SUPER 7 HARROW

2024

SD7 OPERATORS MANUAL

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WARRANTY

Elmer's Warranty

Elmer's Manufacturing warrants against defects in materials or construction of their products for ONE year from purchase date. Elmer's Manufacturing reserves the right to inspect and decide whether material or construction was faulty or whether abuse or accident voids the warranty.

Warranty service must be performed by a dealer or service center authorized by Elmer's Manufacturing to sell and/or service the product. Only new or re-manufactured parts or components furnished by Elmer's Manufacturing will be used. The purchaser will be responsible for any service call and/or transportation of the product to and from the dealer or service center's place of business, as well as any premium charged for overtime labour requested by the purchaser, and for any service and/or maintenance not directly related to any defect covered under the warranty. Costs associated with equipment rental, product downtime, or product disposal are not warrantable and will not be accepted under any circumstance.

Each warranty term begins on the date of purchase. Under no circumstance will the warranty be approved unless the product warranty registration has been properly completed. This warranty is effective only if the warranty registration is submitted within 30 days of purchase. Please note that some countries (example, USA) require these warranty cards to be filled out to prove the machine is, in fact, within the warranty period before allowing Elmer's Manufacturing to perform any warranty work.

This warranty does not cover a component that fails, malfunctions or is damaged as a result of (i) improper modification or repair, (ii) accident, abuse or improper use, (iii) improper or insufficient maintenance, or (iv) normal wear or tear. This warranty does not cover products that are previously owned and extends solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this warranty does not transfer to the third party purchaser in any way. Elmer's Manufacturing makes no warranty, express or implied, with respect to tires or other parts or accessories not manufactured by Elmer's Manufacturing. Warranties for these items, if any, are provided separately by their respective manufacturers. **THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE.**

In no event shall Elmer's Manufacturing be liable for special, direct, incidental, or consequential damages of any kind. The exclusive remedy under this warranty shall be repair or replacement of the defective component at Elmer's Manufacturing's discretion. This is the entire agreement between Elmer's Manufacturing and the Owner about warranty and no Elmer's Manufacturing employee or dealer is authorized to make any additional warranty on behalf of Elmer's Manufacturing.

Elmer's manufacturer reserves the right to make product design and material changes at any time without notice. Elmer's Manufacturing shall not incur any obligation or liability to incorporate such changes and improvements in products previously sold to any customer, nor shall they be obligated or liable for the replacement of previously sold products with products or parts incorporating such changes.

Contact your local Elmer's Manufacturing dealer for any warranty assistance. Claims will be denied if the warranty registration has not been completed. Warranty registration is available on the Elmer's Manufacturing website at https://elmersmfg.com/warranty.

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OWNERSHIP PROTECTION

No questions asked..
The S3 Smart Warranty Ownership Protection Program (SWOP) guarantees responsive product replacement for one full year. Applicable to any manufacturing defect or product failure, you have the assurance of no waiting, no worries, no questions... just SWOP it out, It really is that simple.

Let's Get Started
Phone. 306-773-0645
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2180 Oman Drive
P.O. Box 39
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S3 GROUP

MACHINE IDENTIFICATION

Fill out and retain this portion for your records. The serial number is located as depicted below. Your dealer will need these numbers when you order parts. File identification numbers in a secure place. When ordering parts or requesting assistance, please have the following information ready;
Product Name, Product Model and Serial Number.

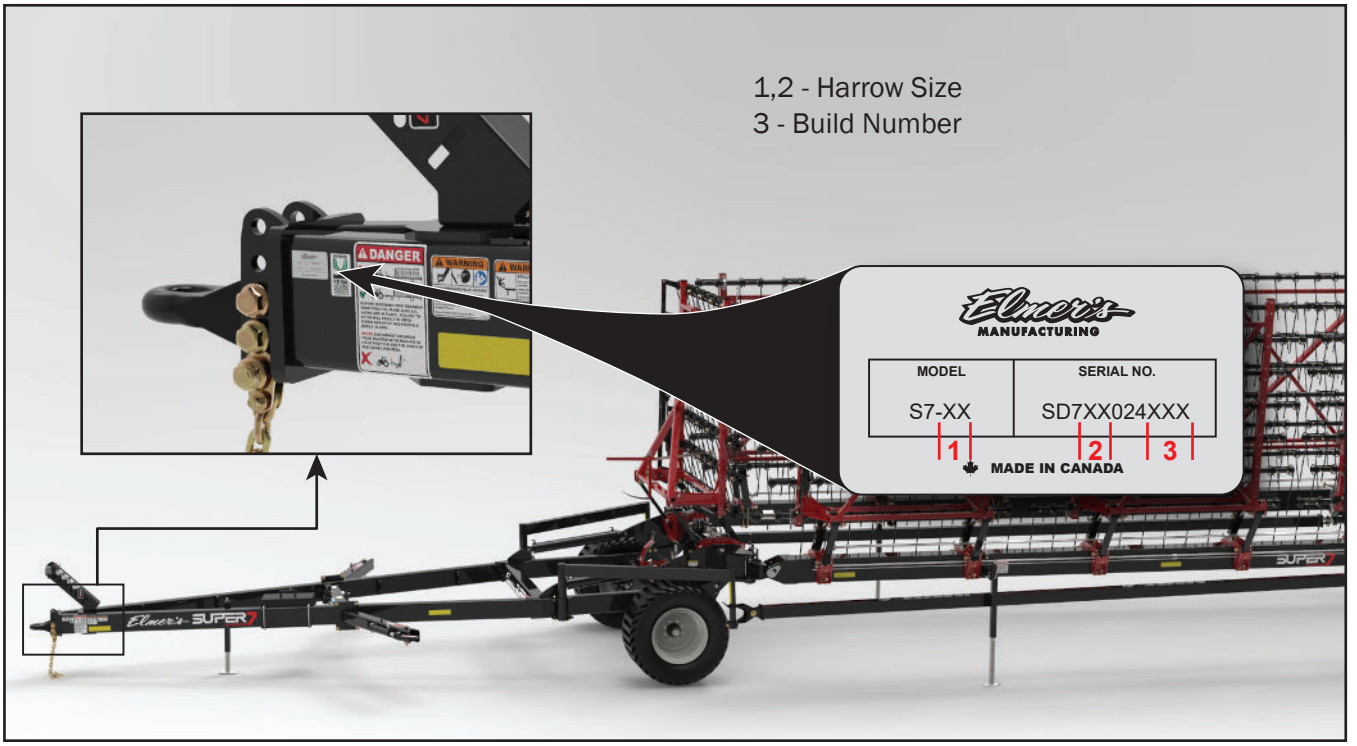
All products manufactured by Elmer's Manufacturing Ltd are warranted to be free from material and workmanship defects for 1 (one) full year from time of purchase. Contact your local dealer for assistance with any warranty questions. Register your equipment for warranty at:
http://elmersmfg.com/warranty.

Purchase Date:_ _____Dealer:_ _____

Dealer City:_____ Phone #:_____

Model #:_____Serial #:_____

NOTE: Information within this manual was published with the most recent information available. Due to continual progress, specification and information is subject to change. Always obtain the most recent information before using the equipment.



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INTRODUCTION

Congratulations on the purchase of your Elmer's Manufacturing Super 7 harrow to complement your farm operation. The Super 7 harrow as been designed for effective residue management, weed control, granular incorporation, seed bed preparation, and light tillage. Adjustable Dynamic Down Pressure, Pitch, and Tine angle allow for fully customized operation in the most challenging terrain and field conditions.

Safe, efficient, and trouble free operation of your Super 7 harrow requires that you and anyone else who will be operating or maintaining the machine read and understand the safety, operation, maintenance and troubleshooting information contained within the operator's manual.

READ THIS MANUAL carefully to learn how to operate and service machine correctly. Failure to do so could result in personal injury or equipment damage.

THIS MANUAL SHOULD BE CONSIDERED A PERMANENT PART OF MACHINE and should remain with the machine when you sell it.

Use the Table of Contents as a guide to locate required information.

When referencing parts of the harrow in this manual, orientation will be based on normal direction of travel of the harrow and relative to the operator in the tractor.

Glossary

Secure Lock - Secure Lock is the combination of a spring-tensioned cylinder and interlock system to prevent the possibility of the solid pull arm unlatching during operation.

DGP - Dynamic Ground Pressure is a electronically set, and hydraulically actuated in-cab adjustability that allows operators to adjust on the go, and maintain constant pressure regardless of the terrain, providing the operator with consistent ground contact, pressure, and finish

SCV - Selective Control Valves are the hydraulic valves used to control flow in a hydraulic circuit.

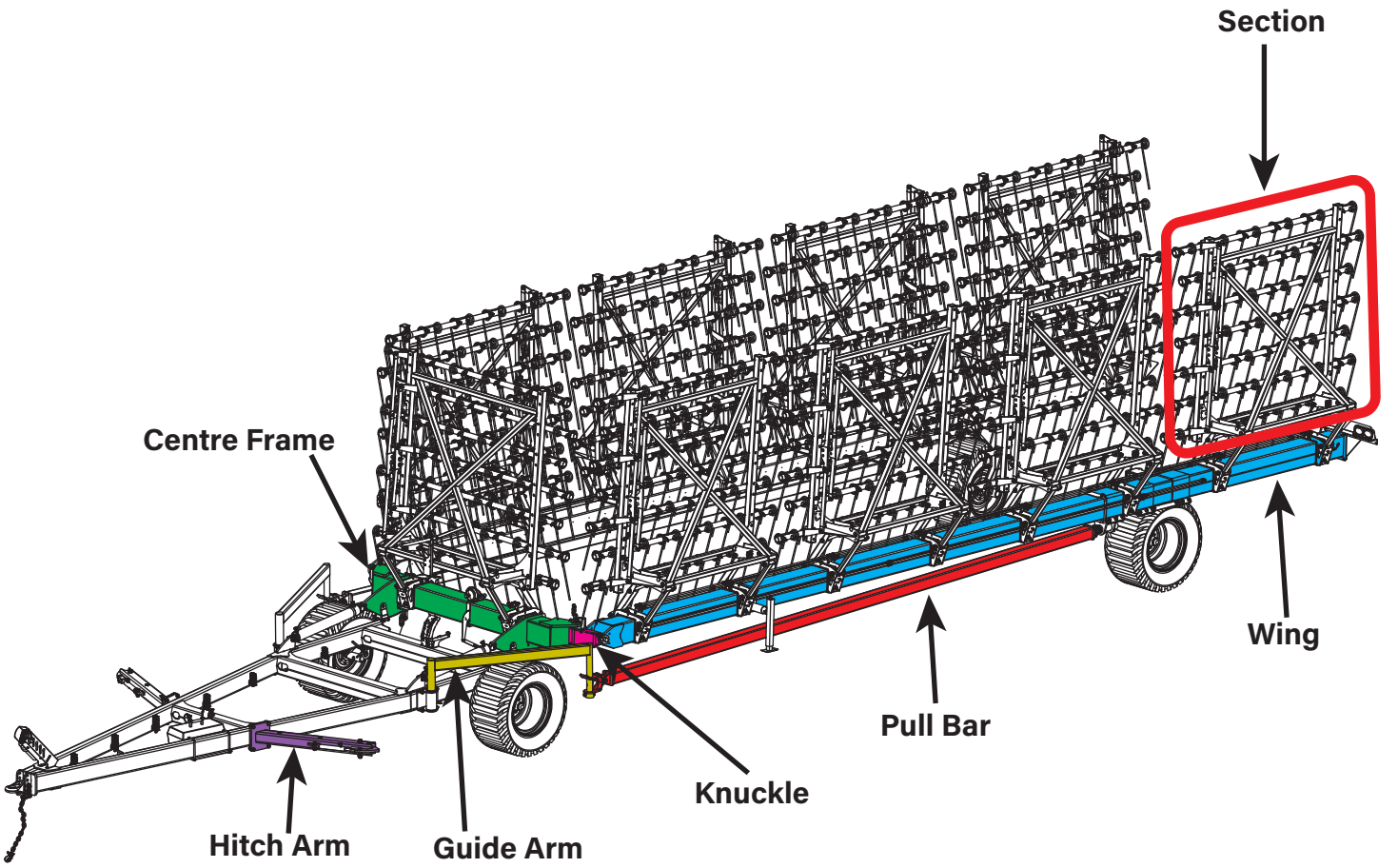
ISOBUS - ISOBUS is an international communication protocol that sets the standard for agriculture electronics. It identifies the use of standardized connectors, communication protocols and operational guidelines used when connecting agricultural equipment.

7-Pin Connector - A 7-pin plug (sometimes referred to as the "7-way trailer connector") is the connector and heavy-duty wire that brings the necessary power and related functions to the trailer you're towing.

Pro - The Super 7 PRO option adds automation and control through features accessed through a tablet or ISOBUS interface.

Case Drain - A low pressure return line connected to the tractors hydraulic reservoir using a flat face coupler.

Machine Components



SAFETY

You are responsible for the safe operation and maintenance of your Elmer's Super 7 Harrow. You must ensure that you and anyone else that is going to operate, maintain or work around the harrow will be familiar with the operating and maintenance procedures and related safety information. This manual will take you step-by-step through all alerts and safety practices that should be adhered to while operating or working with this Super 7 Harrow.

Remember, most accidents involving product operation, maintenance and repair are caused by failure to observe safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations in addition to having the necessary training, skills and tools to performing these functions properly.

Safety Alert Symbol

The Safety Alert symbol identifies important safety messages on the Super 7 harrow and in the manual.

This symbol means:

ATTENTION!

BE ALERT!

YOUR SAFETY IS INVOLVED!

When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Signal Words

The following safety words, colours and graphics may be used in confunction with the safety alert symbol in the manual or on safety decals located on the machine.

DANGER - Indicates an extremely hazardours situation or action that will result in serious bodily injury or death.

WARNING - Indicates a hazardous situation or action that could result in serious bodily injury or death.

CAUTION - Indicates an unsafe situation or action that could result in personal injury.

IMPORTANT - Indicates a situation or action that could result in damage to the equipment or improper operation of the equipment.

READ OPERATORS MANUAL - Used on decals to indicate that more information is available in the operators manual.

Safety Chain

Use of a safety chain is required to attach hitch to tractor. All tractors must be equipped with an intermediate chain support ahead of hitch pin.

Transport Safety

BEWARE of overhead wires and KNOW transport height and width of machine. (See “SPECIFICATIONS” on page 25)

ALWAYS use the transport lockup pins when in transport position. See Figure A

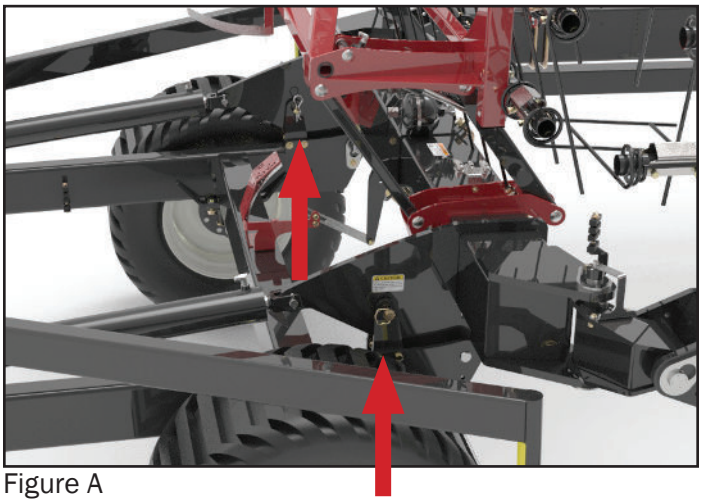


Figure A

Keep SMV emblem and reflectors clean and visible from rear.

Always pin drawbar in center position for ALL tractors when transporting.

When transporting machine on a road or highway at night or during day, use lights and devices for adequate warning to operators of other vehicles. In this regard, check local governmental regulations.

Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads, with or without brakes, that are too heavy for the tractor or are towed too fast can cause loss of control. Consider the total weight of the equipment and its load.

- Do not tow this implement faster than 20 Mph (32 Km/h) and always check and obey local laws for speed limits.

Ensure that the tractor or tow vehicle used is operating within it’s safe tow limit as per the manufacturer.

ALWAYS use the pivoting wheel lockouts when transporting harrow. See Figure D & E (lockouts hightlighted in yellow)

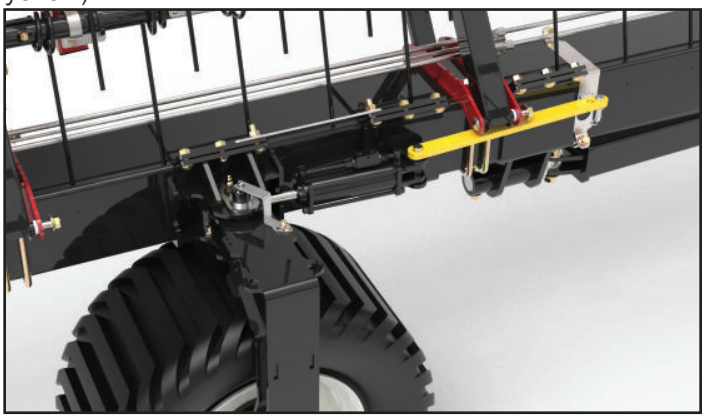


Figure D - Stowed

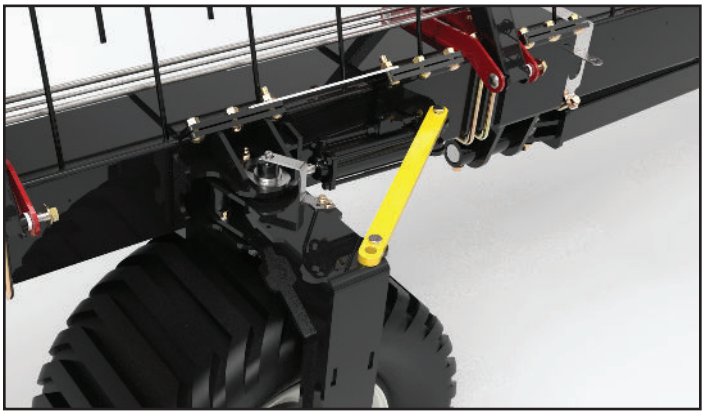


Figure E - Wheel Locked Out

Park Safety

Park machine on a level surface, install transport locks, and chock implement wheels. See “Attaching and Detaching Machine” on page 12.

Place both hitch jack (Figure A) and one of the wing jacks (Figure B) into the vertical position for parking the machine.

DANGER: BEFORE DISCONNECTING DRAWBAR FROM TRACTOR, MAKE SURE ALL JACKS ARE IN PLACE. FAILURE TO DO SO WILL RESULT IN HITCH RAISING ABRUPTLY AND POSSIBLE BODILY INJURY.

Figure A

Figure B

Maintenance Safety

- Shut tractor off before making any adjustments or lubricating the machine.
- Block machine securely to prevent any movement during servicing.
- Wear close fitting clothing and appropriate safety equipment for the job.
- Do not modify the machine in any unauthorized way.

High Pressure Fluid Safety

Use a piece of cardboard or wood to detect leaks of hydraulic fluid under pressure. Correct hydraulic leaks immediately. High pressure fluids can penetrate the skin and cause serious injury or death. Seek medical treatment immediately if injured by high pressure fluids.

Always wear appropriate protective clothing and eye wear when working on or around high pressure fluids.

CAUTION! ESCAPING HYDRAULIC FLUID UNDER PRESSURE CAN PENETRATE SKIN CAUSING SERIOUS INJURY. RELIEVE PRESSURE BEFORE DISCONNECTING LINES OR SERVICING HYDRAULIC SYTEMS.

NOTE!! Hydraulic system contains high pressure accumulator. The system will maintain a pressurized state after disconnect. Follow safe work procedures in maintenance before working on hydraulics.

Setup

Preparing Machine

- General
  - Inspect for loose hardware, loose hydraulic fittings, abnormal wear, and other damage.
- Lubrication - Grease
  - Grease wheel hubs. See “SPECIFICATIONS” on page 25 for grease info.
- Wear
  - Check pivot points for excessive bushing wear or damage. Figures A, B, C and D. (Note: some parts transparent for visibility)

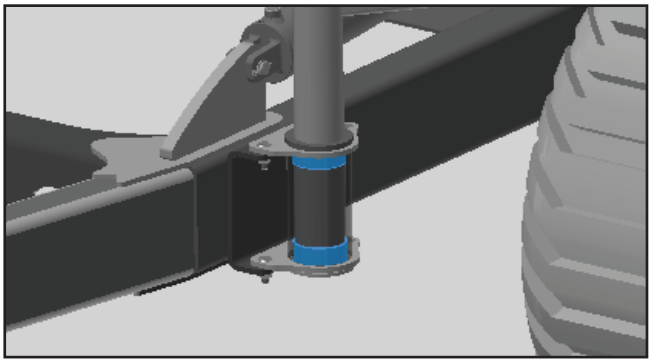


Figure A - Guide Arm Shims

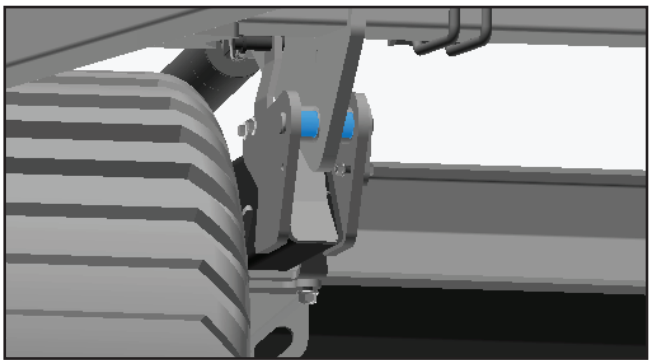


Figure B - Center Frame Pivot Shims

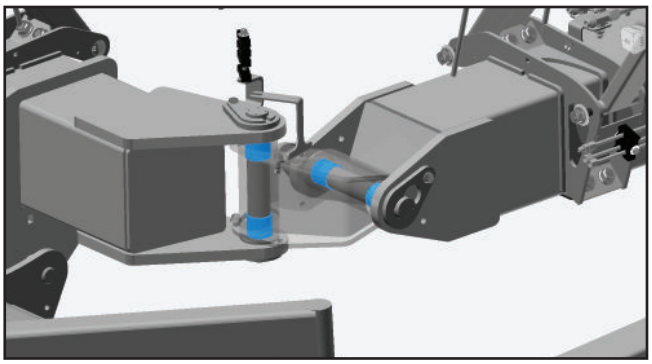


Figure C - Knuckle Shims

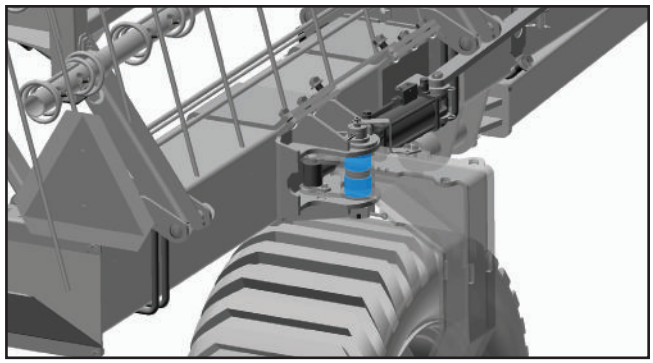


Figure A - Guide Arm Shims

  - Check for uneven tine wear or broken tines
- Tire Pressure
  - See “Checking Tire Pressure” on page 23
- Transport
  - Tighten lug nuts.
  - Ensure lock out pins are in place.
    - Pitch Lock Out Pins
    - Pivoting Wheel Lock Outs
- Hitch Height
  - See “Hitch Height Adjustment” on page 23
    - Note: The desired hitch height should result in the hitch being angled slight downwards towards the tractor.

Preparing Tractor

- Determining Tractor Requirements
  - Recommended Power (See Specifications)
  - A CAT IV (2” or 52mm) hitch pin is required for the standard CAT IV hitch. A CAT V (2.75” or 70mm) hitch pin is required for the optional CAT V hitch.
- Hydraulics
  - Maximum system pressure is 3000 psi
  - SCV’S (See Specifications) Dependent on configuration of harrow
  - Case drain is required for proper operation
  - Exceeding this maximum system pressure or not connecting the case drain will void warranty on hydraulic components
- Consult tractor operator’s manual for specific adjustment procedures, tire inflation, wheel spacing and ballast requirements.
- Positioning Drawbar
  - Ensure drawbar is positioned correctly. See “Drawbar Adjustment” on page 24

- Transporting Machine
  - Observe all applicable safety precautions under transport heading
  - Refer to Specifications for weight, transport height and width
  - Transport with tractor only
  - Always connect safety chain provided to the towing vehicle and the hitch of the implements
  - Inspect tires for any serious cuts or abrasions, replace if damaged
  - Adhere to all local government regulations
- Maximum Speed
  - Always travel at a safe speed. Do Not Exceed 20 M.P.H. (32 kph).
  - The weight of the implement being towed must not exceed 1.5 times the weight of towing vehicle.
- Lights
  - Ensure proper reflectors are in place, refer to Safety Section.
  - Use flashing amber warning lights, turn signals and SMV emblems when on public roads.
  - Be familiar with and adhere to local laws.

Attaching and Detaching Machine

- Tractor Tires
  - Proper ballast and tire pressure are required when pulling heavy implements.
  - Consult your tractor's operator manual and follow all recommended procedures.
- Hydraulics
  - Wipe all hydraulic fittings and couplers with a clean cloth to avoid contaminating the system.
  - Check that hydraulic reservoir is filled to the proper level.
- Drawbar
  - Tractor drawbar must be fixed in the centre position for easier hitching and greater stability.
- Before Entering Field
  - Confirm hitch height setting
  - See "Hitch Height Adjustment" on page 23
- Pro Option
  - Remove transport lockouts before attempting to steer harrow into the field if required.

Controls

(see “Controls, Pro (Optional)” on page 16 if equipped with Pro)

Hydraulic Functions

Pivoting Wheel & Securelock Latch

The Pivoting Wheel (Figure A) & Securelock Latch (Figure B) functions are controlled together and are interlocked to prevent any unintended actions. This circuit can only be activated while the pitch is in the fully raised position.

This circuit drains automatically to prevent all unintentional motion of the pivoting wheels and Secure Lock latch. **Pressure must be applied to hold the latch open.**

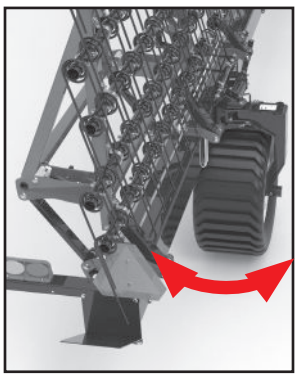


Figure A - Pivoting Wheel

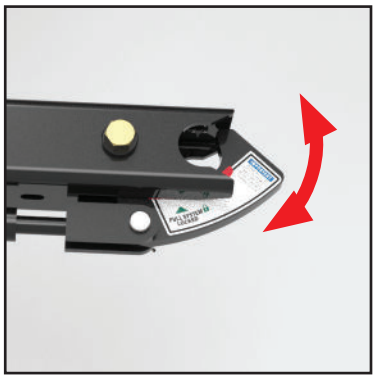


Figure B - Secure Lock Latch

Pitch

The pitch circuit (Figure C) allows the operator to change the angle of the sections relative to the ground using a tractor SCV. A positive setting will allow the harrow to be more aggressive in the front, and less aggressive in the rear. A negative setting will allow the harrow to be less aggressive in the front and more aggressive in the rear. In field position the usable range is ± 6°, visible on the indicator on a range from -3 to 3.

Figure C - Pitch Circuit

Tine Angle

The tine angle circuit (Figure D) allows the operator to change the aggressiveness of the tines, as well as material flow through the harrow using a tractor SCV. A low setting lays the tines back for gentle operation, while also allowing more material to flow through. A high setting stands the tines up for more aggressive operation while holding more material. The tine may be adjusted in a 40° range, visible on the indicator from 0-10.

The tine angle circuit will require phasing daily to ensure an even field finish across the tool bar. To do so adjust the tines to the most aggressive vertical position and continue flowing oil for several seconds or until each section has rotated into the correct position.

The tine angle setting may also drift during periods of high load on some tractors. Utilizing an aggressive tine setting, high DGP setting and high tractor power level combined for light tillage may cause this to occur. To compensate adjust the setting back to the desired potion during times of lower load, such as corners or when traveling over harder ground.

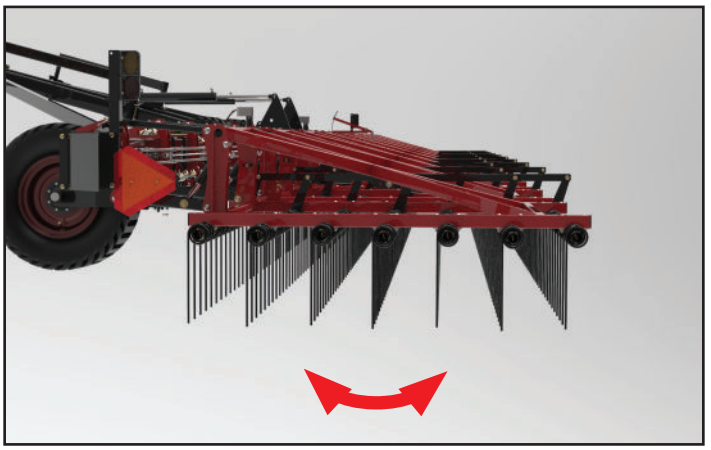


Figure D - Tine Angle

Dynamic Ground Pressure (DGP)
DGP (Figure E) allows the operator to control how much pressure is applied to the ground by each section, regardless of the sections vertical position. This circuit requires constant flow from the tractor and allows the harrow to maintain constant ground pressure through ditches, hills, and other varying terrain. The setting is adjusted using the in-cab control box and set from 1 to 10.

The down pressure setting depends on the desired field finish as well as soil conditions. Heavier settings are more aggressive, will increase soil disruption, and improve incorporation. The lowest down pressure setting removes nearly all weight from the sections for light harrowing applications.

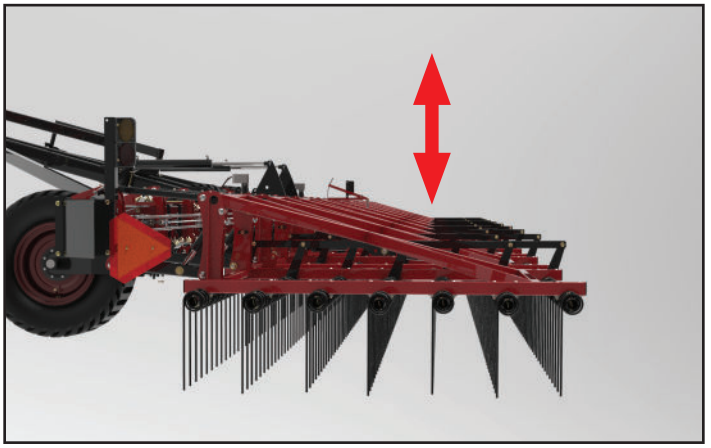


Figure E - Dynamic Ground Pressure

Unfolding Into Field Mode

1. Ensure you have ample room behind and to the sides of the harrow for proper unfolding.
    a. Note: Ensure the pivoting wheel locks have been removed before moving the wheels.
2. Partially rotate the pivoting wheels approximately halfway to field position.
    a. Note: Ensure the pivoting wheel locks have been removed before moving the wheels.
3. Reverse harrow and ensure that wings are moving outward and pull bar and pull bar guide are moving freely.
4. Reverse until pull bar and guides latch into the hitch arms.
    a. Note: The cylinders are spring loaded. DO NOT attempt to open the latches while going into field mode.
5. Before continuing, ensure the Securelock Latches are secured completely. Decals on the latching clasp will show red if not completely latched. (Figure F)

Figure F - Secure Lock not completely latched.

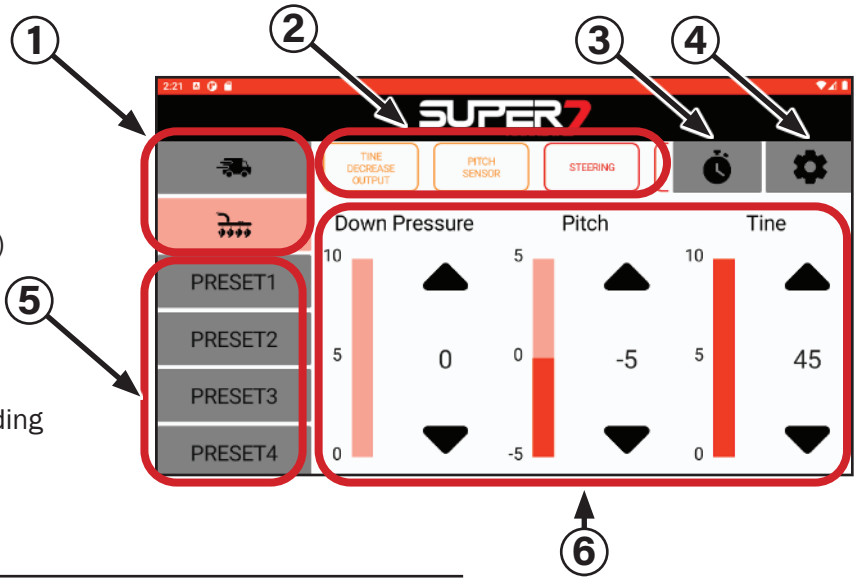
6. Once the Securelock Latch is secure the pitch and be lowered into field position.
    a. Note: Ensure the transport pins have been removed before lowering the pitch.
7. Engage the down pressure circuit to constant flow and select the desired setting for each adjustment.

Folding Into Transport Mode

1. Reverse flow to the down pressure circuit to fully raise the sections.
    a. Note: Failure to do so will cause equipment damage while folding.
2. Fully lift the pitch circuit.
3. To rotate the Pivoting Wheel & Securelock Latch apply constant flow to the circuit until fully transitioned to transport mode.
    a. Note: The Pivoting Wheel & Securelock Latch function can not be activated unless the pitch is fully raised.
    b. Note: The latch will close automatically after hydraulic flow is turn off. Do not turn off flow until fully transitioned to transport mode.
4. Pull harrow forward and ensure that wings fold and pull bar and pull bar guide fold correctly.
5. Put lock-up pins in place.

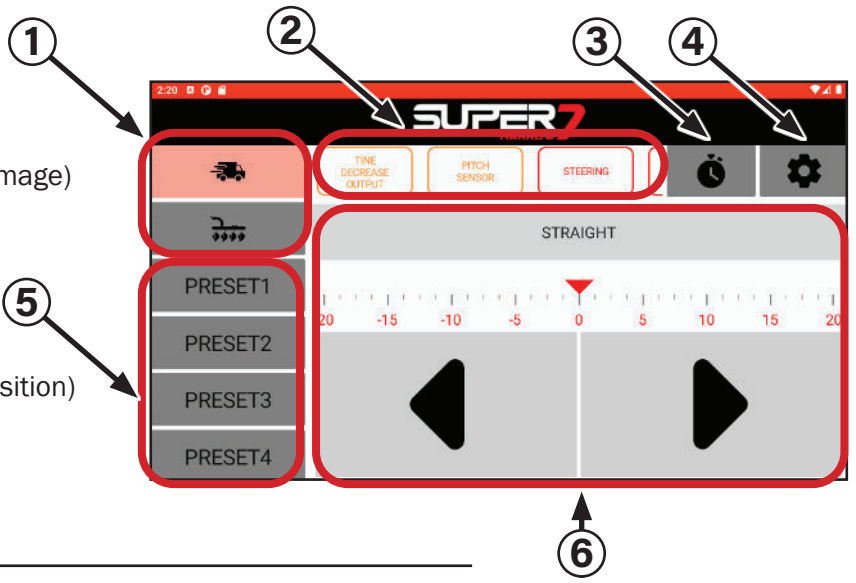
Controls, Pro (Optional)

Control Screens



Field Mode Controls

1. Mode Selection
    a. Transport Mode
    b. Field Mode (Field Selected In Image)
2. Fault Code Display Area
3. Timeout Reset
4. Settings Menu
5. Customizable Pre-sets
6. Field Setting Adjustments and Position Reading
    a. Down Pressure
    b. Pitch
    c. Tine



Transport Mode Controls

1. Mode Selection
    a. Transport Mode
    b. Field Mode (Transport Selected In Image)
2. Fault Code Display Area
3. Timeout Reset
4. Settings Menu
5. Pre-sets (Not used but available for editing)
6. Steering Controls
    a. Straight (Control reset to neutral position)
    b. Steering Angle Feedback
    c. Left Steer
    d. Right Steer

Hydraulic Functions

The Pro option adds an additional hydraulic manifold to the harrow as well as a controller, providing additional features. Each circuit listed below is controlled through a tablet or ISObus interface.

Steering Wheel

The steering wheels (see “Figure A - Pivoting Wheel” on page 14) on Pro allows the software or operator to control each wheel individually for improved maneuverability as well as the standard transition between field and transport positions. The wheels are controlled in 2 modes:

- Normal
    - Wheels will automatically adjust between field and transport positions based on the desired mode selected by the operator. Movement of the wheels is interlocked in some orientations of the harrow to prevent damage.
    - In transport mode the wheels are available for steering based on operator input of how tight they would like to turn. This feature allows operator to navigate around obstacles in tight spaces and negotiate tight field crossings.
- Manual
    - Allows the operator to take control of each wheel individually overriding the normal positing of each wheel to aid in maintenance

or maneuvering unusual situations.

- Additional modes may be added in time to aid operators in more situations.

Securelock Latch

Feedback from sensors on the harrow allow for automated control of the latching system (see “Figure B - Secure Lock Latch” on page 14) based on the harrows position and based on the desired mode selected by the operator. This circuit may be overridden manually if required for maintenance.

Pitch

The pitch circuit (see “Figure C - Pitch Circuit” on page 14) allows the operator to change the angle of the sections relative to the ground. A positive setting will allow the harrow to be more aggressive in the front, and less aggressive in the rear. A negative setting will allow the harrow to be less aggressive in the front and more aggressive in the rear. In field position the usable range is ± 6°, visible on the indicator or electronic interface on a range from -3 to 3.

This setting is controlled automatically during the transition between transport and field modes. The harrow will not transition between states unless sensors indicate the wings are latched and the wheels are fully rotated into field position.

Tine Angle

The tine angle circuit (see “Figure D - Tine Angle” on page 14) allows the operator to change the aggressiveness of the tines, as well as material flow. A low setting lays the tines back for gentle operation, while also allowing more material to flow through. A high setting stands the tines up for more aggressive operation while holding more material.

The tine circuit is managed by the controller to ensure the harrow is preforming as expected at all times. The circuit is automatically phased during the transition into field mode to prevent uneven finishes. Additionally, the controller will compensate for any setting drift to ensure the tine setting remains consistent across the entire field. If automatic tine phasing is insufficient, see troubleshooting section. . The tine may be adjusted in a 40° range, visible on the indicator or electronic interface from 0-10.

Dynamic Ground Pressure (DGP)

DGP (see “Figure E - Dynamic Ground Pressure” on page 15) allows the operator to control how much pressure is applied to the ground by each section, regardless of the sections vertical position. This circuit requires constant flow from the tractor and allows the harrow to maintain constant ground pressure through ditches, hills, and other varying terrain. The setting is adjusted using the electronic interface on a range from 0 to 10.

The down pressure setting depends on the desired field finish as well as soil conditions. Heavier settings are more aggressive, will increase soil disruption, and improve incorporation. The lowest down pressure setting removes nearly all weight from the sections for light harrowing applications.

Unfolding Into Field Mode

1. Activate the transition to field mode by pressing the field mode button (Figure A)

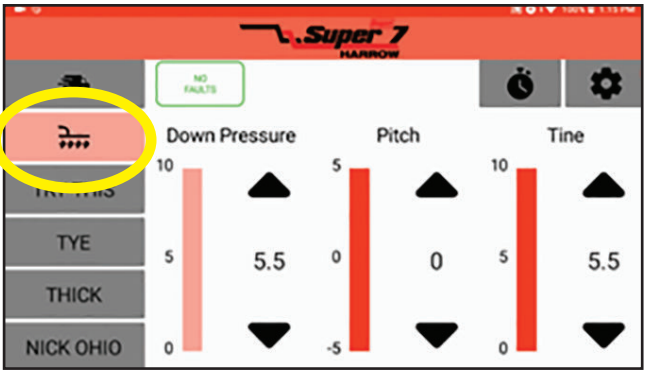


Figure A

2. Following the prompt on your display (Figure B) back up the harrow to unfold and come to a complete stop once latched. After confirming it is safe to go into field mode the harrow automatically pitches down, phases the tines circuit, and applies the last used settings.
    a. Note: The pivoting wheels will automatically adjust as soon as the field mode transition is engaged to assist in backing up the harrow in a short distance.

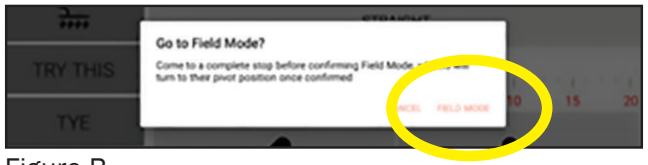


Figure B

3. The field mode page can now be used to operate the harrow.

Folding Into Transport Mode

1. Activate the transition to transport mode when at a stop by pressing the transport mode button (Figure A)

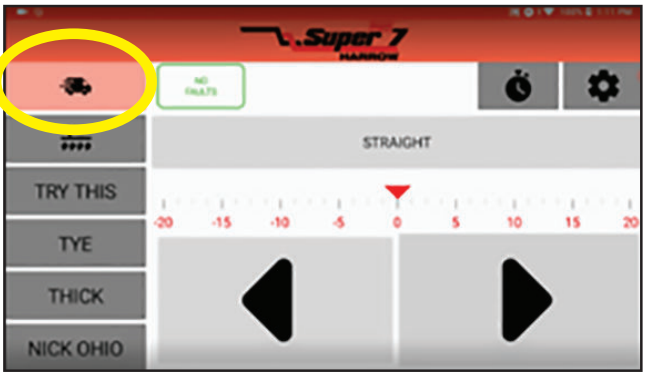
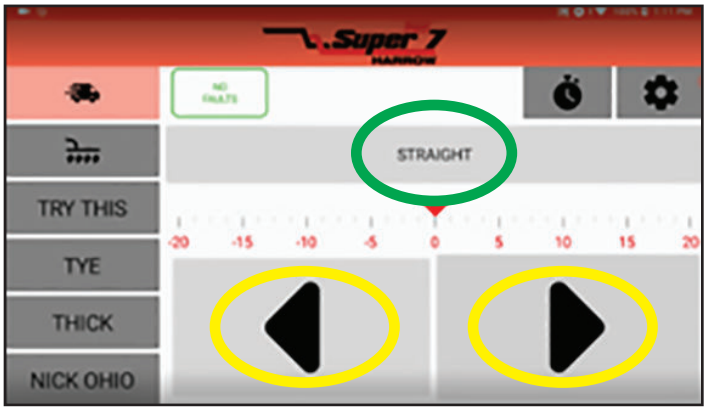


Figure A

2. The harrow will now automatically work through several steps to get ready for transport.
    a. Removing down pressure and fully raising the sections
    b. Fully lifting the pitch circuit
    c. Rotating the wheels into transport position
    d. Unlatching once the harrow is fully transitioned and ready to drive ahead

Steering The Harrow

Note: Steering the harrow should only be done at speeds below 5mph. Steering at higher speeds may cause instability and will result in equipment damage.



1. To steer the harrow in transport at low speeds use the large arrow keys (Yellow) to achieve the desired amount of steering
2. Use the Straight button (Green) to automatically set the wheels to their neural position after navigating the obstacle
3. The steering angle feedback measurement can be used to set your desired steering angle without having to constantly monitor the wheels position.

Backup Manual Controls

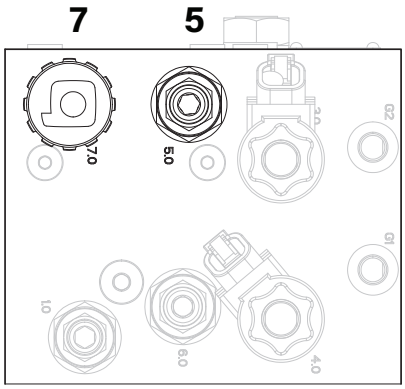
The Super 7 is equipped with manual overrides on each solenoid valve to ensure the harrow is always operational even in the event of an electrical failure on the harrow or tractor. The harrow can be adjusted for field operation, put into field mode, or put into transport mode.

Only operate backup systems with the harrow fully hitched to the tractor. Failure to do so will result in damage to the harrow and could result in serious injury while trying to operate the valves.

Dynamic Ground Pressure (DGP)

DGP can be manually overridden to ensure operators are able to maximize field time even in the event of an electronic failure or damage.

To manually control the down pressure setting:



1. Loosen the locking nut on valve #5
2. Use an allen key to fully close valve #5 (turn clockwise)
3. Tighten the locking nut on valve #5
4. Then use the knob on valve # 7 to adjust the down pressure setting to the desired level
    a. If manual mode has be used before the setting will have been carried forward

To return to normal control:

1. Loosen the locking nut on valve #5

2. Use an allen key to open valve #5 (Turn counter-clockwise)
3. Tighten the locking nut on valve #5
4. Note: There is no need to adjust valve #7 when exiting manual mode

Entering Field Mode

1. Apply hydraulic flow in the standard direction to activate the manual down pressure setting.

Entering Transport Mode

1. Reversing flow on the DGP circuit will lift the sections for safe transition into transport mode
    a. Note while flow is reversed the optional pro manifold functions are disabled, including manual backup controls
2. DO NOT activate the DGP circuit in the standard direction while the system is in manual override and the harrow is in transport mode. DAMAGE WILL OCCUR
    a. It is highly recommended to disengage the DGP override before entering field mode on models equipped with Pro.

Secure Lock Latch (Standard)

The latching system can be overridden allowing the pivoting wheels to be rotated and the latch to be unlocked in the event of sensor, or wiring failure.

Do not activate this valve (Figure C) unless the harrow pitch is fully raised and hitched to a tractor. Failure to do so will result in equipment damage or injury.

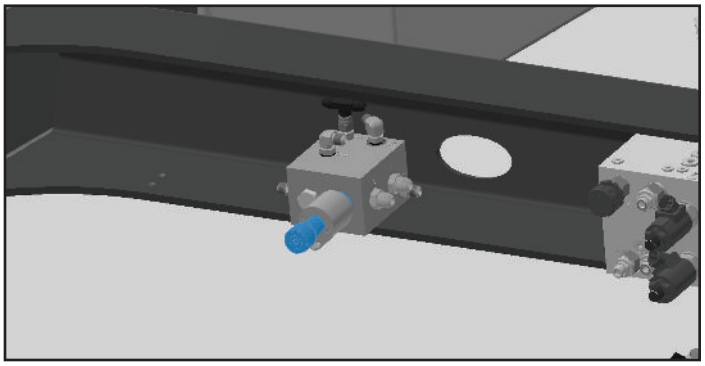


Figure C

Secure Lock Latch Pro (Optional)

(See Figure D)

Pitch

1. Use the SP5 valve to control the harrows pitch.
2. Do not activate the pitch circuit unless the wings are latched.

Steering Wheels

1. Use the SP3 valve to steer the left hand wheel
2. Use the SP2 valve to control the right hand wheel

Tine Angle

1. Use the SP1 valve to control the tine angle adjustment.

Latch

1. Use the SV1 valve to control the latch.
2. Do not override the latch circuit unless the pitch is fully raised and the wheels have been turned into transport position. Failure to do so will result in equipment damage.

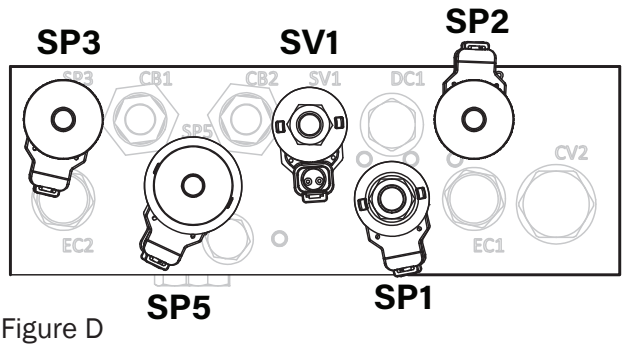


Figure D

Field Settings

The Super 7 provides operators with a wide range of setting combinations to meet the needs of any application. There is no one group of settings for each application to achieve the desired field finish but some general guidelines have been provided here. Note: These may not work in your exact application but are intended as a starting point when adjusting your harrow.

Operating Speeds:
Operating speed is dependent on available horsepower, field conditions, and the desired application. Suggested operating speeds can range from 6 to 16 MPH (9.5 to 25.5 KPH) or wider to suit any operation.

Speed must be balanced with with the remaining 3 settings to archive the desired result.

Residue Management:
For managing straw and spreading chaff in the fall after harvest. For best results ensure straw is as dry as possible.

Speed	Medium - High
Tine Setting	High
Down Pressure	Low
Pitch	Level

Granular/Chemical Incorporation & Raking:
To work granular seed or chemicals into the soil or to rake up straw. Run tines at an aggressive angle to break the crust. Adjust the down pressure as required to control depth of tillage.

Speed	Low - Medium
Tine Setting	High
Down Pressure	Low - Medium
Pitch	Level

Seedbed Preparation, Weed Management, Light Tillage:
For leveling, breaking up clumps, conditioning soil and removing weeds prior to seeding. Use slower speeds and more down pressure to ensure a good finish. Relax tine angle to avoid building ridges.

Speed	Low - Medium
Tine Setting	Medium – High
Down Pressure	Medium – High
Pitch	Level

Field Packing:
If packing is done after seeding, ensure down pressure and tine angle are not too aggressive such that the seed is being disturbed. Ensure large ridges are not being formed.

Speed	Low - High
Tine Setting	Low
Down Pressure	Low – Medium
Pitch	Level

Troubleshooting

Information for fault diagnosis and remedy of problems in operation, as applicable to a normal operator.

General Troubleshooting

Symptom	Problem	Solution
Harrow tines are not at equal angles	• Harrow tine adjust cylinders require re-phasing	• Apply hydraulics to Tine Angle Adjust cylinders and hold for 2 minutes. See “Tine Angle Adjust” in Operation section
Wings not level to main frame section	• Tire pressure not correct	• Check tire pressure see “Checking Tire Pressure”
Hydraulics do not hold in position	• Damaged seals • Leaks • Damaged / leaking valve	• Replace seals • Check for any leaks replace components as required • Check for external damage to valving
Oil leaking	• Damaged cylinder shaft or Seal • Loose fittings	• Replace • Tighten hose and pipe connections
Harrow wing not aligned	• Damaged components	• Inspect for damaged components, and replace as required.
Latch does not line up with pull bar and can’t engage	• Catch plate is too low • Catch plate is too high	• Check for bending or other damage to the system. A new guide arm may be needed. Do not attempt to bend guide arm. Contact product support.
Latch will not unlock	• Interlock not activated	• Harrow sections are not completely raised or have settled. Interlock may need to be adjusted so that it is activated when sections are raised. • Check that power is being supplied by the tractor • Check wiring, solenoid, and tilt switch for signs of damage
Tines require frequent phasing (More then once per 320 acres)	• Leaking Hydraulic Fittings • Leaking Hydraulic Cylinder seals (Internal or External)	• Tighten loose fittings • Replace damaged fittings • Rebuild hydraulic cylinders

App Troubleshooting

If hydraulics are not engaged during an automated motion the system may time out. If the system does not prompt an error, or automatically reset, bumping the function in the manual overrides page or power cycling the controller will reset the system.

Using Safe Service Procedures

- 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. Stop the engine. Remove the key. 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 battery ground cable (-) before making adjustments on electrical systems or welding on machine.
- On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.
- Work in Clean Area
- Before starting a job:
  - Clean work area and machine.
  - Make sure you have all necessary tools to do your job.
  - Have the right parts on hand.
  - Read all instructions thoroughly; do not attempt shortcuts.
- Before servicing the hydraulics system ensure pressure has been relived from the accumulator, and the lines have been disconnected from the tractor. Failure to do so will cause a high-pressure discharge of oil.
  - To relive pressure from the hydraulics system...
    - Connect the down pressure hydraulic circuit to a tractor or appropriately sized hydraulic power unit and set the circuit to float.
    - Discharge any pressure in the system by opening valve # 6
    - Give the system a minute to allow all pressure to leave the system
    - Close valve # 6

MAINTENANCE AND ADJUSTMENTS

Maintenance procedures

Service Tires Safely

CAUTION: Explosive separation of a tire and rim parts can cause serious injury or death to you or others.

- Only attempt to mount a tire if you have proper equipment and experience to perform the job. Have it done by your dealer or a qualified repair service shop.
- Inspect tires and wheels daily. Do not operate with low pressure, cuts, bubbles, damaged rims or missing studs and lug nuts.

Checking Tire Pressure

CAUTION: Avoid loss of vehicle control during transport from failure of overloaded tires, which could cause severe injury or death to you or others.

- Equal pressure in all tires is necessary for even flotation. A low tire will cause deeper penetration on one side than other. Increased penetration on one side will result in side draft of machine. Inflate tires as per specification on page 25.
- Inspect tires and wheels daily for tread wear, side wall abrasions, damaged rims or missing lug bolts and nuts. Replace if necessary.
- Tighten lug nuts as per specifications on page 25.
- Check tire pressure daily when tires are cold.
- Do not inflate tire above the recommended pressure.

Pivoting Wheel Adjustment

- If the harrow wings fail to track straight within the width of the machine, confirm the wheel is undamaged and correctly assembled. If the pivoting wheel is assembled correctly adjust the position of the hydraulic cylinder threaded clevis end to properly align the wheel. Always test any adjustments at slow speeds to confirm proper tracking before traveling.

Catch Plate / Hitch Arm Alignment

Guide Arm / Hitch Arm
If the Guide arm and hitch arms do not align properly, the slotted adjustment on the guide arm mount may be used to make minor adjustments. If the slotted adjustment is not enough, check for damage to pull system components.

Catch Plate / Hitch Arm
If the catch plate is sitting too low to properly latch first adjust the Guide Arm / Hitch arm alignment, then shim between the latch plate and retaining collar if required.

Adjustments

Hitch Height Adjustment

1. Adjust the position of the hitch such that the top of the hitch frame slopes towards the tractor at 2.5 – 3.0 degrees. See Figure A
2. Alternatively, the leading edge of the hitch can be set vertically as measured by a square or plumb bob to achieve the correct setting.

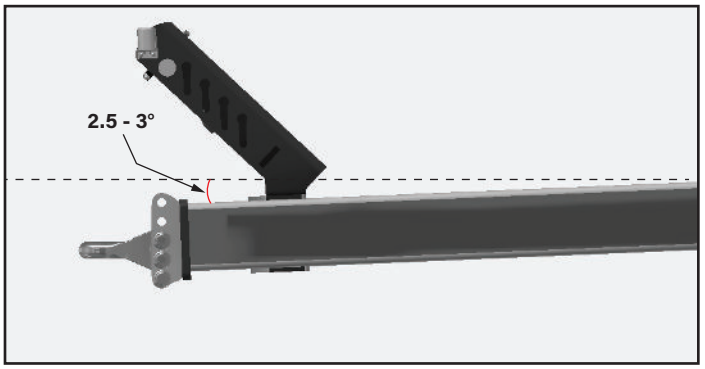


Figure A - Hitch Angle

Drawbar Adjustment

Place drawbar in fixed centered down position, 406-508 mm (16-20 in.) from ground to top of drawbar, centered as shown in Figure B.

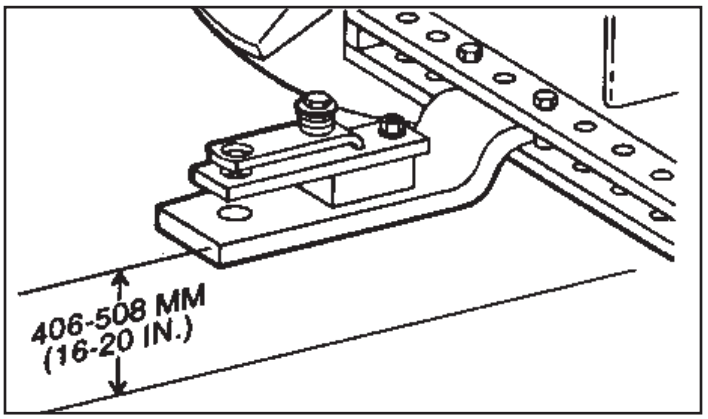
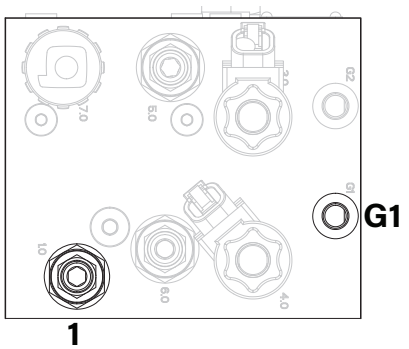


Figure B

Dynamic Ground Pressure (DGP) Lift Setting

The DGP lift setting is set from the factory, and should not require adjustment during regular use. Should the valve require replacement the new valve will need to be set. The lift pressure setting can range from 1350 – 1400 PSI

1. Connect a pressure gauge to port G1.
    a. Follow Safe Service Procedures when installing the gauge
2. Engauge the tractor hydraulics and monitor the pressure at port G1.
3. Loosen the jam nut on valve 1 and use an allen key to adjust the pressure setting
    a. Turning the valve clockwise will increase the pressure at port G1
    b. Turning the valve counter-clockwise will reduce the pressure at G1
    c. Tighten jam nut after the desired pressure has been reached



SPECIFICATIONS

MODEL	70’	90’
Number of Sections	7	9
Harrow Bar Spacing	14”	
Tine Spacing	1 7/16”	
Tine Size	½” x 22”	
# Tines/section (Total)	42 (294)	42 (378)
Recommended Horsepower	5 to 7+ HP per foot	
Tine Angle Cylinder	3” x 8” (Phasing)	
Down Pressure Cylinder	2” x 6”	
Pivoting Wheel Cylinder	3” x 8” Integrated PO Check	
Pitch Cylinder	4” x 34”	
Transport Width	14'11 1/2"	
Transport Height	14'3"	
Transport Length	54’7”	64'7"
Approximate Weight	17000 lbs	19500 lbs
Tool Bar Ground Clearance	1'11 3/4"	1'11 3/4"
Safety Chain	Standard	
Safety Lights	Standard	
Tine Angle Adjust	90 degrees -40 degrees	
Down Pressure Adjustment	0-10	
Pitch Adjustment	±6 degrees	
SCV’s Required	4 Standard – 1 Pro	
Recommended Min Hydraulic Pressure	2800 PSI	
Hydraulic Flow Required	Minimum	10 GPM
	Recommended	35 GPM
Case Drain	Required	
Hitch Frame Construction	4”x8”-3/8” Wall Tube	
Wing Construction	10”x10”-1/4” wall Tube	
Wheels	550/45-22.5 – 16 Ply Tires	
12 Volt Amperage	15 Amps	
Tire Pressure	35 psi	
Lug Nut Torque	130 ft-lbs.	

Parts

For parts information, please refer to the separate 2024 Super 7 Parts Manual, part number 14108500. You can also refer any questions to your local dealer.