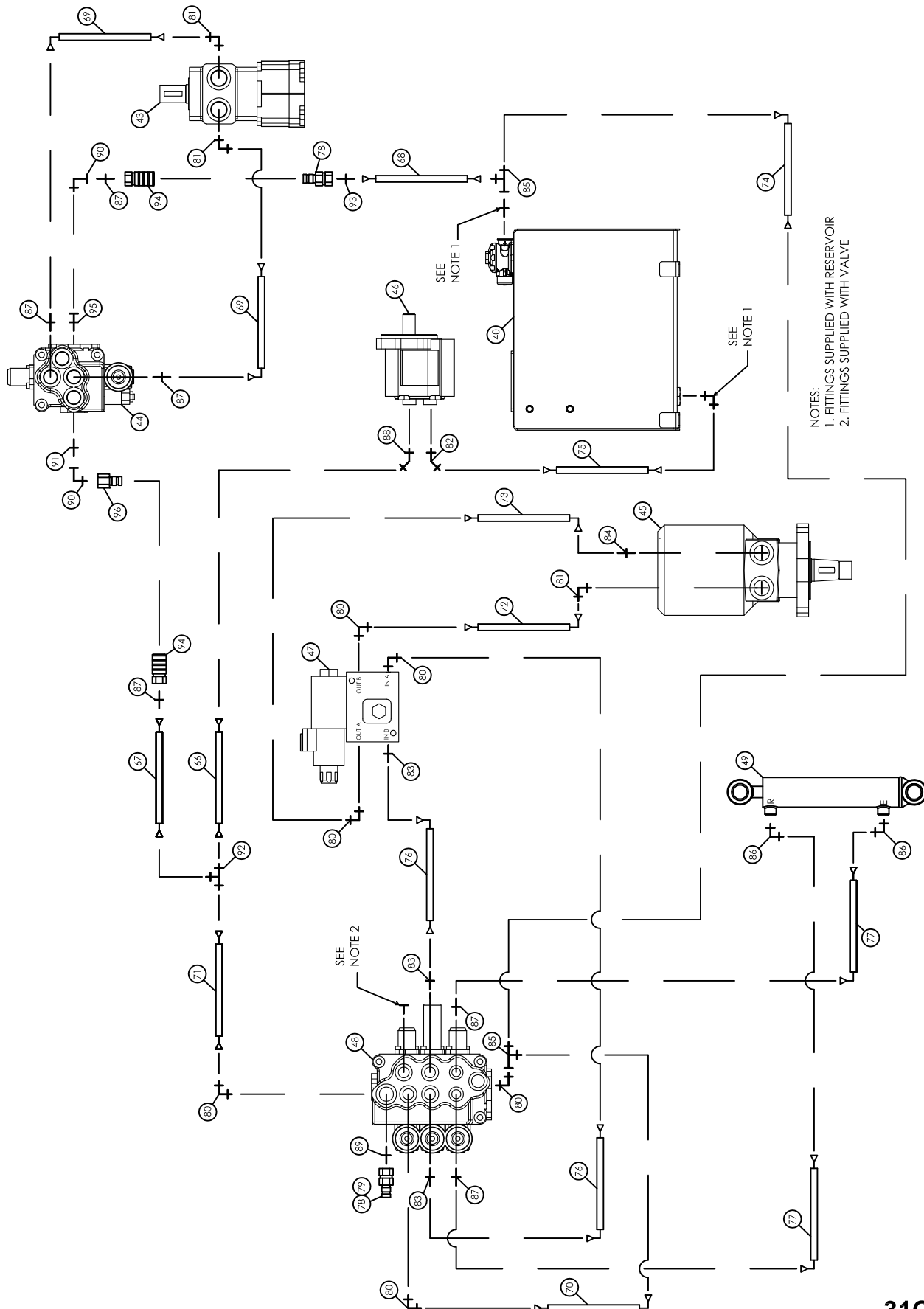
DC-912 A, WITH LIFT, PLUMBING DIAGRAM

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970180446	HYDRAULIC PLUMBING ASSEMBLY, HYDRAULIC ROLLER LIFT, EFC
70	1	970173213	HOSE ASSEMBLY, .38 IN ID, 18.50 IN L, 100R17, 1-8;4-8, 16.00 IN L,
71	1	970188870	HOSE ASSEMBLY, .50 IN OD, 122.74 IN L, 100R17, 1-8, 1-8, 120.00 IN L,
72	1	970202132	HOSE ASSEMBLY, .38 IN ID, 24.95 IN L, 100R17, 1-8, 4-8, 22.00 IN L,
73	1	970188874	HOSE ASSEMBLY, .38 IN ID, 26.73 IN L, 100R17, 1-8, 4-8, 24.00 IN L,
74	1	970202141	HOSE ASSEMBLY, .50 IN ID, 98.73 IN L, 100R17, 1-8, 4-8 LONG, 96.00 IN L,
75	1	970224859	HOSE ASSEMBLY, .75 IN ID, 75.46 IN L, 100R4, 1-12, 1-12, 72.00 IN L,
76	2	970188871	HOSE ASSEMBLY, .38 IN ID, 15.23 IN L, 100R17, 1-8, 4-8, 12.50 IN L,
77	2	970202138	HOSE ASSEMBLY, .38 IN ID, 98.73 IN L, 100R17, 1-8, 4-8, 96.00 IN L,
78	1	035620155	QUICK DISCONNECT, NIPPLE, 0.13 MALE BODY, -6 JIC FEMALE, DIAGNOSTIC
79	1	035620102	DUST CAP, DIAGNOSTIC QUICK DISCONNECT, FITS .13 IN DIA MALE BODY,
80	5	027420058	ADAPTER, 90 DEG ELBOW, -8 SAE, -8 JIC
81	1	027420060	ADAPTER, 90 DEG ELBOW, -10 SAE, -8 JIC
82	1	027410057	ADAPTER, 45 DEG ELBOW, -12 JIC, -12 SAE
83	4	027400060	ADAPTER, STRAIGHT, -8 SAE, -8 JIC
84	1	027400064	ADAPTER, STRAIGHT, -10 SAE, -8 JIC
85	1	027434203	ADAPTER, TEE, -8 JIC, -8 JIC FEMALE SWIVEL, -8 JIC
86	2	027423061	ADAPTER, 90, -8 JIC MALE, .38 NPT MALE
87	2	027400056	ADAPTER, STRAIGHT, -6 SAE, -8 JIC
88	1	981715876	FITTING, ELBOW, 45 DEG, 1/2 I MJIC, 1/2 IN M O-RING
89	1	027400059	ADAPTER, STRAIGHT, -8 SAE, -6 JIC
90	1	970156811	RESERVOIR, HYDRAULIC, STEEL, 8 GAL, INTERNAL, INTERNAL, TUBE, 20.00 IN L, 6.50 IN W,
95	1	970157667	HYDRAULIC MOTOR, GEROLLER, 24.7 CU IN, 1.25 IN TAPERED SHAFT
96	1	970183606	PUMP, .30 CU IN, RIGHT HAND, SAE TYPE A, 9 TOOTH SPLINE 16-32
97	1	970116573	HYDRAULIC VALVE, SOLENOID, WITH REVERSING
98	1	970151945	HYDRAULIC VALVE, 3 SPOOLS, 3000 PSI, DOUBLE RELIEFS ON THIRD SPOOL
99	1	970116221	CYLINDER, 2.00 IN BORE, 12.00 IN STROKE, 1.125 IN ROD, 2500 PSI

DC-912A, WITH LIFT, PLUMBING DIAGRAM

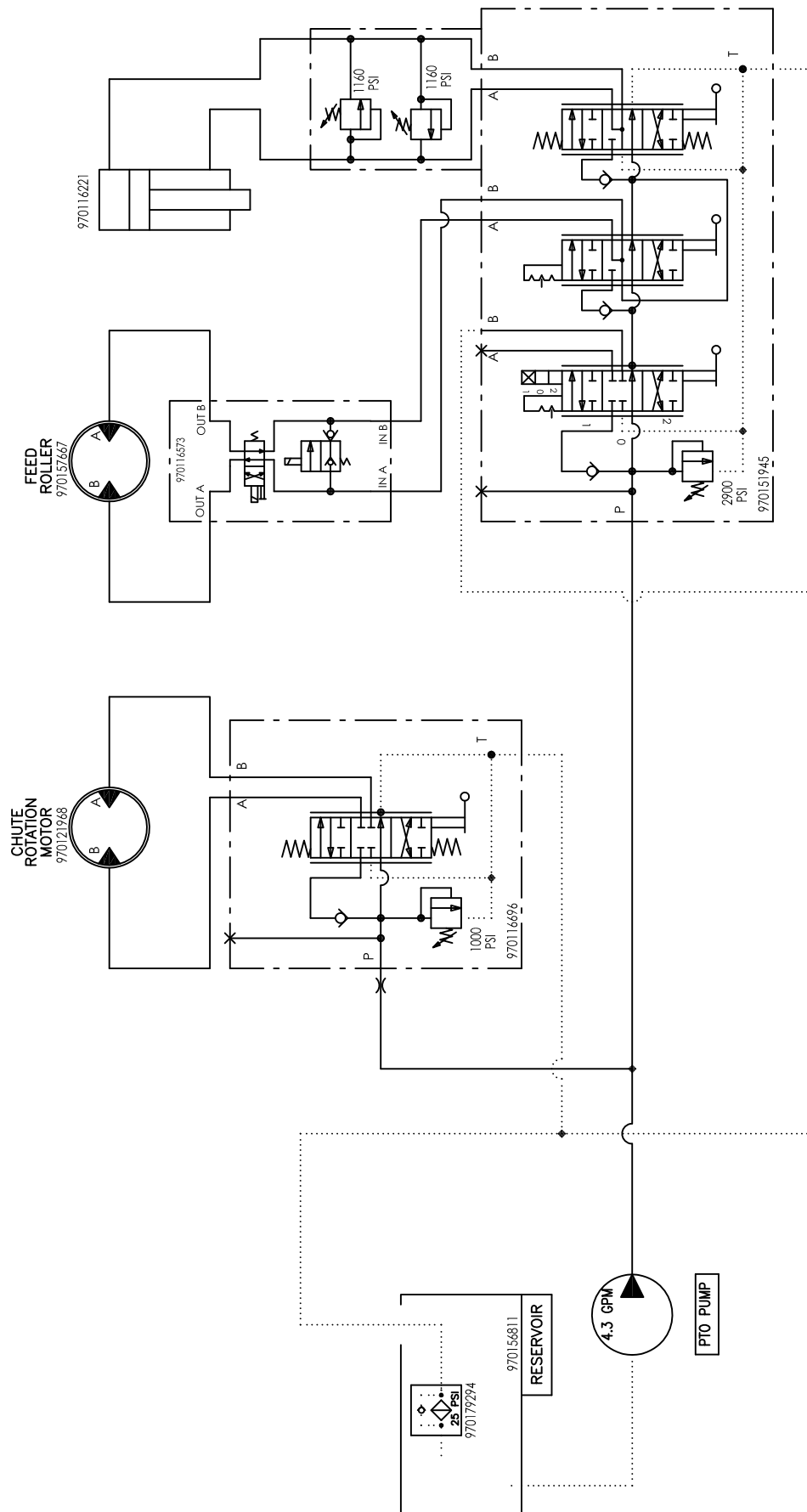


DC912A PLUMBING ASSEMBLY WITH LIFT CYLINDER, EFC, AND HYDRAULIC CHUTE ROTATION



NOTES:
1. FITTINGS SUPPLIED WITH RESERVOIR
2. FITTINGS SUPPLIED WITH VALVE

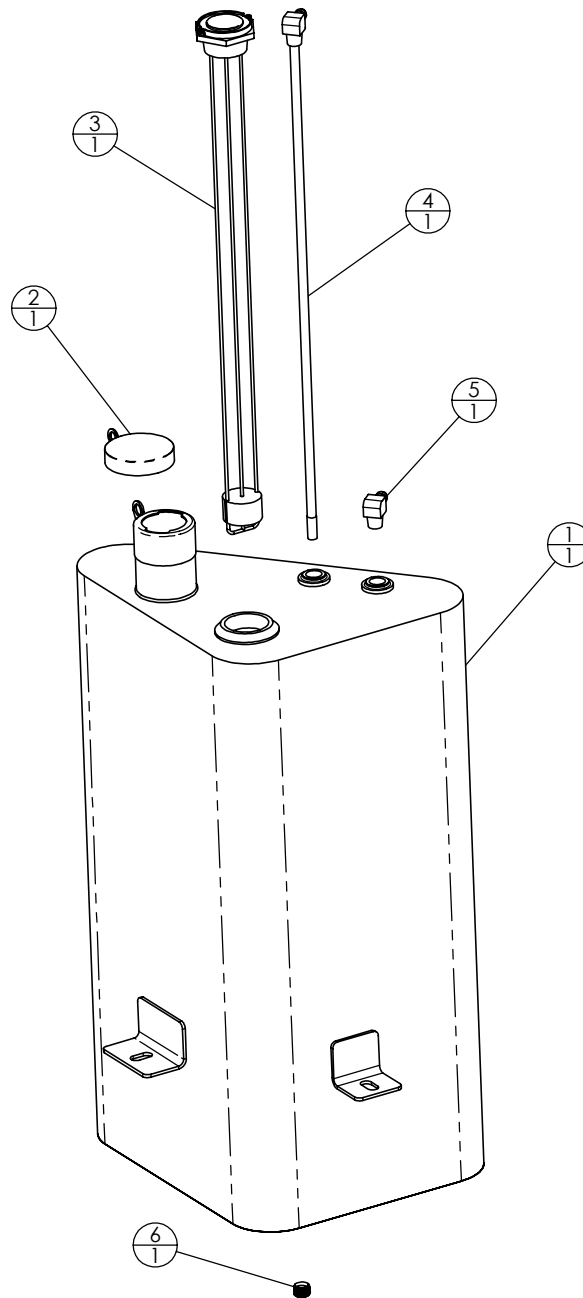
DC912A PLUMBING ASSEMBLY WITH LIFT CYLINDER, EFC, AND HYDRAULIC CHUTE ROTATION



DC912A PLUMBING ASSEMBLY WITH LIFT CYLINDER, EFC, AND HYDRAULIC CHUTE ROTATION

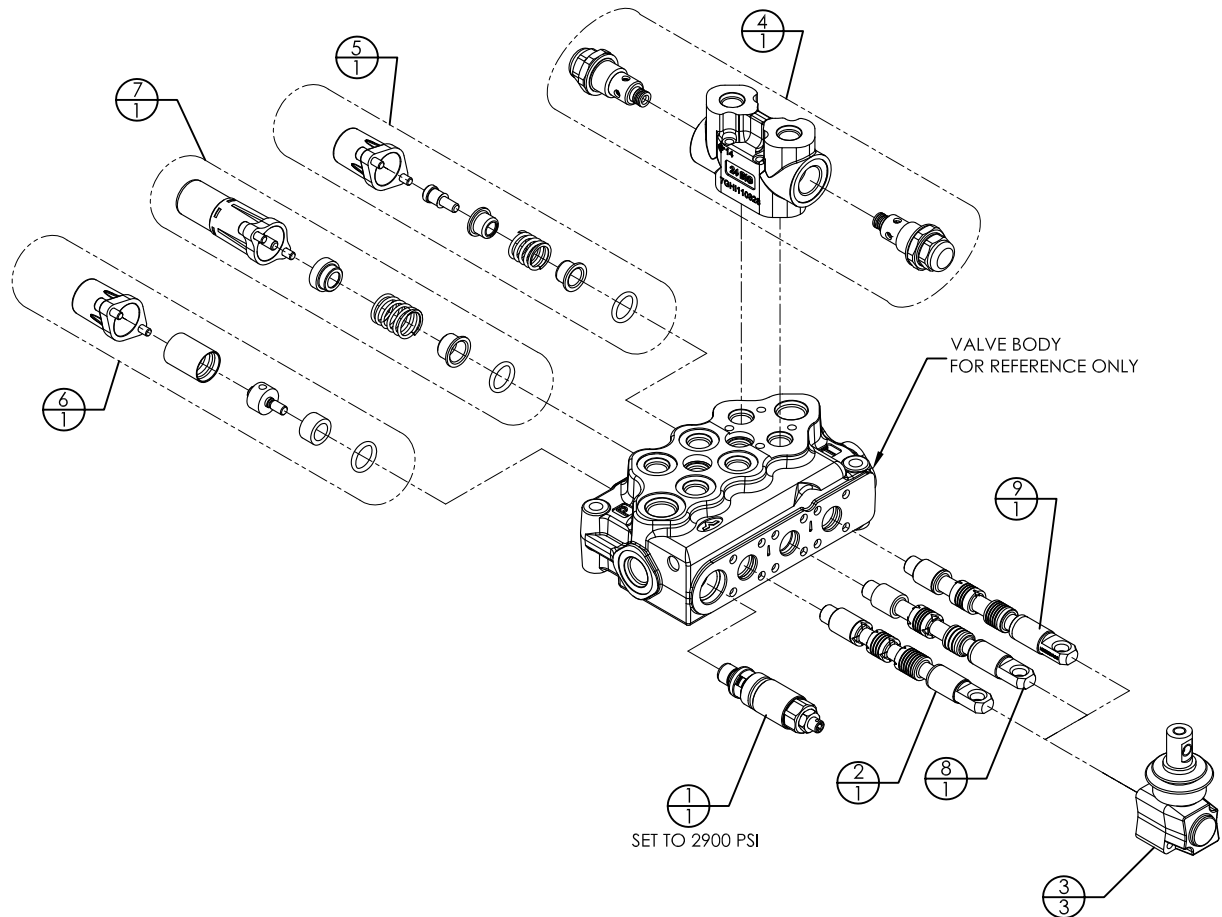
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970289119	HYDRAULIC PLUMBING ASSEMBLY, HYDRAULIC ROLLER LIFT, EFC, HYDRAULIC CHUTE
40	1	970156811	RESERVOIR, HYDRAULIC, STEEL, 8 GAL, INTERNAL, INTERNAL, TUBE, 20.00 IN L, 6.50 IN W,
43	1	970121968	HYDRAULIC MOTOR, ROLLER STATOR, 15.50 CU IN, RH, 1.00 IN KEYED SHAFT, 4 BOLT
44	1	970116696	HYDRAULIC VALVE, MANUAL, 1 SPOOL, 2000 PSI, 12 GPM, OPEN CENTER, CHECK VALVE,
45	1	970157667	HYDRAULIC MOTOR, GEROLLER, 24.7 CU IN, 4 BOLT MAGNETO MOUNT, 1.25 IN TAPERED
46	1	*VARIES*	PUMP - SEE POWER SYSTEM ASSEMBLY FOR YOUR ENGINE
47	1	970116573	HYDRAULIC VALVE, MANIFOLD, SOLENIOD OPERATED, 3000 PSI, 10 GPM, ELECTRONIC FEED
48	1	970151945	HYDRAULIC VALVE, MANUAL, 3 SPOOLS, 3000 PSI, SERIES VALVE, RELIEF ON THIRD SPOOL,
49	1	970116221	HYDRAULIC CYLINDER, 2.00 IN BORE, 12.00 IN STROKE, 1.125 IN ROD, 2500 PSI
66	1	970289652	HOSE ASSEMBLY, .50 IN OD, 52.74 IN L, 100R17, 1-8, 1-8, 50.00 IN L,
67	1	970289653	HOSE ASSEMBLY, .38 IN OD, 21.42 IN L, 100R17, 1-8, 1-8, 18.50 IN L,
68	2	970289661	HOSE ASSEMBLY, .38 IN OD, 70.92 IN L, 100R17, 1-8, 1-8, 68.00 IN L,
69	2	970289662	HOSE ASSEMBLY, .38 IN OD, 17.73 IN L, 100R17, 1-8, 4-8, 15.00 IN L,
70	1	970173213	HOSE ASSEMBLY, .38 IN ID, 18.50 IN L, 100R17, 1-8, 4-8, 16.00 IN L,
71	1	970289663	HOSE ASSEMBLY, .50 IN OD, 79.74 IN L, 100R17, 1-8, 1-8, 77.00 IN L,
72	1	970202132	HOSE ASSEMBLY, .38 IN ID, 24.95 IN L, 100R17, 1-8, 4-8, 22.00 IN L,
73	1	970188874	HOSE ASSEMBLY, .38 IN ID, 26.73 IN L, 100R17, 1-8, 4-8, 24.00 IN L,
74	1	970202141	HOSE ASSEMBLY, .50 IN ID, 98.73 IN L, 100R17, 1-8, 4-8 LONG, 96.00 IN L,
75	1	970224859	HOSE ASSEMBLY, .75 IN ID, 75.46 IN L, 100R4, 1-12, 1-12, 72.00 IN L,
76	2	970188871	HOSE ASSEMBLY, .38 IN ID, 15.23 IN L, 100R17, 1-8, 4-8, 12.50 IN L,
77	2	970202138	HOSE ASSEMBLY, .38 IN ID, 98.73 IN L, 100R17, 1-8, 4-8, 96.00 IN L,
78	2	035620155	QUICK DISCONNECT, NIPPLE, 0.13 MALE BODY, -6 JIC FEMALE, DIAGNOSTIC
79	1	035620102	DUST CAP, DIAGNOSTIC QUICK DISCONNECT, FITS .13 IN DIA MALE BODY,
80	6	027420058	ADAPTER, 90 DEG ELBOW, -8 SAE, -8 JIC
81	3	027420060	ADAPTER, 90 DEG ELBOW, -10 SAE, -8 JIC
82	1	027410057	ADAPTER, 45 DEG ELBOW, -12 JIC, -12 SAE
83	3	027400060	ADAPTER, STRAIGHT, -8 SAE, -8 JIC
84	1	027400064	ADAPTER, STRAIGHT, -10 SAE, -8 JIC
85	2	027434203	ADAPTER, TEE, -8 JIC, -8 JIC FEMALE SWIVEL, -8 JIC
86	2	027423061	ADAPTER, 90 DEGREE, .38 NPT MALE, TO -8 JIC MALE,
87	6	027400056	ADAPTER, STRAIGHT, -6 SAE, -8 JIC
88	1	027410054	ADAPTER, 45 DEGREE ELBOW, -8 SAE, -8 JIC
89	1	027400059	ADAPTER, STRAIGHT, -8 SAE, -6 JIC
90	2	027424204	ADAPTER, 90 DEG ELBOW, -8 JIC FEMALE SWIVEL, -8 JIC
91	1	970122067	ADAPTER, STRAIGHT, -8 SAE, -8 JIC, 2X .03 IN OD DRILLED ORIFICES
92	1	027434054	ADAPTER, TEE, -8 JIC, -8 JIC, -8 JIC
93	1	202434814	ADAPTER, STRAIGHT, -8 JIC, -6 JIC
94	2	970289617	QUICK DISCONNECT, COUPLER, .13 FEMALE BODY, -6 SAE,
95	1	027400204	ADAPTER, STRAIGHT, -8 JIC FEMALE SWIVEL, -8 SAE
96	1	035620156	QUICK DISCONNECT, NIPPLE, .13 MALE BODY, -8 JIC FEMALE, DIAGNOSTIC

DC-912A FUEL TANK ASSEMBLY



ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970177653	DC-912A COMPLETE FUEL TANK ASSEMBLY
1	1	970234356	RESERVOIR, FUEL, STEEL, 12 GAL, DC-912A,
2	1	970233286	FILLER CAP, DIESEL FUEL, STEEL, VENTED W/ LOCKING LUG & CHAIN,
3	1	970233442	FUEL GAUGE, DIESEL, STEEL, 22.00 ON L,
4	1	970233443	PICKUP TUBE, DIESEL, STEEL, CFD-1217, 22.625 IN L,
5	1	970122097	ADAPTER, 90 DEG, .38 NPTF, .31 HOSE BARB,
6	1	027522001	ADAPTER, SOCKET HEAD PLUG, .38 NPT

3 SPOOL MANUAL MAIN CONTROL VALVE ASSEMBLY



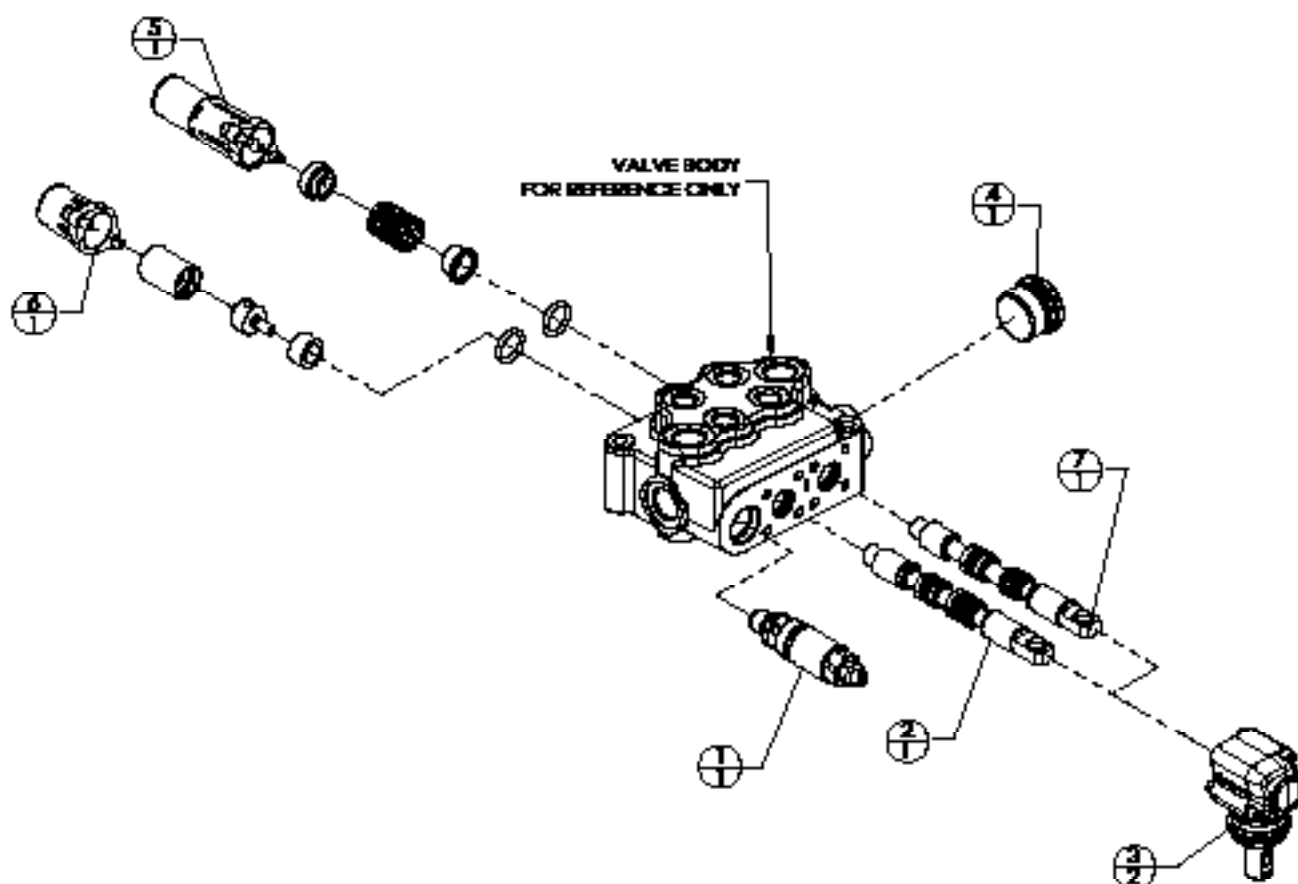
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970151945	HYDRAULIC VALVE, MANUAL, 3 SPOOLS, 3000 PSI, SERIES VALVE, RELIEF ON THIRD
1	1	970024635	RELIEF VALVE,MANUAL VALVE DETENTED,W/RELIEF,TOOL VALVE,1 SPOOL,3600 PSI,45
2	1	035209305	HYDRAULIC VALVE COMPONENT;SPOOL
3	3	970028823	HYDRAULIC VALVE,KIT CONTROL LEVER BOX,MANUAL,1 SPOOL
4	1	970215234	HYDRAULIC VALVE,RELIEF,DUAL CROSSOVER,WALVOIL
5	1	970078486	KIT, SPRING CENTERING KIT,
		970254407	END CAP ONLY FOR SPRING CENTERING AND TWO POSITION KITS
6	1	970175043	HYDRAULIC VALVE COMPONENT,TWO POSITION DETENT KIT
		970254407	END CAP ONLY FOR SPRING CENTERING AND TWO POSITION KITS
7	1	970229323	HYDRAULIC VALVE COMPONENT,HEAVY DETENT KIT
		970288697	END CAP ONLY FOR HEAVY DETENT KIT
		035209475	O RING FOR ALL SPRING AND DETENT KITS
8	1	035209385	2/SD5 SPOOL
9	1	970229331	HYDRAULIC VALVE COMPONENT,LOW FLOW,SPOOL
		970255117	SCREW

100.1A

[PAGE 1 OF 1]

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2 SPOOL MANUAL HYDRAULIC VALVE ASSEMBLY

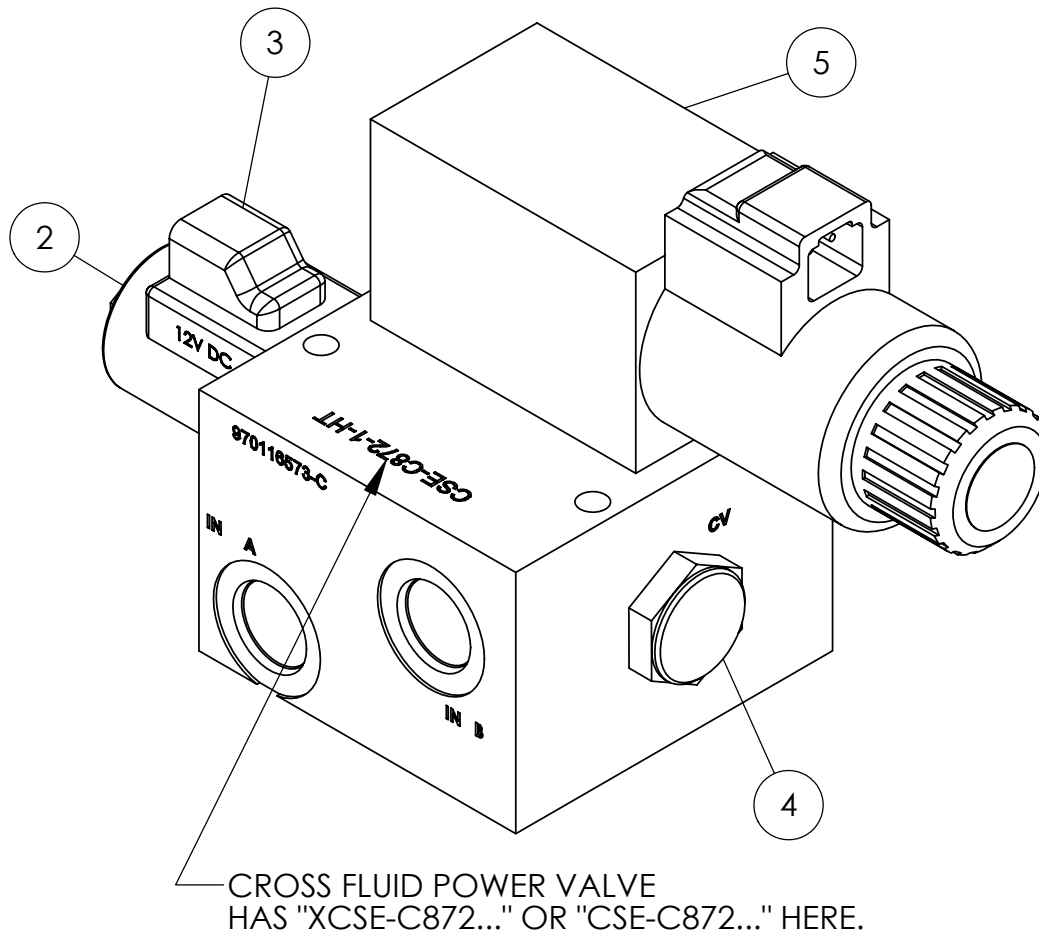


ITEM NO.	QTY	PART NUMBER	DESCRIPTION
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1	1	570125880	HYDRAULIC VALVE,RELIEF,3000 PSI,OPTIONAL LIFE ON 570084228 VALVE
2	1	035225885	2/805 5/POOL
3	2	570025823	HYDRAULIC VALVE KIT CONTROL LEVER BODY,MANUAL,1 5/POOL
4	1	035225815	AE0805 PLUG
5	1	570225823	HYDRAULIC VALVE COMPONENT,HEAVY DETENT KIT
6	1	570225827	HYDRAULIC VALVE COMPONENT,TWO POSITION DETENT KIT
7	1	570225876	HYDRAULIC VALVE COMPONENT,2/POOL,1HE05

ELECTRONIC FEED CONTROL (EFC) VALVE ASSEMBLY

ITEM 5 NOTE:
THIS VALVE MAY BE A VICKERS OR
A PARKER, THIS COMPONENT
IS INTERCHANGEABLE



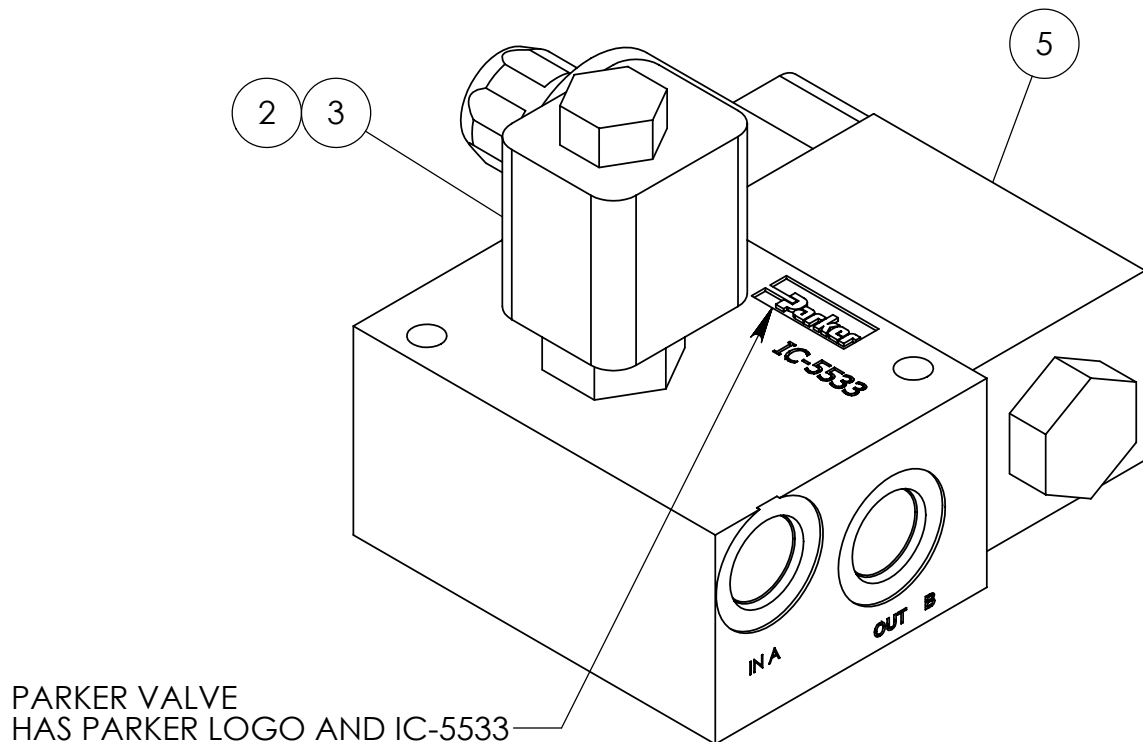
NOTE: YOU MUST IDENTIFY MANUFACTURER,
CROSS FLUID POWER (THIS PAGE) OR PARKER (PAGE 2)

FOR VALVES MANUFACTURED BY CROSS FLUID POWER

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970116573	COMPLETE ASSEMBLY, HYDRAULIC VALVE;EFC WITH REVERSING
2	1	970240877	HYDRAULIC VALVE SPOOL, SOLENOID, 1 SPOOL, , ELECTRONIC FEED CONTROL DUMP
3	1	970240887	HYDRAULIC VALVE SOLENOID COIL, 12V DC
4	1	970240918	HYDRAULIC VALVE, CHECK, CARTRIDGE,
5	1	970177591	HYDRAULIC VALVE, SOLENOID, 1 SPOOL, 10 GPM, REVERSING VALVE,

ELECTRONIC FEED CONTROL (EFC) VALVE ASSEMBLY

ITEM 5 NOTE:
THIS VALVE MAY BE A VICKERS OR
A PARKER, THIS COMPONENT
IS INTERCHANGEABLE



NOTE: YOU MUST IDENTIFY MANUFACTURER
PARKER (THIS PAGE) OR CROSS FLUID POWER (PAGE 1)

FOR VALVES MANUFACTURED BY PARKER

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
		970116573	COMPLETE ASSEMBLY, HYDRAULIC VALVE;EFC WITH REVERSING
2	1	970302037	HYDRAULIC VALVE;CARTRIDGE ONLY;SOLENOILD OPERATED;;;BI DIRECTIONAL POPPET;;
3	1	970132917	HYDRAULIC VALVE SOLENOID COIL, 12V DC
5	1	970177591	HYDRAULIC VALVE, SOLENOID, 1 SPOOL, 10 GPM, REVERSING VALVE,

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