

PLANTER 2009 Model 9540 4-Row



OPERATING INSTRUCTIONS & PARTS MANUAL

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Warranty Policy

I. The Purpose of Warranty

Warranty assures the purchaser that should a defect in material or workmanship occur during the warranty period, Double L will assume specific repair responsibilities, as listed in the warranty statement. The warranty statement is to be provided to each purchaser of each piece of new equipment. Warranty begins on the date the product is delivered to the original purchaser of the product. Once the warranty period has begun, it cannot be stopped or interrupted.

II. Dealer Responsibilities

The following responsibilities are to be performed when the dealer delivers a product to the purchaser or otherwise places it into warranty service:

1. Complete the Warranty Registration Form and forward to Double L within 30 days of the sale of the product. **Warranty reimbursement is contingent upon product registration.**
2. Review warranty statement, operator's manual and complete delivery report with purchaser to assure understanding of purchaser's responsibilities as related to warranty, service and the proper and safe operation of the product. Purchasers should be advised to have failed parts repaired or replaced immediately upon failure and that continued use will result in additional damage and excessive wear.
3. Contact manufacturer prior to beginning repair or replacement of failed parts to make certain that the cost of repairs are consistent with the value of the product when sold. Warranty requests for units in dealer's inventory may be submitted to Double L when defects are noted in products prior to the retail sale of that unit.
4. Provide warranty and service repairs as directed by Double L Service Repair Bulletins or other instructions.
5. All warranty work must be completed within 30 days of failure. Notify Double L's Warranty Department if repairs will require more than 30 days after failure for an extension. No claim will be accepted for warranties that exceed this 30-day period.
6. No warranty will be allowed on units delivered to the retail customer prior to the full payment of that unit to the manufacturer.
7. If diagnostic time is required, contact Double L prior to beginning the warranty repair for approval.

III. Double L's Responsibilities

1. Reimbursement for parts used in warranty repair will be credited only when the parts are purchased from Double L
2. Dealer should use parts from their parts inventory first. In the event that parts must be shipped from Double L, freight will be paid by the Dealer, and will be shipped by the most economical means to arrive in the shortest possible time. Air, Next Day Air, Priority and other special shipment methods requested by the dealer will be at customer's expense.
3. Labor is not paid on the warranty associated with repair parts purchased by the retail customer that are used on a product that is not currently in warranty time frame.
4. Reimbursements for repairs made by outside sources (not dealer personnel) will be made for those services deemed necessary for the resolution of the warranty by Double L's Warranty Department. Outside repair invoices must have **prior** approval from Double L's Service Department and must be attached to the warranty claim after approval.

IV. Other Warranty Provisions

The following guidelines are to be followed when performing warranty repairs:

1. In all cases, the most economical repair should be performed unless otherwise directed. Credit will not be allowed for assemblies, or groups, if it is practical to make the repair with individual parts. In some cases, the assembly, or group price may be less than the total of the parts and labor required to complete the repair. In those cases, an assembly, or group, may be used.
2. Only those parts provided by Double L are covered under Warranty. The use of parts from other sources will not be eligible for warranty consideration.
3. All parts removed during warranty repair should be held for a period of 90 days after the warranty claim has been submitted to Double L. These parts can be discarded if disposition or return request hasn't been made during this period. Parts that are returned to Double L for which credit has not been issued can be returned upon dealer request within 30 days of claim disposition. These parts will be discarded after the 30-day period.
4. Double L reserves the right to deny or reverse any and all warranty claims for parts, labor, or miscellaneous charges when errors are found or warranty provisions are abused or fraudulent claims are submitted.
5. Warranty reimbursement is not possible:
 - a. If parts returned are not cleaned and properly identified, or if they are damaged in return shipment due to poor packaging.
 - b. When failure falls under the "limitations" as identified in the Warranty Statement.
 - c. When Double L has requested the return of certain parts, assemblies or information and has not received material within 30 days of date posted on return request.
 - d. On claims due to damage or shortage that are obviously the responsibility of dealer or the delivering carrier.
 - e. On the entire claim when warranty policy and provisions are not followed.

All dealers will warranty their technician's work to the purchaser and will indemnify Double L from such claims.

Service Bulletins

Service Bulletins will be issued when necessary to alert dealers of special repairs. Each Bulletin will give detailed directions and procedures to complete the service.

V. Procedures For Completion Of Warranty Form

1. Dealer number, name and address - *record number, name and address of dealership that has performed warranty repairs and requests reimbursement.*
2. Customer name and address and telephone number - *record name, address and telephone number of original purchaser of the warranted product.*
3. Purchase Date - *date when product was delivered to customer.*
4. Serial Number - *record the serial number of the machine on which repairs were performed.*
5. Failure Date - *record date when failure occurred.*
6. Model - *record model name or number.*
7. Hours/Acres used - *record number of acres or hours the product was used prior to failure.*
8. Dealer Signature - *Signature of dealer, or dealer's representative, verifying repairs are complete.*
9. Parts Required - *record all service parts used to make necessary repairs. Include quantity, part number, description and list price.*

10. Labor Hours - *record time taken to perform repairs. (Repair time ONLY - Travel time is not allowed)*
11. Labor Rate - *record your normal retail shop rate or the rate specified in Warranty Policy, whichever is less.*
12. Total Labor Amount - *multiply hours X rate to get total labor expense.*
13. Total Parts - *total list price of parts used.*
14. Dealer Comments - *please record a brief description of failure and probable cause.*

VI. Use of Photos

Pictures should be attached to the dealer's claim when their inclusion will help identify the condition of the part being repaired or replaced, and thus assisting in approval of the claim. In many cases, the use of photos may eliminate the need to return parts for evaluation. Photos will not be returned unless specifically requested.

VII. Delayed Warranty Repairs

Warranty repairs should be scheduled and performed as soon as possible after notification of dealer and Double L. There may be circumstances that require the use of the product for a short period of time by the retail customer or the availability of repair parts necessary to complete the repairs will require the work to extend past the 30 day period. In those cases, the dealer must notify Double L in writing of the extenuating circumstance and advise that the continued use of the product will not enlarge the warranty claim. These claims will then be processed as if the product is still within the warranty period.

VIII. Denied Claims

Dealers will be notified of a denied claim in writing that will state the reason for the denial. The dealer has the right to appeal this claim and must do so within 30 days of notification of denial. If there has been no appeal within the 30 days period the claim will be considered closed.

Limited Warranty Statement

Double L warrants each new Double L product to be free from defects in material and workmanship. This warranty is applicable only for the normal service life expectancy of the product or components, not to exceed 12 consecutive months from the date of delivery of the new Double L product to the original purchaser.

Genuine Double L replacement parts and components will be warranted for 30 days from date of purchase, or the remainder of the original equipment warranty period, whichever is longer. Under no circumstances will it cover any merchandise or components thereof, which, in the opinion of the company, has been subjected to misuse, unauthorized modifications, alteration, an accident or if repairs have been made with parts other than those obtainable through Double L.

The Company in no way warrants engines, batteries, tires or other trade accessories since these items are warranted separately by their respective manufacturer.

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

Double L, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.

This warranty shall not be interpreted to render Double L liable for injury or damages of any kind or nature to person or property. This warranty does not extend to the loss of crops, loss because of delay in harvesting, or any expense or loss incurred for labor, substitute machinery, rental or for any other reason.

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

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

Double L reserves the right to make improvements in design or changes in specifications at any time, without incurring any obligation to owners of units previously sold.

No one is authorized to alter, modify or enlarge this warranty nor the exclusion, limitations and reservations.

General Safety

Before operating, adjusting or servicing the machine it is important that the safety instructions in this manual are carefully read and understood by those, which are directly concerned.

While all care and attention has been taken in the design and production of this machine, as with all machinery there remains a certain amount of risk to personnel while the machine is in use. It is strongly recommended that users and operators take all possible precautions to ensure both their own safety and that of the others that may be in the vicinity.

Read and observe the safety instructions in this manual. Safety is your responsibility!

RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



UNDERSTAND SIGNAL WORDS

A signal word – DANGER, WARNING, or CAUTION – is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your dealer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your dealer.

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

HANDLE CHEMICAL PRODUCTS SAFELY

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with Double L equipment include such items as lubricants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment. (Contact Double L for MSDS's on chemical products used with Double L equipment.)

USE SAFETY LIGHTS AND DEVICES

Slow moving tractors, self-propelled equipment and towed implements or attachments can create a hazard when driven on public roads. They are difficult to see, especially at night. Avoid personal injury or death resulting from collision with a vehicle.

Whenever driving on public roads, use flashing warning lights and turn signals according to local regulations. For some equipment, install extra flashing warning lights.

Keep safety items in good condition. Replace missing or damaged items.

PRACTICE SAFE MAINTENANCE

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil or debris.

Disconnect electrical cable before making adjustments on electrical systems or welding on machine.

REMOVE PAINT BEFORE WELDING OR HEATING

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well-ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.

If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to you and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

AVOID CONTACT WITH MOVING PARTS

Keep hands, feet and clothing away from power driven parts. Never clean, lubricate or adjust machine when it is running.

AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

Spray from high-pressure nozzles can penetrate the skin and cause serious injury. Keep spray from contacting hands or body.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

DISPOSE OF WASTE PROPERLY

Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used by Double L includes such items as oil and filters.

Use leak-proof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center.

Machine Safety

Be careful when other people are close by!

Never start the machine when people are close by tractor or machine. Never stand between the tractor wheels and machine. The width and height of the potato planter seed hopper create a large blind spot behind the machine. Exercise extra caution when backing up.

Use of the machine

The machine should be used only for the purpose it has been designed for.

Use personal protection devices

Do not wear loose clothing, which might catch in any of the moving parts. In dusty conditions an approved mask must be used.

Take care of excessive noise level. Some tractor/implement combinations, depending on conditions, may cause noise level beyond 85dB at the operator's ears. In these conditions ear protection must be worn. Keep cab windows and doors closed to reduce noise level.

The machine must be connected to a correctly sized tractor

The weight of the tractor must correspond to the maximum weight of the machine when operated. Follow domestic law and regulations.

Connecting machine to tractor.

If connection should be carried out with drawbar, one of the parts (tractor or machine's drawbar) must have a clevis. The drawbar pin must be secured with a lock pin.

Observe national regulations regarding road transport. Some countries require the use of safety chain when a trailed machine is towed along public roads.

Think of safety while operating the machine

Stop the tractor engine and remove the ignition key prior to carrying out repairs, cleaning, lubrication or maintaining the machine.

Safety guards

Make sure all guards are in good order and fitted correctly. Do not attempt to start the machine before ensuring this.

Some machine options may require the use of a PTO shaft. Pay particular attention to the plastic guards of the PTO shaft. If damaged they must be replaced. The chain locks of the guards must always be fitted on a suitable place on the tractor and the machine to prevent the outer plastic guards turning.

Hydraulics

Be very careful when dealing with hydraulics. Use eye protection and gloves. Escaping hydraulic oil under pressure might penetrate into the skin and cause serious infection. See a doctor if you have been exposed to injury.

Take care that nobody is close to the machine when the hydraulic functions are being operated.

When uncoupling machine and when leaving tractor/machine

When uncoupling, all hydraulic functions must be in neutral position. The machine must be lowered to the ground and be safely secured. If the machine has parking chocks they should be used at the wheels. Never allow children to play or stay near agricultural machinery.

Drive safely

Beware of your responsibility, - carelessness or negligence may cause serious injury or even death.

Prior to transporting the machine along public roads, check wheel bolts and couplings. Disconnect or lock the hydraulic system.

Drive carefully. Reduce speed when turning and driving on uneven ground. Take care that trailed machine does not start swinging or become unstable.

Please be aware of the danger of overturning when working on slopes and in soft ground. Reduce load.

Lights

The owner and operator is responsible of providing correct lamps and reflectors on the machine when transported on public roads. Comply with public regulations.

Safety equipment

Always carry first aid equipment on the tractor. Also observe the regulations concerning fire extinguisher. When working with burning materials like hay and straw a fire extinguisher must be available at all times.

Spare parts

For safety reasons use only original spare parts. The use of non Double L spare parts will cause the warranty to be invalid.

Maintenance

Take care that the machine is properly maintained and kept in good safe working condition. Never change the basic technical construction of the machine.

Maintenance

CAUTION: Review and follow all safety instructions before performing any maintenance. To prevent injury, never lubricate or service equipment while it is running.

Roller Chains

Roller chains should be kept tight and lubricated. Adjustment of the roller chains is accomplished by moving the idler. Lubricate the chains every 200 hours with SAE 30 or heavier engine oil or an aerosol chain lube.

Cup Belt Tension & Alignment

Adjusters are provided at the top of each planter leg to tension and align the cup belt. Do not over tighten cup belt. In order to avoid stretching the belts, reduce the tension when not in use.

Bolts

Belt and chain roller bolts as well as mounting bolts should be checked at least every season and tightened as necessary. Pay extra attention to the frame bolts connecting the front and rear cross tubes.

Check thoroughly all bolts of drawbar, top section's hinge pins, wheels and wheel shafts after 1 hour of use and thereafter weekly. All other bolts and nuts should be checked after 8 hours of use and thereafter weekly.

Bolt tensioning torque

Thread size	Torque
M5 3/16"	50.5 lb.in
M6 1/4"	7.3 lb.ft
M8 5/16"	17.7 lb.ft
M10 3/8"	35.4 lb.ft
M12 1/2"	62.7 lb.ft
M16 5/8"	155 lb.ft
M20 3/4"	295 lb.ft
M24 1"	737 lb.ft

Dirt Build Up

It is often necessary to clean dirt off of accumulation points, especially when conditions are wet. Some of the points to watch are: pulleys, rollers, chutes, bowls, belt slides and all drive and hydraulic components. Stop the planter before cleaning.

Controls

Check wirings for damage or corrosion. Check all plugs and sockets. Keep command panel and electric cabinet clean. Clean with a moist cloth, and avoid running water.

Storage

- a. Clean excessive dirt build up from machine.
- b. Lubricate all roller chain.
- c. Apply a light coat of oil to all extended cylinder rods.
- d. Store in dry shelter if possible or cover all rubber parts.
- e. Loosen all roller chain drives.
- f. Cover electric valves

Welding on machine

Disconnect the command panel and the electric cabinet before any welding is done on the machine.

Maintenance hydraulics

Check the filter element every 50 acres or at least once a season. The filter element should be replaced for every 250 acres being planted and always once a season.

Caution!

Release pressure in the system before opening the filter housing.

Keep hydraulic oil clean! Clean hydraulic oil will prevent excessive wear and premature failure of components. Replace the tractor filter and oil as per manufacturer's instructions.

Cleaning

We recommend the use of pressured air when cleaning the machine. Thus there is less risk of damaging the bearings of the machine. If high pressure water is used, keep clear of bearings and electric components.

Assure that piston rods are kept free from aggressive chemicals in order to avoid corrosion.

Machine identification

The machine's serial number and the manufacturer's address are found on the number plate of the machine. See illustration below.

The serial number and year of manufacture for this machine is given below. This number is important with regard to service and the correct supply of spare parts.

Serial number :958009-121

Year of manufacture :2009

Technical specifications

Model	9560
Number of rows	6
Row width	(34" - 38")
Seed spacing intervals	infinite variable 4" – 31"
Hopper capacity	13,000 pounds
Minimum filling height, potatoes	93"
Guage wheels	12.4"-24" 8 layer w/ribs
Trailing wheels	14L-16.1 Flootation
Disc-rollers for coverers	16" diameter
Working speed	2.5-6.5 miles/hour
Weight empty machine	
Electronic planting monitoring system	
Area meter	

Model descriptions

The Model 9580 potato planter from Double L is a 8 row semi-mount trailed machine. The planting units include double cup belts, adjustable gate between hopper and planting unit, adjustable row width, hydraulic drive powered by the hydraulic pump of the tractor, infinite planting distance adjustment, rigid furrow openers and manually controlled planting depth. The machine is available as follows:

8-row basic machine, row width 36"

Choose between following cup types:

- Planting cup 2.6" diameter
- Planting cup 2.9" diameter

The planter is delivered with 16" diameter hilling discs.

1. PREPARING A NEW MACHINE

Start up of new machine

Read the operator's manual. Great care must be taken when starting a brand new machine for the first time. Incorrect assembly, faulty operations etc. may cause expensive repairs and loss of profit. The Double L product guarantee does not cover damage occurring when the instructions given in this book are not followed.

Carefully do as described below when starting a new machine.

Check that the machine is mounted correctly and that it is not damaged. Assure that electric wirings have length and position that allow machine to move without causing any damage to the wirings.

Check the connections between tractor and machine.

Check that the roller chains are tensioned and correctly positioned on the sprockets.

Check that the drive rollers on top of both planting tubes are equally adjusted in order to assure cup belts run straight.

Lubricate the machine according to lubrication instructions.

Check wheel bolts torque setting.

Row width control

Check that row width is in accordance with customer's specifications.

The row width could preferential be ordered directly from the factory, since it is difficult to change the row width after initial factory assembly.

6-row basic machine, row width 34"

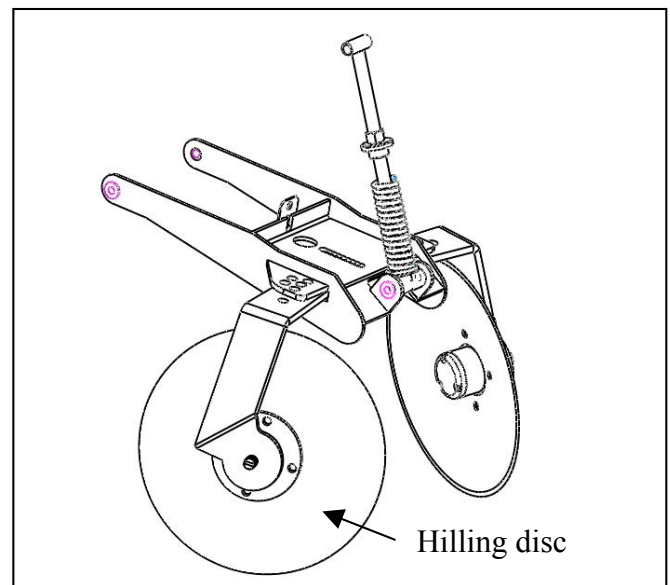
6-row basic machine, row width 36"

6-row basic machine, row width 38"

Hilling discs

The Hilling disc frame is attached to the planting unit with metric 12 mm bolts.

The hilling disc down pressure can be adjusted by changing the preload spring pressure. Hilling disc position can be varied by moving the top of the spring rod to different anchor positions on the platter leg.

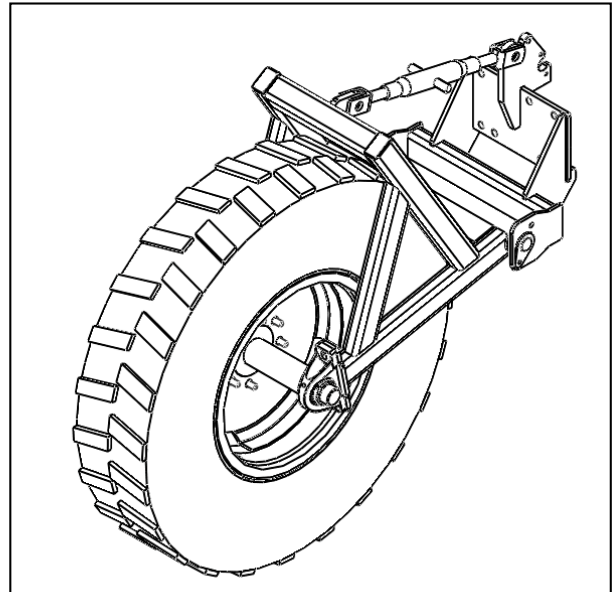


The roller disc down pressure can be adjusted by turning the nut above the compression spring.

The width distance between the discs, and disc angle, is adjustable by using the different holes in the roller discs arms, and then locked by the center bolt.

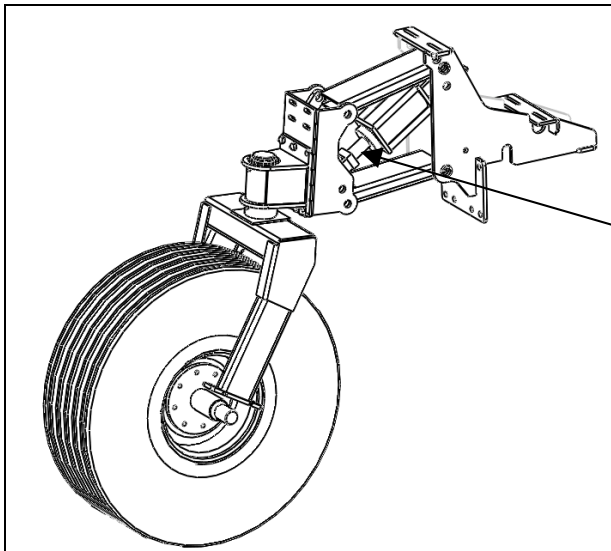
Gauge wheels

The gauge wheels mounted on the front of the planter are set with the dual turnbuckles located on each side of the tire. It's easiest if the adjustment amount is first estimated, and then make the adjustment with the tractor drawbar raised up. In this manner, the turnbuckles will turn easily since the weight of the planter is supported by the tractor.



Trailing wheels

The trailing wheels are hydraulically controlled from the tractor. To change wheel height, add or remove ram stops from each hydraulic cylinder. Make sure that all cylinders have the same number and size of ram stops.



Add or remove cylinder stops to change depth.

2. TRACTOR REQUIREMENTS

Tractor Horsepower—225 horsepower minimum.

Hydraulic connection

Single acting output with free return, continuous oil flow, capacity 12 gallons/min.

One double acting hydraulic valve.

Electrical supply

12V, standard 12mm.

IMPORTANT! Ensure all electrical contacts and the sockets are well connected in order to avoid a power supply cutoff due to vibrations. Even a very short cutoff will start the computer test procedure.

3. TRACTOR CONNECTIONS

Road Transport

Prepare the planter for road transport:

A removeable transport axle and hitch have been provided for transporting the planter between fields. The hitch and rear axle can be raised and lowered with hydraulic pressure from the tractor. The hydraulic cylinders can be stored on the planter and do not need to be removed along with the hitch and axle. Limit tow speed to 15 miles per hour, and do not tow planter with potatoes in the tank. Although the hydraulics can lift the planter up away from the ground for clearance while towing, do not rely on the hydraulics to hold planter up while towing. After raising the planter, make sure the hitch and axle are pinned with the provided bolts. Do not actuate hydraulics after hitch and tow axle are pinned in place.

Hydraulic drive system

Components

The hydraulic drive system on this machine consists of the following items.

- Two or three spools valve block
- Oil motor for driving planting units
- 2-way check valves for trailing wheel cylinders
- Check valves for ensuring proper flow direction
- High pressure oil filter
- Hydraulic circuit for raising and lowering the tow hitch and tow axle.

Connecting the hydraulic valve

When connecting hydraulic hoses to tractor, the pressure hose goes to the oil filter on the planter, the second hose is return. The hydraulic valve is very sensitive to contamination, and if contaminated oil reaches the valve, the valves proportional control will be compromised.

Connecting tractor hydraulics

The trailing wheels are connected directly to the tractor hydraulics for lowering /raising, and operated by the keypad. The icon showing hopper up/down controls the wheel height on Double L planters.

4. OPERATING THE MACHINE

Seed potato size

Uniformly sized potato seed results in an improved yield and optimal planter performance.

Recommended grading (square sieve):

	Min. size	Max. size	Max length of potatoes
Large cup ø74mm	1.5"	2 3/8"	4"
Large inserts (white)	1 3/8"	2"	3"
Small inserts (green)	1"	1.5"	2"

Working speed

Depends on cup belt speed, i.e. the chosen spacing.

Small spacing = low speed

Large spacing = high speed

Spacing (inch) x 0.39 = optimal working speed (miles per hour).

Spacing (cm) x 0.25 = optimal working speed (km/h).

Round seed can be planted at larger speed while oblong and cut seed should be set at lower speed.

Belt agitation

Set to minimize misses and doubles. Six positions (Fig. 45a/A).

Minimum agitation = Large potatoes, high belt speed

Maximum agitation = Small potatoes, low belt speed

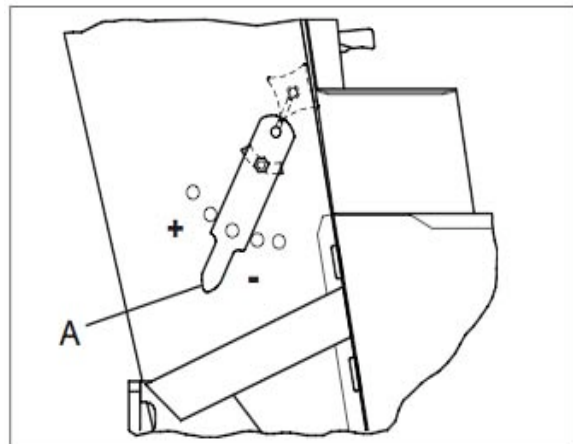
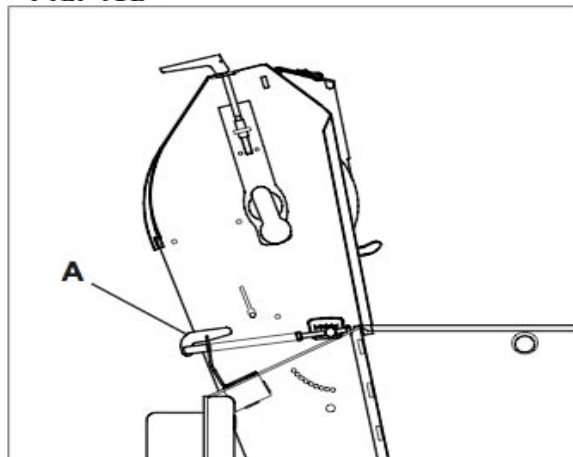


Fig. 45a

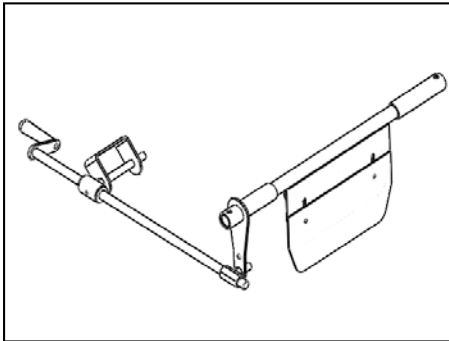
Mechanic agitation

9 positions (Fig. 45b/A)



Regulation of potato flow from hopper to planting units

Set the choke plates (angle and length) to obtain balance between supply and planting. Potato level should normally be approx. 6-8 inches below the lower edge of the hopper's front plate. If the hopper bowl is too full, the cup belt does not agitate properly and more double seed sets will occur.



Choke plate angle:

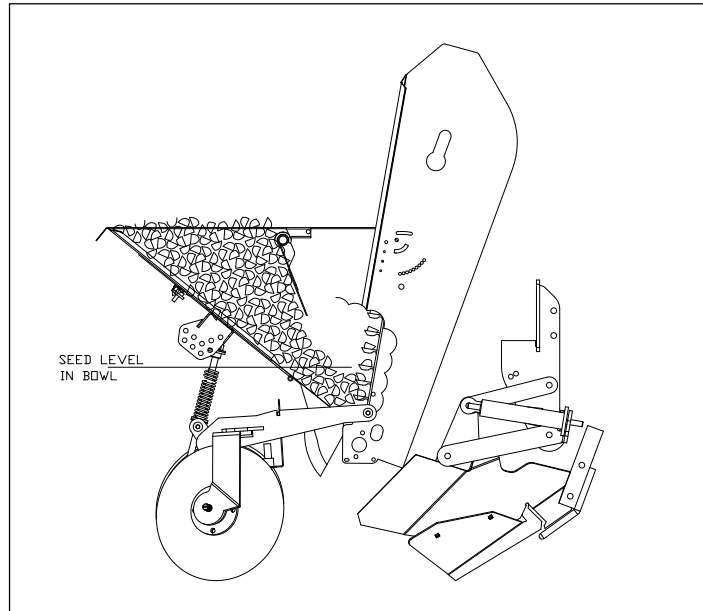
Increase flow – turn crank clockwise

Reduce flow – turn crank counter clockwise.

Choke plate length: (slotted bolt holes)

Increase flow - shorten plate

Reduce flow - lengthen plate



Emptying the potato hopper

Empty all accessible cups. Open the bottom hatches and empty the hopper. If the flow blocks, move the belts. Finally turn the belts in order to empty the planting tubes. Reposition the hatches.

It is possible to empty the hopper by engaging the drive of the planter from the electronic keypad, see the section covering the control system.

5 ELECTRONIC CONTROL PANEL

NOTE! The screen displays may differ slightly from the figures included in this manual. Some function icons do not apply to Double L planters.

The electronic control system includes (Fig. 50):

- A** Control panel
- B** Black box
- C** Wheel sensor
- D** Drive shaft sensor
- E** Valve bank cable
- F** Depth control sensor (optional)
- G** Battery cable
- H** Power supply cable
- I** Panel cable

The black box is fitted behind the right-hand side panel of the planter.

5.1 The keys of the control panel

See Fig. 51.

- A-B** Arrow keys for moving the marker on the screen
 - C** Not in use
 - D-E** \pm keys for change of screen values
 - F** Not in use
 - G** OK key confirming the selection/storing the new value
 - J-O** Function keys with variable function, see soft key display on screen
- When operating the \pm keys (D-E) with no parameter selected, the screen contrast is adjusted.

5.2 Connecting the tractor power supply

In order to start using a machine with electronic control system, the power supply to the black box must be connected. Insert the plug in the power supply socket of the tractor. If the tractor does not include a proper power supply socket, a new one should be fitted. A battery cable with fuse is included with the machine. Connect cable to the tractor's battery when fitting the battery cable.

Note that red cable should be connected to the + terminal of the battery.

On the rear side of the panel an ON/OFF switch is provided (Fig. 51/T). When turn ON the control system is powered and the screen lights up.

Wait then about 25 seconds for the main menu.

See Fig. 51 for the description of the keys of the control panel. **See Fig. 51** regarding description of symbols on the screen and the varying function of the function keys.

Disconnect the power supply if the machine is not used for several days.

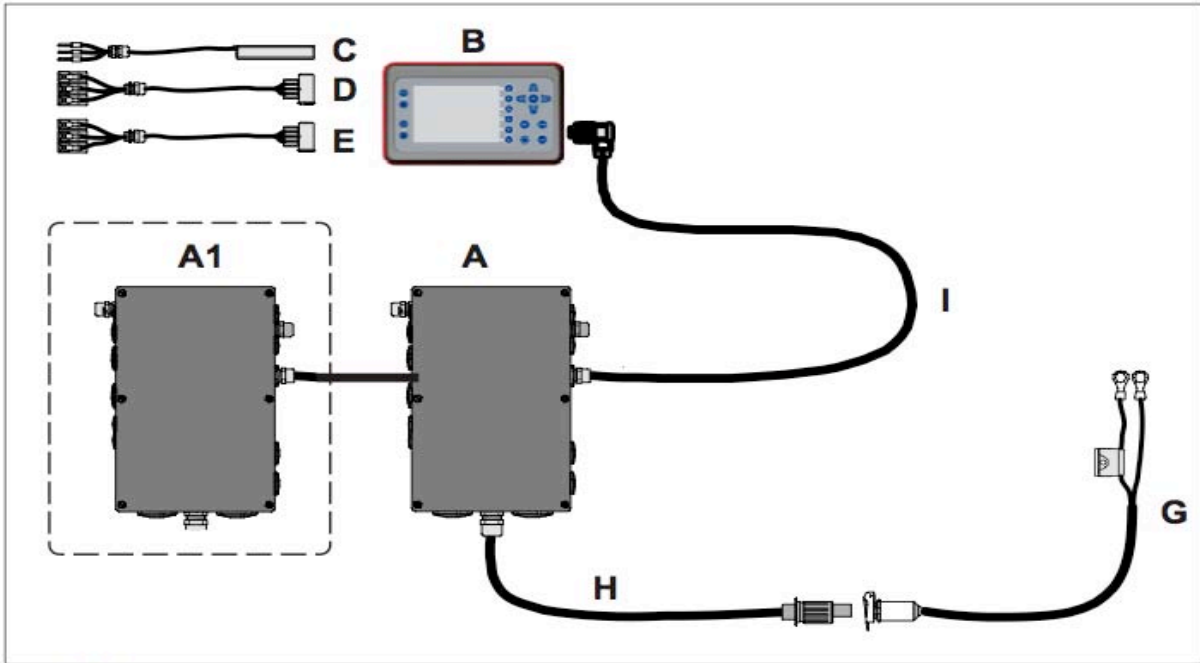


Fig. 50

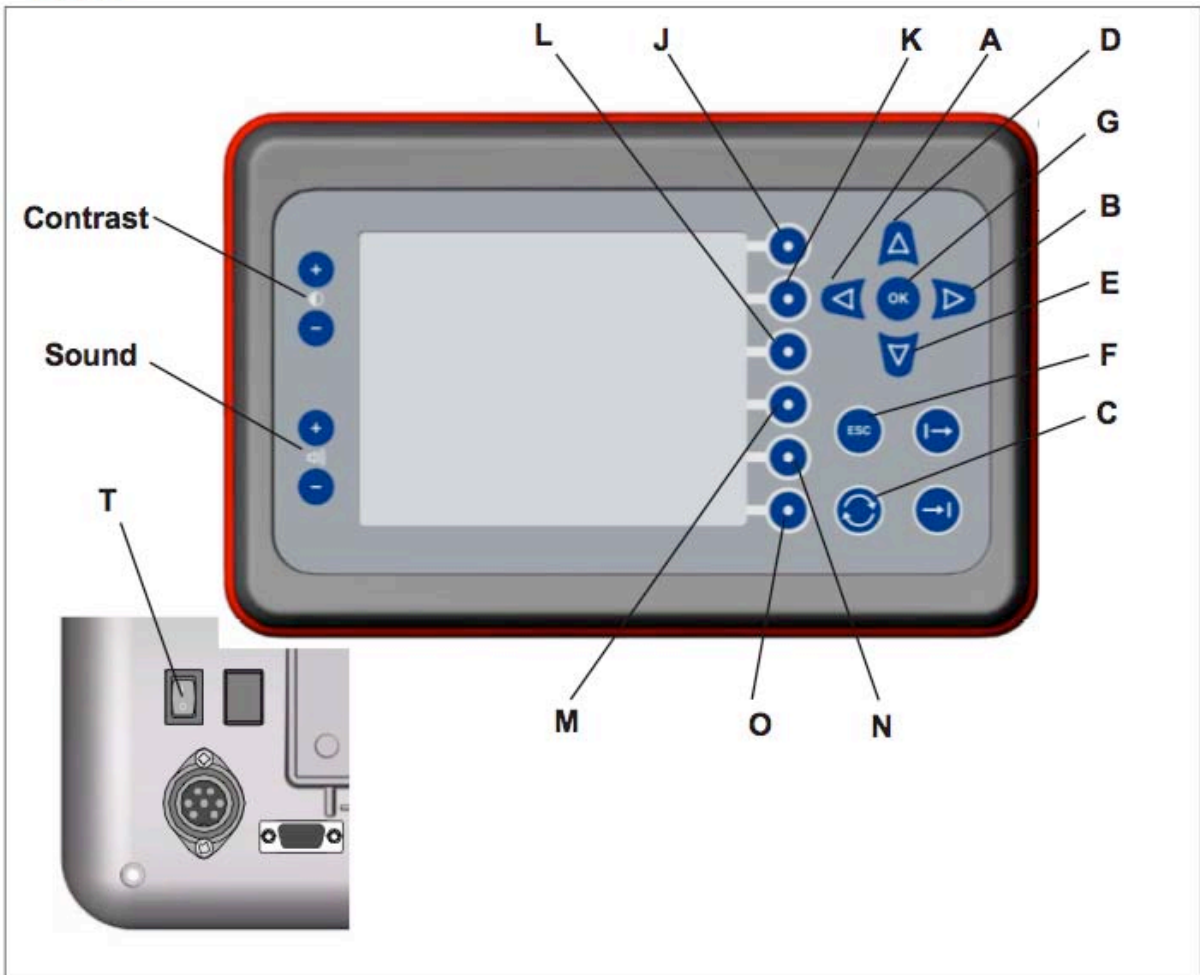


Fig. 51

5.3 Panel display

Operating the machine:

A Start/stop of the machine

Note that forward speed should exceed 0.5 km/h to activate planter drive. Lower the machine and push the "**START**" key, see **Fig. 52 (A)**. The key symbol will thus change to show "**STOP**". Press "**STOP**" key to stop the planter drive and continue for at least 2 meters in order to cover the end of the row. Thereafter raise the machine. During the planting the planting units will empty. It is recommended to maintain a fairly constant level of tubers in the planting units in order to obtain a good result.

B Changing between menus for operating the hydraulic functions on the machine

C Raise hopper (rear tires on Double L planters)

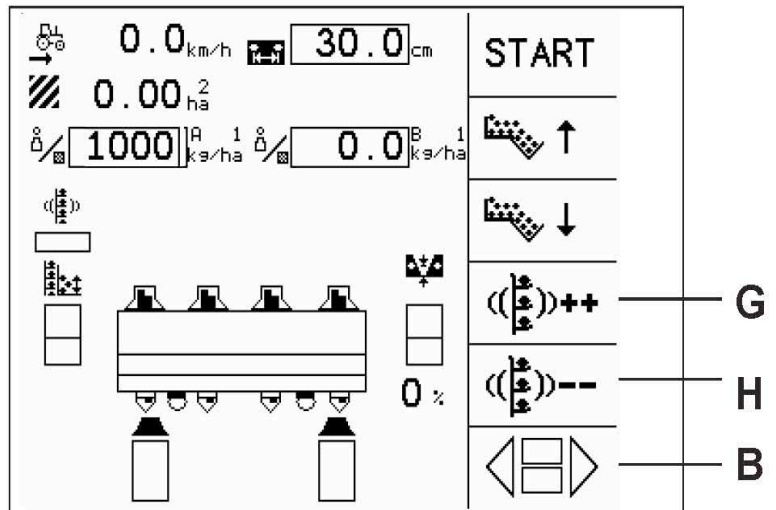
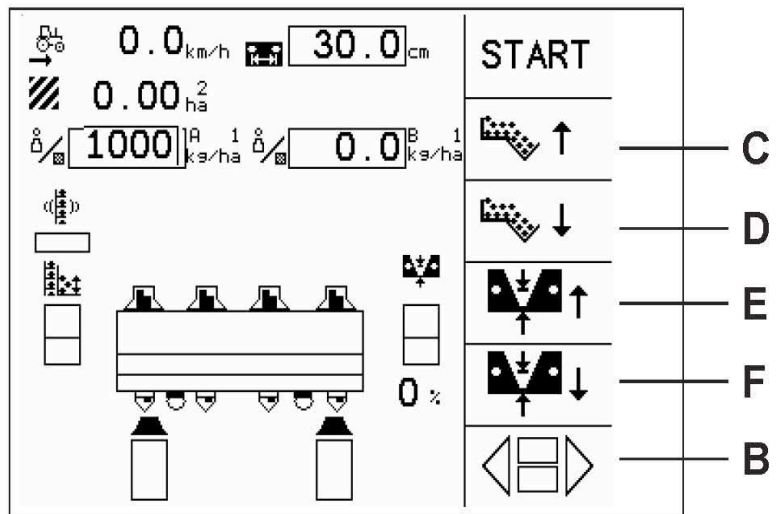
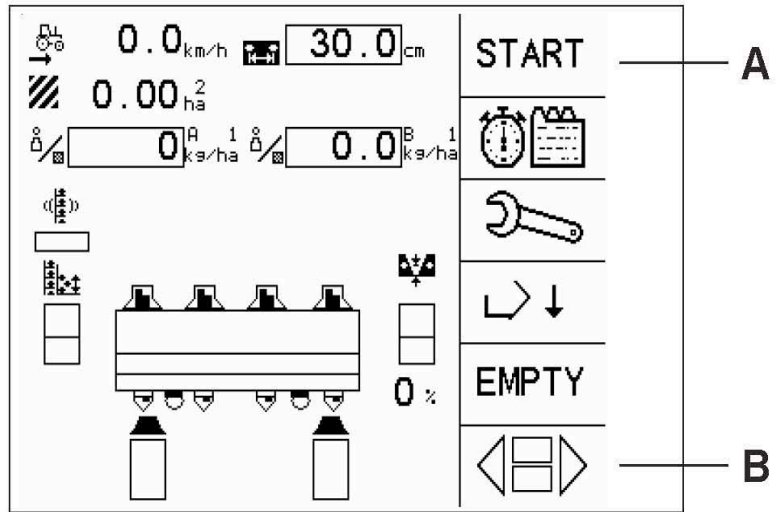
D Lower hopper (rear tires on Double L planters)

E Machine up/reduce planting depth

F Machine down/increase planting depth

G Increase agitation of cup belt

H Decrease agitation of cup belt

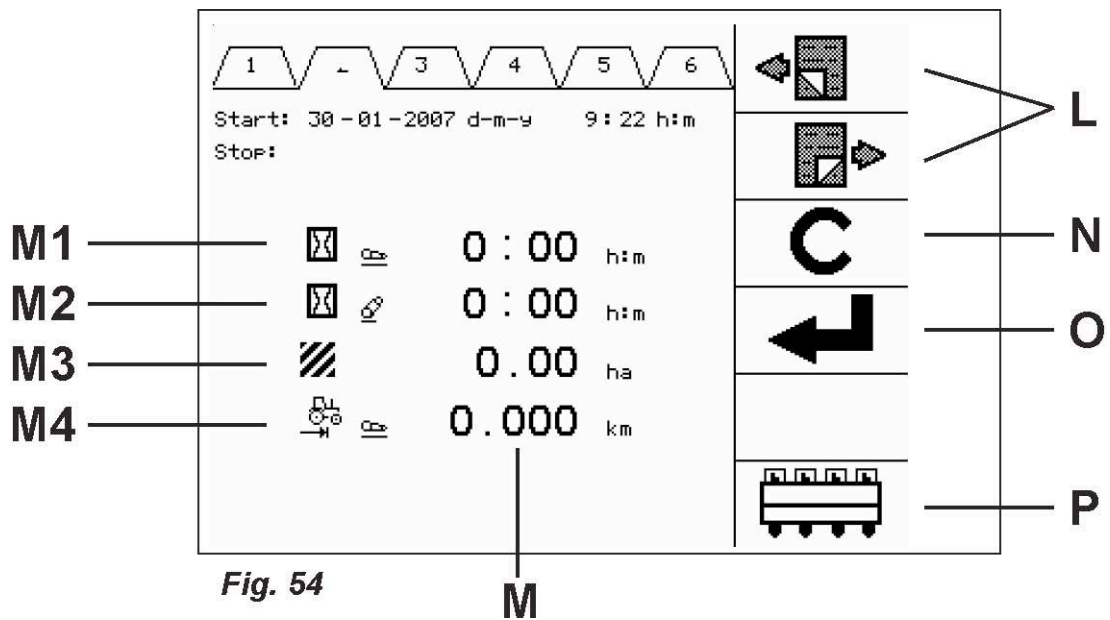
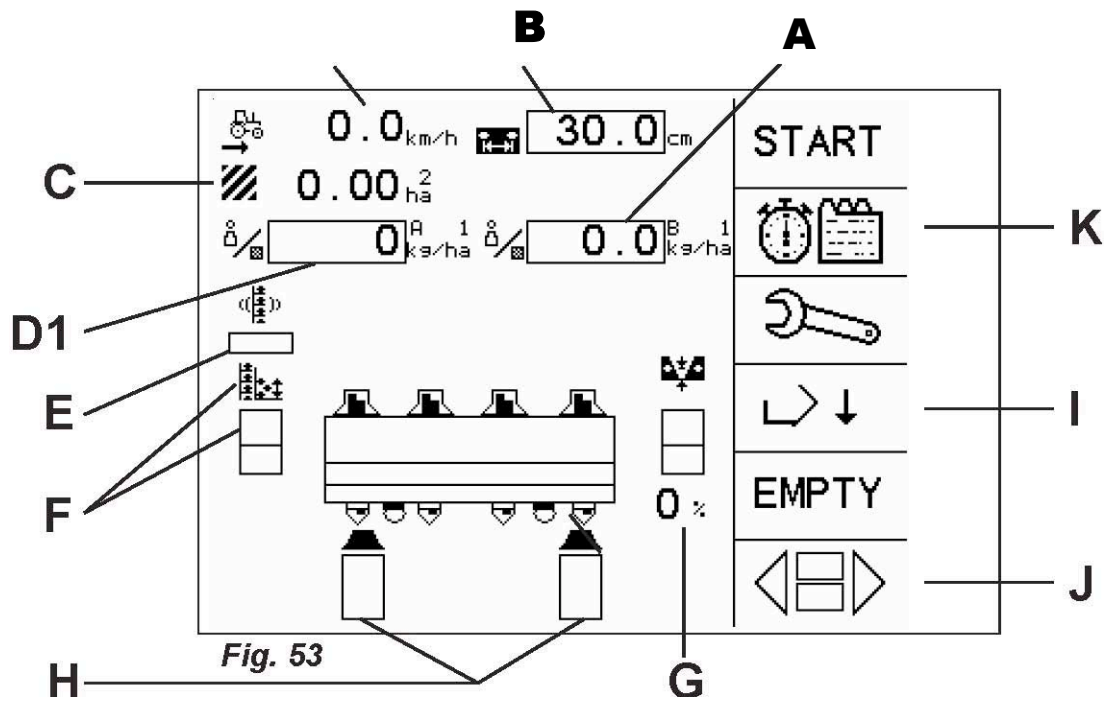


Main menu:

- A** Showing the progress of speed
- B** Wanted planting width
- C** Indicates the area registration which is active, and total areal in hectares(ha) which have been driven on this area registration
- D1** Wanted fertilizer amount Kg/ha for fertilizer hopper **A**
- D2** (Wanted fertilizer amount Kg/ha for fertilizer hopper (**B/C**))
- E** Indicates the agitation intensity Min-Max on the cup belt
- F** Shows if the automatic hopper leveling sensor is activated and also the potato level in the planting unit
- G** Shows if the automatic depth control sensor is activated and also the depth of the machine
- H** Shows if the planting sensor is activated 2-8 rows and also the error planting for each row (0-100%).
- I** Lower hopper for loading
- J** Empty planter with cup belt
- M1** Total time the machine has been driven in raised position
- M2** Total time the machine has been driven in lowered position
- M3** Total area with planted potatoes
- M4** Average speed during work

Area registration:

- K** Change to area registration
- L** Change between area registration 1-20
- M** Indicate for every area registration
- N** Reset the registrations
- O** Activates the chosen area registration
- P** Change to the main menu without activating chosen area registration



Programming/calibrating the machine

Programming the control:

A Service menus

B Activate the wheel sensor. If this is set to symbol "tractor" the wheel sensor is activated and the wheel on the planter has to rotate for starting the machine. If this is set to symbol "hand" the sensor is not activated. And the planter is starting directly after the start has been pressed. You then have to add the speed of the tractor manually in the main menu. **(Fig. 53 A)**

C Calibration of the wheel diameter. Measure 100 meter (109 yd)

Press the arrow key **(Fig 51 A-B)** until the **"START"** symbol is flashing. Press **"OK"** key and drive 100m (109 yd).

Press once again **"OK"** key to store the correct numbers of pulses for 100 meters (109 yd) This number will typically be around 600 pulses per 100 meters. Loose soil has more tire slip, thus fewer pulse counts per 100 meters. After an initial field calibration, pulse count can be manually fine tuned. Ideally, the speed indicated on the planter should match that indicated by the tractor. If planter control speed is below that measured by the tractor speedometer, adjust the pulse count number upward. If it measuring over what the tractor speedometer reads, adjust this number downward. Changes in soil conditions within the same field may result in this calibration fluctuating slightly from tractor speed, but it should stay fairly close.

D Number of planting units. After confirming **"OK"** the current must be turned off/on, so the value in the software will be stored.

E Actual row with

F Turn off/on the planting control

G Choose between metric and imperial measuring value. After confirming **"OK"** the current must be turned off/on, so the value in the software will be stored.

H Go directly to the main menu

I Next page

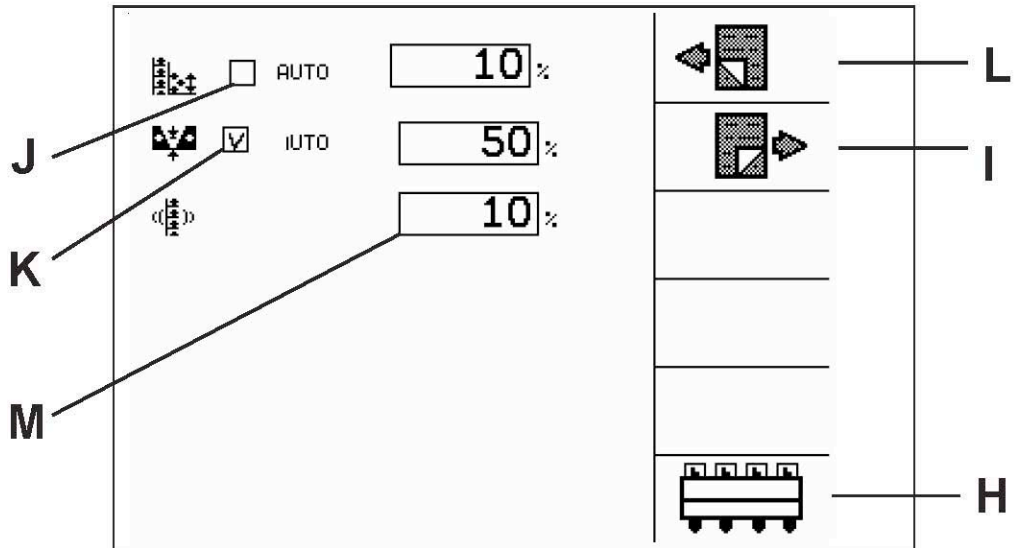
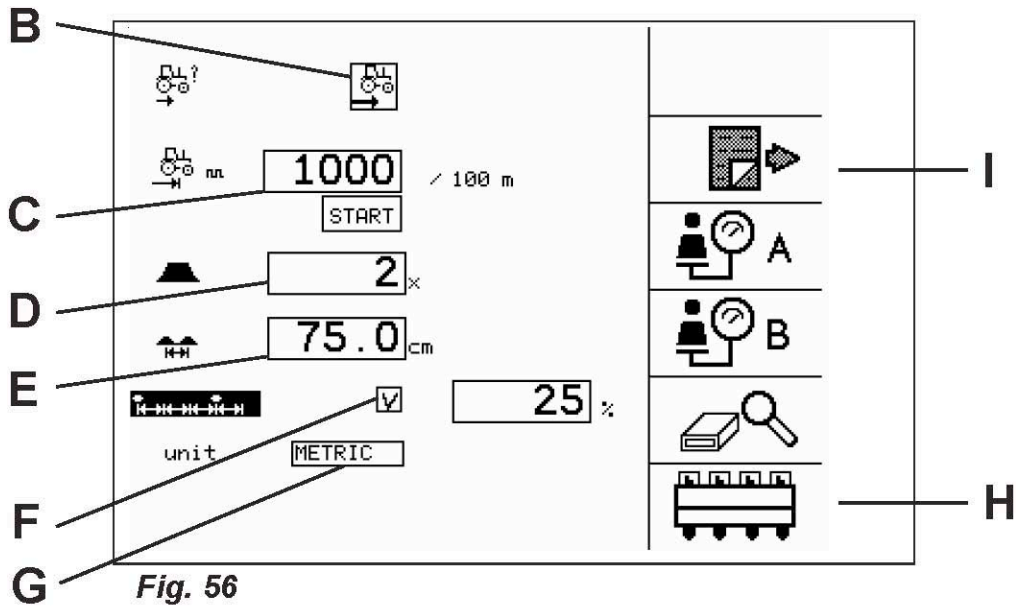
J Activates the hopper level sensor and add the wanted level of potato in the planting unit from 0-100%, 0% gives a low level of potatoes, and 100% gives high level of potatoes.

K Activate the depth sensor. Adjust the planting depth by setting the value from 0-100%. 0% gives a shallow or none planting depth, and 100% gives maximum planting depth

M Define the intensity fo the agitation for each press on++or-- **(Se Fig. 57 G-H)**

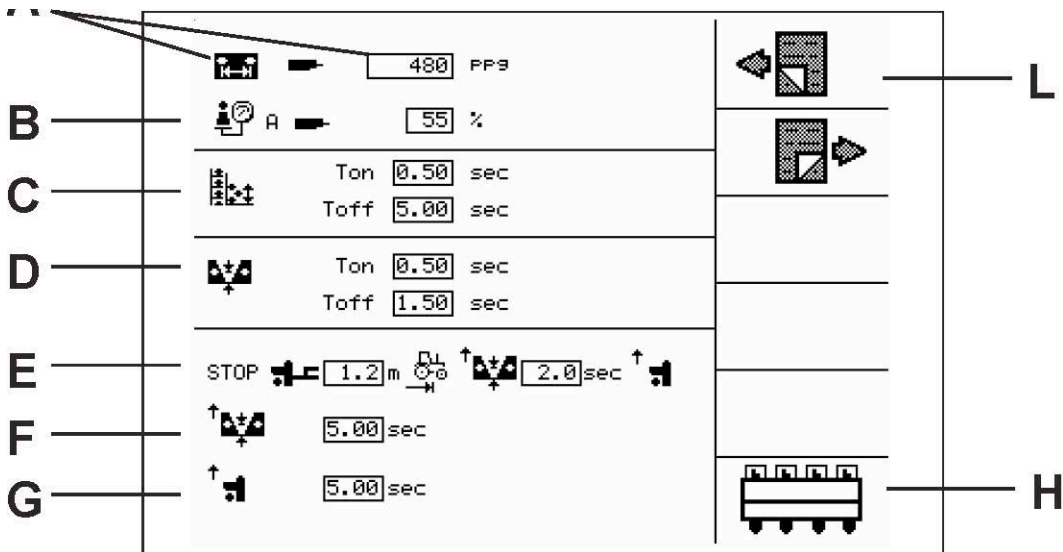
L Previous page

I Next page



Programming of the machines sensors and hydraulic valve:

- A** This value is centering the proportional valve for the drive of the planting belt. The value for the center position of the valve is about 500 ppg. If the belt is starting to late this value has to increase. Or if the belt is going to fast during planting this value has to reduce
- B** This value is centering the proportional valve for the drive of the planting belt. The value for the center position of the valve is about 50%. If the fertilizer chain is starting to late this value has to increase. Or if the chain is going to fast during planting the value has to reduce.
- C** The active time for the hopper filling sensor
Ton = time cylinder is active
Toff = time for next reacting
- D** The active time for the depth sensor
Ton = time cylinder is active
Toff = time for next reacting
- E** After enter the "STOP" the machines runs (X) meters before lifting in front. And then (X) seconds before lifting up the rear of the machine, after the front lifting has started.
- F** (x) seconds the lifting in front is activated
- G** (x) seconds the lifting of the rear of the machine is activated
- L** Previous page
- H** Main menu



5.4 Alarms displayed on screen

5.4.1. Misses (empty cups)

Too many empty cups on row unit number given in the alarm display.

Check the tuber level and the adjustments of the choke plates, agitators etc.

5.4.2 Cup belts does not run

No oil supply to the drive motor. Check the hydraulic system.

5.4.3 Too low voltage

Check the electric connections of control system and the power supply system of the tractor.

5.4.4 Too high speed of the cup belts

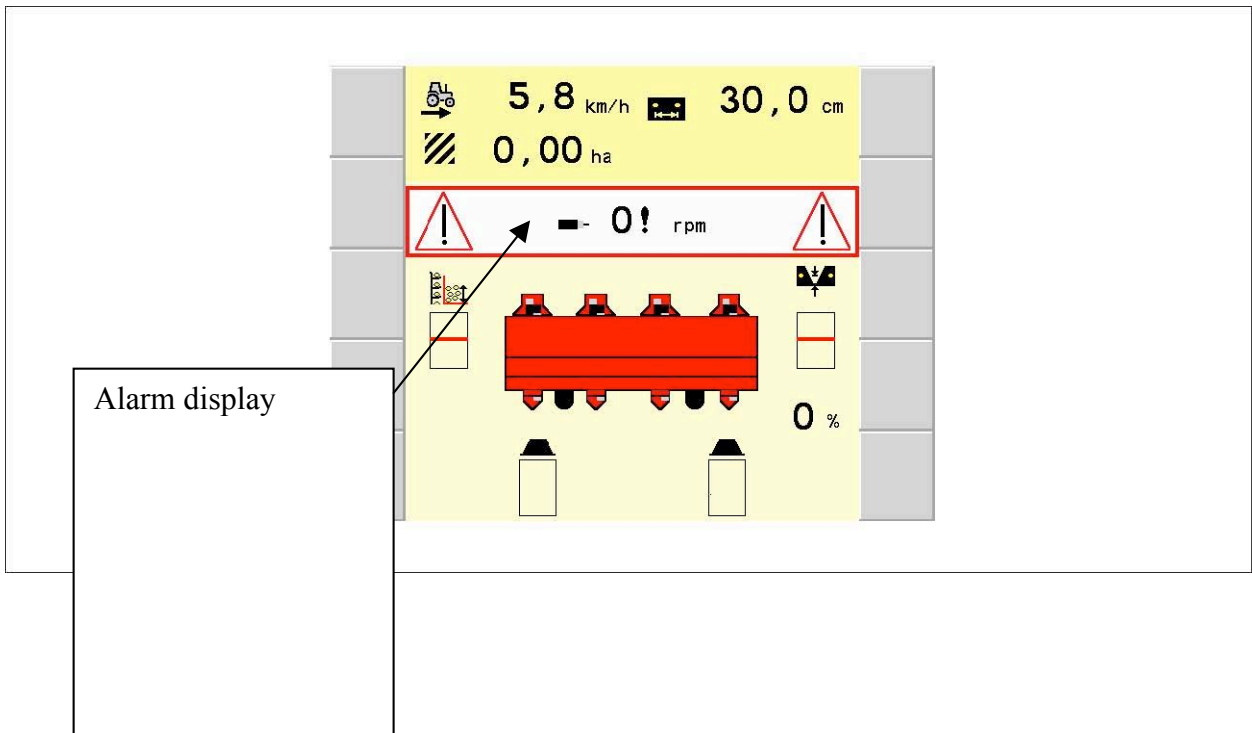
Faulty planting distance setting or too high forward speed on the tractor.

5.4.5 Varying planting distance

Faulty oil supply to the planter.

5.4.6 Field registration

Push key K (Field registration) in order to activate the field registration display.



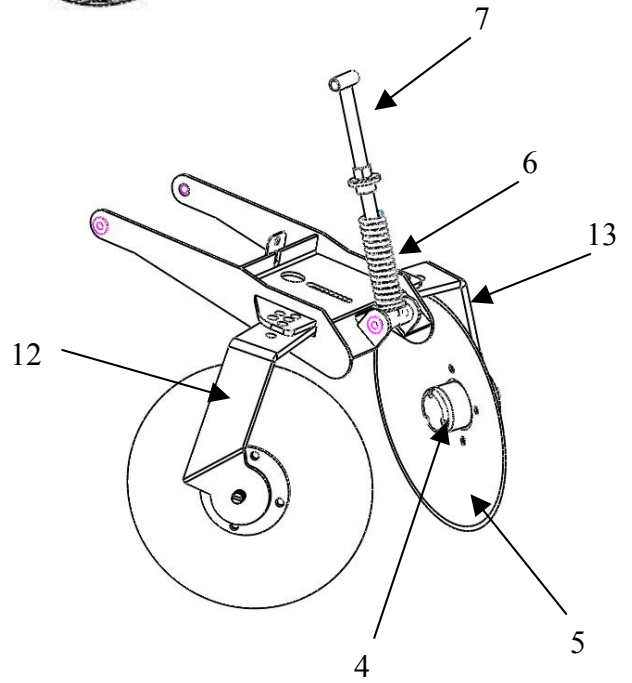
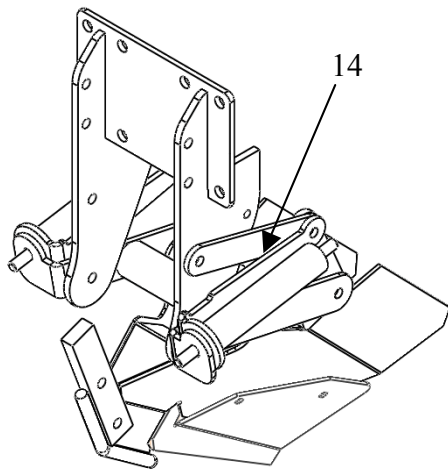
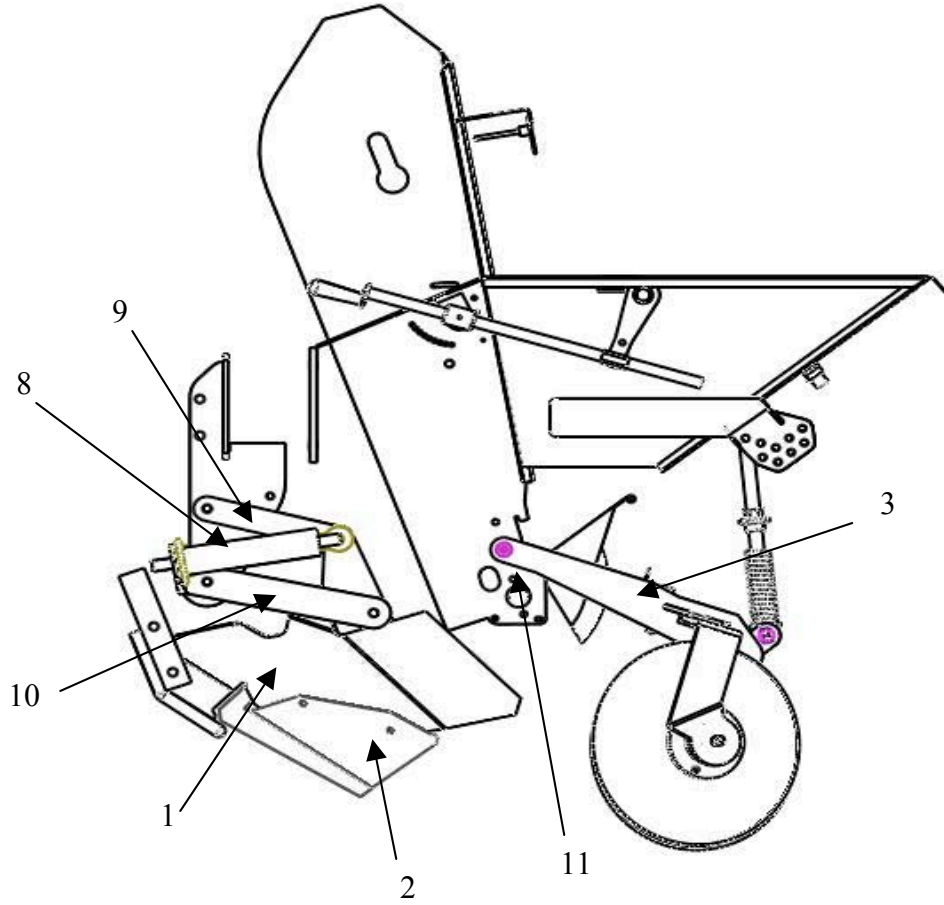
6. Trouble shooting

Symptom	Action
Inaccurate planting:	
Misses	Remove/exchange inserts Reduce belt agitation Reduce working speed Increase choke plates openings
Doubles	Use cup inserts Increase belt agitation Increase working speed Reduce choke plate openings
Doubles and misses	Reduce variations of seed size
Potatoes out of line in the row	Increase the planting depth to make a deeper V- shaped furrow.
Potatoes out of center of ridge	Adjust coverers' position according to planter's row centers
Faulty planting depth	a) Rigid furrow opener Lift or lower land wheels
Varying planting depth	a) Rigid furrow openers Reduce hopper filling
Covering:	
Too little soil covering	Increase depth of coverers
Too much soil covering	Reduce depth of coverers
Sharp top of ridge	a) Disc coverers Increase distance between pair of discs b) Ridging shovel/ridging hood Move shovel wings inwards
Wide furrow	a) Roller discs Increase distance within the pair of discs
Narrow furrow	a) Roller discs: Decrease distance within the pair of discs

Notes

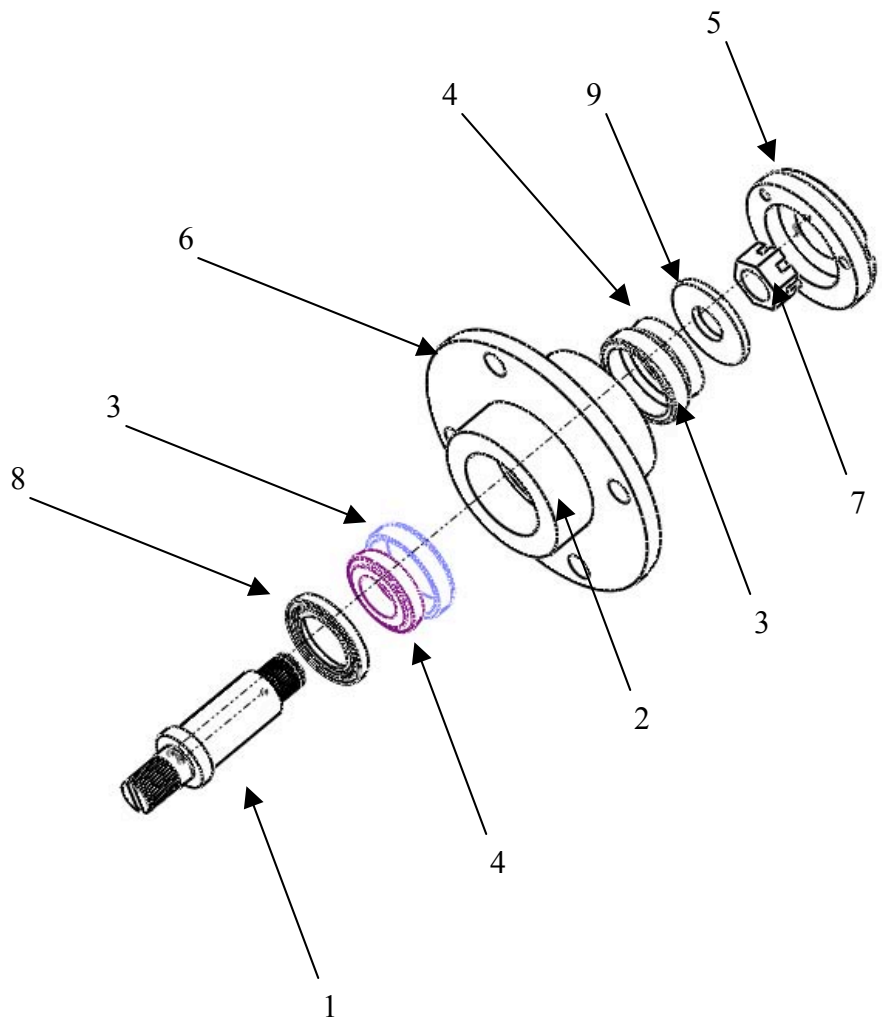
PARTS MANUAL

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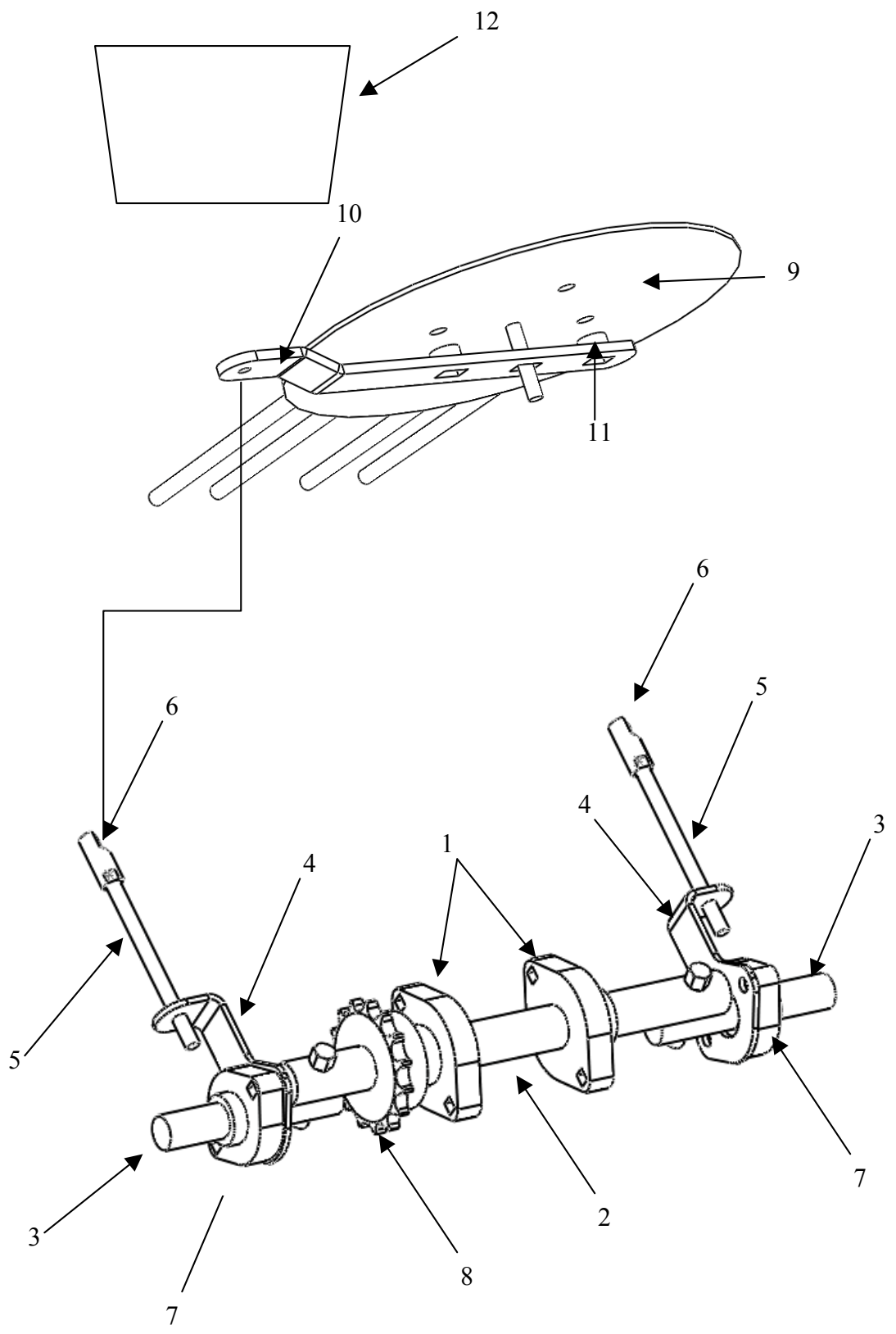
Planter Leg

<u>Item #</u>	<u>Part #</u>	<u>Qty (per row)</u>	<u>Description</u>
1	41550	1	Shoe, complete assembly
2	41558	1	Frog
3	42050	1	Hilling disc frame
4	41832	2	Disc hub, complete assembly
5	21165	2	Hilling disc
6	135393	1	Spring, compression
7	42036	1	Adjuster, hilling disc
8	133698	2	Urethane spring
9	133646	2	Parallel arm, upper
10	133641	2	Parallel arm, lower
11	134841	4	Bushing
12	134641	1	Hilling disc arm, LH
13	134640	1	Hilling disc arm, RH
14	133647	2	Spring arm



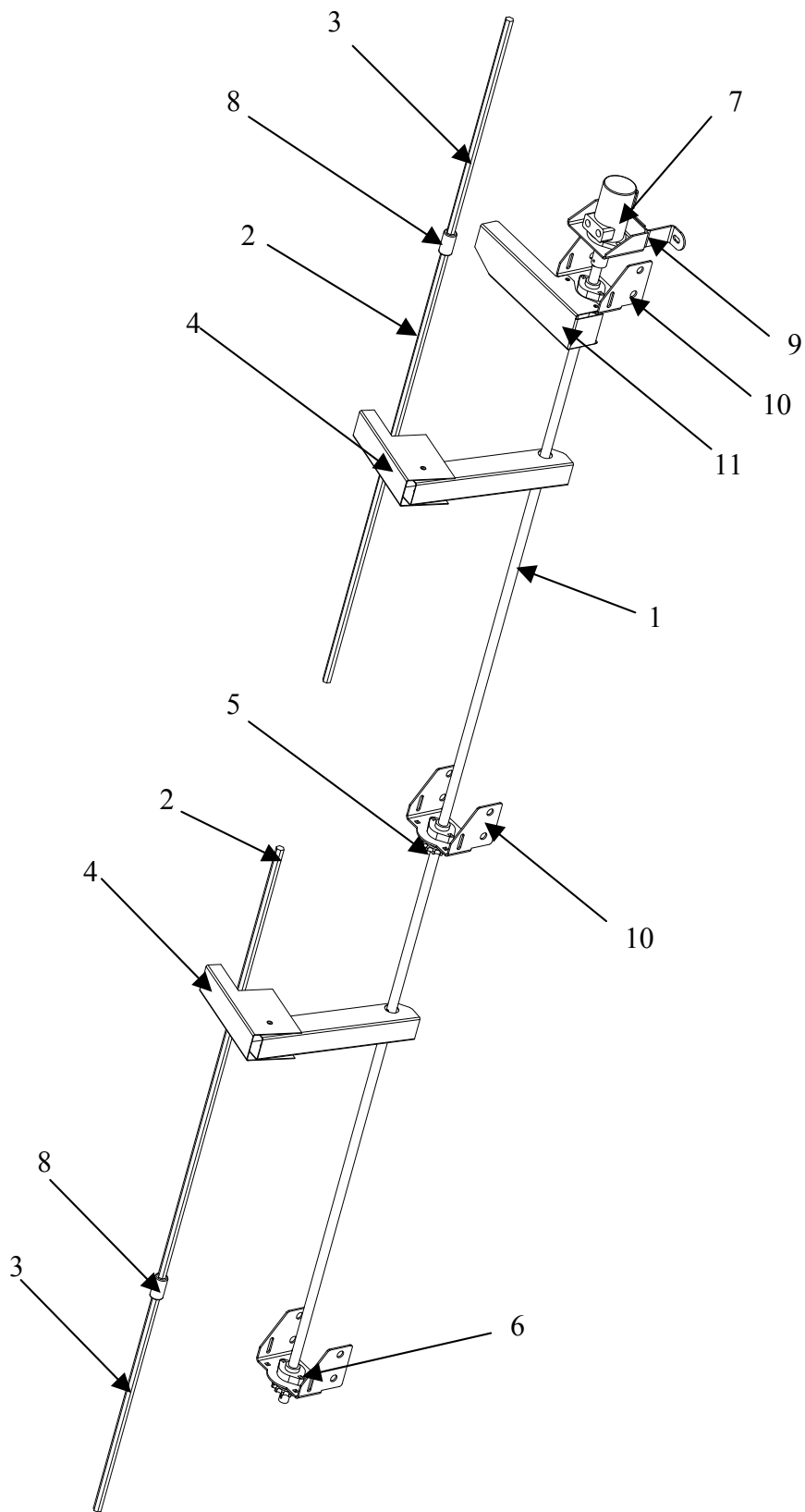
Spindle Assembly—Hilling Disc

<u>tem #</u>	<u>Part #</u>	<u>Qty (per hub)</u>	<u>Description</u>
1	134727	1	Spindle, planter hub
2	134728	1	Hub, planter
3	015333	2	Bearing cup
4	015326	2	Bearing cone
5	014731	1	Cap, hub
6	134732	1	Hub, flange
7	008178	1	Castle nut, 3/4-NF
8	022279	1	Seal, shaft
9	014349	1	Washer, 3/4 flat



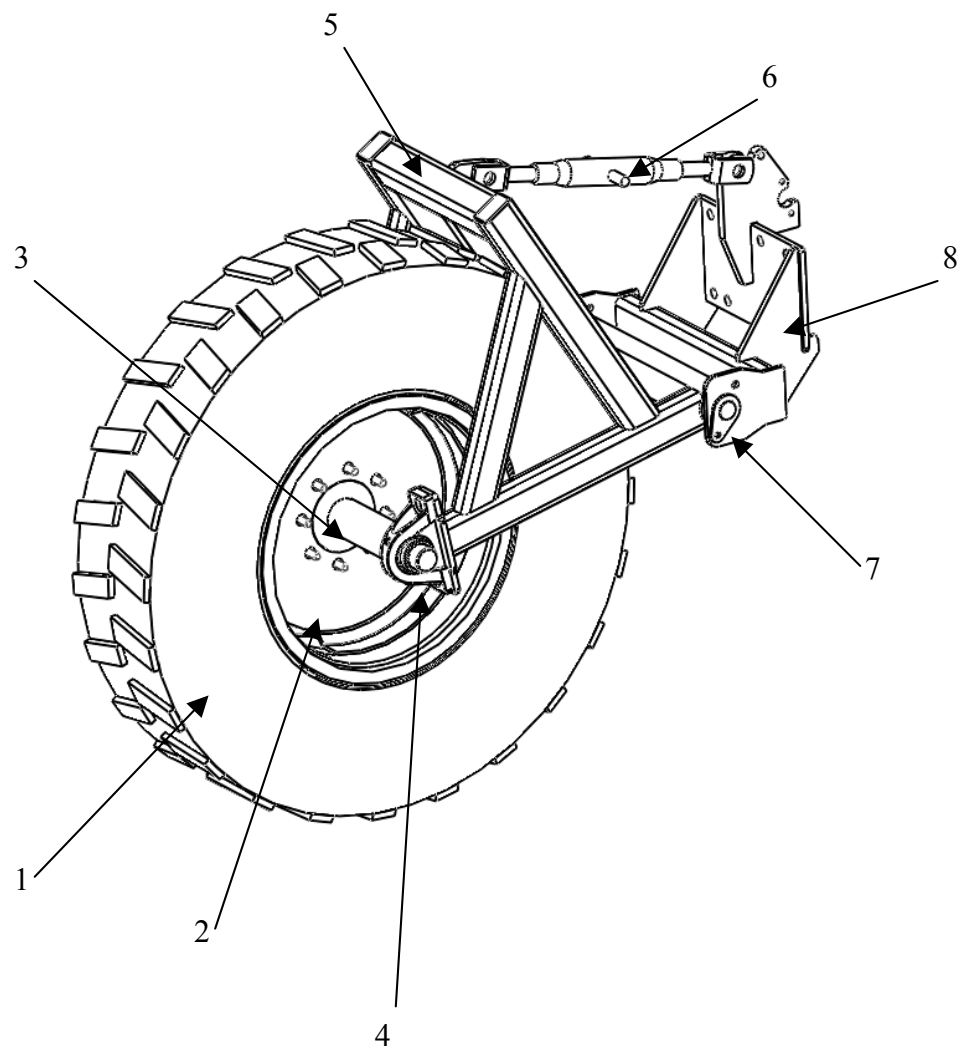
Agitator Assembly

<u>Item #</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	016321	4	Sprocket, 60B15 1.25B Bearing, 1" flange
2	133671	1	Agitator shaft
3	133670	2	Agitator eccentric
4	133672	2	Agitator mount
5	135448	2	All-thread
6	137266	2	Ball joint, ½ inch.
7	017389	2	Bearing, 1" flange
8	027139	1	Sprocket, 60B15 1.25B
9	UH210346	1	Feeding disc
10	135400	1	Disc crank
11	135449	2	Bushing
12	136119	1	Belt flap



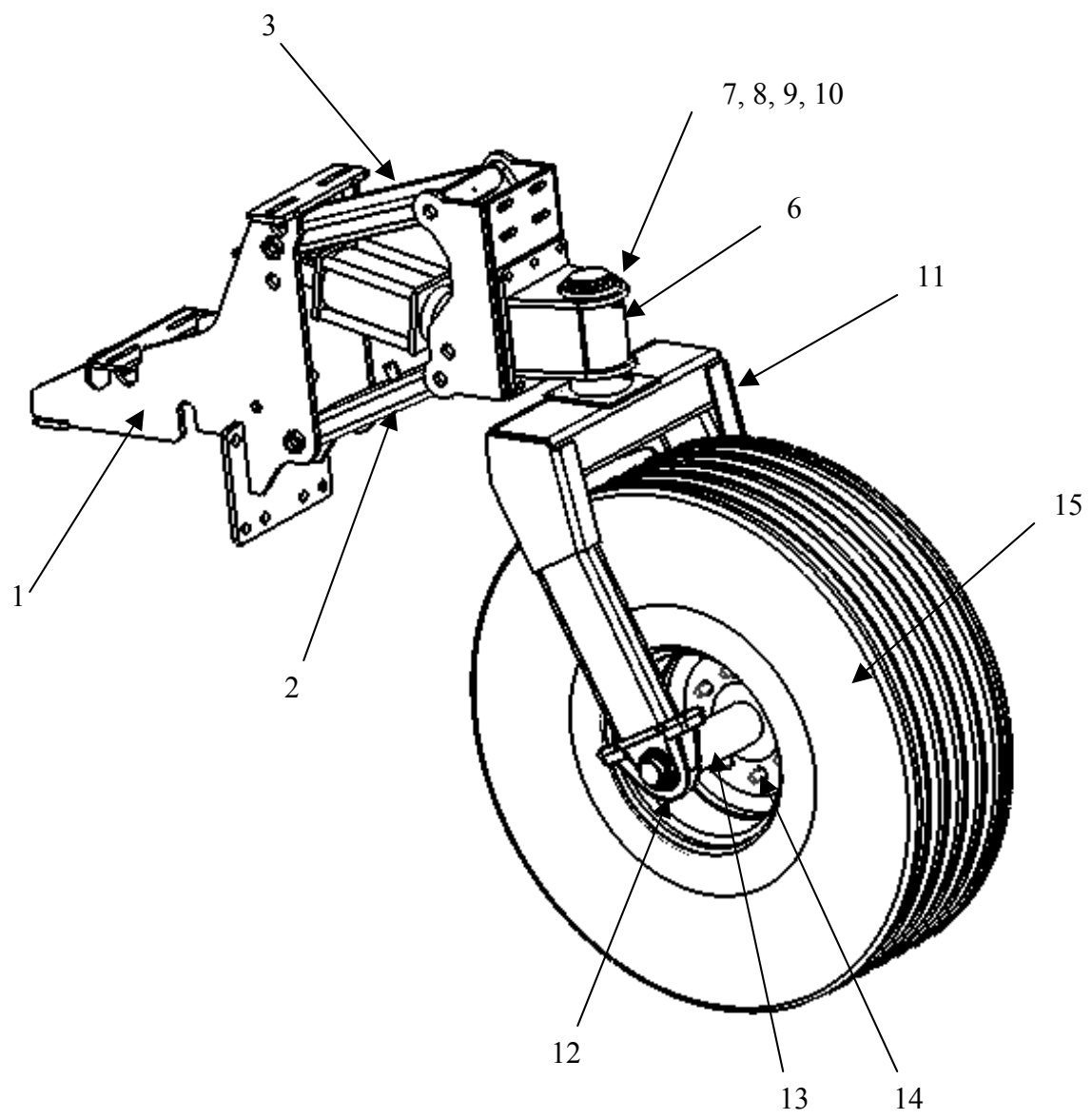
Drive

<u>Item #</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	137526	1	Main drive shaft--34" row spacing, 4 row
1	137526	1	Main drive shaft--36" row spacing, 4 row
2	134836	2	Hex shaft, long
3	133699	2	Hex shaft, short
4	42035	1	Planter transmission with speed sensor
4	42034	1	Planter transmission
5	001990	3	Sprocket
6	017389	3	Bearing, 1" flange
7	027716	1	Hydraulic motor
8	133704	2	Hex coupler
9	41868	1	Hydraulic motor mount
10	134815	3	Bearing mount
11	134837	3	Chain guard



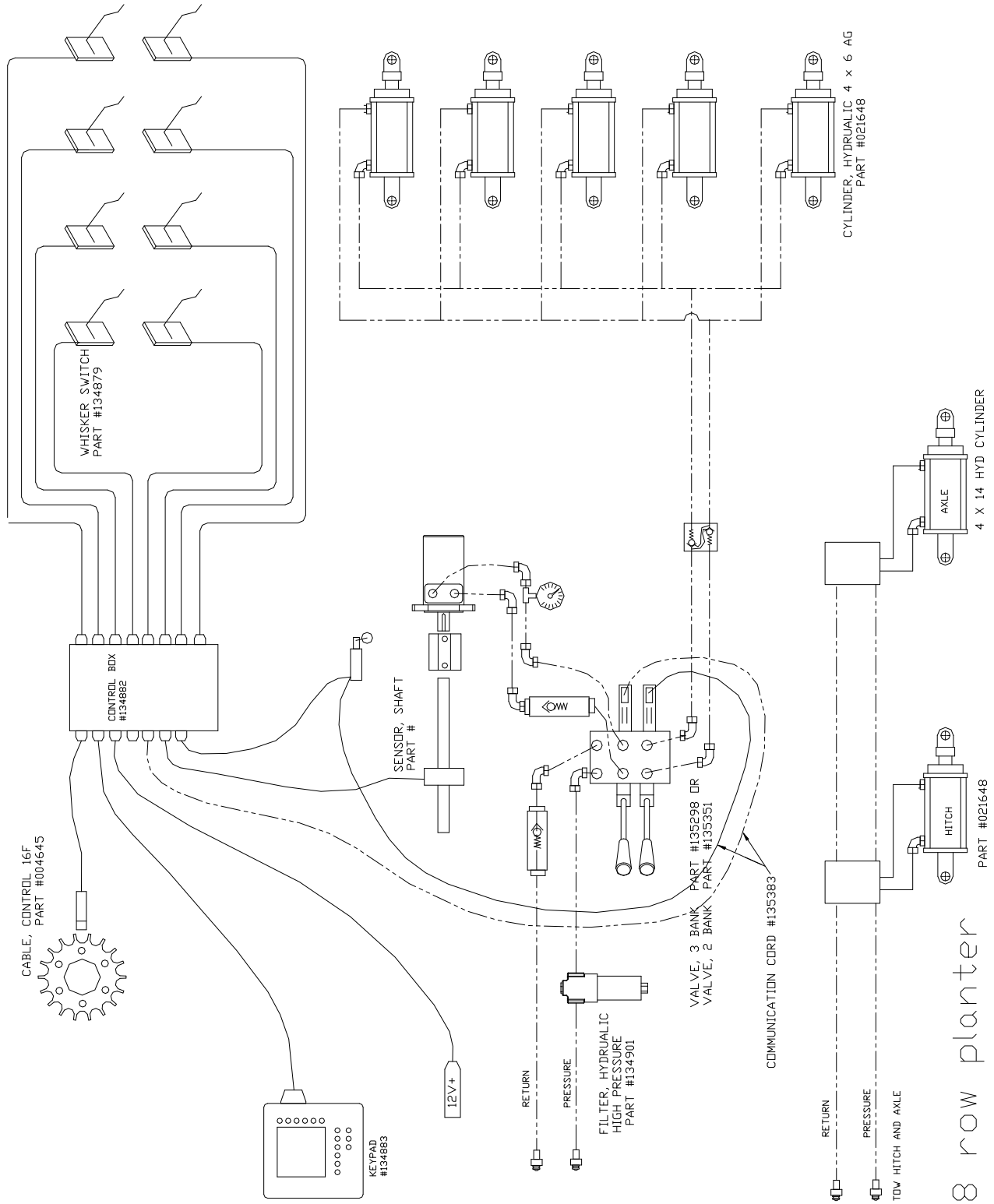
Gauge Wheel

<u>Item #</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	021159	1	Tire, 13.0 x 24.0 grader
2	003725	1	Wheel
3	41850	1	Spindle
4	011306	2	Bearing, pillow block 2"
5	42614	1	Wheel fork
6	017027	2	Turnbuckle
7	36936	1	Gauge wheel, pivot arm
8	42613	1	Gauge wheel mount



Trailing Wheels

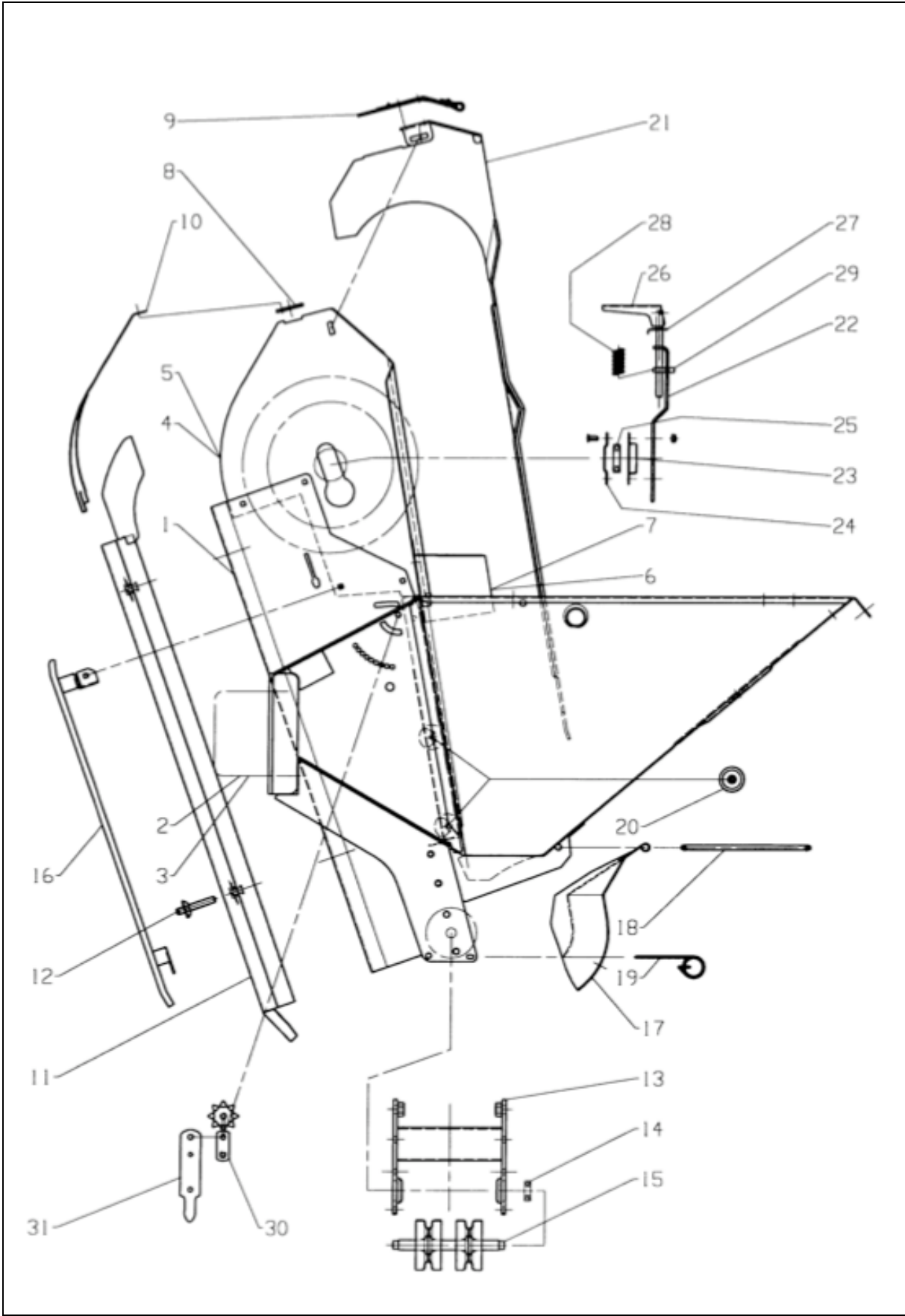
<u>Item #</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	41553	3	Mount assembly
1	41553A	1	Mount assembly, w/depth limit switch
2	36851	1	Lift arm
3	36851A	1	Lift arm w/depth sensor mount
4	021648	1	Hydraulic cylinder, 4x8
5	40238	1	Swivel wheel mount
6	40237	1	Swivel, complete assembly
7	020424	1	Dust cap
8	020426	1	Retaining ring
9	019649	1	Bushing, bronze
10	021099	1	Spacer
11	41799	1	Caster, fork
12	011306	2	Bearing, 2" pillow block
13	41850	1	Spindle
14	007860	1	Wheel
15	134771	1	Tire



8 row planter

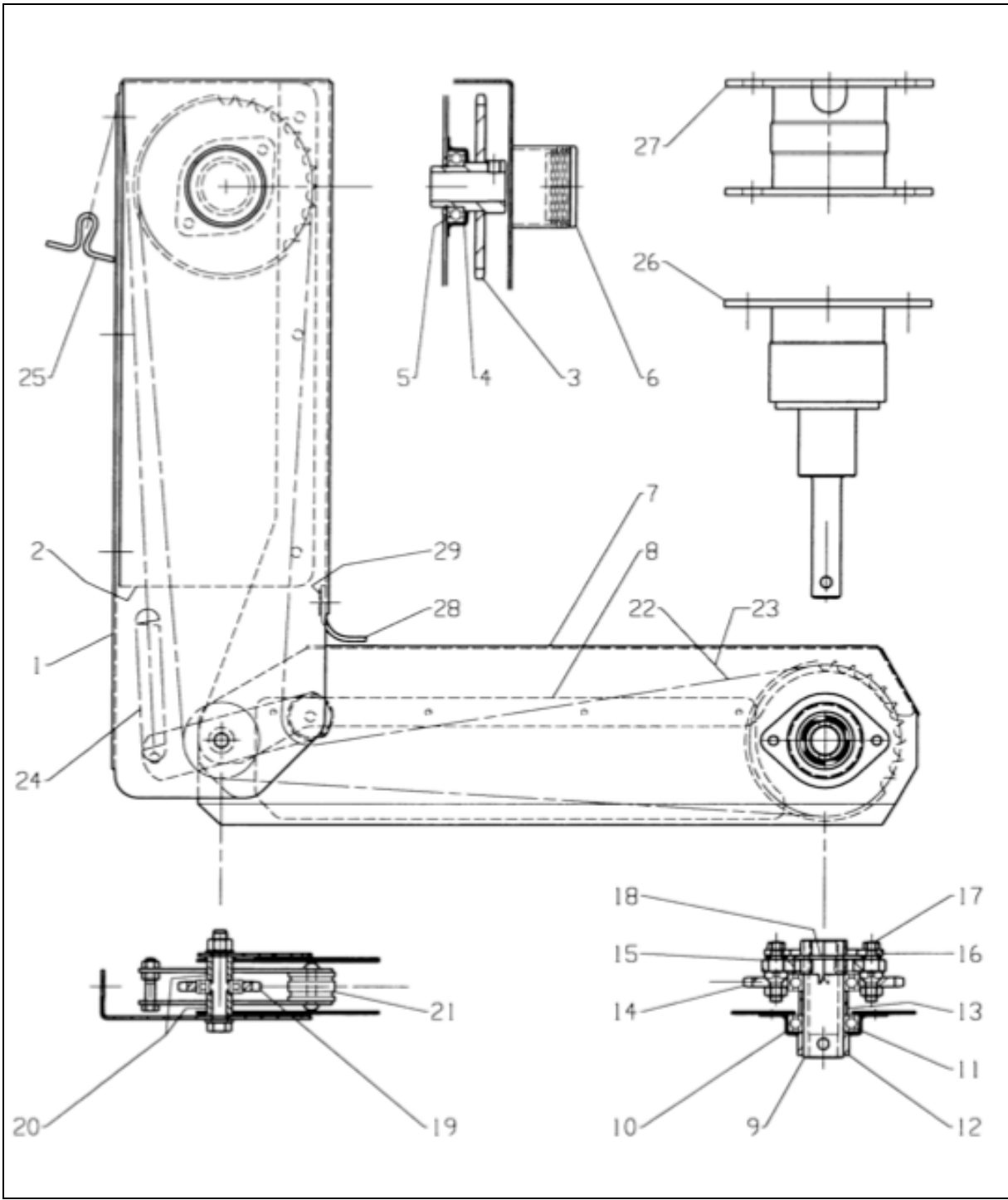
Hydraulic & Control Circuits

<u>Item #</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	134883	1	Keypad - Planter
2	134881	1	Sensor, inductive - Planter
3	134882	1	Control Box
4	134879	1	Whisker Switch
5	134880	1	Sensor, shaft
6	029110	1	Switch, limit
7	011696	1	Coupler, 1" x 1"
8	027716	1	Motor, hydraulic 10.0 1" L.P. C-L,RS
9	004645	2	Cable, control 16F
10	134901	1	Filter, hydraulic high pressure
11	135298	1	Valve, 3 Bank
11	135351	1	Valve, 2 Bank
12	027838	2	Valve, restrictor SAE #8
13	027750	2	Valve, body + P.O. check cart
14	027751	2	Valve, hydraulic pilot dual
15	021648	1	Cylinder, hydraulic 4 x 6 AG
16	007053	1	Valve, hydraulic select manual



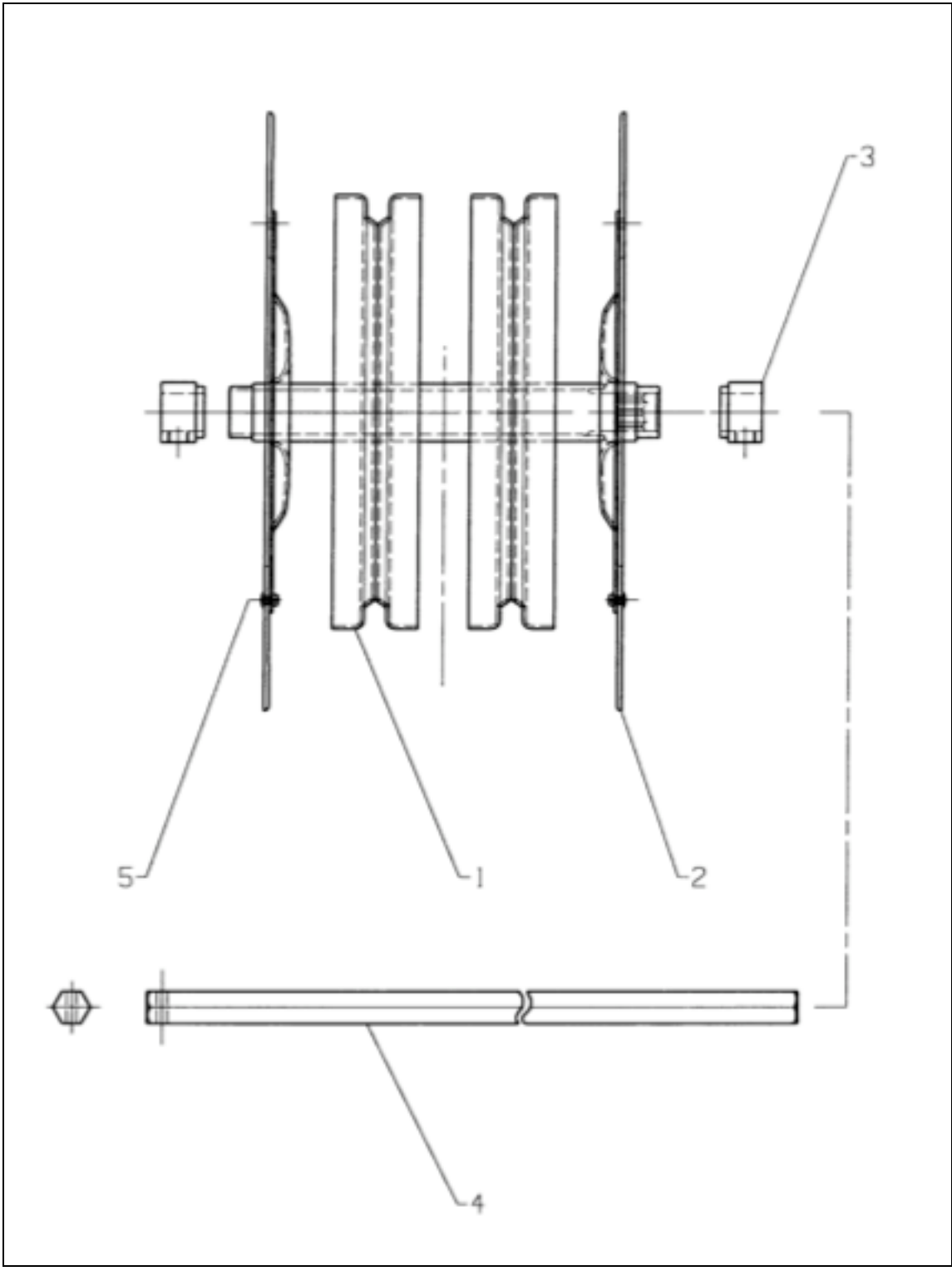
Planter row unit

<u>Item #</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	UH210015	4	Planting unit 3700
2	UH210045	-	not used on Double L planter
3	UH210048	-	not used on Double L planter
4	UH210032	4	Side plate, LH
5	UH210033	4	Side plate, RH
6	UH210036	4	Box corner, LH
7	UH210037	4	Box corner, RH
8	UH210150	4	Yoke
9	UH210152	8	Inlet guide assembly
10	UH210027	8	Guide grill
11	UH210072	4	Planting tube lining, 3700
12	UH210080	8	Adjusting screw
13	UH210129	4	Bottom bearing, 3700
14	UH870718	8	Ball bearing, 6203 2RS C3
15	UH210135	4	Bottom pulley, 3700
16	UH210135	4	Support rail, 3700
17	UH210085	4	Lock gate, 3700
18	UH215049	4	Bolt, D10
19	UH215026	4	Spring
20	UH216725	8	Roller, ø50 and bolt
21	UH210160	4	Belt rail, 3700
22	UH215091	8	Bearing holder
23	UH219250	8	Bearing housing, D55-D36
24	UH215092	8	Guide bearing
25	UH870632	8	Bearing 6006-2RS
26	UH210142	8	Tension screw assembly
27	UH210144	8	Guide washer D13
28	UH215093	8	Compression spring
29	UH222628	8	Washer
30	UH215081	4	Agitator
31	UH222599	4	Agitator lever



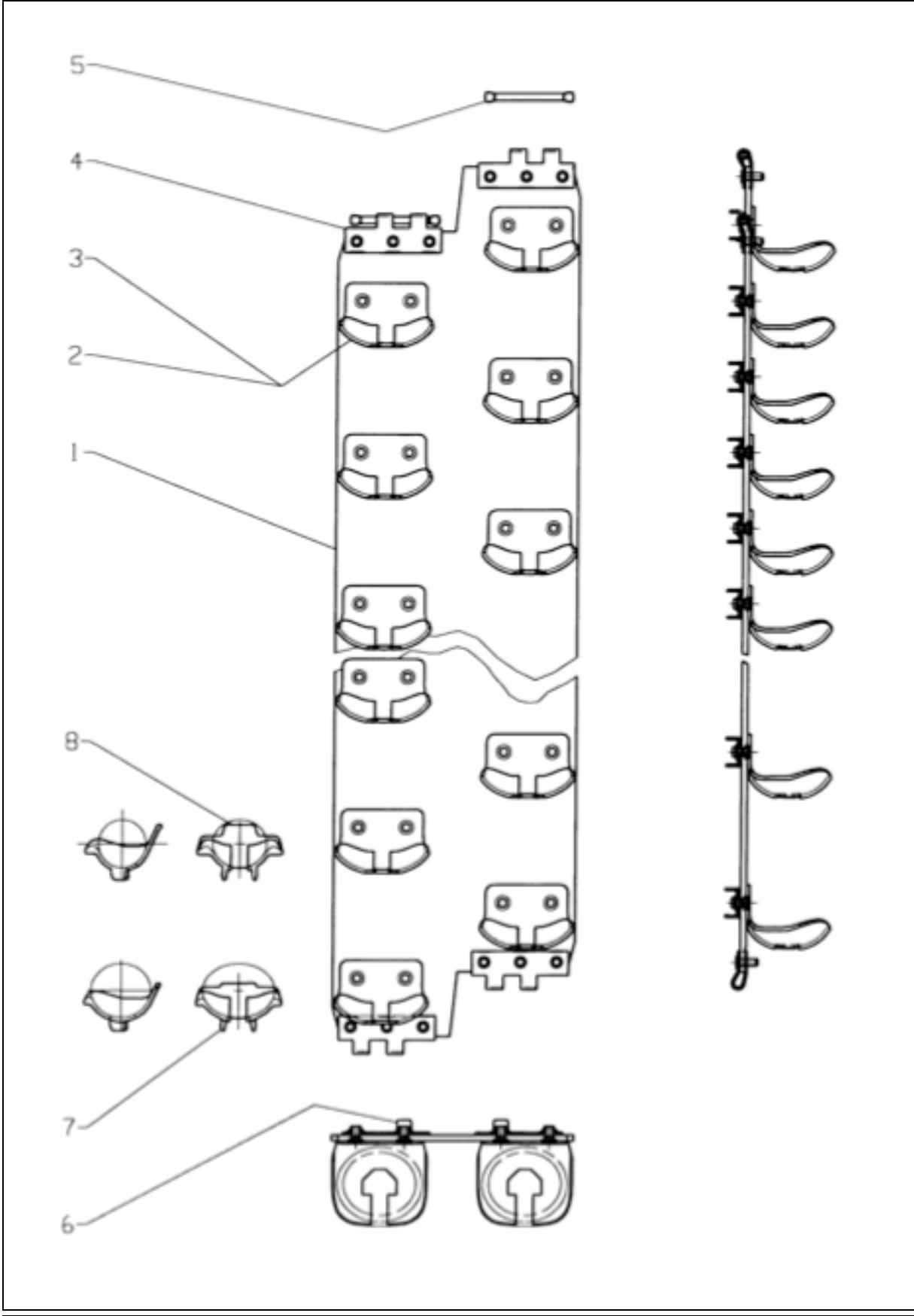
Transmission

<u>Item #</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	UH210015	4	Planting unit 3700
2	UH210045	-	not used on Double L planter
3	UH210048	-	not used on Double L planter
4	UH210032	4	Side plate, LH
5	UH210033	4	Side plate, RH
6	UH210036	4	Box corner, LH
7	UH210037	4	Box corner, RH
8	UH210150	4	Yoke
9	UH210152	8	Inlet guide assembly
10	UH210027	8	Guide grill
11	UH210072	4	Planting tube lining, 3700
12	UH210080	8	Adjusting screw
13	UH210129	4	Bottom bearing, 3700
14	UH870718	8	Ball bearing, 6203 2RS C3
15	UH210135	4	Bottom pulley, 3700
16	UH210135	4	Support rail, 3700
17	UH210085	4	Lock gate, 3700
18	UH215049	4	Bolt, D10
19	UH215026	4	Spring
20	UH216725	8	Roller, ø50 and bolt
21	UH210160	4	Belt rail, 3700
22	UH215091	8	Bearing holder
23	UH219250	8	Bearing housing, D55-D36
24	UH215092	8	Guide bearing
25	UH870632	8	Bearing 6006-2RS
26	UH210142	8	Tension screw assembly
27	UH210144	8	Guide washer D13
28	UH215093	8	Compression spring
29	UH222628	8	Washer
30	UH215081	4	Agitator
31	UH222599	4	Agitator lever



Top Shaft

<u>Item #</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	UH210120	2	Top pulley D254
2	UH210116	4	Guiding pulley
3	UH215141	4	Stop ring
4	UH217031	1	Drive shaft



Cup Belt

<u>Item #</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>
1	UH210175	2	Rubber belt Steel cup, 3700 large, zinc + powder
2	UH210179	80	coat
3	UH210180	80	Steel cup, 3700 large, zinc
4	UH215156	8	connector
5	UH215158	4	connector pin
6	UH215154	80	Guiding cup
7	UH210182	80	Insert, medium (white)
8	UH210184	80	Insert, small (green)



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