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SECTION 1 – INTRODUCTION

The following patent decal is located on the rear left-hand frame and provides current patents issued on your machine.

NOTE: Hagie Manufacturing Company reserves the right to make changes to any current patents or patents pending at any time, without notice.



Hagie Manufacturing Patent Decal
(Located on the rear left-hand frame)

A WORD FROM HAGIE MANUFACTURING COMPANY

Congratulations on the purchase of your DTS10 Sprayer! We recommend that you review this operator's manual and become familiar with operating procedures and safety precautions before attempting to operate your machine.

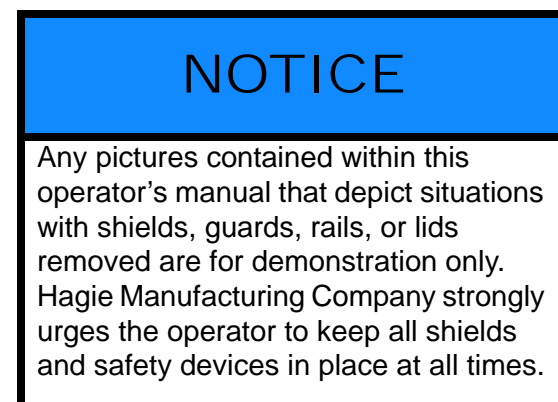
As with any piece of equipment, certain operating procedures, service, and maintenance are required to keep your machine in top running condition. We have attempted herein to cover all of the adjustments required to fit varying conditions. However, there may be times when special care must be considered.

NOTE: The user is responsible for inspecting the machine and having parts repaired or replaced when continued use of the product causes damage or excessive wear to other parts.

Hagie Manufacturing Company reserves the right to make changes in the design and material of any subsequent machine without obligation to existing units.

Thank you for choosing a Hagie sprayer and we ensure you of our continued interest in its satisfactory operation for you. We are proud to have you as a customer!

ABOUT THIS MANUAL



This manual will aid you in the proper operation and service of your machine. It is the responsibility of the user to read the operator's manual and comply with the correct and safe operating procedures, as well as maintain the product according to the service information provided in the *Maintenance and Storage Section* elsewhere in this manual.

Photographs and illustrations used in this manual are of general nature only. Some of the equipment and features shown may not be available on your machine.

Information described in this manual was correct at the time of printing. Because of Hagie Manufacturing Company's continuous product

improvement, certain information may not be included in this manual. To obtain the most current operator's manual for your machine, please visit www.hagiehelp.com.


Keep this manual in a convenient place for easy reference, should problems arise. This manual is considered a permanent fixture of the product. In the event of resale, this manual should accompany the machine.


If you do not understand any part of this manual or require additional information or service, contact Hagie Customer Support for assistance.

SAFETY MESSAGES USED IN THIS MANUAL

The following safety messages found throughout this manual alert you of situations that could be potentially dangerous to the operator, service personnel, or equipment.

 DANGER
This symbol indicates a hazardous situation which, if not avoided, will result in serious injury or death.

 WARNING
This symbol indicates a potentially hazardous situation, which if not avoided, could result in serious injury or death.

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

NOTICE

This symbol indicates operator awareness, which if not avoided, may result in personal or property damage.

NOTE: A "Note" is intended to make special mention of, or remark on.

SERVICE AND ASSISTANCE

For service and assistance, please contact:

Hagie Manufacturing Company
721 Central Avenue West
P.O. Box 273
Clarion, IA 50525-0273
(515) 532-2861 OR (800) 247-4885
www.hagiehelp.com

IDENTIFICATION

NOTICE

Reference to the right and left-hand used throughout this manual refers to the position when seated in the operator's seat facing forward.

Each machine is identified by means of a frame serial number. This serial number denotes the model, year in which it was built, and the number of the sprayer.

For further identification, the engine and hydrostatic pumps each have serial numbers, the wheel motors have identification tags, and the planetary wheel hubs have identification plates that describe the type of mount and gear ratio.

To ensure prompt, efficient service when ordering parts or requesting service repairs, record the serial numbers and identification numbers in the following spaces provided.

Sprayer

The sprayer serial number is stamped on the right-hand side of the frame.

_____ Sprayer



Sprayer Serial Number
-Typical View

Engine

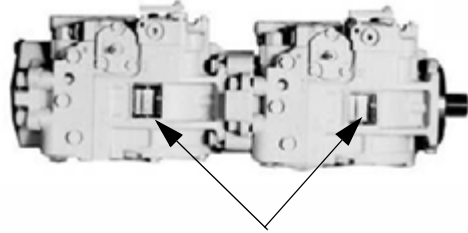
The engine serial number is located on the side of the front left-hand gear housing.

_____ Engine



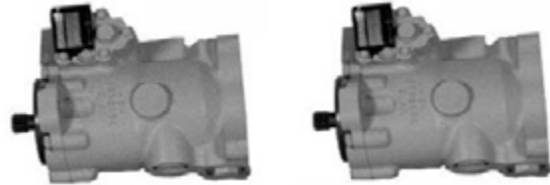
Engine Serial Number
-Typical View

Hydrostatic Pumps



- Front: _____
- Rear: _____

Wheel Motors



Front Wheel Motor

Rear Wheel Motor

- Left Front: _____
- Right Front: _____
- Left Rear (w/sensor): _____
- Right Rear (w/o sensor): _____

Wheel Hubs

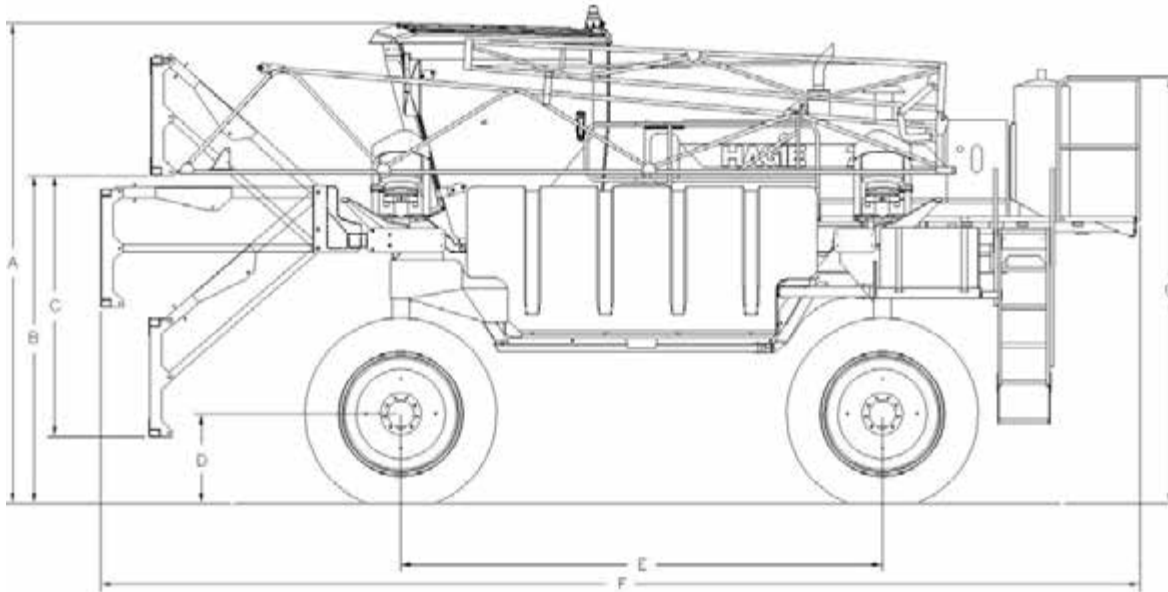


Planetary Wheel Hubs

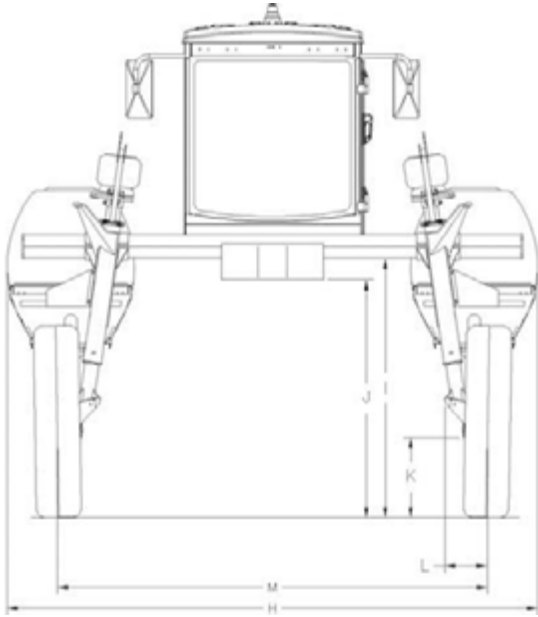
- Left Front: _____
- Right Front: _____
- Left Rear: _____
- Right Rear: _____

SPECIFICATIONS

NOTE: 90-ft. boom and 290/95 R34 tires used for the following machine dimensions.



Detail	Description	Specification
A	Overall Machine Height** <i>NOTE: Sprayer height does not include the cab-mounted optional GPS unit.</i>	<ul style="list-style-type: none"> • 133"/337.8 cm (from top of cab) • 152"/386.1 cm (from top of boom)
B	Raised Transom Height**	134" (340.4 cm)
C	Transom Lift Range	22.25" - 99.75" (56.5 - 253.4 cm) (77.5"/196.9 cm range)
D	Static Loaded Hub Height**	26" (66 cm)
E	Wheel Base	140" (355.6 cm)
F	Sprayer Length	322" (817.9 cm)
G	Rear Handrail Height	121" (307.3 cm)
H	Width (booms folded, 120" tread)	152"/386.1 cm (from tank to tank)
I	Frame Clearance**	66.5" (168.9 cm)
J	Center Clearance**	64.75" (164.5 cm)
K	Lower Leg Clearance**	20.5" (52.1 cm)
L	Tire (center to inside of lower leg)	14.5"/36.8 cm (rear)
M	Tread Width** <i>Optional</i>	120"-144" (304.8 - 365.8 cm) - adjustable* 120" - 154" (304.8 - 391.2 cm) - adjustable*



* Tread width is measured at half (1/2) the tire height.

General Information

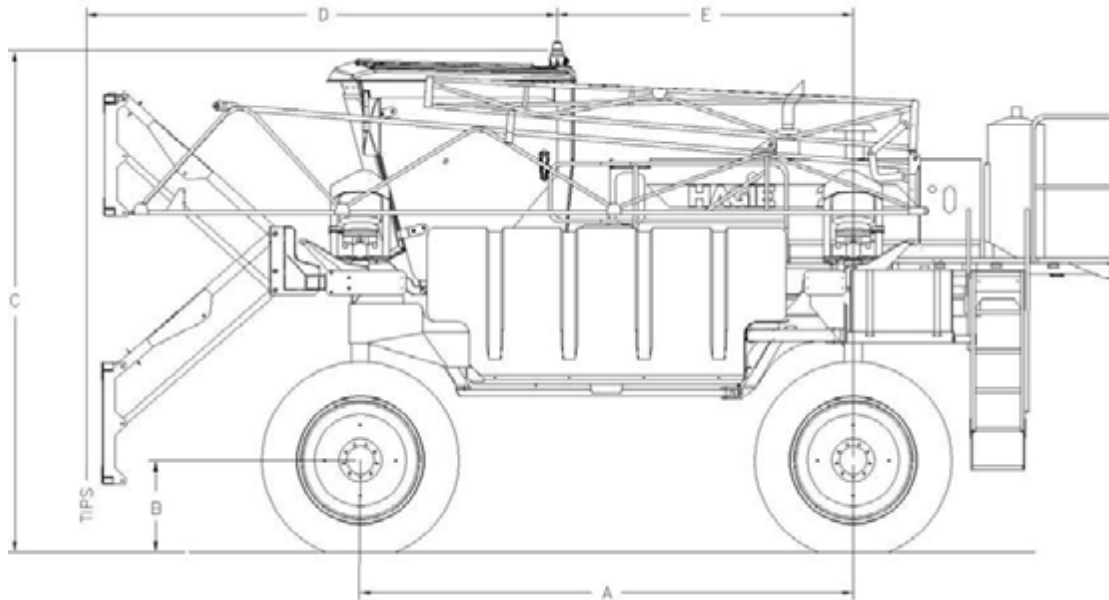
- **Frame Type:**
3 x 6" (7.6 x 15.2 cm) modular platform frame
- **Suspension:**
Rigid, 4-wheel, independent air bags
- **Approximate Dry Weight:**
15,500 lbs. (7,030 kg)
- **Shipping Width:**
152"/386.1 cm (at 120"/304.8 cm tread width)

NOTICE

Because Hagie Manufacturing Company offers a variety of options, the illustrations in this manual may show a machine equipped other than standard. Height and weight do not consider options. Values may vary, depending on available equipment.

Spray System GPS Specifications -If Equipped

NOTE: 90-ft. boom and 290/95 R34 tires used for the following machine dimensions.



Detail	Description	Specification
A	Wheel Base	140" (355.6 cm)
B	Static Loaded Hub Height	26" (66 cm)
C	Overall Sprayer Height (from middle of GPS unit)	138.5" (351.8 cm)
D	Length (from front of boom spray tips to center of GPS unit)	164" (416.6 cm)
E	Length (from center of GPS unit to center of rear hub)	84" (213.4 cm)

NOTE: Dimensions may vary depending on boom and tire options.



Settings and Calibration

Record settings and calibration values used in the following spaces provided when programming your spray system console. Refer to this information for future reference.

Circle the selected setting on the spray system console for the following options:

Units	• US (Acres)		• SI (Hectares)		• Turf (1,000 sq. ft./ 92 sq. m)
Speed Sensor	• SP1 (Wheel Speed)		• SP2 (Radar/GPS)		
Control Type	• Liquid Spray	• Gran 1 (Single Belt Bed)	• Gran 2 (Split Belt Bed/Single Encoder)	• Gran 3 (Split Belt Bed/Dual Encoders)	• Spinner RPM Control
Valve Type	• Standard Valve	• Fast Valve	• Fast Close Valve	• Pulse Width Modulated Valve	• Pulse Width Modulated Close Valve

Record calculated calibration values in the spaces provided below.

Speed Cal	Section Widths	Meter Cal	Rate Cal	Valve Cal	Tank Volume
1.	1.	1.	1.	1.	1.
	2.	2.	2.	2.	2.
	3.	3.	3.	3.	3.
	4.	4.	4.	4.	4.
	5.	5.	5.	5.	5.
	6.				
	7.				
	8.				
	9.				
	10.				



Description	Specification
Engine	
Manufacturer	Cummins®
Model	6BTA 6.7 QSB (turbo charged)
Type	In-Line, Liquid Cooled
Number of Cylinders	6
Displacement	6.7 Liter (408.9 c.i.)
Horse Power	215 (intermittent)
Fuel Type	No. 1 or 2 Diesel
Fuel System	Filtered, Direct-Injected
Air Cleaner	Dry-Type, Dual Element
Slow Idle	800 RPM
Fast Idle	2720 RPM (no load)
Power Train	
Hydrostatic Pump	Sauer-Danfoss Tandem 90-Series
Range	132cc (66x2), Limited Stroke (variable displacement)
Drive Train	All-Time 4-Wheel Drive
Speed (depending on tire size)	<ul style="list-style-type: none"> • Low • Medium • High
	<ul style="list-style-type: none"> • 0-14 mph (0-22 km/h) • 0-18 mph (0-30 km/h) • 0-28 mph (0-45 km/h)
Hydrostatic Wheel Motor (Front/Rear)	Sauer-Danfoss M46
Final Drives	<ul style="list-style-type: none"> • Type - Front/Rear • Lubrication
	<ul style="list-style-type: none"> • Planetary Gear Reduction Hubs • Torque Hub® 7000-Series (7HBA and 7HBX) • Oil Bath
Brakes	
• Type	Integral, Spring-Applied, Hydraulically Released
Steering	
• Type	• Hydraulic, Priority on Demand
• Control	• Full-Time Power
• Steering Cylinders	• Self-Centering, Double Action
• Turning Radius (120"/304.8 cm tread setting)	• 19.5" (49.5 cm)
Auxiliary Hydraulic System	
Type	Open
Pump Type	Tandem Gear



Pressure Setting	2600 PSI (179.3 bar)
Spray System	
Booms <ul style="list-style-type: none"> • Type • Standard • Optional • Controls • Hydraulic Level Shock Absorber 	<ul style="list-style-type: none"> • Dry (with variable row spacing) • 60-ft. (3 spray sections) • 60/80-ft. or 90-ft. (5 spray sections) • Electro-Hydraulic, Fold/Lift/Level • Boom Level Accumulator
Hoses <ul style="list-style-type: none"> • Rear Fill Connection (Male w/Female Adapter) • Solution Hose from Tank • Boom Section Feeder Hose • Boom Nozzle Hose 	<ul style="list-style-type: none"> • 2" (5.1 cm) I.D. • 1.5" (3.8 cm) I.D. • 1" (2.5 cm) I.D. • .75" (1.9 cm) I.D.
Solution Tanks <ul style="list-style-type: none"> • Standard • Agitation 	<ul style="list-style-type: none"> • (2) 500 Gallon (1892 L) Polyethylene Tanks with Sight Gauge • Mechanical, Hydraulically Driven w/Variable Speed Control
General Spray System <ul style="list-style-type: none"> • Pump • Solution Valves • Pressure Gauge • Monitor • Fence Row Nozzle 	<ul style="list-style-type: none"> • Centrifugal, Hydraulically Driven with Variable Speed Control • Electric Ball Valves • Glycerin Filled (100 PSI/6.9 bar) • Raven 4600 (GPS ready) • Standard
Foam Marker System	
Make	Hagie Foam Marker
Type	Live Air
Rinse System	
Spray System Rinse (Solution Tanks, Pump, Booms)	Standard
High-Pressure Wash System	Optional
Electrical System	
General Electrical System <ul style="list-style-type: none"> • Battery • Alternator • Starter 	<ul style="list-style-type: none"> • Single 12V, Negative Ground • 130 AMP, Voltage Regulated • 12V with Solenoid
Circuit Breakers <ul style="list-style-type: none"> • Main Breaker • Starter Relay • Highway/Field Lights • Work Lights • Foam Marker/Switch Panel Auxiliary Power • A/C and Storage Console Auxiliary Power • Engine 	<ul style="list-style-type: none"> • 100 AMP • 30 AMP • 40 AMP • 30 AMP • 30 AMP • 30 AMP • 125 AMP (2x)



<p>Fuses</p> <ul style="list-style-type: none"> • Rinse System Power/Gauges • Hydraulic Tread Adjust/Seat • Spray Solution Valves • Flow Control/Agitation/Boom Folding Controls • Fuel/Brake • AM/FM Radio • CB Radio Power Supply/Dome Light • Tank Solution Valves/Rinse System Control • Hazard/Warning Lights, Turn Signals, Wiper • Boom Lift/Level Controls 	<ul style="list-style-type: none"> • 10 AMP • 20 AMP • 10 AMP • 10 AMP • 15 AMP • 10 AMP • 10 AMP • 10 AMP • 10 AMP • 15 AMP
<p>Lights</p> <ul style="list-style-type: none"> • Front Cab • Rear Cab • Booms • Tank Shields 	<ul style="list-style-type: none"> • (4) Trapezoidal Field Lights • (2) Trapezoidal Work Lights • (2) Trapezoidal Work Lights (1 each) • (2) Trapezoidal Highway Lights (1 each)
<p>Auxiliary Power Supplies</p> <ul style="list-style-type: none"> • Switch Panel 	<p>12V Binding Post-Type</p>
<p>Cab and Instruments</p>	
<p>General Cab</p>	<ul style="list-style-type: none"> • Tilt Steering • Windshield Wipers/Washer • Flashing Hazard Warning Lights • Turn Signals • Side Mirrors • Dome Light • Tinted Glass
<p>Temperature Control</p>	<p>Full Range</p>
<p>A/C Charge Type</p>	<p>R-134a</p>
<p>Fresh Air Filtration</p>	<p>Paper and Charcoal Filters</p>
<p>Seat (Air Ride w/Adjustment)</p>	<ul style="list-style-type: none"> • Fore-Aft • Seat Cushion • Backrest • Height • Lumbar • Ride Firmness • Armrest Tilt
<p>Storage</p>	<ul style="list-style-type: none"> • Right Armrest/Control Station • Floor-Mounted Storage Console



<p>Instruments</p> <ul style="list-style-type: none"> • Dial Gauges • Digital Gauge • Engine Air Filter Restriction Monitor • Stereo 	<ul style="list-style-type: none"> • Hour Meter • Fuel • Temperature • Alternator • Oil Pressure • Speedometer (MPH-km/h) • Tachometer (RPM) • Engine Warnings • Filter Minder® • AM/FM Stereo/CD Player (w/dual speakers)
Capacities	
Solution Tanks (2)	500 Gallons (1892 L)/each
Fuel Tanks (2)	50 Gallons (189.3 L)/each, No. 1 or 2 diesel
Cooling System	10 Gallons (37.9 L), ethylene glycol
Hydraulic Reservoir	25 Gallons (94.6 L), anti-wear hydraulic oil
Rinse System Tank	55 Gallons (208.2 L)
Foam Marker Tank (if equipped)	36 Gallons (136.3 L)
Engine Oil Pan (including filter)	17 Quarts (16.1 L), SAE 15W-40
Engine Oil Dipstick (L-H mark)	2 Quarts (1.9 L)
Torque Hub (4)	23 oz. (.7 L)/each - <i>approximate</i> , 75W-90



2014 PRODUCT WARRANTY

Hagie Manufacturing Company Product Warranty

Hagie Manufacturing Company warrants each new Hagie product to be free under normal use and service from defects in workmanship and materials for a period of lesser of: two (2) years or 1000 hours from the date of delivery on all Agricultural Products. Hagie Manufacturing Company makes this warranty from the original delivery date and is transferable to a purchaser from the original purchaser of this equipment, given there is remaining time left under the year and hour warranty standard stated above. This warranty shall be fulfilled by repairing or replacing free of charge any part that shows evidence of defect or improper workmanship, provided the part is returned to Hagie Manufacturing Company within thirty (30) days of the date that such defect or improper workmanship is discovered, or should have been discovered. Labor to repair said items will be covered by standard labor time rates. Freight charges of defective parts are not covered by this warranty and are the responsibility of the purchaser. No other express warranty is given and no affirmation of Hagie Manufacturing Company, by words or action, shall constitute a warranty.

Hagie Manufacturing Company limits its warranty to only those products manufactured by Hagie Manufacturing Company and does not warrant any part or component not manufactured by Hagie Manufacturing Company, such as parts or components being subject to their manufacturer's warranties, if any. Excluded from this warranty are parts subjected to accident, alteration, or negligent use or repair. This warranty does not cover normal maintenance such as engine tune ups, adjustments, inspections, nor any consumables such as tires, rubber products, solution system valves, wear parts, wiper blades, etc.

Hagie Manufacturing Company shall not be responsible for repairs or replacements which are necessitated, in whole or in part; by the use of parts not manufactured by or obtainable from Hagie Manufacturing Company nor for service performed by someone other than Hagie authorized personnel, unless authorized by Hagie Manufacturing Company. Customer acknowledges that it is not relying on Hagie Manufacturing Company's skill or judgment to select finish goods for any purpose and that there are no warranties which are not contained in this agreement.

In no event shall Hagie Manufacturing Company's tort, contract, or warranty liability exceed the purchase price of the product. The foregoing limitation will not apply to claims for personal injury caused solely by Hagie Manufacturing Company's negligence.

Hagie Manufacturing Company shall not be liable for damages, including special, incidental or consequential damages or injuries (damage and repairs of equipment itself, loss of profits, rental or substitute equipment, loss of good will, etc.) arising out of or in connection with performance of the equipment or its use by customer, and Hagie Manufacturing Company shall not be liable for any special, incidental or consequential damages arising out of or in connection with Hagie Manufacturing Company's failure to perform its obligation hereunder. HAGIE MANUFACTURING COMPANY'S ENTIRE LIABILITY AND THE CUSTOMER'S EXCLUSIVE REMEDY SHALL BE REPAIR OR REPLACEMENT OF PARTS COVERED UNDER THIS WARRANTY. THIS WARRANTY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.



SECTION 2 – SAFETY AND PRECAUTIONS

Most accidents occur as the result of failure to follow basic and fundamental safety rules and precautions. Recognizing potential safety hazards, following correct and safe operating procedures described in this manual, and complying with safety warnings located throughout the machine may reduce the risk of accidents.

There is no way to completely eliminate the potential for danger when operating agricultural equipment. Therefore, you must study this operator's manual and understand how to operate the sprayer controls for safe operation before using the sprayer, its attachment, or any sprayer equipment. Likewise, never let anyone operate the machine without proper instruction.

Do not operate the sprayer, its attachment, or any sprayer equipment for anything other than their intended uses. Hagie Manufacturing Company shall not be liable for any damage, injury, or death associated with improper use of the sprayer, its attachment, or any sprayer equipment.

Do not make any modifications such as weldments, add-ons, adaptations, or changes from the original design of the sprayer. Such modifications may become safety hazards to you and others and **will void all warranties**.

Replace missing, faded, or damaged safety signs. Refer to "Safety Decals" elsewhere in this section for correct sign and placement.

SAFETY PRECAUTIONS

Do Not Bypass Safety Start Switch

- Start the machine from the operator's seat only.
- The parking brake must be engaged before starting the engine.



Use Caution While Driving

- Never drive near ditches, embankments, holes, mounds, or other obstacles.
- Never drive on hills too steep for safe operation.



- Reduce the sprayer speed while turning.



- Do not permit passengers to ride on machine while it is moving. Failure to comply may result in passenger falling off of machine and/or obstructing the operator's view.



- Check overhead clearance before driving under any overhead obstructions. Contact with power lines may result in serious injury or death.



- Booms must be folded and in cradles when driving.

Keep Riders Off Machine

- Do not permit passengers to ride on the machine or in the cab. The only time passengers should be permitted is for instructional

or diagnostic purposes only. The passenger should be seated in the Instructor Seat next to the operator and never allowed to ride outside of the cab.

Remove Paint Before Welding or Heating

- Avoid toxic fumes and dust. Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.



- Do not use chlorinated solvents in areas where welding will take place.
- Do all work in an area that is well ventilated to carry toxic fumes and dust away.
- Dispose of paint and solvents properly.

Avoid Heating Near Pressurized Lines

- Avoid torching, welding, and soldering near pressurized hydraulic lines. Pressurized lines may accidentally burst when heat goes beyond the immediate flame area.



Handle Fuel Safely

- Always turn engine off and allow it to cool before refueling.
- NEVER smoke while refueling.



- Do not fill tank completely, as fuel may expand and run over.
- Always clean up spilled fuel with soapy water.
- Keep a fire extinguisher nearby when refueling.



Operate Safely

- Before moving the sprayer, ensure there are no obstacles or persons in the path of travel.
- Never operate a machine in the same field as walking personnel.
- Always drive at a reasonable field speed.
- Never operate the sprayer on roadway with solution in the tanks. Additional weight caused from partially full or full solution tanks may cause erratic or increased stopping distance.
- Do not operate the machine at speeds exceeding 20 mph (32 km/h) with solution in the tanks. Operating speeds exceeding 20 mph (32 km/h) with fully loaded tanks may result in tire blow-out or wheel hub damage and will void the warranty.
- Ensure Slow Moving Vehicle (SMV) and SIS emblem is in place and visible from the rear when traveling on public roadways.



- Pull over to the side of the road before stopping.
- Always come to a complete stop before reversing directions.
- Keep a fire extinguisher nearby at all times.
- Keep ALL shields in place.
- Keep clear of all moving parts and keep others away when operating.
- Do not wear loose fitting clothing that may be blown or drawn into moving parts.
- Do not activate the parking brake while the machine is in motion.
- Bring machine to a slow stop to avoid sudden downward decent.
- Reduce speed for icy, wet, graveled, or soft roadway surfaces.
- Use flashers/hazard warning lights (day or night) unless prohibited by law.
- Keep away from overhead power lines. Serious injury or death may result to you or others should the machine contact electrical power lines.
- Never fold/unfold boom extension while the main boom is in the cradle.
- Never operate sprayer with one boom out of the cradle, and the other boom in the cradle.
- Do not adjust factory engine RPM settings.
- Never use starting fluid to assist engine start-up.

Be Prepared

- Be prepared for an emergency. Keep a fire extinguisher, first aid kit, and clean water in the cab.
- Service the fire extinguisher regularly. Keep an accurate inventory of supplies in

the first aid kit and dispose of anything that has expired.

Wear Protective Clothing

- Do not wear loose fitting clothing that could get caught in moving parts. Wear safety equipment that is appropriate for the job.



- Do not store chemical-soaked clothes in the cab. Clean off as much mud and dirt from your shoes as you can before entering the cab.

Protect Against Noise

- Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating the machine.
- Prolonged exposure to loud noise may result in loss of hearing. Wear suitable hearing protection.



Battery Acid Accident Prevention

Avoid serious injury by avoiding battery acid contact with your body. Battery electrolyte contains sulfuric acid that is strong enough to eat holes in clothing and cause blindness if splashed into eyes.

Make sure to:

- Fill batteries in a well ventilated area.
- Wear Personal Protective Equipment (PPE) when servicing a battery.
- Avoid breathing in the fumes when recharging with electrolyte.
- Avoid spilling or dripping electrolyte.
- When charging a battery, connect positive cable to positive terminal and negative cable to negative terminal. Failure to comply may result in an explosion and/or personal injury.

If you spill on yourself:

- Flush affected area with cold water and remove contaminated clothes and shoes immediately. Continue to flush the area for a minimum of 15 minutes.



- Call a physician.
- While transporting or waiting for medical attention, apply compresses of iced water or immerse affected area in iced water. **DO NOT ALLOW TISSUE TO FREEZE.**
- Do not apply creams or ointments until you have been seen by a physician.

If acid is swallowed:

- Do NOT induce vomiting.
- Drink large amounts of water.
- Seek medical attention immediately!
- Do not neutralize the acid.

If fumes are inhaled:

- Move the person into fresh air.
- Do not give artificial respiration to a person that is able to breath on their own.
- Give CPR only if there is no breathing and no pulse.
- Seek medical attention immediately!

Handle Agricultural Chemicals Safely

Agricultural chemicals used in applications can be harmful to your health and the environment if not used carefully.

- Always follow the manufacturer’s label for directions of use.

- Never allow chemicals to come in contact with your skin or eyes. Always use the proper Personal Protective Equipment (PPE).
- NEVER pour chemicals into an empty tank. Always fill tank half full of water first.
- Dispose of empty chemical containers properly.



- Wash spilled chemicals or spray residue from the sprayer to prevent corrosion and deterioration.
- Select safe areas to fill, flush, calibrate, and clean sprayer where chemicals will not run off to contaminate people, animals, vegetation, or water supply.
- Never place a spray nozzle to your lips in an attempt to unclog it.
- Do not spray when wind is in excess of chemical manufacturer’s recommendation.
- Store chemicals in their original containers with the label intact.
- Store chemicals in a separate, locked building.
- Wear Personal Protective Equipment (PPE) as recommended by the chemical manufacturer.

Safe Hydraulic Maintenance

- Always practice personal safety when performing service or maintenance on the hydraulic system.
- Use caution when working around hydraulic fluid under pressure. Escaping fluid can have sufficient force to penetrate your skin, possibly resulting in serious injury. This fluid may also be hot enough to burn.



- Always lower the load or relieve the pressure before repairing a hydraulic oil leak.

Beware of Exhaust Fumes

- Never run the machine in a closed building. Proper ventilation is required. Use an exhaust pipe extension to remove fumes if you must operate in a building. Also, open doors and windows to bring in enough outside air into the area.

General Maintenance Safety

- Turn off engine before checking, adjusting, repairing, lubricating, or cleaning any part of the sprayer.
- When servicing the radiator, let the engine cool before removing pressurized cap.



- Disconnect battery ground cable and turn the Battery Disconnect Switch OFF before servicing the electrical system or welding on the machine.



Tread Width

-If Equipped

- Select tread setting to fit between crop rows.

Spray Booms

- Select a safe area before folding/unfolding booms.
- Clear area of personnel.
- Cradle booms when leaving sprayer unattended.
- Ensure booms are folded when cradled.
- Do not fold/unfold boom extensions when main boom is in the cradle.
- Do not operate sprayer with one boom out of cradle and other boom in cradle.
- Check for overhead obstructions.
- Do not fold or unfold booms near power lines. **Contact with power lines can result in serious injury or death.**

SEAT BELT

For your safety, it is recommended that you wear your seat belt at all times when operating the machine.

- Grasp the Seat Belt Buckle (located on the outward side of seat) and extend all the way across your hips, seated below your abdomen.
- Insert the buckle tongue into the receptacle assembly (located on the opposite side of seat) and engage into LOCKED position.
- **To release Seat Belt**, press the Release Button (located on the receptacle end) and allow belt to retract.

EMERGENCY EXIT





In the event of an emergency, use the cab door to exit the machine.

Should the cab door become inoperable, an Emergency Exit Tool (located on rear left-hand side of cab) is provided and is used in the rare event to shatter the glass of the cab.

The Emergency Exit Tool, when pressed firmly against the glass, will automatically trigger and shatter the glass.



Emergency Exit Tool
(Located on rear left-hand side of cab)
-Typical View

Following are locations of important safety decals. Replace them if they are damaged or missing. All safety decals, instructional decals, or machine striping may be purchased through the Hagie Customer Support Department.

To replace safety decals, ensure the installation area is clean and dry and decide on exact position before you remove the backing paper.

Safety Decal Locations -Typical View

650175
(Located on rear left-hand cab window)



650176
(Located on front left-hand cab window)



SAFETY DECALS

Decals warning you of avoidable danger are located on various parts of the machine. They are there for your personal safety and protection. DO NOT remove them. They will fracture upon attempted removal and therefore, must be replaced.

650336
(Located on right-hand cab window)



650337
(Located on right-hand cab window)



650339
(Located near steering column)



650340
(Located near brake switch on side console)



650350
(Located above booster terminals on rear mainframe)



650367
(Located near top of hydraulic oil reservoir)



650831
(Located near steering column)



650847
(Located on exterior rear left-hand side of cab)



650848
(Located on rear of left and right-hand fuel tanks)



650852
(Located on cab storage console lid)



650849 and 650954
(Located on top of each fuel tank)



650981
(Located near radiator)



650982
(Located near battery)



650850
(Located on top of each solution tank)



650851
(Located on rear left and right-hand mainframe)



SECTION 3 – CAB

SEAT - OPERATOR (AIR SUSPENDED)

Your machine is equipped with an Air Suspended Operator's Seat that is featured with the following for your driving and comfort needs.



Seat Cushion Adjustment (1)

- Rotate Seat Cushion Adjustment Knob until desired cushion position is achieved.



Height Adjustment (2)

- Pull Height Adjustment Knob OUT to lower seat.
- Push knob IN to raise seat.



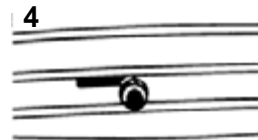
Lateral Isolator (3)

- Lift Lateral Isolator Lever UP to engage.
- Push lever DOWN to lock out.



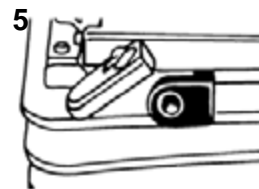
Ride Firmness Adjustment (4)

- Rotate Ride Firmness Knob “counter-clockwise” for a firmer ride.
- Rotate knob “clockwise” for a softer ride.



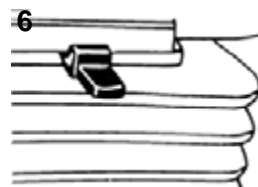
Fore-Aft Adjustment (5)

- Pull Fore-Aft Adjustment Lever OUT, while simultaneously moving seat forward or rearward to desired position.



Fore-Aft Isolator (6)

- Lift Fore-Aft Isolator Lever UP to engage.
- Push lever DOWN to lock out.



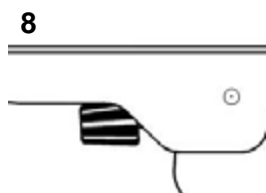
Backrest Adjustment (7)

- Lift Backrest Adjustment Lever UP while simultaneously leaning rearward or forward.
- Release lever when desired backrest position is achieved.



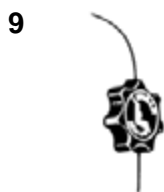
Armrest Tilt Adjustment (8)

- Rotate Armrest Tilt Adjustment Lever “counter-clockwise” to lower armrest tilt.
- Rotate lever “clockwise” to raise armrest tilt.



Lumbar Adjustment (9)

- Rotate Lumbar Adjustment Knob “clockwise” to increase lumbar support.
- Rotate knob “counter-clockwise” to decrease lumbar support.



Seat Belt


Refer to “Seat Belt” provided in the *Safety and Precautions Section* elsewhere in this manual for further information.

OPERATOR'S STATION

Front Console

- Steering Column Tilt Adjust
- Steering Column Release Pedal
- Turn Signals
- Master Spray Switch

Steering Column Tilt Adjust

 **WARNING**

Ensure the steering wheel and steering column are locked into place before operating the machine. Failure to comply may make it difficult to maintain control of the machine.

The Steering Column Tilt Adjust allows you to angle the top section of the steering column to the position that best suits your comfort needs.

To adjust the steering column:

1. Rotate the Tilt Lock Lever (located on the right-hand side of steering column) “counter-clockwise” (toward the operator) to release the steering column tilt lock.



Tilt Lock Lever
(Located on the right-hand
side of steering column)
-Typical View

2. Move steering column to desired position.



-Typical View

3. Rotate the Tilt Lock Lever “clockwise” (away from the operator) to lock steering column in place.

Steering Column Release Pedal

The Steering Column Release Pedal is featured for ease of exiting and entering the cab.

To release the steering column:

1. Press and hold the Steering Column Release Pedal (located on the lower left-

hand side of steering column) DOWN to unlock the column base.



Steering Column Release Pedal
(Located on the lower left-hand
side of steering column)
-Typical View

2. Move steering column to desired position.



-Typical View

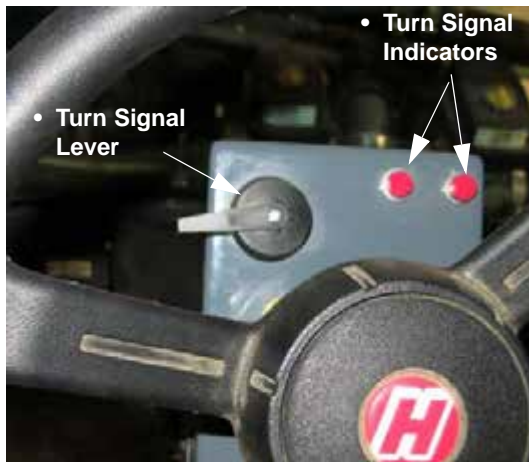
3. While maintaining steering column position, release the Steering Column Release Pedal to re-lock the column base.

Turn Signals

To activate the front and rear Turn Signals, move the Turn Signal Lever (located at top of steering column) UP for a right-hand turn, or DOWN for a left-hand turn.

Steering column-mounted indicator lights will flash correspondingly when either turn signal is activated.

NOTE: The Turn Signal Lever is not self-centering and must be manually returned to the OFF position after completing your turn.



Turn Signal Lever and Indicators
(Located at top of steering column)
-Typical View

Master Spray Switch

The Master Spray Switch (located on the lower right-hand side of steering column) activates the spray system.



Master Spray Switch
(Located on the lower right-hand
side of steering column)
-Typical View

Refer to the *Spray Systems Section* elsewhere in this manual for further information.

Side Console

- Hydrostatic Drive Control Handle
- Speed Range Switch
- Side Console Adjustment Lever
- Low Hydraulic Oil Indicator
- Master Spray Indicator
- Boom Solution Valve Switches
- Fence Row Switch
- Parking Brake Switch
- Solution Tank Valve Switches
- Rinse Switch
- Boom Fold Switches
- Ignition Switch
- Throttle Switch
- Agitation Valve Switch
- Solution Pump Switch
- Fuel Tank Selector Switch
- Hydraulic Tread Adjust Switches
- Power Ports

Hydrostatic Drive Control Handle

The Hydrostatic Drive Control Handle (located near the side console) is used to control the direction of the machine and the speed in which it travels.



Hydrostatic Drive Control Handle
(Located near the side console)
-Typical View

Refer to the “Hydrostatic Drive” information provided in the *Engine and Drive Systems Section* elsewhere in this manual for further information.

The Hydrostatic Drive Control Handle is also used to control the spray boom. Refer to the *Spray Systems Section* elsewhere in this manual for further information.

**Speed Range Switch
(High/Medium/Low)**

The Speed Range Switch (located near the Hydrostatic Drive Control Handle) is provided to allow the operator to select desired speed range.



Speed Range Switch
(Located near the
Hydrostatic Drive Control Handle)
-Typical View

Refer to “Hydrostatic Drive” provided in the *Engine and Drive Systems Section* of this manual for further information.

Side Console Adjustment Lever

The side console may be adjusted to best suit your comfort needs. To adjust the height of the console:

1. Pull the Console Adjust Lever (located near the Hydrostatic Drive Control Handle) DOWN.



Console Adjust Lever
(Located near Hydrostatic
Drive Control Handle)
-Typical View

2. While maintaining the Console Adjust Lever in the down position, move the entire side console up or down to desired position.



-Typical View

3. Release the Console Adjust Lever when desired console height is achieved.

Low Hydraulic Oil Indicator

NOTICE

Shut down the engine immediately if the low hydraulic oil indicator light illuminates. Failure to comply may result in severe system damage.



Low Hydraulic Oil Indicator
(Located on the side console)
-Typical View

Master Spray Indicator

When the Master Spray Switch (located near the bottom right-hand side of steering column) is activated, a Master Spray Indicator (located on the side console) will illuminate.



Master Spray Indicator
(Located on the side console)
-Typical View

Refer to the *Spray Systems Section* elsewhere in this manual for further information.

Boom Solution Valve Switches

The Boom Solution Valve Switches (located on the side console) each control a valve located on the boom or transom. The valves control the flow of solution through the boom.



Boom Solution Valve Switches
(Located on the side console)
-Typical View

Refer to the *Spray Systems Section* elsewhere in this manual for further information.

Fence Row Switch

The Fence Row Switch (located on the side console) is used in the selection of either the right or left fence row spray nozzle.



Fence Row Switch
(Located on the side console)
-Typical View

Refer to “Fence Row Application” provided in the *Spray Systems Section* elsewhere in this manual for further information.

Parking Brake Switch



Do not engage the Parking Brake while operating the machine. Failure to comply may result in personal injury and machine damage.



The Parking Brake is not intended for normal or emergency stopping.

NOTE: Bring the machine to a complete stop before activating the Parking Brake Switch.

- Press the Parking Brake Switch (located on the side console) in the UP (On) position to engage the Parking Brake.
- Press the Parking Brake Switch in the DOWN (Off) position to disengage the Parking Brake.



Parking Brake Switch
(Located on the side console)
-Typical View

Solution Tank Valve Switches (Electric)

-If Equipped

The Solution Tank Valve Switches (located on the side console) control the electric solution tank valves (if equipped). This switch must be in the UP (Open) position for spray application.



Solution Tank Valve Switches - Left/Right
(Located on the side console)
-Typical View

Refer to the *Spray Systems Section* elsewhere in this manual for further information.

Rinse Switch

The Rinse Switch (located on the side console) is used to rinse the solution tanks and spray booms.

NOTE: When rinsing the boom and nozzles, ensure the Boom Solution Valve Switches (located on the side console) are in the ON position before activating the Rinse Switch.



Rinse Switch
(Located on the side console)
-Typical View

Refer to the “Rinse System” information provided in the *Spray Systems Section* elsewhere in this manual for further information.

Boom Fold Switches

The hydraulic Boom Fold Switches (located on the side console) are used to unfold/fold the spray booms, as well as the spray boom extensions.



Boom Fold Switches
(Located on the side console)
-Typical View

Refer to the *Spray Systems Section* elsewhere in this manual for further information.

Ignition Switch

The Ignition Switch (located on the side console) has four positions - ACCESSORY, OFF, RUN, and START.

- **Before engaging the starter**, turn the ignition key to the RUN position and wait for the “wait to start” light to disappear.



Ignition Switch
(Located on the side console)
-Typical View

- **To engage the starter**, turn the key to the START position and hold momentarily until the engine engages. If the engine does not engage after 15 seconds, turn the key to the OFF position.

NOTE: Constant cranking of the starter will cause damage to the battery and starting system.

Throttle Switch

The Throttle Switch (located on the side console) is used to control engine speed (RPM).

NOTE: Engine speed can range between 800 and 2720 RPM.



Throttle Switch
(Located on side console)
-Typical View

Refer to “Hydrostatic Drive” provided in the *Engine and Drive Systems Section* elsewhere in this manual for further information.

Agitation Valve Switch

The Agitation Valve Switch (located on the side console) controls the rate of flow through the Agitation System.



Agitation Valve Switch
(Located on side console)
-Typical View

Refer to the *Spray Systems Section* elsewhere in this manual for further information.

Solution Pump Switch

The Solution Pump Switch (located on the side console) is used to turn the Solution Pump ON/OFF. **This is the ONLY way to turn on/off the Solution Pump.**



Solution Pump Switch
(Located on side console)
-Typical View

NOTE: Leaving the Solution Pump Switch in the ON position will cause the pump to run continuously, which may result in system damage.

Refer to the *Spray Systems Section* elsewhere in this manual for further information.

Fuel Tank Selector Switch

The Fuel Tank Selector Switch (located on the side console) allows you to draw fuel from either the right or left fuel tank.


- **To draw engine fuel from the right-hand fuel tank**, press the Fuel Tank Switch (located on the side console) in the UP (Right) position.
- **To draw engine fuel from the left-hand fuel tank**, press the Fuel Tank Switch in the DOWN (Left) position.



Fuel Tank Selector Switch
(Located on side console)
-Typical View

NOTE: You may operate from either fuel tank until the low fuel indicator light (located near the fuel gauge) illuminates. When the indicator light is on, you must either switch to the opposite tank or refuel.

Hydraulic Tread Adjust Switches

 **CAUTION**

Never adjust the hydraulic tread width on a public roadway. Ensure the machine is on level ground where there are no ditches or valleys to interfere while you perform the adjustment.

The Hydraulic Tread Adjust Switches (located near the side console - open armrest to access) are used to adjust tread width to desired position.



Hydraulic Tread Adjust Switches
(Located near side console
- open armrest to access)
-Typical View

Refer to “Tread Adjustment” provided in the *Hydraulic Systems Section* elsewhere in this manual for further information.

Power Ports

Your cab is equipped with two separate auxiliary power ports for the connection of 12-volt accessories.

- The “binding post” power port (located on the side console) is protected by a 30-amp circuit breaker.



Power Port - Binding Post
(Located on the side console)
-Typical View

- The storage console power port (located on lower storage console on the left-hand side of the operator's seat) is protected by a 30-amp circuit breaker.

NOTE: Replace insulated plug when not in use.



Power Port - Storage Console
(Located on lower storage console on the left-hand side of operator's seat)
-Typical View

NOTE: The ignition does not have to be on to use the Power Ports. However, prolonged use without the engine running is not recommended.

Overhead Monitors and Controls

- Interior Work Light
- Stereo/Radio
- Climate Controls

- Windshield Wiper/Washer
- Fuel Gauge
- Engine Monitor
- Spray System Console

Interior Work Light

The Interior Work Light (located on cab headliner) is turned on manually by pressing the Interior Work Light Switch in the UP (On) position.

NOTE: The ignition key must be in the ON position for the light to operate.



Interior Work Light
(Located on cab headliner)
-Typical View

Stereo/Radio

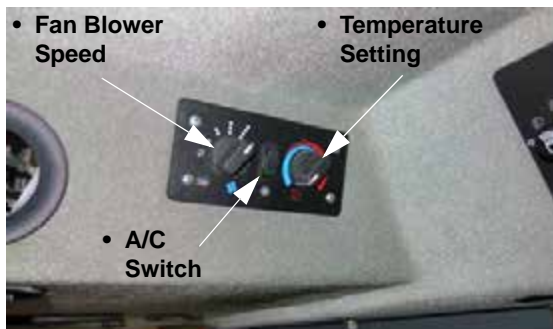
The cab is featured with an AM/FM/Tuner with a CD Player and Weatherband Broadcasting. Refer to the stereo manufacturer's user guide for complete operating instructions and programming information.



Stereo/Radio
(Located on cab headliner)
-Typical View

Climate Controls

The Climate Controls are located on the cab headliner.



Climate Controls
(Located on cab headliner)
-Typical View

Fan Blower Speed

- Rotate the Fan Blower Speed Dial “clockwise” to increase fan speed.
- Rotate the Fan Blower Speed Dial “counter-clockwise” to decrease fan speed.
- Rotate the Fan Blower Speed Dial fully “counter-clockwise” to turn OFF.

Temperature Setting

- Rotate the Temperature Setting Dial “clockwise” to increase temperature.
- Rotate the Temperature Setting Dial “counter-clockwise” to decrease temperature.

Air Conditioner Switch

- To activate the air conditioner, press the Air Conditioner Switch in the UP (On) position.
- Adjust fan speed and temperature accordingly.

Air Vents

Rotate Air Vents to desired position, or individually turn on or off with the directional fins.



Air Vents
-Typical View

Refer to the *Maintenance and Storage Section* elsewhere in this manual for information on servicing the Air Conditioning System.

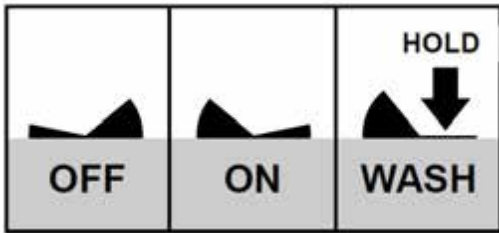
Windshield Wiper/Washer

- **To turn windshield wiper on**, press the Windshield Wiper/Washer Switch (located on the cab headliner) in the UP (On) position.
- **To turn windshield wiper off**, press the Windshield Wiper/Washer Switch in the DOWN (Off) position.

NOTE: The wiper will continue to operate until the switch is turned to the OFF position.



Windshield Wiper/Washer Switch
(Located on cab headliner)
-Typical View



- **To activate the washer pump and apply windshield washer fluid, press and hold the Windshield Wiper/Washer Switch in the UP position.**
- Release switch when desired amount of fluid is achieved.
- Place switch in the DOWN (Off) position when finished.

Fuel Gauge

The Fuel Gauge (located near the side console) measures the amount of fuel in either fuel tank, depending on the tank selected.

NOTE: A low fuel indicator light will illuminate when fuel level in either tank reaches a low level. When this indicator light is on, you must either draw fuel from the opposite tank, or refuel.



Fuel Gauge
(Located near the side console)
-Typical View

Engine Monitor

NOTICE

Immediately reduce engine speed and shut ignition off if any red indicator lights appear on the engine monitor. Determine cause and correct issue before continuing operation.

Your machine is featured with a CANtrak 2600 Monitor (located near the side console), which monitors engine parameters.



Engine Monitor
(Located near the side console)
-Typical View

Refer to the *Engine and Drive Systems Section* elsewhere in this manual, as well as the manufacturer's operation manual for complete operating and programming instructions.

Spray System Console

The spray system is controlled by the Spray System Console and the Solution Pump Control Valve. The system receives data and automatically makes adjustments based on the target rate of application set by the operator.



Spray System Console
(Located near the side console)
-Typical View

Refer to the manufacturer's operation manual for complete operating instructions and programming information.

Lights

Hazard/Warning Lights

The Hazard/Warning Lights (located on the front and rear of machine) are to be used at any time, day or night, when traveling on a public roadway, unless prohibited by law.

- Press the Hazard/Warning Lights Switch (located on the cab headliner) in the UP position to turn ON.
- Press the Hazard/Warning Lights Switch in the DOWN position to turn OFF.



Hazard/Warning Lights Switch
(Located on cab headliner)
-Typical View

Highway Lights

The Highway Lights (mounted on the center of each front tank shield) are used when traveling on a public roadway at night.



Highway Lights
(Mounted on the center of
each front tank shield)
-Typical View

- Rotate the Highway Lights Switch (located on the cab headliner) to the *first* "On" position to activate.

NOTE: Activating the Highway Lights will also turn on the red running lights on the rear of machine.



Highway Lights Switch
(Located on cab headliner)
-Typical View

NOTE: The ignition does NOT have to be on to operate the Highway Lights. However, prolonged use of these lights without the engine running is not recommended.

Field Lights

The Field Lights (mounted on the front of cab) are used when operating in the field at night.

NOTE: Turn Field Lights OFF before entering a public roadway.



Field Lights
(Mounted on the front of cab)
-Typical View

- Rotate the Field Lights Switch (located on the cab headliner) to the *second* “On” position to activate.

NOTE: Activating the Field Lights will also turn on the red running lights on the rear of machine.



Field Lights Switch
(Located on cab headliner)
-Typical View

NOTE: The ignition does NOT have to be on to operate the Field Lights. However, prolonged use of these lights without the engine running is not recommended.

Running Lights

Activating the Highway or Field Lights will also turn on the red Running Lights (located on the rear of machine).



Running Lights
(Located on rear of machine)
-Typical View

Work Lights

The Work Lights (located on the transom mount and on the rear of cab) are for use when operating in the field after dark.

NOTE: Turn Work Lights OFF before entering a public roadway.



Work Lights
(Located on the transom mount and rear of cab)
-Typical View

- Press the Work Lights Switch (located on the side console) in the UP position to turn ON.


- Press the Work Lights Switch in the DOWN position to turn OFF.



Work Lights Switch
(Located on side console)
-Typical View

NOTE: The ignition does NOT have to be on to operate the Work Lights. However, prolonged use of these lights without the engine running is not recommended.

SECTION 4 – ENGINE AND DRIVE SYSTEMS

 **WARNING**

CALIFORNIA PROPOSITION 65 WARNING

WARNING: Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer and birth defects or other reproductive harm.

WARNING: Battery posts, terminals, and related accessories contain lead and lead compounds, and chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

3. Check hydraulic oil reservoir level.
4. Check cooling air intake screen.
5. Check Filter Minder®.
6. Drain fuel/water separator.
7. Check engine drive belt.
8. Drain water out of air tank/wet tank.
9. Check for any oil or fuel leaks.

Cold Start Procedure

NOTICE

Use of starting fluid is not recommended.

1. Move the Hydrostatic Drive Control Handle to the NEUTRAL position.
2. Press the Parking Brake Switch (located on the side console) in the UP (On) position.

NOTE: Return Parking Brake Switch to the OFF position when start procedure is complete.

3. Turn the Ignition ON, but DO NOT engage the starter. (**Wait for the “Wait to Start” warning light to disappear**).

NOTE: Ensure that there are no other warnings before proceeding.

4. Engage the starter.


(If the engine fails to start after 15 seconds, turn the key OFF, wait one minute, and repeat the procedure. If the engine does not start after three attempts, check the fuel supply system).

NOTE: Absence of blue or white exhaust smoke while cranking indicates that no fuel is being delivered.

5. Observe warning indicator lights and gauges for operation (after start-up).

NOTE: If any functions do not operate, shut the engine OFF and determine cause.

ENGINE - STARTING

 **CAUTION**

Start the engine from the operator's seat only. When running the engine in a building, ensure there is adequate ventilation.

NOTICE

Cold oil may not flow in quantities adequate to prevent pump cavitation.

Pre-Operational Checklist

1. Check engine oil level.

NOTE: Do not operate the machine when oil level is below the “low” mark on the engine oil dipstick.

2. Check radiator coolant level.

6. Allow a warm-up period of at least 5 minutes before operating the engine at a high RPM.

NOTE: The engine must reach operating temperature and oil pressure must stabilize in the normal operating range before it is run faster than idle speed (1,000 RPM or less).

7. Press the Parking Brake Switch in the DOWN (Off) position.

⚠ CAUTION

When using jumper cables to start the engine, make sure to connect the cables in parallel - positive (+) to positive, and negative (-) to negative. When using an external electrical source to start the engine, turn the Battery Disconnect Switch to the OFF position. Remove key before attaching jumper cables to prevent unintentional starter engagement.

ENGINE MONITOR -
CANTRAK 2600

NOTICE

Immediately reduce engine speed and shut off ignition if any red warning indicator lights illuminate. Determine cause and correct before continuing operation.

Your machine is featured with a CANtrak 2600 System, which is used for monitoring engine parameters. Refer to the manufacturer’s operation manual for complete operating and programming instructions.



CANtrak Engine Monitor
(Located near the operator’s station)
-Typical View
* Start-up screen shown

Hagie Manufacturing Company recommends locking the monitor to eliminate the changing of parameter settings.

To Lock/Unlock the Monitor

- In Quad-Mode, press and hold the F1 and F2 Switches simultaneously.

NOTE: The CANtrak Engine Monitor is factory pre-set. No adjustments are required.

After the initial start-up screen is displayed, a Quad-Mode display will appear.



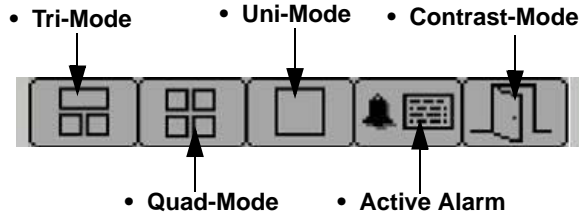
Quad-Mode
-Typical View

At any time, press the F1 or F2 Switches to display the context-dependent “Button Bar”.

The top level Button Bar shows the basic structure of the monitor and disappears after 5 seconds of inactivity.

- (F1) - Tri-Mode
- (F2) - Quad-Mode
- (F3) - Uni-Mode
- (F4) - Active Alarm

- (F5) - Contrast Mode (or hold for 3 seconds to view the Configuration Menu)



Button Bar
-Typical View

Tri-Mode



Tri-Mode
-Typical View

NOTE: Press the F2 Switch to go back to the Quad-Mode display, or the F3 Switch to view the Uni-Mode display.

Uni-Display

The Uni-Mode display plots data history in an X-Y graph format.



Uni-Mode
-Typical View

Active Alarm

The Active Alarm display lists all active/current alarms received by the unit.



Active Alarm
-Typical View

Configuration Menu



Configuration Menu
-Typical View

Refer to the manufacturer's operation manual for complete operating and programming instructions.

HYDROSTATIC DRIVE

The Hydrostatic Drive System uses pressurized hydraulic fluid to drive the machine. The Hydrostatic Drive System consists of four components: Diesel Engine, Hydrostatic Pumps, Wheel Motors, and Wheel Hubs.

Hydrostatic Drive Components

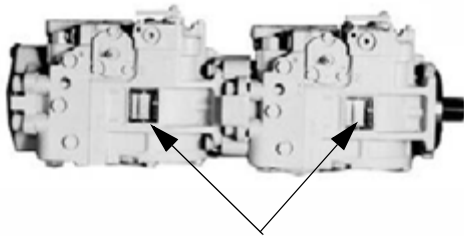
- Diesel Engine
- Hydrostatic Pumps (2)
- Front and Rear Wheel Motors (4)
- Wheel Hubs (4)



Diesel Engine
-Typical View



Wheel Hub
-Typical View



Hydrostatic Pumps (Front/Rear)
-Typical View



Wheel Motor
-Typical View

Drive System Control

NOTE: The NEUTRAL position must be met on the Hydrostatic Drive Control Handle before changing direction of the machine.

- **To move the machine forward**, slowly push the Hydrostatic Drive Control Handle FORWARD.

NOTE: The further the handle is moved forward, the faster the machine will travel and the engine speed will increase.

- **To move the machine in reverse**, slowly pull the Hydrostatic Drive Control Handle backward.

NOTE: The further back the handle is pulled, the faster the machine's speed.

- **To stop the machine**, slowly place the Hydrostatic Drive Control Handle in the NEUTRAL position.

NOTE: Before turning the engine off, reduce engine speed and allow to idle for a minimum of three (3) minutes.

Speed Range

To adjust speed ranges, press the 3-position Speed Range Switch (located near the Hydrostatic Drive Control Handle) to desired position.

- (H) - High
- (M) - Medium

- (L) - Low

NOTE: The lower the speed range setting, the higher the torque, but the lower the speed.



Speed Range Switch
(Located near the
Hydrostatic Drive Control Handle)
-Typical View



Throttle Switch
(Located on side console)
-Typical View

Parking Brake

The Parking Brake will engage when applied hydraulic pressure falls below 150 PSI (10.3 bar) or if the engine is shut off.



Throttle Switch

NOTICE
Never operate the machine at anything less than full recommended throttle.

The Throttle Switch (located on the side console) is used to control engine speed (RPM).

NOTE: Engine speed can range between 800 and 2720 RPM.

The Throttle Switch works with a timer to tell the engine how fast to run. The longer the operator holds the switch in either direction (press UP/“rabbit icon” to increase the speed, press DOWN/“turtle icon” to decrease the speed), the more the engine will speed up or slow down.

CAUTION
Do not engage the Parking Brake while operating the machine. Failure to comply may result in personal injury and machine damage.

NOTICE
The Parking Brake is not intended for normal or emergency stopping.

NOTE: Bring the machine to a complete stop before activating the Parking Brake Switch.

SECTION 4 – ENGINE AND DRIVE SYSTEMS



- Press the Parking Brake Switch (located on the side console) in the UP (On) position to engage the Parking Brake.
- Press the Parking Brake Switch in the DOWN (Off) position to disengage the Parking Brake.



Parking Brake Switch
(Located on the side console)
-Typical View

SECTION 5 – HYDRAULIC SYSTEMS

HYDRAULIC SYSTEM



The auxiliary Hydraulic System is an open center-type system and is mounted behind the heavy-duty variable displacement pump. This system consists of dual gear pumps that supply required hydraulics to operate the full-time power steering unit, boom control cylinders (lift/level/fold), solution pump, mechanical agitation, and hydraulic tread adjust (if equipped).

After supplying each of these systems, the hydraulic oil is sent to the oil cooler (located in front of the engine coolant radiator), where it is cooled and then sent back to the hydraulic oil reservoir.

NOTICE

Shut down the engine immediately if the low hydraulic oil indicator light illuminates. Failure to comply may result in severe system damage.



Low Hydraulic Oil Indicator
(Located on the side console)
-Typical View

TREAD ADJUSTMENT - HYDRAULIC

-If Equipped

NOTE: Refer to the Miscellaneous Section elsewhere in this manual for adjusting non-hydraulic tread machines.

CAUTION

Never adjust the hydraulic tread width on a public roadway. Ensure the machine is on level ground where there are no ditches or valleys to interfere while you perform the adjustment.

NOTICE

Always adjust tread width between 1 and 2 mph (1.6 and 3.2 km/h).

NOTE: Hydraulic Tread Adjustment bearing clearance has been factory preset. If further adjustment is required, additional shims will need to be added or removed. Refer to “Service - Tread Adjust Shims”

provided in the Maintenance and Storage Section elsewhere in this manual for further information. Contact Hagie Customer Support if assistance is needed.

To Adjust Hydraulic Tread Width

1. Ensure the nylon material on the tread adjustment brackets (located on the front and rear legs) have an adequately lubricated surface to slide on during adjustment.

NOTE: Refer to “Service - Lubrication” provided in the Maintenance and Storage Section elsewhere in this manual for further information.

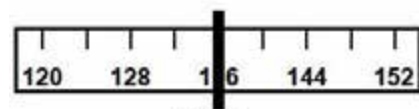
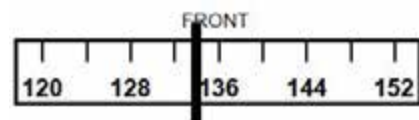
2. Survey your surroundings and allow yourself enough room to adjust tread width in either forward or reverse.
3. While driving one or two miles per hour (1.6 to 3.2 km/h), press and hold the desired Hydraulic Tread Adjust Switch(es) (located near the side console - open armrest to access) to move tread in or out as desired.
 - LF (Left Front)
 - LR (Left Rear)
 - RF (Right Front)
 - RR (Right Rear)



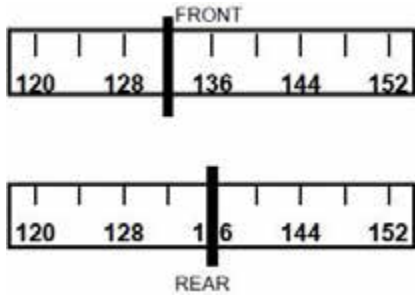
Hydraulic Tread Adjust Switches
(Located near the side console
- open armrest to access)
- Typical View

NOTICE

If adjusting the front and rear legs independently, do not allow the difference between the two to become greater than 2 inches (5 cm) according to the tread width indicators. Failure to comply may result in machine damage. See the following illustrations for correct and incorrect adjustment examples.



REAR
Correct Adjustment



Incorrect Adjustment

NOTE: When operating hydraulic tread adjustment, you may notice a squealing-type noise. Do not be alarmed. This noise is the hydraulic fluid reaching the relief setting.

4. Observe the tread width indicator (located on each leg).



Tread Width Indicator
(Located on each leg)
-Typical View

5. Release the Hydraulic Tread Adjust Switch(es) when the tread width indicators reach desired tread width.

NOTE: All four tread width indicators should have identical readings after tread adjustment is complete.

To Recalibrate Toe-In

- While driving forward (slowly), turn the steering wheel fully in one direction until it bottoms out.
- Continue to turn the steering wheel to allow fluid to bypass the steering cylinder.

- Turn the steering wheel fully in the opposite direction and repeat process.

When the wheels are straightened, the steering cylinders will be re-centered and correct toe-in should be obtained.

Refer to the *Maintenance and Storage Section* elsewhere in this manual for further information on gauging Toe-In.

SECTION 6 – ELECTRICAL SYSTEMS

WARNING

**CALIFORNIA PROPOSITION
65 WARNING**

WARNING: Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer and birth defects or other reproductive harm.

WARNING: Battery posts, terminals, and related accessories contain lead and lead compounds, and chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.



Battery Access
(Located on the rear right-hand side of machine - open hood to access)
-Typical View

NOTE: When servicing the electrical system, always remove the battery (removing the ground cable first). When reinstalling the battery, connect the ground cable last.

BATTERIES

CAUTION	<p>Batteries contain sulfuric acid. Avoid contact with skin, eyes, or clothing. Do not inhale fumes or ingest liquid. Batteries contain gases which can explode. Keep sparks and flame away while servicing.</p>

Charging

CAUTION

+
POS

Electrical system is 12 volt negative ground. When using booster with jumper cables, precautions must be taken to prevent personal injury or damage to electrical parts.

1. Attach one end of jumper cables to positive terminal of battery and other end to positive terminal of vehicle battery to be jump-started by electric motor.
2. Attach one end of second cable to negative booster terminal and other end to remote frame away from battery.
3. To remove cables, reverse above sequence exactly to avoid sparks. See operators manual for additional information.

-
NEG

For your convenience, a set of Auxiliary Battery Charging Posts are located on the rear mainframe for ease of charging the batteries.

CAUTION

Disconnect the battery when servicing any part of the electrical system. Failure to comply may result in personal injury and property damage.

Access

The battery is located on the rear right-hand side of machine. Open hood to access.



Auxiliary Battery Charging Posts
(Located on the rear mainframe)
-Typical View

Connect your charging cables to the Auxiliary Battery Charging Posts just as you would to the battery - positive cable to the positive terminal, and negative cable to the negative terminal.

NOTE: Keep these terminals clean and their caps in place when not in use.

NOTICE

To ensure sufficient electrical contact, battery terminal connections should be as clean and tight as possible.

Cleaning

- Disconnect the battery cables from the batteries.
- Remove any corrosion with a wire brush or battery post brush.
- Wash the battery cable connections and posts with a mild baking soda and ammonia solution.
- Apply grease (or dielectric grease) to prevent corrosion.
- Reconnect the batteries, ensuring connections are tight.
- Clean every 100 hours of operation.

Replacement

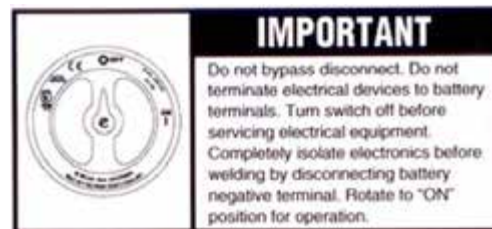
Install replacement batteries with ratings equivalent to the following specifications:

- **Voltage** - 12V only
- **CCA** - 30 seconds at 0° F. (950)
- **Reserve Capacity** - 185 minutes at 25 amps

Storage

Refer to “Storage” provided in the *Maintenance and Storage Section* elsewhere in this manual for further information.

BATTERY DISCONNECT SWITCH



NOTICE

Do not use the Battery Disconnect Switch as a safety device when performing work to the electrical system. Disconnect the negative battery cable before servicing.

Your machine is equipped with a Battery Disconnect Switch (located on the rear mainframe). The Battery Disconnect Switch disengages the battery, therefore, cutting all electrical power to the engine.

NOTE: Ensure the switch is in the engaged position before starting the engine.

- Rotate the Battery Disconnect Switch to the ON (clockwise) or OFF (counter-clockwise) positions to operate.



Battery Disconnect Switch
(Located on the rear mainframe)
-Typical View

NOTE: Replace with fuse of equal size and amperage.

FUSES		CIRCUIT BREAKERS	
Rinse system power and Gauges 10 AMP	AA/PM Radio 10 AMP	Starter relay 30 AMP	
Seat power and Hydraulic tread adjust 20 AMP	CB radio and Dome light 10 AMP	Highway lights and Field lights 40 AMP	
Spray solution valves 10 AMP	Tank solution valves and Rinse system control 10 AMP	Engine relay 100amp	
Flow ctrl, agitation, and Boom folding ctrsaa 10 AMP	Hazard/learning lights, Turn signal, and wiper 10 AMP	Work lights 30 AMP	
Fuel tank selector and Parking brake 15 AMP	Boom lift control and Boom level control 15 AMP	Foam marker and Switch panel aux power 30 AMP	
		A/C and Storage console aux pwr 30 AMP	

-Typical View

** May vary depending on available equipment*

FUSES AND CIRCUIT BREAKERS

Fuses

Fuses protect the individual “lighter duty” electrical circuits on the machine. The fuse panel is located on the right-hand side of the operator’s seat. Remove screws and panel to access.

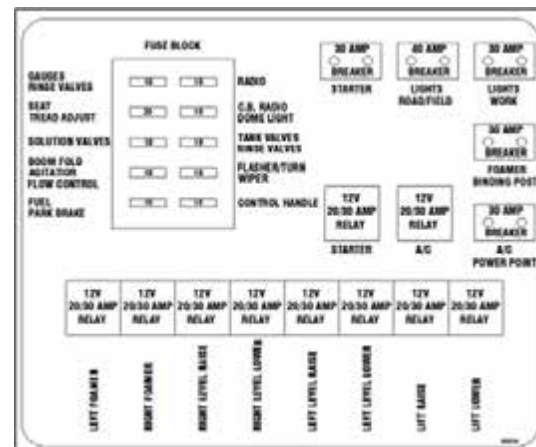


Fuse Panel
(Located on the right-hand side of the operator's seat)
-Typical View

Circuit Breakers

Circuit Breakers protect the functions of the “heavier duty” electrical circuits on the machine. The breakers will trip when overloaded and automatically reset themselves after they cool down. They will continue to trip and reset as long as the overload or short exists.

NOTE: If the Circuit Breaker does not reset, replace with a breaker of equal amperage and size.



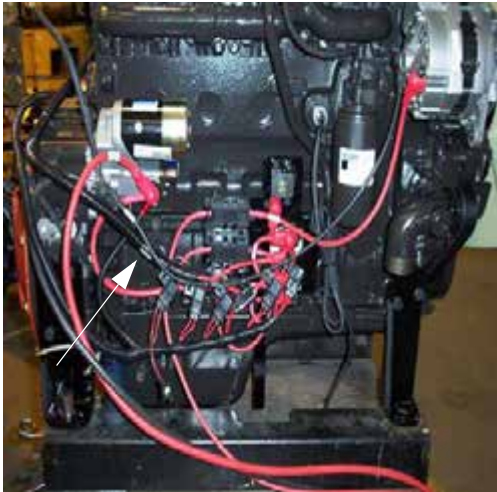
-Typical View

** May vary depending on available equipment*

Wire Harness Circuit Breaker

The wire harnesses on your machine are protected by the main circuit breaker (mounted on the engine).

If a fuse blows, remove it by pulling the fuse straight out. DO NOT pry it out with a screw driver.



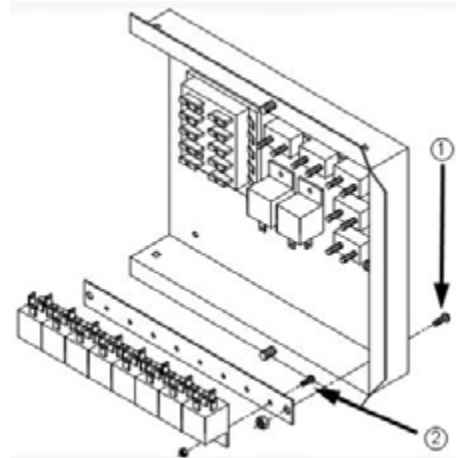
Main Circuit Breaker
(Mounted on engine)
-Typical View

Circuit Relays

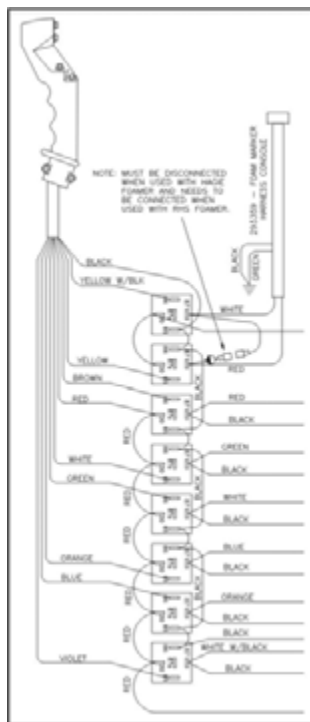
Relays carry large electrical loads and are controlled by switches. They can be replaced, if necessary. Contact Hagie Customer Support when servicing electrical relays to ensure proper wire location is maintained on the relay panel.

If it becomes necessary to remove a relay:

1. Tag all wires that run to that particular relay.
2. Remove the two (2) bolts that mount the relay panel to the electrical panel (Item 1).
3. Unbolt the individual relay by removing the relay bolt that secures it to the relay panel (Item 2).



-Typical View



-Typical View

SECTION 7 – SPRAY SYSTEMS

SPRAY BOOMS - 60/80/90'

The Spray Booms are controlled by an electro-hydraulic system. This system consists of operator-manipulated switches (located on the side console and the hydrostatic drive control handle) and hydraulic cylinders (attached to the booms), which provide lift, level, horizontal extension, and vertical extension.

CAUTION

When operating or positioning the booms, observe the following safety precautions. Failure to comply may result in injury or equipment damage.

- Do not unfold/fold boom extensions while main boom is in cradle.
- Do not operate machine with one boom out of cradle and the other boom in cradle.
- Ensure booms are folded and in cradle before transporting the machine.

WARNING

When operating or positioning the booms, observe the following safety precautions:

- Monitor both sides of the boom during fold procedure.
- Cradle booms when leaving the machine unattended.
- Ensure booms are folded when cradled.
- Select a safe area before unfolding/folding the booms.
- Clear area of personnel.
- Check for overhead obstructions.
- Do not unfold/fold booms near power lines. Contact with power lines can result in serious injury or death.
- Spray equipment is designed for FIELD USE ONLY. Do not attempt to use machinery for anything other than its intended purpose.



WARNING

Hydraulic and electrical control systems are optimized for use of the spray boom attachment. Any modification to these systems may lead to unintended and uncontrolled motion. DO NOT install add-on control systems that are not approved by Hagie Manufacturing Company.

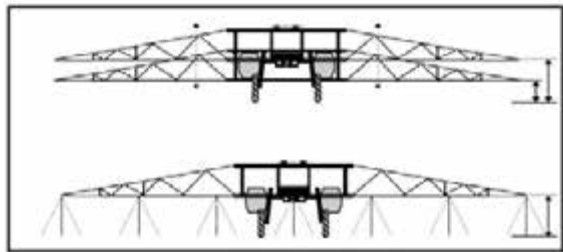
Power Lines



Hagie Manufacturing Company cannot stress enough that extreme caution must be taken when operating equipment around power lines. Ensure there is more than sufficient clearance when transporting, unfolding and folding the boom, or spraying near power lines.



Lift



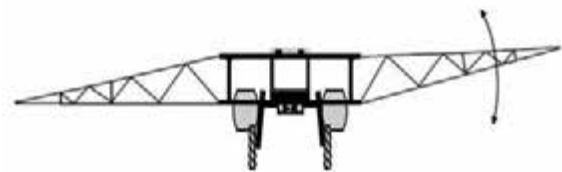
-Typical View

- Press and hold the Transom Raise Switch (located on the Hydrostatic Drive Control Handle) to raise transom/boom assembly.
- Press and hold the Transom Lower Switch (located on the Hydrostatic Drive Control Handle) to lower the transom/boom assembly.



Lift Cylinder
-Typical View

Level



-Typical View

- Transom Raise Switch
- Transom Lower Switch

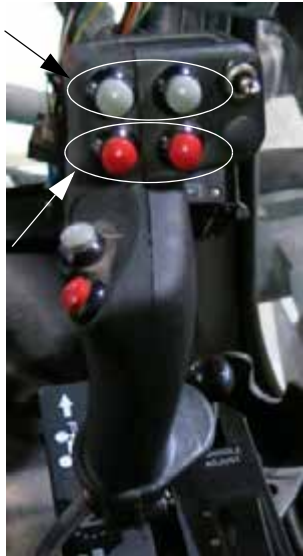


Transom Raise/Lower Switches
(Located on the Hydrostatic
Drive Control Handle)
-Typical View

- Press and hold desired Left or Right Boom Level Switch (located on the Hydrostatic Drive Control Handle) to increase angle of individual booms.
- Press and hold desired Left or Right Boom Level Switch to decrease angle of individual booms.

NOTE: While depressed, either switch will activate the transom lift cylinders.

- Press to increase boom angle
- Press to decrease boom angle



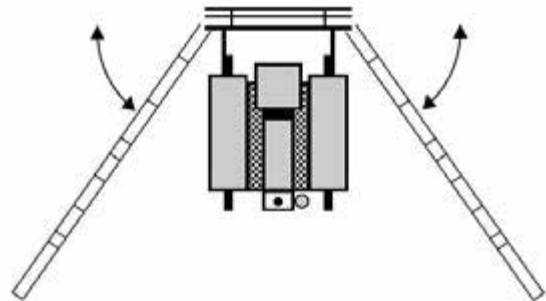
Left/Right Boom Level Switches
(Located on the Hydrostatic Drive Control Handle)
-Typical View

NOTE: While depressed, any of the level switches will activate the level cylinders connecting either boom to the transom. This adjustment also aids in positioning the booms correctly in the cradles for transportation and storage.



Level Cylinder
-Typical View

Unfolding/Folding



-Typical View

To Unfold/Fold Booms:

NOTE: Ensure the Hydrostatic Drive Control Handle is in the NEUTRAL position. If the machine is put in gear during unfold/fold operation, boom movement will stop.

- Press and hold the corresponding Left or Right Boom Fold Switch (located on the side console) in the UP position to unfold booms OUT.
- Press and hold the corresponding Left or Right Boom Fold Switch in the DOWN position to fold booms IN.



Boom Fold Switches (Left/Right)
(Located on the side console)
-Typical View

NOTE: While depressed, the Boom Fold Switches activate the cylinders connecting either boom breakaway mount to the transom.



Boom Breakaway Mount Cylinder
-Typical View



Boom Extension Switch
(Located on the side console)
-Typical View

Spray Boom Extensions



-Typical View

To Unfold/Fold Boom Extensions:

NOTICE

Both of the left and right boom extension cylinders are activated when the Boom Extension Switch is pressed.

- Press and hold the Boom Extension Switch (located on the side console) in the UP position to unfold boom extensions OUT.
- Press and hold the Boom Extension Switch in the DOWN position to fold boom extensions IN.



Boom Extension Cylinder
-Typical View

Cradling the Booms

Always cradle the booms before traveling, transporting, or parking for an extended period of time.



To Cradle the Booms:

- Fold outer boom extensions IN.
- Raise transom all the way UP.
- Fold main boom sections IN toward the machine.

NOTE: As booms near the cradle, care must be taken while making adjustments to avoid property damage.

- Raise each individual boom level until it clears the outer cradle stop.



- Raise boom level until it clears outer cradle stop
-Typical View

- Fold the boom IN toward cradle back-stop.
- When boom touches the back-stop, lower boom level until the full weight of the boom is resting in cradle.



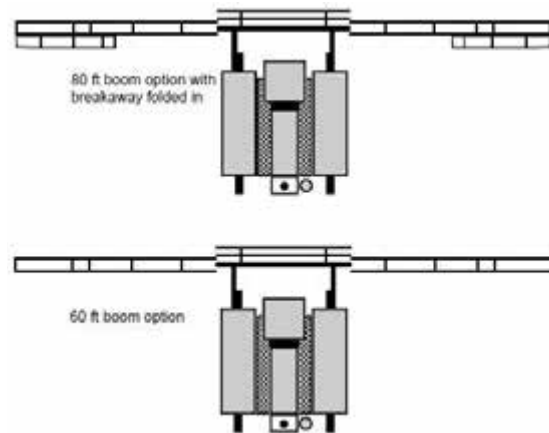
- Lower boom level until full weight of boom is resting in cradle
-Typical View

NOTE: If the boom does not fold in far enough, the fold cylinder sleeve may require adjustment.

80-ft. to 60-ft. Boom Conversion

Folding and locking the outer boom breakaway and turning the outer boom solution valves off, essentially turns an 80-ft. boom into a 60-ft. boom.

NOTE: All booms are equipped with a main boom two-way, spring-loaded breakaway. 80 and 90-ft. booms are equipped with a one-way spring-loaded breakaway on the outer boom section.



To Convert an 80-ft. Boom to a 60-ft. Boom:

- Close the outer boom extension solution valves.
- Manually fold each outer boom extension backward, as shown in the following photo.



-Typical View

- Lock each outer boom extension into position with provided Lock Pin (located near the rear of each folded boom).

NOTICE

Ensure outer boom extension is in the locked position when folded. Failure to comply may result in property damage.



Lock Pin
(Located near the rear of
each folded boom extension)
-Typical View

SOLUTION SYSTEM COMPONENTS

The Solution System is a constantly monitored, continuously adjusted computer-controlled system. The cab-mounted digital spray system console receives information from various inputs to help determine gallons per minute (GPM)/liters per minute (l/min) and gallons per acre (GPA)/liters per hectare (l/ha).

Please read and understand the information provided in this manual, as well as the spray system console manufacturer's operation manual before operating the Solution System. The following information refers to components of the Solution System and is not intended to replace the manufacturer's operating instructions.

- Solution Tanks (2)
- Solution Pump
- Solution Pump Switch
- Flow Meter
- Pressure Gauge
- Solution Tank Valves
- Solution Tank Valve Switches
- Agitation Valve Switch
- Agitator Motor
- Boom Solution Valve Switches
- Boom Solution Valve Indicators
- Master Spray Switch
- Spray System Console

Solution Tanks (2)



Solution Tank
(Located on each side of machine)
-Typical View

Solution Pump

The Solution Pump (located near front of machine) is a hydraulically-driven centrifugal pump with variable speed control.



Solution Pump
(Located near front of machine)
-Typical View

The Solution Pump draws solution out of the tanks at the rate determined during calibration. It dispenses solution through the many valves and hoses that make up the spray system. The Solution Pump also dispenses fluid through the Rinse System.

NOTE: Activate the Solution Pump while operating at a relatively low engine RPM setting (1,000 RPM.) Increase engine RPM slowly and maintain full recommended throttle RPM during field operation.

Refer to the spray system console manufacturer's operation manual for further information on solution pump control.

Solution Pump Switch

The Solution Pump Switch (located on the side console) is used to turn on/off the Solution Pump. **This is the ONLY way to turn on/off the Solution Pump.**

NOTE: Leaving the Solution Pump Switch in the ON position will cause the pump to run continuously, which may result in system damage.

- Press the Solution Pump Switch in the UP position to turn ON (enable).
- Press the Solution Pump Switch in the DOWN position to turn OFF (disable).



Solution Pump Switch
(Located on side console)
-Typical View

Flow Meter

The Flow Meter (located on the right-hand side of machine) monitors the solution flow and sends information back to the spray system console.



Flow Meter
(Located on the right-hand side of machine)
-Typical View

Pressure Gauge

The Pressure Gauge (located on the transom) gives a constant visual display of solution pressure being applied (measured in PSI).

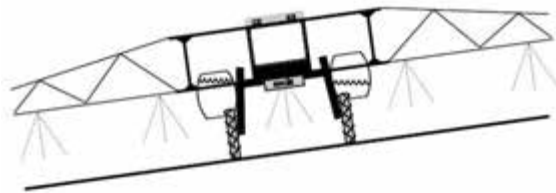
NOTE: Pressure will vary according to speed, application, rate, tip size, etc.



Pressure Gauge
(Located on transom)
-Typical View

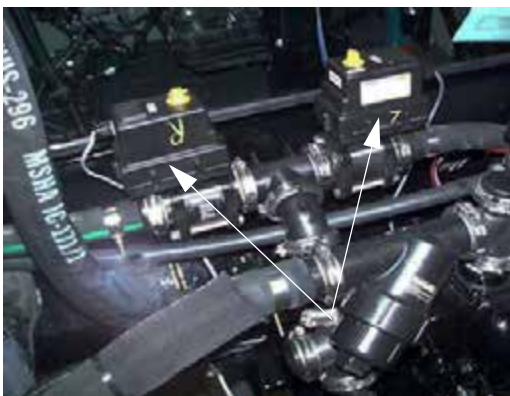
Solution Tank Valves

Solution Tank Valves allow you to: 1) Draw solution from one solution tank or the other; 2) Avoid solution siphoning from one solution tank to the other when operating on uneven ground; 3) Operate the Rinse System.



-Typical View

Your machine is equipped with Electric Solution Tank Valves (located near front of machine), which are activated by enabling the Solution Tank Valve Switches (located on the side console).



Solution Tank Valves
(Located near front of machine)
-Typical View

Solution Tank Valve Switches

- Press desired left or right Solution Tank Valve Switch in the UP position to OPEN the corresponding electric solution tank valve.
- Press switch in the DOWN position to CLOSE the corresponding electric solution tank valve.



Solution Tank Valve Switches - Left/Right
(Located on the side console)
-Typical View

Agitation Valve Switch

The Agitation System is a hydraulically-driven mechanical system, which maintains suspension of solution in the tanks. Enable the Agitation Valve Switch (located on the side console) to activate the Agitation System, which in turn delivers hydraulic fluid to the Agitator Motors (located on each solution tank).

- Press the Agitation Valve Switch in the UP (On) position to enable.
- Press the Agitation Valve Switch in the DOWN (Off) position to disable.



Agitation Valve Switch
(Located on side console)
-Typical View



-Typical View

Agitator Motor

Agitator Motor speed is controlled by the Variable Flow Control Valve (located on the rear of machine).



Agitator Motor
(Located on each solution tank)
-Typical View

To adjust Agitator Motor speed:

- Loosen Set Knob (located on the Variable Flow Control Valve).
- Turn Adjustment Lever to desired speed.
- Re-tighten Set Knob.

Boom Solution Valve Switches

The spray booms are divided into sections that are independently supplied with solution and can be turned on or off individually. The hydro-electric Boom Solution Valves are controlled by the Boom Solution Valve Switches (located on the side console).

- Press desired Boom Solution Valve Switch in the UP position to turn ON.
- Press desired Boom Solution Valve Switch in the DOWN position to turn OFF.



Boom Solution Valve Switches
(Located on the side console)
-Typical View

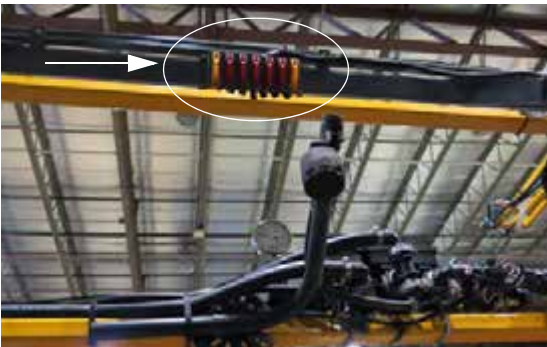
NOTE: The number and location of Boom Solution Valves varies according to boom length. 60-ft. booms are divided into three sections with valves mounted on the transom. 80/90-ft. booms are divided into five

sections with three valves mounted on the transom and one mounted on each boom.

Boom Solution Valve Indicators

The Boom Solution Valve Indicators (located on the transom) allow you to view system status for the following:

- (2) Fence Row Indicators
- (5) Spray Section Indicators



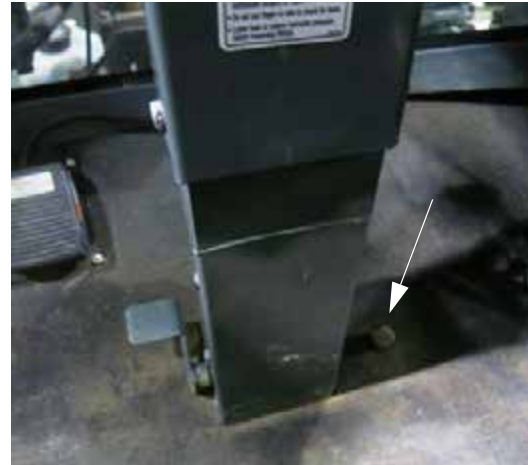
Boom Solution Valve Indicators
(Located on transom)
-Typical View

Master Spray Switch

Main solution power and Boom Solution Valve Switches are controlled by the Master Spray Switch (located on the lower right-hand side of the steering column) and must be ON to supply power.

This allows you to turn all of the Boom Solution Valves on or off at the same time, such as turning them off when you reach the end rows, and turning them back on when you re-enter the field.

- Press Master Spray Switch DOWN to turn ON. Press switch again to turn OFF.



Master Spray Switch
(Located on the lower right-hand side of steering column)
-Typical View

NOTE: When the Master Spray Switch is ON, the Master Spray Indicator (located on the side console) will illuminate.



Master Spray Indicator
(Located on the side console)
-Typical View

Spray System Console

Refer to the Spray System Console manufacturer's operation manual for complete programming and operating instructions.



Spray System Console
(Located near the side console)
-Typical View

May vary in appearance depending on model and available equipment.

SOLUTION SYSTEM - OPERATION

NOTICE

Never attempt to operate the spray system without solution in the tanks. Failure to comply will cause severe equipment damage and will void the warranty.

Getting Started

1. Calibrate the Spray System Console (refer to the manufacturer's operation manual for calibration instructions).
2. Ensure there is adequate amount of solution in the tanks.
3. Engage the parking brake.
4. Start the engine.

NOTE: Maintain a relatively low engine RPM setting (1,000 RPM). Increase engine RPM slowly until full recommended throttle RPM is obtained.

5. Press the Solution Pump Switch (located on the side console) in the UP (On) position.

NOTICE

Do not allow the Solution Pump to run continuously while the Boom Solution Valve Switches are off. Failure to comply will generate overheating, causing severe pump damage and will void the warranty.



Solution Pump Switch
(Located on side console)
-Typical View

6. Press both left and right Solution Tank Valve Switches (located on the side console) in the UP position to open the electric solution tank valves.



Solution Tank Valve Switches - Left/Right
(Located on the side console)
-Typical View

7. If desired, enable the Agitation Valve Switch (located on the side console).
 - Press the Agitation Valve Switch in the UP position to turn ON.

SECTION 7 – SPRAY SYSTEMS



- Press the Agitation Valve Switch in the DOWN position to turn OFF.



Agitation Valve Switch
(Located on side console)
-Typical View

8. Press the Master Spray Switch (located on the lower right-hand side of steering column) to the ON position.



Master Spray Switch
(Located on the lower right-hand
side of steering column)
-Typical View

NOTE: When the Master Spray Switch is ON, a Master Spray Indicator (located on the side console) will illuminate.



Master Spray Indicator
(Located on the side console)
-Typical View

9. Press the individual Boom Solution Valve Switches (located on the side console) to the ON position.



Boom Solution Valve Switches
(Located on the side console)
-Typical View

10. Slowly move the Hydrostatic Drive Control Handle forward to obtain desired ground speed.
11. Frequently observe the pressure gauge. If the pressure drops to zero or the spray pattern deteriorates, turn OFF the Master Spray, Solution Pump, Solution Tank Valves, and Agitation Valve Switches until solution is refilled.

FENCE ROW APPLICATOR

To Operate the Fence Row Nozzles

- Press the Fence Row Switch (located on the side console) in the UP position to

apply solution from the RIGHT side of machine.

- Press the Fence Row Switch in the DOWN position to apply solution from the LEFT side of machine.
- Place the Fence Row Switch in the mid (center) position to turn OFF.



Fence Row Switch
(Located on the side console)
-Typical View

Fence Row Indicator Lights (located on the transom) will illuminate when the corresponding Fence Row Nozzle is activated.



Fence Row Indicators
(Located on transom)
-Typical View

NOTE: If neither left or right Fence Row Indicator is illuminated, no solution is being applied through the Fence Row Nozzles.

60-ft. Spray Boom

The Fence Row Nozzle on a 60-ft. boom is supplied by an electric valve mounted in-line with the left or right boom solution supply

hose. To operate the Fence Row Nozzle, the corresponding boom section (left or right) must be ON.

80/90-ft. Spray Booms

The Fence Row Nozzle on 80/90-ft. booms is supplied by an electric valve attached to the outer boom electric solution valve. Therefore, Fence Row application may be operated by itself.

FILLING YOUR SOLUTION TANKS



WARNING

CHEMICALS ARE DANGEROUS

Read the chemical manufacturer's labels to avoid injury or damage.



CAUTION

Wear the appropriate clothing and Personal Protective Equipment (PPE) when working with agricultural chemicals. Do not store chemical-soaked clothing inside the cab.

Front Fill

-If Equipped

1. Press the Solution Tank Valve Switch(es) (located on the side console) in the UP position to OPEN the corresponding solution tank valve(s).

NOTE: Both solution tanks may be filled at the same time.



Solution Tank Valve Switches
(Located on the side console)
-Typical View

2. Remove fill port cap (located near front of machine behind center front shield) and connect solution supply to the Solution Tank Fill Port.
3. Rotate the Tank Fill Valve (located near front of machine behind center front shield) to the OPEN position.



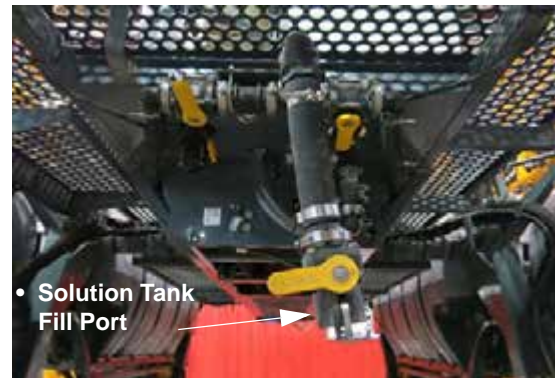
-Typical View

4. Fill tank(s) to desired level.
5. **When finished filling the tank(s)**, close the Tank Fill Valve.
6. Remove solution supply from the Solution Tank Fill Port.
7. Reinstall the fill port cap.
8. Press the Solution Tank Valve Switch(es) (located on the side console) in the DOWN position to CLOSE the corresponding solution tank valve(s).

Rear Fill

1. Lower the Rear Fill Assembly.

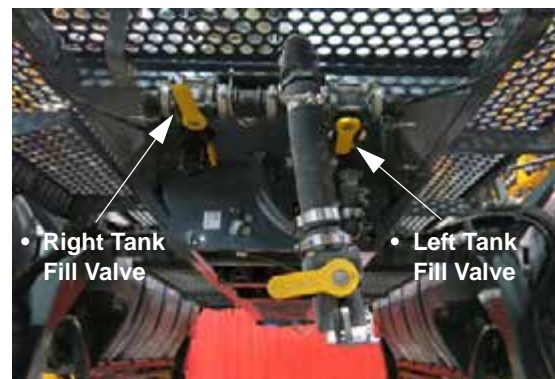
2. Remove fill port cap and connect solution supply to the Solution Tank Fill Port.



Rear Fill Assembly
(Located beneath rear of machine)
-Typical View

3. Rotate the corresponding Tank Fill Valve(s) (located beneath rear of machine) to the OPEN position.

NOTE: Both solution tanks may be filled at the same time.



Tank Fill Valves
(Located beneath rear of machine)
-Typical View

4. Fill tank(s) to desired level.



-Typical View

5. **When finished filling the tank(s)**, rotate the Tank Fill Valve(s) to the CLOSED position.
6. Remove solution supply from the Solution Tank Fill Port.
7. Reinstall the fill port cap.
8. Raise the Rear Fill Assembly to stored position, ensuring it “clicks” into locked position.

RINSE SYSTEM

Operate the Rinse System on your machine to flush the spray system (solution tanks, fill lines, booms, nozzles, and solution pump).

NOTE: Ensure the solution tanks are empty before activating the Rinse System.

NOTICE

Select a safe area to rinse the spray system and clean the sprayer where chemicals will not drift off to contaminate people, animals, vegetation, or water supply.

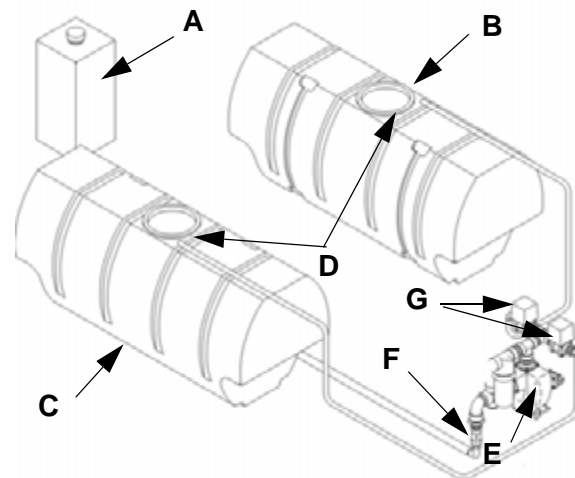
NOTICE

Never attempt to operate the Rinse System without fresh water in the tank. Failure to comply will result in equipment damage and will void the warranty.

Refer to the chemical manufacturer’s information for types of cleaning solution combinations (water, cleaning agents, etc.)

Rinse System Components

- (A) - Rinse Tank
- (B) - Left Solution Tank
- (C) - Right Solution Tank
- (D) - Rotary Nozzle Drop Tubes
- (E) - Solution Pump
- (F) - Flow Check Valve
- (G) - Electric Shutoff Valves



Step 1 - Rinsing the Solution Tank and Fill Lines

1. Press the left and right Solution Tank Valve Switches (located on the side console) in the DOWN (Close) position.



Solution Tank Valve Switches - Left/Right
(Located on the side console)
-Typical View



Rinse Switch
(Located on side console)
-Typical View

2. Press the Solution Pump Switch (located on the side console) in the UP (On) position.



Solution Pump Switch
(Located on side console)
-Typical View

Step 2 - Rinsing the Boom and Nozzles

1. Press the left and right Solution Tank Valve Switches (located on the side console) in the UP (Open) position.



Solution Tank Valve Switches - Left/Right
(Located on the side console)
-Typical View

3. Turn the Spray System Console ON.
4. Press the Rate Control Switch (located on the Spray System Console) to the MANUAL position.
5. Press the Flow Increase/Decrease Switch (located on the Spray System Console) and increase solution pressure to desired psi (bar).

NOTE: Do not exceed 150 PSI (10.3 bar).

6. Locate the Rinse Switch (located on the side console).
 - Press and hold the Rinse Switch in the UP position to rinse the RIGHT solution tank.
 - Press and hold the Rinse Switch in the DOWN position to rinse the LEFT solution tank.
 - Release the Rinse Switch when rinsing is complete.

2. Press the Master Spray Switch (located on the lower right-hand side of the steering column) to the ON position.



Master Spray Switch
(Located on the lower right-hand
side of steering column)
-Typical View

3. Press the Solution Pump Switch (located on the side console) in the UP (On) position.



Solution Pump Switch
(Located on side console)
-Typical View

4. Turn the Spray System Console ON.
5. Press the Rate Control Switch (located on the Spray System Console) to the MANUAL position.
6. Press the Flow Increase/Decrease Switch (located on the Spray System Console) and increase solution pressure to desired psi (bar).

NOTE: Do not exceed 150 PSI (10.3 bar).

7. Press the Boom Solution Valve Switches (located on the side console) to the ON (Open) position.



Boom Solution Valve Switches
(Located on side console)
-Typical View

8. When rinsing is complete, turn the Spray System OFF (including the Solution Pump Switch, Master Spray Switch, Boom Solution Valves, and the Spray System Console).

FOAM MARKER SYSTEM

- If Equipped

⚠ CAUTION

Maximum foam regulator pressure is 20 PSI (1.4 bar). Use of higher pressure may cause personal injury and system damage and will void the warranty.

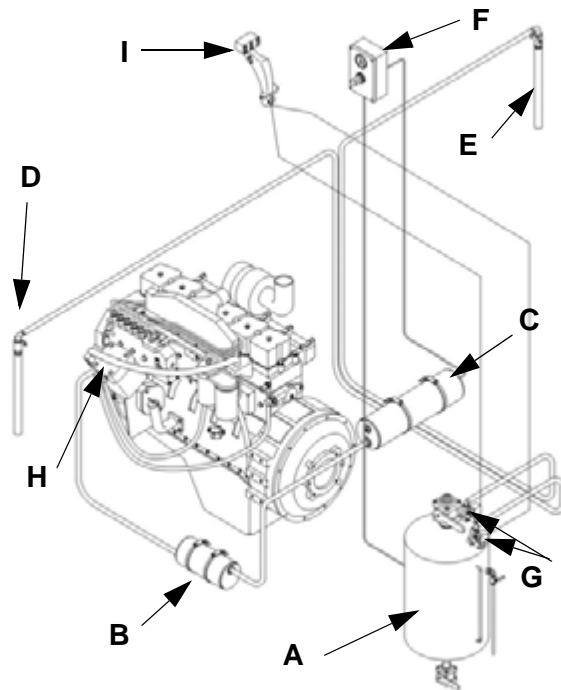
NOTICE

Drain wet tank daily to avoid contamination.

Foam Marker Components

- (A) - Stainless Steel Foam Tank
- (B) - Wet Tank
- (C) - Air Tank
- (D) - Left Foam Drop Tube
- (E) - Right Foam Drop Tube
- (F) - Foam Tank Pressure Gauge

- (G) - Foam Solenoid Valves
- (H) - Air Compressor (Engine)
- (I) - Hydrostatic Drive Control Handle



Foam Marker Switch
(Located on the Hydrostatic
Drive Control Handle)
-Typical View

NOTE: The Foam Marker Switch controls the Foam Solenoid Valves (located on top of the pressurized Foam Tank), which supplies foam to the Left and Right Foam Drop Tubes.

Foam Marker Operation

1. Locate the Foam Marker Switch (located on the Hydrostatic Drive Control Handle).
 - Move the Foam Marker Switch LEFT if foam application is desired from the left foam drop.
 - Move the Foam Marker Switch RIGHT if foam application is desired from the right foam drop.
 - Move the Foam Marker Switch to the mid (center) position to turn OFF.
2. Observe system pressure indicated on the Foam Marker Pressure Gauge (located near the rear left-hand side of machine).



Foam Marker Pressure Gauge
(Located near the rear
left-hand side of machine)
-Typical View

Pressure Adjustment

NOTE: Before decreasing foam pressure, open either the left or right Foam Solenoid Valve (located on top of the Foam Tank) momentarily to relieve system pressure.

- Turn Foam Pressure Dial (located near the rear left-hand side of machine) to adjust air pressure in the foam tank. Turn dial “clockwise” to INCREASE pressure. Turn dial “counter-clockwise” to DECREASE pressure.



Foam Pressure Dial
(Located near the rear
left-hand side of machine
-Typical View

Filling the Foam Tank

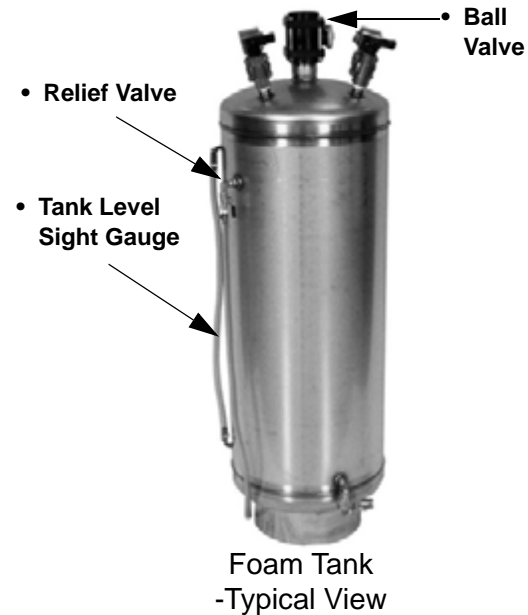
⚠ CAUTION

Shut engine OFF and relieve system pressure before performing any service or refilling the foam tank.

⚠ WARNING

Do not stand directly over or in front of valves when opening. Failure to comply may result in serious injury.

1. Open the Relief Valve (located on the side of foam tank) to relieve tank pressure.



2. Close Relief Valve.
3. Open the Ball Valve (located on top of the foam tank).
4. Add water to tank, leaving enough room for the foam concentrate.
5. Add foam concentrate (according to the label on the container).
6. When filling is complete, close the Ball Valve.
7. Engage the parking brake.
8. Start the engine.
9. Adjust tank air pressure accordingly.

APPLICATION

It is important to apply chemicals as recommended by the manufacturer. In order to do so, the spray system console must be properly calibrated.

NOTE: Refer to the spray system console manufacturer’s operation manual for calibration instructions.



Determine the speed in which the sprayer will travel when applying chemicals. To select the best speed, consider the lay of the land, condition of the soil, type of crop, height of crop, etc.

Remember that the performance of the nozzles (spray tips) and spray system are dependent on the performance of the operator. If the spray system is operated within set parameters of the nozzle type and spray system console, you will see greater success with your application. Operating the machine one or two miles per hour (1.6 to 3.2 km/h) faster or slower than intended will greatly change the outcome of the programmed spray application.

Select nozzle spacing (distance between each nozzle on the spray boom) that is best suited for the intended spray application. For recommendation in determining nozzle spacing and height of the boom, refer to the spray product catalog that accompanies this manual.

There are various types and sizes of nozzles. Select (as recommended by the spray product catalog) and install the appropriate nozzle best suited for the intended spray application. The type of nozzle will depend on the product being applied and the type of crop that it is being used on. The size of nozzles selected will be based on the speed in which the machine will travel, nozzle spacing, and the number of gallons per acre (GPA)/liters per hectare (l/ha) that will be applied.

Nozzle Selection

There are several things to consider when selecting the correct nozzle type for the intended spray application. Whatever your personal preference is, ensure that the nozzle complies with the chemical manufacturer's standards for spray control and also any environmental standards for your region.

NOTE: Certain regions may have restrictions on "drift" control.

Once you have selected the type of nozzle, you must choose the size of the nozzle. There are three main things to consider when choosing a nozzle size:

1. Recommendation of GPA (l/ha).
2. The speed in which you intend to travel when applying chemical and nozzle spacing (distance between nozzles).
3. Spray Tip size (refer to the following example on how to select a proper tip size).

Since all tabulations in the spray product catalog are based on spraying water, you will need to use a conversion factor when spraying liquids other than water. Refer to the spray product catalog for further information.

Example of how to choose the proper nozzle:

Joe is spraying 28% nitrogen. The chemical manufacturer recommends that the chemical be applied at 20 gallons per minute (GPM)/75.7 liters per minute (l/min). Joe knows that he can run his sprayer at 10 mph (16 km/h) across the field. He has 20-inch (50 cm) nozzle spacing on his booms. Joe has narrowed his tip search to flat spray tips.

Use the following conversion formula:

- **20 GPA (187 l/ha) (liquid other than water) x 1.13 (conversion factor) = 22.6 GPA (211.3 l/ha) (water).**

Joe determined that he needs an application rate of 22.6 GPA (211.3 l/ha) to select the correct nozzle to apply 28% nitrogen at 20 GPA (187 l/ha).

To determine which nozzle is better for his intended use, Joe needs to figure out the gallons per minute (GPM)/liters per minute (l/min) he needs to spray.

$$\text{GPM} = \frac{\text{GPA} \times \text{MPH} \times \text{Nozzle Spacing}}{5940 \text{ (Constant)}}$$



$$\text{l/min} = \frac{\text{l/ha} \times \text{km/h} \times \text{Nozzle Spacing}}{60,000}$$

Examples:

$$\text{GPM} = \frac{22.6 \times 10 \times 20}{5940} = \frac{4520}{5940} = \mathbf{0.76 \text{ GPM}}$$

$$\text{l/min} = \frac{211.3 \times 16 \times 50}{60,000} = \frac{169040}{60,000} = \mathbf{2.82 \text{ l/min}}$$

English to Metric Conversion

- Gallons per Acre (GPA) x 9.354 = Liters per Hectare (l/ha)
- Gallons per Minute (GPM) x 3.785 = Liters per Minute (l/min)

Metric to English Conversion

- Liters per Hectare (l/ha) x .1069 = Gallons per Acre (GPA)
- Liters per Minute (l/min) x .26 = Gallons per Minute (GPM)

NOTE: Always double check your application rates. The following tabulations are based on spraying water at 70° F./21° C.



Standard Application Rate Chart												
				Gallons per Acre (GPA) - 15" Nozzle Spacing								
Tip Cap.	Liquid Pressure (PSI)	Cap. 1 Nozzle (GPM)	Cap. 1 Nozzle (Oz./Min.)	4	6	8	10	12	14	16	18	20
01	15	0.061	7.8	6.0	4.0	3.0	2.4	2.0	1.7	1.5	1.3	1.2
	20	0.071	9.1	7.0	4.7	3.5	2.8	2.3	2.0	1.8	1.6	1.4
	30	0.087	11	8.6	5.7	4.3	3.4	2.9	2.5	2.2	1.9	1.7
	40	0.10	13	9.9	6.6	5.0	4.0	3.3	2.8	2.5	2.2	2.0
	50	0.11	14	10.9	7.3	5.4	4.4	3.6	3.1	2.7	2.4	2.2
	60	0.12	15	11.9	7.9	5.9	4.8	4.0	3.4	3.0	2.6	2.4
	75	0.14	18	13.9	9.2	6.9	5.5	4.6	4.0	3.5	3.1	2.8
	90	0.15	19	14.9	9.9	7.4	5.9	5.0	4.2	3.7	3.3	3.0
015	15	0.092	12	9.1	6.1	4.6	3.6	3.0	2.6	2.3	2.0	1.8
	20	0.11	14	10.9	7.3	5.4	4.4	3.6	3.1	2.7	2.4	2.2
	30	0.13	17	12.9	8.6	6.4	5.1	4.3	3.7	3.2	2.9	2.6
	40	0.15	19	14.9	9.9	7.4	5.9	5.0	4.2	3.7	3.3	3.0
	50	0.17	22	16.8	11.2	8.4	6.7	5.6	4.8	4.2	3.7	3.4
	60	0.18	23	17.8	11.9	8.9	7.1	5.9	5.1	4.5	4.0	3.6
	75	0.21	27	21	13.9	10.4	8.3	6.9	5.9	5.2	4.6	4.2
	90	0.23	29	23	15.2	11.4	9.1	7.6	6.5	5.7	5.1	4.6
02	15	0.12	15	11.9	7.9	5.9	4.8	4.0	3.4	3.0	2.6	2.4
	20	0.14	18	13.9	9.2	6.9	5.5	4.6	4.0	3.5	3.1	2.8
	30	0.17	22	16.8	11.2	8.4	6.7	5.6	4.8	4.2	3.7	3.4
	40	0.20	26	19.8	13.2	9.9	7.9	6.6	5.7	5.0	4.4	4.0
	50	0.22	28	22	14.5	10.9	8.7	7.3	6.2	5.4	4.8	4.4
	60	0.24	31	24	15.8	11.9	9.5	7.9	6.8	5.9	5.3	4.8
	75	0.27	35	27	17.8	13.4	10.7	8.9	7.6	6.7	5.9	5.3
	90	0.30	38	30	19.8	14.9	11.9	9.9	8.5	7.4	6.6	5.9
025	15	0.15	19	14.9	9.9	7.4	5.9	5.0	4.2	3.7	3.3	3.0
	20	0.18	23	17.8	11.9	8.9	7.1	5.9	5.1	4.5	4.0	3.6
	30	0.22	28	22	14.5	10.9	8.7	7.3	6.2	5.4	4.8	4.4
	40	0.25	32	25	16.5	12.4	9.9	8.3	7.1	6.2	5.5	5.0
	50	0.28	36	28	18.5	13.9	11.1	9.2	7.9	6.9	6.2	5.5
	60	0.31	40	31	20	15.3	12.3	10.2	8.8	7.7	6.8	6.1
	75	0.34	44	34	22	16.8	13.5	11.2	9.6	8.4	7.5	6.7
	90	0.38	49	38	25	18.8	15.0	12.5	10.7	9.4	8.4	7.5



SECTION 7 -
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03	15	0.18	23	17.8	11.9	8.9	7.1	5.9	5.1	4.5	4.0	3.6
	20	0.21	27	21	13.9	10.4	8.3	6.9	5.9	5.2	4.6	4.2
	30	0.26	33	26	17.2	12.9	10.3	8.6	7.4	6.4	5.7	5.1
	40	0.30	38	30	19.8	14.9	11.9	9.9	8.5	7.4	6.6	5.9
	50	0.34	44	34	22	16.8	13.5	11.2	9.6	8.4	7.5	6.7
	60	0.37	47	37	24	18.3	14.7	12.2	10.5	9.2	8.1	7.3
	75	0.41	52	41	27	20	16.2	13.5	11.6	10.1	9.0	8.1
	90	0.45	58	45	30	22	17.8	14.9	12.7	11.1	9.9	8.9
04	15	0.24	31	24	15.8	11.9	9.5	7.9	6.8	5.9	5.3	4.8
	20	0.28	36	28	18.5	13.9	11.1	9.2	7.9	6.9	6.2	5.5
	30	0.35	45	35	23	17.3	13.9	11.6	9.9	8.7	7.7	6.9
	40	0.40	51	40	26	19.8	15.8	13.2	11.3	9.9	8.8	7.9
	50	0.45	58	45	30	22	17.8	14.9	12.7	11.1	9.9	8.9
	60	0.49	63	49	32	24	19.4	16.2	13.9	12.1	10.8	9.7
	75	0.55	70	54	36	27	22	18.2	15.6	13.6	12.1	10.9
	90	0.60	77	59	40	30	24	19.8	17.0	14.9	13.2	11.9
05	15	0.31	40	31	20	15.3	12.3	10.2	8.8	7.7	6.8	6.1
	20	0.35	45	35	23	17.3	13.9	11.6	9.9	8.7	7.7	6.9
	30	0.43	55	43	28	21	17.0	14.2	12.2	10.6	9.5	8.5
	40	0.50	64	50	33	25	19.8	16.5	14.1	12.4	11.0	9.9
	50	0.56	72	55	37	28	22	18.5	15.8	13.9	12.3	11.1
	60	0.61	78	60	40	30	24	20	17.3	15.1	13.4	12.1
	75	0.68	87	67	45	34	27	22	19.2	16.8	15.0	13.5
	90	0.75	96	74	50	37	30	25	21	18.6	16.5	14.9
06	15	0.37	47	37	24	18.3	14.7	12.2	10.5	9.2	8.1	7.3
	20	0.42	54	42	28	21	16.6	13.9	11.9	10.4	9.2	8.3
	30	0.52	67	51	34	26	21	17.2	14.7	12.9	11.4	10.3
	40	0.60	77	59	40	30	24	19.8	17.0	14.9	13.2	11.9
	50	0.67	86	66	44	33	27	22	19.0	16.6	14.7	13.3
	60	0.73	93	72	48	36	29	24	21	18.1	16.1	14.5
	75	0.82	105	81	54	41	32	27	23	20	18.0	16.2
	90	0.90	115	89	59	45	36	30	25	22	19.8	17.8
08	15	0.49	63	49	32	24	19.4	16.2	13.9	12.1	10.8	9.7
	20	0.57	73	56	38	28	23	18.8	16.1	14.1	12.5	11.3
	30	0.69	88	68	46	34	27	23	19.5	17.1	15.2	13.7
	40	0.80	102	79	53	40	32	26	23	19.8	17.6	15.8
	50	0.89	114	88	59	44	35	29	25	22	19.6	17.6
	60	0.98	125	97	65	49	39	32	28	24	22	19.4
	75	1.10	141	109	73	54	44	36	31	27	24	22
	90	1.20	154	119	79	59	48	40	34	30	26	24
10	15	0.61	78	60	40	30	24	20	17.3	15.1	13.4	12.1
	20	0.71	91	70	47	35	28	23	20	17.6	15.6	14.1
	30	0.87	111	86	57	43	34	29	25	22	19.1	17.2
	40	1.00	128	99	66	50	40	33	28	25	22	19.8
	50	1.12	143	111	74	55	44	37	32	28	25	22
	60	1.22	156	121	81	60	48	40	35	30	27	24
	75	1.37	175	136	90	68	54	45	39	34	30	27
	90	1.50	192	149	99	74	59	50	42	37	33	30
15	15	0.92	118	91	61	46	36	30	26	23	20	18.2
	20	1.06	136	105	70	52	42	35	30	26	23	21
	30	1.30	166	129	86	64	51	43	37	32	29	26
	40	1.50	192	149	99	74	59	50	42	37	33	30
	50	1.68	215	166	111	83	67	55	48	42	37	33
	60	1.84	236	182	121	91	73	61	52	46	40	36
	75	2.05	262	203	135	101	81	68	58	51	45	41
	90	2.25	288	223	149	111	89	74	64	56	50	45

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20	15	1.22	156	121	81	60	48	40	35	30	27	24
	20	1.41	180	140	93	70	56	47	40	35	31	28
	30	1.73	221	171	114	86	69	57	49	43	38	34
	40	2.00	256	198	132	99	79	66	57	50	44	40
	50	2.24	287	222	148	111	89	74	63	55	49	44
	60	2.45	314	243	162	121	97	81	69	61	54	49
	75	2.74	351	271	181	136	109	90	78	68	60	54
	90	3.00	384	297	198	149	119	99	85	74	66	59



Metric Application Rate Chart													
			Liters per Hectare (l/ha) - 40 cm Nozzle Spacing										
Tip Cap.	Liquid Press. (Bar)	Cap. 1 Nozzle (l/min)	4 km/h	6 km/h	8 km/h	10 km/h	12 km/h	14 km/h	16 km/h	18 km/h	20 km/h	25 km/h	30 km/h
01	1.0	0.23	86.3	57.5	43.1	34.5	28.8	24.6	21.6	19.2	17.3	13.8	11.5
	1.5	0.28	105	70.0	52.5	42.0	35.0	30.0	26.3	23.3	21.0	16.8	14.0
	2.0	0.32	120	80.0	60.0	48.0	40.0	34.3	30.0	26.7	24.0	19.2	16.0
	3.0	0.39	146	97.5	73.1	58.5	48.8	41.8	36.6	32.5	29.3	23.4	19.5
	4.0	0.45	169	113	84.4	67.5	56.3	48.2	42.2	37.5	33.8	27.0	22.5
	5.0	0.50	188	125	93.8	75.0	62.5	53.6	46.9	41.7	37.5	30.0	25.0
	6.0	0.55	206	138	103	82.5	68.8	58.9	51.6	45.8	41.3	33.0	27.5
	7.0	0.60	225	150	113	90.0	75.0	64.3	56.3	50.0	45.0	36.0	30.0
015	1.0	0.34	128	85	63.8	51.0	42.5	36.4	31.9	28.3	25.5	20.4	17.0
	1.5	0.42	158	105	78.8	63.0	52.5	45.0	39.4	35.0	31.5	25.2	21.0
	2.0	0.48	180	120	90.0	72.0	60.0	51.4	45.0	40.0	36.0	28.8	24.0
	3.0	0.59	221	148	111	88.5	73.8	63.2	55.3	49.2	44.3	35.4	29.5
	4.0	0.68	255	170	128	102	85.0	72.9	63.8	56.7	51.0	40.8	34.0
	5.0	0.76	285	190	143	114	95.0	81.4	71.3	63.3	57.0	45.6	38.0
	6.0	0.83	311	208	156	125	104	88.9	77.8	69.2	62.3	49.8	41.5
	7.0	0.90	338	225	169	135	113	96.4	84.4	75.0	67.5	54.0	45.0
02	1.0	0.46	173	115	86.3	69.0	57.5	49.3	43.1	38.3	34.5	27.6	23.0
	1.5	0.56	210	140	105	84.0	70.0	60.0	52.5	46.7	42.0	33.6	38.0
	2.0	0.65	244	163	122	97.5	81.3	69.6	60.9	54.2	48.8	39.0	32.5
	3.0	0.79	296	198	148	119	98.8	84.6	74.1	65.8	59.3	47.4	39.5
	4.0	0.91	341	228	171	137	114	97.5	85.3	75.8	68.3	54.6	45.5
	5.0	1.02	383	255	191	153	128	109	95.6	85.0	76.5	61.2	51.0
	6.0	1.12	420	280	210	168	140	120	105	93.3	84.0	67.2	56.0
	7.0	1.21	454	303	227	182	151	130	113	101	90.8	72.6	60.5
025	1.0	0.57	214	143	107	85.5	71.3	61.1	53.4	47.5	42.8	34.2	28.5
	1.5	0.70	263	175	131	105	87.5	75.0	65.6	58.3	52.5	42.0	35.0
	2.0	0.81	304	203	152	122	101	86.8	75.9	67.5	60.8	48.6	40.5
	3.0	0.99	371	248	186	149	124	106	92.8	82.5	74.3	59.4	49.5
	4.0	1.14	428	285	214	171	143	122	107	95.0	85.5	68.4	57.0
	5.0	1.28	480	320	240	192	160	137	120	107	96.0	76.8	64.0
	6.0	1.40	525	350	263	210	175	150	131	117	105	84.0	70.0
	7.0	1.51	566	378	283	227	189	162	142	126	113	90.6	75.5

SECTION 7 –
SPRAY SYSTEMS



03	1.0	0.68	255	170	128	102	85	72.9	63.8	56.7	51.0	40.8	34.0
	1.5	0.83	311	208	156	125	104	88.9	77.8	69.2	62.3	49.8	41.5
	2.0	0.96	360	240	180	144	120	103	90.0	80.0	72.0	57.6	48.0
	3.0	1.18	443	295	221	177	148	126	111	98.3	88.5	70.8	59.0
	4.0	1.36	510	340	255	204	170	146	128	113	102	81.6	68.0
	5.0	1.52	570	380	285	228	190	163	143	127	114	91.2	76.0
	6.0	1.67	626	418	313	251	209	179	157	139	125	100	83.5
	7.0	1.80	675	450	338	270	225	193	169	150	135	108	90.0
04	1.0	0.91	341	228	171	137	114	97.5	85.3	75.8	68.3	54.6	45.5
	1.5	1.12	420	280	210	168	140	120	105	93.3	84.0	67.2	56.0
	2.0	1.29	484	323	242	194	161	138	121	108	96.8	77.4	64.5
	3.0	1.58	593	395	296	237	198	169	148	132	119	94.8	79.0
	4.0	1.82	683	455	341	273	228	195	171	152	137	109	91.0
	5.0	2.04	765	510	383	306	255	219	191	170	153	122	102
	6.0	2.23	836	558	418	335	279	239	209	186	167	134	112
	7.0	2.41	904	603	452	362	301	258	226	201	181	145	121
05	1.0	1.14	428	285	214	171	143	122	107	95	85.5	68.4	57.0
	1.5	1.39	521	348	261	209	174	149	130	116	104	83.4	69.5
	2.0	1.61	604	403	302	242	201	173	151	134	121	96.6	80.5
	3.0	1.97	739	493	369	296	246	211	185	164	148	118	98.5
	4.0	2.27	851	568	426	341	284	243	213	189	170	136	114
	5.0	2.54	953	635	476	381	318	272	238	212	191	152	127
	6.0	2.79	1046	698	523	419	349	299	262	233	209	167	140
	7.0	3.01	1129	753	564	452	376	323	282	251	226	181	151
06	1.0	1.37	514	343	257	206	171	147	128	114	103	82.2	68.5
	1.5	1.68	630	420	315	252	210	180	158	140	126	101	84.0
	2.0	1.94	728	485	364	291	243	208	182	162	146	116	97.0
	3.0	2.37	889	593	444	356	296	254	222	198	178	142	119
	4.0	2.74	1028	685	514	411	343	294	257	228	206	164	137
	5.0	3.06	1148	765	574	459	383	328	287	255	230	184	153
	6.0	3.35	1256	838	628	503	419	359	314	279	251	201	168
	7.0	3.62	1358	905	679	543	453	388	339	302	272	217	181
08	1.0	1.82	683	455	341	273	228	195	171	152	137	109	91
	1.5	2.23	836	558	418	335	279	239	209	186	167	134	112
	2.0	2.58	968	645	484	387	323	276	242	215	194	155	129
	3.0	3.16	1185	790	593	474	395	339	296	263	237	190	158
	4.0	3.65	1369	913	684	548	456	391	342	304	274	219	183
	5.0	4.08	1530	1020	765	612	510	437	383	340	306	245	204
	6.0	4.47	1676	1118	838	671	559	479	419	373	335	268	224
	7.0	4.83	1811	1208	906	725	604	518	453	403	362	290	242
10	1.0	2.28	855	570	428	342	285	244	214	190	171	137	114
	1.5	2.79	1046	698	523	419	349	299	262	233	209	167	140
	2.0	3.23	1211	808	606	485	404	346	303	269	242	194	162
	3.0	3.95	1481	988	741	593	494	423	370	329	296	237	198
	4.0	4.56	1710	1140	855	684	570	489	428	380	342	274	228
	5.0	5.10	1913	1275	956	765	638	546	478	425	383	306	255
	6.0	5.59	2096	1398	1048	839	699	599	524	466	419	335	280
	7.0	6.03	2261	1508	1131	905	754	646	565	503	452	362	302
15	1.0	3.42	1283	855	641	513	428	366	321	285	257	205	171
	1.5	4.19	1571	1048	786	629	524	449	393	349	314	251	210
	2.0	4.83	1811	1208	906	725	604	518	453	403	362	290	242
	3.0	5.92	2220	1480	1110	888	740	634	555	493	444	355	296
	4.0	6.84	2565	1710	1283	1026	855	733	641	570	513	410	342
	5.0	7.64	2865	1910	1433	1146	955	819	716	637	573	458	382
	6.0	8.37	3139	2093	1569	1256	1046	897	785	698	628	502	419
	7.0	9.04	3390	2260	1695	1356	1130	969	848	753	678	542	452

20	1.0	4.56	1710	1140	855	684	570	489	428	380	342	274	228
	1.5	5.58	2093	1395	1046	837	698	598	523	465	419	335	279
	2.0	6.44	2415	1610	1208	966	805	690	604	537	483	386	322
	3.0	7.89	2959	1973	1479	1184	986	845	740	658	592	473	395
	4.0	9.11	3416	2278	1708	1367	1139	976	854	759	683	547	456
	5.0	10.19	3821	2548	1911	1529	1274	1092	955	849	764	611	510
	6.0	11.16	4185	2790	2093	1674	1395	1196	1046	930	837	670	558
	7.0	12.05	4519	3013	2259	1808	1506	1291	1130	1004	904	723	603

NOTE: The previous tabulations are based on 15-inch/40 cm nozzle spacing. Refer to the spray product catalog for tabulations if choosing spacing other than 15"/40 cm.

Verifying Calibration

WARNING

Do not add chemicals until calibration is complete. Contact with chemicals may cause serious injury or death.

To test your system, fill the solution tank with clean water. **Do not add chemicals until calibration is complete.**

1. Apply the parking brake.
2. Start the engine.
3. Throttle the engine to operating speed.
4. Turn the spray system console ON.
5. Press the left and right Solution Tank Valve Switches (located on the side console) in the UP (Open) position.
6. Press the Master Spray Switch (located on the bottom right-hand side of steering column) in the ON position.
7. Press all Boom Solution Valve Switches (located on the side console) in the ON position.
8. Press the Rate Control Switch (located on the Spray System Console) to the MANUAL position.
9. Press the Flow Increase/Decrease Switch (located on the Spray System Console) and increase solution pressure to increase flow.
10. Ensure there are no leaks and that all nozzles are spraying a desirable pattern.

11. Continue spraying in the stationary position for at least 10 minutes for proper warm-up of the sprayer and system.

Once the sprayer has had an adequate warm-up period, you will need to perform a “self test” to simulate speed (although the machine will remain stationary).

NOTE: The following “self-test” steps require measuring flow at given pressure.

- Collect one nozzle’s spray for one (1) minute in an adequately sized and marked container.
- Verify that the collection equals or is close to the GPM (l/min) for the nozzle, pressure, speed, GPA (l/ha), and spacing that you are using.

Also to ensure accuracy, you will need to verify the flow meter. To do so:

- Collect one nozzle’s spray for one (1) minute and multiply it by the number of nozzles on the boom. This should equal the amount measured through the flow meter.

Calculating Spray Width

The spray section widths will need to be entered into the spray system console during initial set-up. No matter what the length of the boom is or how many spray sections it has, the formula for calculating section widths are the same.

$$\text{Number of Nozzles} \times \text{Nozzle Spacing} = \text{Spray Section Width}$$



Further Information

Refer to the spray system console manufacturer's operation manual for complete operating and calibrating instructions, troubleshooting tips, and safety precautions.

SECTION 8 – MAINTENANCE AND STORAGE

SERVICE - FLUIDS

Hydraulic Oil

NOTICE

Ensure area is clean before changing hydraulic oil and filters to avoid contamination, such as dirt and debris. Failure to comply may result in severe hydraulic system damage.

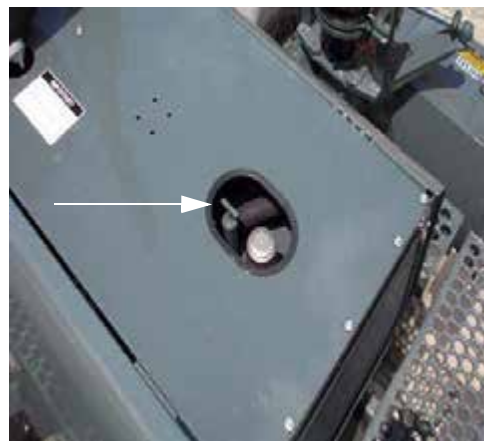
NOTICE

Ensure engine is off before filling hydraulic oil reservoir.

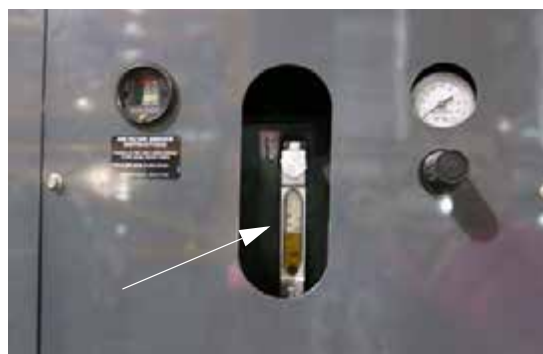
Check the Hydraulic Oil Reservoir level by using the Hydraulic Oil Dipstick (located on top of the reservoir), or the Hydraulic Oil Sight Gauge (located on the side of reservoir). Add just enough fluid to maintain oil level at the bottom tip of the dipstick, or at mid-sight gauge.

NOTE: Check hydraulic oil reservoir level daily.

*NOTE: Hydraulic oil expands when heated.
Always check oil level when it is cool.*



Hydraulic Oil Dipstick
(Located on top of Hydraulic Oil Reservoir)
-Typical View



Hydraulic Oil Sight Gauge
(Located on the side of
Hydraulic Oil Reservoir)
-Typical View

NOTE: Replace hydraulic oil every 500 hours of operation (or based on oil analysis guidelines).

Filling the Hydraulic Oil Reservoir

To fill the hydraulic oil reservoir, remove the hydraulic oil dipstick (located on top of reservoir) and add oil through the dipstick port.

Type

Premium hydraulic fluids containing high quality rust, oxidation, and foam inhibitors are required. Hydraulic oil must conform to one of the following types:

- Anti-Wear Hydraulic Oil
- Agricultural Hydraulic Transmission Fluid

Wheel Hub Oil (Torque Hub®)

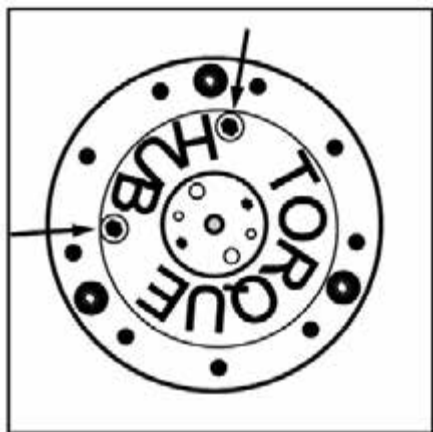
Oil Level

Each Torque Hub should maintain an oil level of half-full at all times. Less than that would limit lubrication and overfilling would cause overheating and machine damage.

To check the oil level:

NOTE: Check Torque Hub oil level every 100 hours of operation.

1. Position wheel hub so one of the face plugs is positioned at 12 o'clock (see following illustration.) The other plug will be positioned at either 9 o'clock or 3 o'clock.



2. Remove the lower plug.
If no oil comes out, the oil level is too low.

NOTE: Hagie Manufacturing Company recommends 75W-90 gear oil.

3. If oil is needed, remove the top plug and fill just until oil begins to come out of the lower hole. See following photo.



-Typical View

4. Reinstall plugs when oil level is satisfactory.

To change the oil:

NOTE: Wheel hub oil should be changed after the first 50 hours of operation. After that, it should be changed every 250 hours of operation or yearly, whichever occurs first.

1. Position wheel hub so one of the face plugs is positioned at 6 o'clock and the other plug is positioned at 3 o'clock or 9 o'clock.
2. Remove both plugs to drain oil.
3. Once all of the oil is drained, rotate the wheel hub so that the plug hole is positioned at 12 o'clock and the other is positioned at 3 o'clock or 9 o'clock.
4. Refill wheel hub with oil as previously described.
5. Reinstall plugs.

General Maintenance

NOTICE

Failure to rotate the wheel hub and disperse oil may cause rusting and internal wheel hub damage.

If your machine is going to sit unused for an extended period of time, occasionally rotate the wheel hubs by driving the machine forward and backward - at least half of a tire rotation to adequately coat all internal wheel hub parts. This will prevent rusting if moisture inadvertently entered the wheel hub during an oil change.

Engine Oil

NOTICE

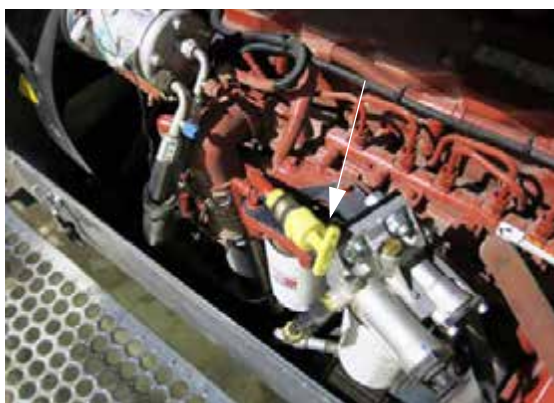
Never operate the engine with oil level below the “L” (low) mark or above the “H” (high mark) on the engine oil dipstick.

NOTICE

The engine must be level when checking the oil level to ensure accuracy.

The Engine Oil Dipstick is located on the left-hand side of the engine. Wait at least five (5) minutes after shutting the engine off to check the oil level.

NOTE: Check the engine oil level daily.



Engine Oil Dipstick
(Located on the left-hand side of engine)
-Typical View

Capacity

- Engine Oil Dipstick Capacity (low to high mark) = 2 quarts (1.9 L)
- Engine Oil Pan Capacity (including filter) = 17 quarts (16.1 L)

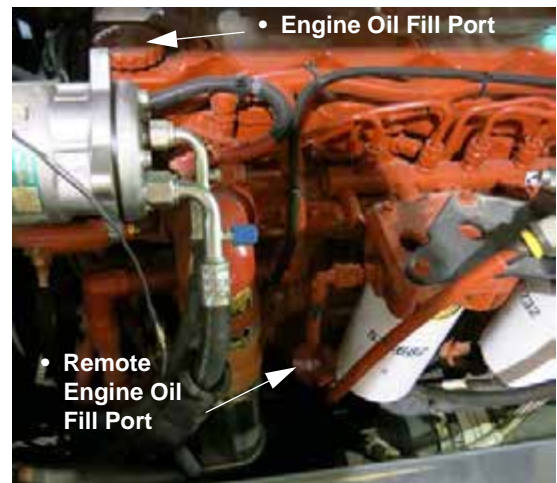
Type

- Valvoline Premium Blue® Classic Engine Oil - 15W-40 (recommended)

NOTE: Change the engine oil every 250 hours of operation or yearly, whichever occurs first.

Engine Oil Fill

Engine oil can be added through the Engine Oil Fill Port or the Remote Engine Oil Fill Port (both located on the left-hand side of engine).



Engine Oil Fill Ports
(Located on the left-hand side of engine)
-Typical View

Cooling System

NOTICE

Ethylene Glycol-based antifreeze and Propylene Glycol-based antifreeze should never be mixed.

The cooling system should be sufficiently charged with an adequate mixture of antifreeze and water, regardless of climate, to maintain broad operating temperature range. Follow the coolant manufacturer’s recommendations for your climate.

NOTE: The cooling system has been factory-filled with an ethylene glycol-based antifreeze.

Checking Coolant Level/ Concentration



The Radiator Cap is located behind the cab. Remove radiator screens to access.

NOTE: Never remove the Radiator Cap from a hot engine. Always allow the engine to cool before servicing the cooling system. Check coolant level daily.



Radiator Cap
(Located behind cab - remove radiator screens to access)
-Typical View

A 50/50 ethylene glycol and water mixture is a conservative mixture, which allows protection against both overheating and freezing.

NOTE: If a stronger antifreeze mixture is required, ensure not to exceed the engine manufacturer’s guidelines for antifreeze-water mixing.

The following Ethylene Glycol Table gives a few examples of ethylene glycol antifreeze/water mixture protection values.

Ethylene Glycol		
40%	-23° C	-10° F
50%	-37° C	-34° F
60%	-54° C	-65° F

Coolant concentration should be checked every 500 hours of operation or at the beginning of each spray season, whichever occurs first. A refractometer should be used to check concentration.

NOTE: “Floating Ball” type density testers are not accurate for use with a heavy duty diesel cooling system.

Changing Coolant

COOLING SYSTEM REQUIRES SPECIAL FILL PROCEDURE

- Open cab heater water valve by turning the cab temperature selector knob to “Heat” with ignition on.
- Open both cab heater valves on engine.
- Fill radiator to bottom of fill neck using 50/50 EG coolant mixture.
- If radiator is drained completely and refilled faster than 3 gpm (11.4 l/min), radiator may need to be topped off.
- Run engine at operating temperature for 5 minutes.
- Shut off engine.
- Wait until coolant is below 122° F. before removing cap to check coolant level.
- Top off cooling system if required.

Coolant should be changed periodically to eliminate the buildup of harmful chemicals. Drain and replace coolant every other spray season or 1,000 hours of operation, whichever occurs first. Refill with soft water only, as hard water contains minerals, which break down the anti-corrosion properties of the antifreeze.

Further Information

Refer to the engine manufacturer’s operation manual for further information.

Fuel



NOTE: Keep a fire extinguisher nearby when refueling.

DO NOT fill fuel tanks completely. Fuel can expand and run over. Wipe up all spilled fuel and clean with detergent and water before starting the engine.

Type

No. 2 diesel fuel recommended. (In operating conditions less than 32° F., use a blend of No. 1 and No. 2 diesel fuel).

NOTE: The addition of No. 1 diesel fuel may cause loss of power and/or fuel economy.

Priming

Refer to the engine manufacturer’s information for further information.

Air Conditioning

NOTICE

Charge only with R134A. Charge to 2 lbs. 12 oz.

The cab is equipped with an R134A Air Conditioning System. **Recharge system with R134A refrigerant only.**

NOTE: Confirm refrigerant before recharging the Air Conditioning System. If your system is mistakenly recharged with R-12 refrigerant, machine damage (such as compressor seizure) may result. If you do not have the proper equipment, it is recommended that you allow an authorized service technician service your Air Conditioning System.



A/C Charge Port
-Typical View

Recharging



DO NOT MIX REFRIGERANTS

Windshield Washer Fluid

The Windshield Washer Fluid Reservoir is located toward the front of machine behind the center front shield. Check fluid level daily and refill with non-freezing automotive windshield cleaner, as required.



Windshield Washer Fluid Reservoir
(Located toward front of machine
behind center front shield)
-Typical View

SERVICE - FILTERS

Engine Air Intake



NOTICE

Do not tap filter to remove dust. A crushed filter caused by tapping may result in engine damage. Remove and replace filter as recommended.



Engine Air Intake Filter
(Located behind left-hand
engine compartment)
-Typical View

Removal

The Engine Air Intake Filter should only be removed if replacement is required.

- Loosen the air cleaner and remove end cap.
- Remove filter.

NOTE: Use care when removing the filter to ensure dust from the filter does not enter the air intake passage.

Replacement

Your machine is equipped with a Filter Minder® to notify you of filter element efficiency.

Cleaning

It is not recommended to clean the Engine Air Intake Filter element. However, a clean damp cloth should be used to wipe away dust and debris from the air cleaner housing.

Filter Minder

The Filter Minder (located near the rear left-hand side of machine) is an air restriction monitoring system that progressively and constantly indicates how much air filter capacity remains.

NOTE: Check Filter Minder reading daily.



Filter Minder
(Located near the rear
left-hand side of machine)
-Typical View

Service

Service the air cleaner when the Filter Minder reads 20" (80% of dirt holding capacity) and before the yellow indicator reaches the red line on the Filter Minder.

NOTE: Reset the Filter Minder to zero each time the air filter element is replaced.

Radiator Screens

NOTICE

Failure to keep cooling systems clean can cause overheating and damage to the engine and hydrostatic systems.

To maintain airflow through the engine cooling system, the Radiator Screens (located behind cab near the radiator) must be inspected daily and cleaned as necessary.

Removal

- Slide Radiator Screens (side and top) out of radiator housing to remove.



Radiator Screens
(Located behind cab near the radiator)
-Typical View

Cleaning

Use compressed air to dislodge large debris and dirt. Water from a pressurized hose may also be used or if necessary, the screens may be soaked with soapy water and scrubbed gently with a brush.

NOTE: When cleaning the cooling fins of the radiator, oil cleaner, or A/C condenser with compressed air or

water, be careful not to damage the cooling fins, which may impair cooling capabilities.

Engine Oil Filter

The Engine Oil Filter (located on the right-hand side of machine - open hood to access) should be replaced every 250 hours of operation or whenever the oil is changed, whichever occurs first.



Engine Oil Filter
(Located on the right-hand side of machine - open hood to access)
-Typical View

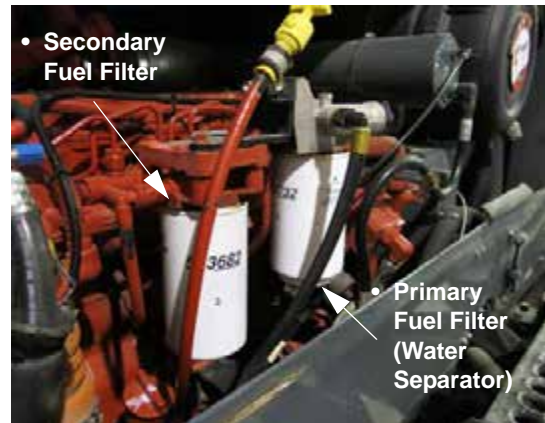
Fuel Filters

Primary Fuel Filter (Water Separator)

The Primary Fuel Filter (located on the left-hand side of engine - open hood to access) should be drained of water and other deposits daily. Replace the filter every 500 hours of operation or yearly, whichever occurs first.

Secondary Fuel Filter

The Secondary Fuel Filter (located on the left-hand side of engine - open hood to access) should be replaced every 500 hours of operation or yearly, whichever occurs first.



Primary and Secondary Fuel Filters
(Located on left-hand side of engine - open hood to access)
-Typical View

Hydraulic Filters

Hydraulic Suction Filter

Remove and replace Hydraulic Suction Filter (located behind left-hand engine compartment) and replace with a new 10 Micron-rated Suction Filter every 250 hours of operation or yearly, whichever occurs first.



Hydraulic Suction Filter
(Located behind right-hand engine compartment)
-Typical View

Hydrostatic Charge Pressure Filter

Remove Hydrostatic Charge Pressure Filter (located behind left-hand engine compartment) and replace with a new 4

Micro-rated Charge Pressure Filter every 250 hours of operation or yearly, whichever occurs first.



Hydrostatic Charge Pressure Filter
(Located behind left-hand engine compartment)
-Typical View

High Pressure In-Line Filters

Boom and Tread Adjust Stack Valves are protected by a 90 Micron In-Line Sintered Bronze Filter. Replace High Pressure In-Line Filters if required. Contact Hagie Customer Support for assistance.



Boom Stack Valve
-Typical View



Tread Adjust Stack Valve
-Typical View

NOTE: When the filter element is removed for cleaning, caution should be taken to ensure the gasket is properly placed when reinstalling (see following photo.) Also, pay special attention to the direction of flow, ensuring the end marked “OUT” is oriented correctly.



-Typical View

Solution Line Strainer

Maintain consistent application rates by inspecting the Solution Line Strainer (located near front of machine behind the center front shield) daily for blockage. Clean the strainer screen as necessary and ensure the gasket is in place before reinstalling the screen.

NOTE: Ensure the Solution Tank Valves are closed before removing the Solution Line Strainer. Refer to the Spray Systems Section elsewhere in this manual for further information.

NOTE: Wear the appropriate clothing when removing and cleaning the Solution Line Strainer.



Solution Line Strainer
(Located near front of machine
behind the center front shield)
-Typical View

Line Strainers (High-Pressure Pump)

Line Strainers for the High-Pressure Pump are located beneath each solution tank. Remove and clean in the same manner as previously described.

Fresh Air Cab Filters

(Refer to your Parts Manual for specific location and replacement part numbers)



Fresh Air Cab Filter Access
(Located in cab headliner)
-Typical View

Paper Filter (1)

- Remove the paper filter and gently tap it against a flat surface.
- Direct low-pressure compressed air through the filter to remove large particles.
- Replace the paper filter, if necessary.

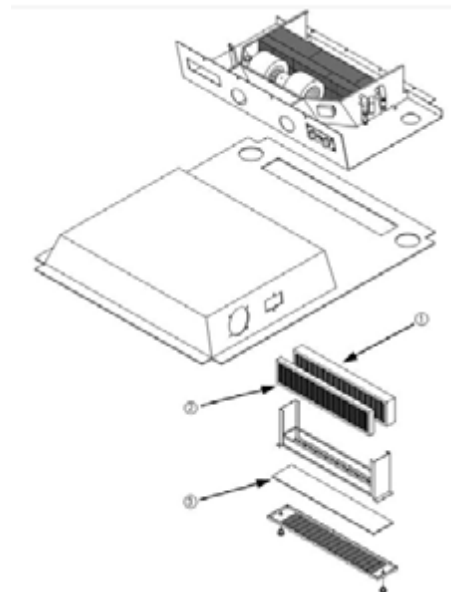
NOTE: The paper filter should be cleaned yearly, or as required.

Charcoal Filter (2)

- Remove and replace Charcoal Filter at the first sign of chemical odor entering the cab.

Recirculating Filter (3)

- Clean the Recirculating Filter with soap and water yearly, or as required.
- Replace Recirculating Filter if it becomes worn.



Fresh Air Cab Filters

- (1) - Paper Filter
 - (2) - Charcoal Filter
 - (3) - Recirculating Filter
- Typical View

SERVICE - LUBRICATION

NOTICE

Failure to properly lubricate pivot and friction points may result in unnecessary wear and damage.

Leg Bearings

The leg assemblies on your machine are constructed with upper and lower nylon bearings for suspension telescoping between

the inner and outer leg weldments. These bearings must be lubricated to avoid bearing failure and ensure optimal ride quality.

Grease Points (zerks) are located on the sides of the leg assemblies - one on the upper bearing, and two on the lower bearing. Refer to following illustration.

NOTE: Grease bearings on front and rear legs daily.

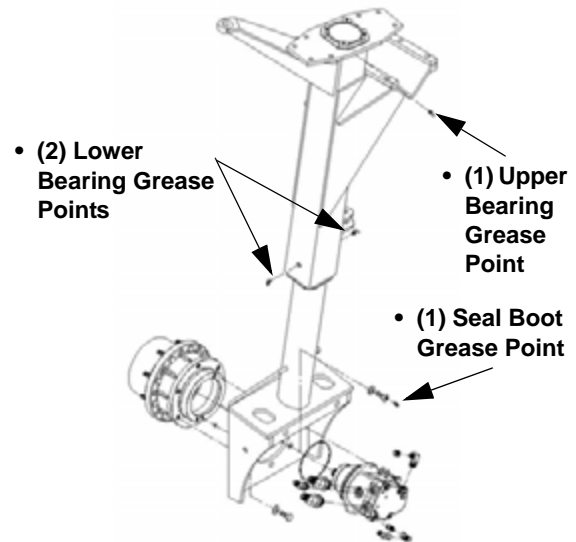
During late season crop applications, the grease may possibly be wiped away due to the passing of crop leaves. Therefore, bearings should be greased at least two times per day (e.g. morning and noon).

NOTE: If the crop is mature enough or plant population is high enough, more frequent leg bearing grease application may be required to ensure proper lubrication and optimal performance.

Torque Hub® Seal Boot

Each leg assembly has a Torque Hub Seal Boot (located between the wheel motor and Torque Hub). Grease seal boot every 50 hours of operation, or as needed.

NOTE: An over-greased seal boot will leak grease out around the seal, and when heated, may cause the appearance of a failed wheel motor leaking hydraulic fluid. Wipe away any excess grease after servicing.



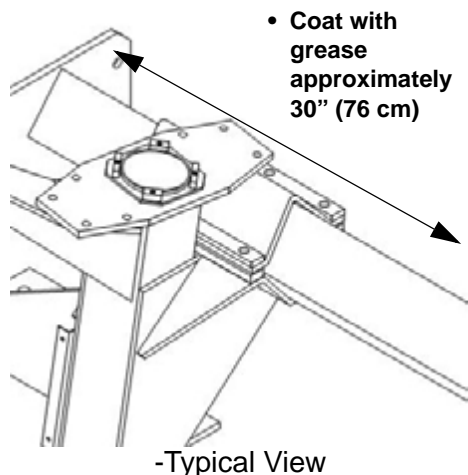
Leg Bearing and Torque Hub
Seal Boot Grease Points
-Typical View

Hydraulic Tread Adjust Bearing Slide Path

NOTICE
<p>Failure to inspect and lubricate the tread adjust bearing slide path may cause one of the legs to “hang up” while the other is still sliding during adjustment. Failure to comply may result in machine damage.</p>

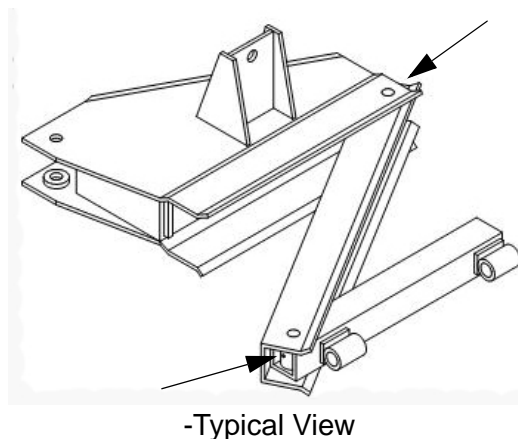
- Inspect slide path often and lubricate as needed.

NOTE: Generously apply a standard lubricant to the slide path.



Boom Hinge and Breakaway Pivots

Lubricate the two grease zerks on each breakaway (between the transom and each inner boom section) every 25 hours of operation.

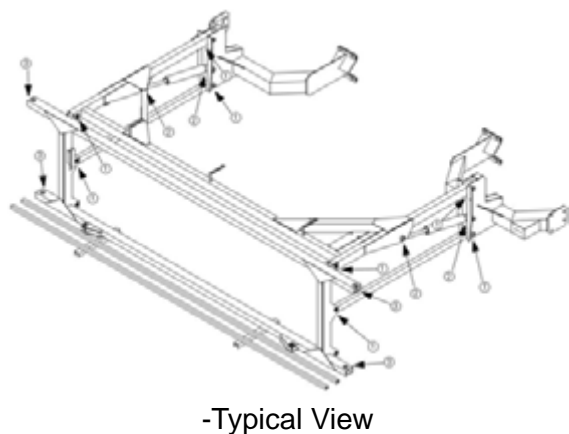


NOTE: During late season crop applications, the grease may possibly be wiped away due to the passing of crop leaves. More frequent grease application may be required to ensure proper lubrication and optimal performance.

Transom, Lift Arm, and Lift Cylinders

Lubricate the Transom, Lift Arm, and Lift Cylinder grease zerks every 25 hours of operation.

- (8) Lift Arm Pivot Locations (Item 1)
- (4) Lift Cylinder Pivot Locations (Item 2)
- (4) Boom Fold Pivot Locations - Transom (Item 3)

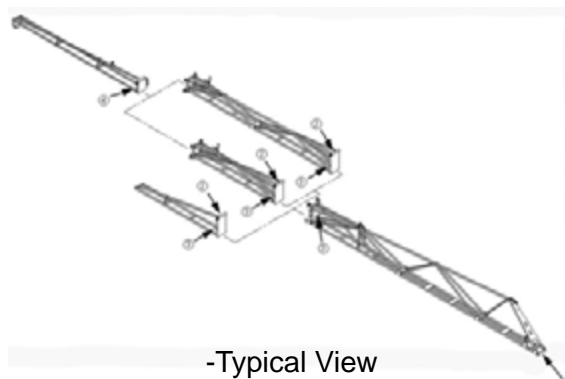


60/80/90' Spray Booms

60-ft. spray booms have a grease zerker on the boom level pivot point connected to the breakaway (Item 1), on the boom extension vertical folding pivot point (Item 2), and on the boom folding link clevis pins (Item 3). Lubricate every 25 hours of operation.

80/90' Spray Booms Only

In addition, 80 and 90-ft. spray booms also have a grease zerker on the outer boom breakaway folding pivot (Item 3). Lubricate every 25 hours of operation.

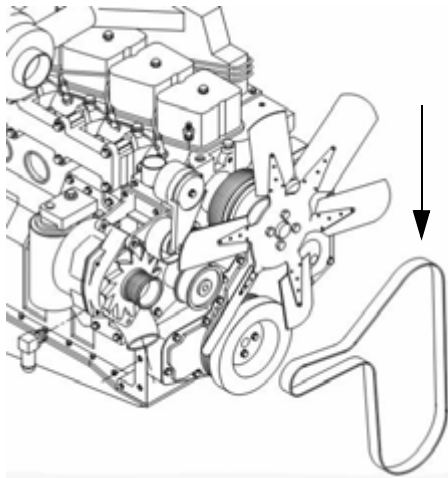


SERVICE - BELTS

Engine Drive Belt

Removal

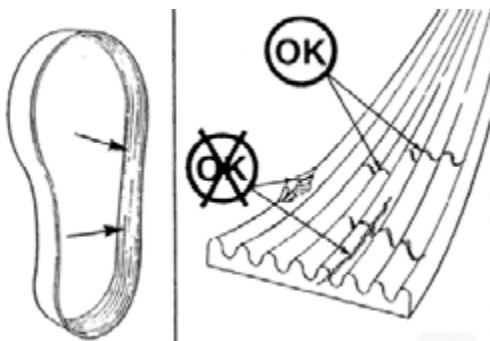
- Insert a 3/8" square ratchet drive into the belt tensioner.
- Lift UP and remove the Engine Drive Belt.



-Typical View

Inspection

- Visually inspect the Engine Drive Belt daily.
- Check the belt for intersecting cracks.



-Typical View

NOTE: Transverse cracks (across the belt width) are acceptable. Longitudinal cracks (direction of the belt length) that intersect with transverse cracks are not acceptable.

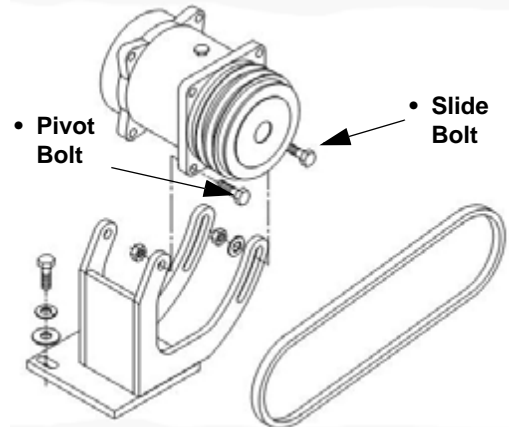
- Replace the Engine Drive Belt if it becomes frayed or has material missing.

A/C Compressor Belt

-If Equipped

Visually inspect the A/C Compressor Belt daily. Replace the belt if it becomes frayed or has missing material.

- To tighten the A/C Compressor Belt, loosen the two Pivot Bolts and the two Slide Bolts.



-Typical View

- Using a pry tool, adjust the tension of the A/C Compressor Belt to desired tautness.
- While maintaining tension, re-tighten all four bolts.

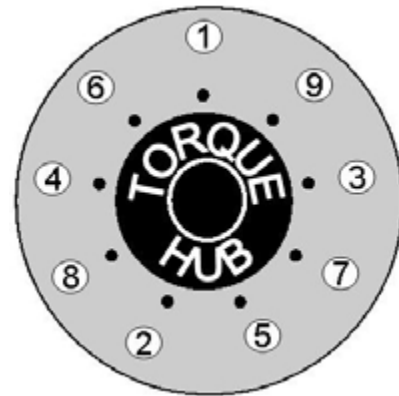
SERVICE - BOLT TORQUE

NOTICE

Check lug nut torque immediately after receiving the machine and every 50 hours of operation thereafter.

Wheel Bolts

NOTE: If you do not have the proper equipment to mount a tire, contact a local qualified tire service center.



NOTICE

To achieve even torque consistency, the tire should be completely off the ground.

To install wheel/tire assembly on the Torque Hub®:

1. Ensure threads are thoroughly cleaned of rust and dirt.

NOTE: Threads should be dry (no lubricant).

2. Align the wheel bolt holes with the Torque Hub studs.
3. Mount wheel on the hub.
4. Start all of the lug nuts and tighten until snug.
5. Following the torque sequence (as shown in the following illustration), turn each lug nut to a torque value of 120 dry ft.-lbs.

NOTE: Use slow, even pressure on the torque wrench. Quick or jerky movements can cause inaccurate values.

6. Repeat the same sequence to 150 dry ft.-lbs., and again to 180 dry ft.-lbs.

NOTE: If the wheel turns during lug nut torquing, lower machine to the ground - just enough for the tire to touch and prevent rotation. Or, more preferably, place a suitable wedge between the tire and the ground. Lower the machine and resume operation. Recheck torque after 30 minutes of operation.

7. When torquing is complete, lubricate exposed threads with anti-seize grease.

Leg Mounting Bolts

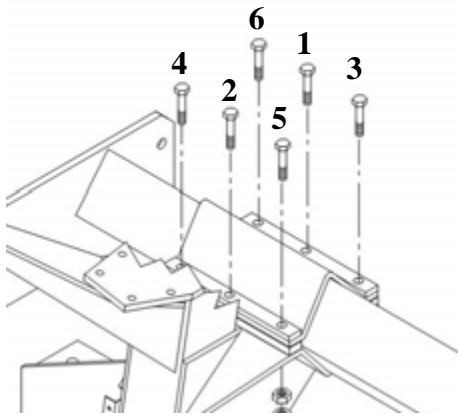
NOTE: Check Leg Mounting Bolt torque daily.

CAUTION

Never remove more than three leg mounting bolts from any single leg mount.

To torque leg mounting bolts:

1. Start lug nuts on the mounting bolts and tighten until snug.
2. Following the torque sequence (as shown in the following illustration), turn each lug nut to a value of 100 dry ft.-lbs.



NOTE: Use slow, even pressure on the torque wrench. Quick or jerky movements can cause inaccurate values.

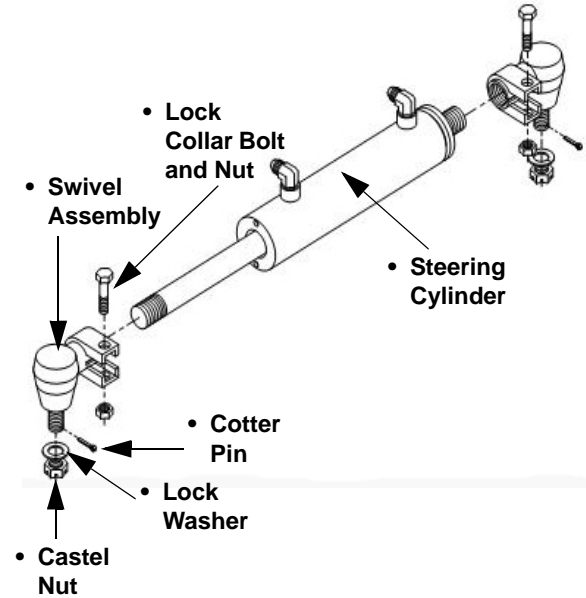
3. Lower machine to the ground and repeat same sequence to 130 dry ft.-lbs., and again to 160 dry ft.-lbs.
4. Resume operation and recheck torque values after 30 minutes.

SERVICE - TOE-IN

Toe-In Adjustment

To adjust Toe-In of the front tires, perform the following for both front steering cylinders:

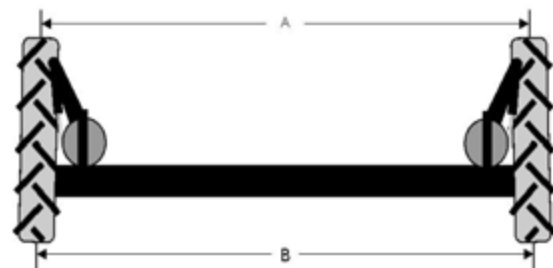
1. Remove Cotter Pin, Castal Nut, and Lock Washer from the steering cylinder assembly.



Steering Cylinder Assembly
-Typical View

2. Loosen the Lock Collar Bolt and Nut.
3. Lightly tap Swivel Assembly out of steering arm.
4. Move left and right tires evenly until the difference in Dimensions A and B are within specified range. See following illustration.

NOTE: Dimension A should be 1/2" to 3/4" (1.3 to 1.9 cm) less than Dimension B.

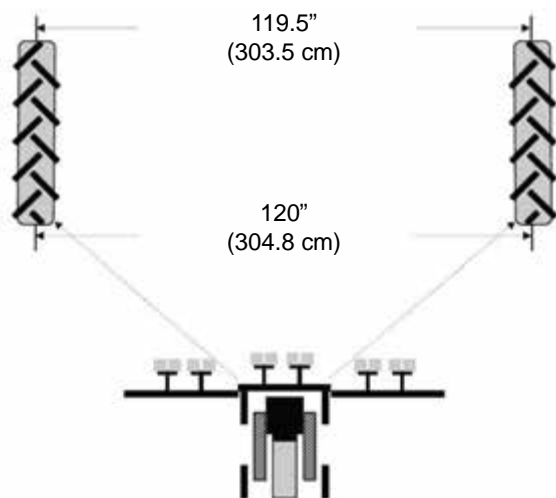


5. Screw Swivel Assembly IN or OUT on the Steering Cylinder until the tread part lines up with the steering arm.
6. Insert Swivel Assembly back into steering arm.
7. Reinstall Lock Washer and Castal Nut, then tighten.
8. Reinstall Cotter Pin.

9. Tighten Lock Collar Bolt.

To Gauge Toe-In

1. Use a tape measure placed at one-half tire height on the front center seam of the front tire, compared to the same measurement of the rear of the front tire.
2. Subtract the front measurement from the rear measurement (which must be a positive number).
3. Correct Toe-In should range between 1/2" and 3/4" (1.3 and 1.9 cm).



Example of correct Toe-In for a machine with 120" tread width

NOTE: Must have 1/2" to 3/4" (1.3 to 1.9 cm) Toe-In.

NOTE: Toe-in is factory preset and should not require adjustment unless the steering cylinders are removed or if you experience difficulty steering one way versus the other.

Contact Hagie Customer Support for additional assistance regarding Toe-In measurement and adjustment.

SERVICE - TIRES

CAUTION

When inflating tire, use an extension with an in-line air gauge and air chuck. This will allow the operator to stand clear of a possible tire sidewall explosion trajectory.

Tire Pressure

- Check tire pressure weekly.
- Never inflate a tire more than the recommended maximum air pressure.
- Use an airline with a locking air chuck and stand behind the tire tread while filling.



-Typical View

NOTE: Tire pressure will depend on type of tire used and amount of load.

Wheel Bolts

Refer to "Service - Bolt Torque" elsewhere in this section for torque specifications and torquing pattern.

Mounting

NOTE: If you do not have the proper equipment to mount a tire, contact a local qualified tire service center.

Tire should be mounted on rim according to the following illustration for optimal traction and tread cleaning action.



Toe-In

Refer to “Service - Toe-In” elsewhere in this section for information on measurement and adjustment.

SERVICE - TREAD ADJUST SHIMS

WARNING

Do not loosen the leg mounting bolts to obtain additional clearance for the leg to slide on the frame.

NOTICE

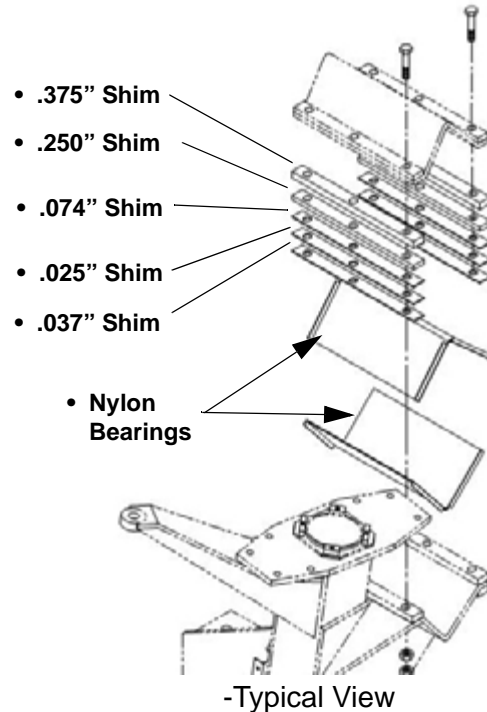
If the leg mount bolts have been tightened to the proper torque and the mount is loose, the bearing may be worn and replacement is required. Check the bearing before shims are removed.

Tread Adjust Shim Adjustment

When adjusting for more or less bearing clearance:

- Park the machine on level ground.
- Shut the engine off.

- Block the wheel on opposite side of machine (front and rear).
- Remove three (3) of the six leg mounting bolts at once when removing or adding shims to the leg assembly.



Speed Sensor Adjustment (Left Rear Wheel Motor)

When installing or adjusting the Speed Sensor:

- Turn Speed Sensor (located on the rear left-hand wheel motor) in by hand until contact is made with speed ring.
- Back out one-half turn (.030 gap).
- Rotate sensor until the wrench flats on housing are positioned at a 22° angle to the motor shaft.
- Lock in place with lock nut.



Speed Sensor
(Located on the rear
left-hand wheel motor)
-Typical View

SERVICE - DRIVE TRAIN

Tandem Hydrostatic Pumps

When the Hydrostatic Drive Control Handle is in the NEUTRAL position, the machine should not move in either direction. If it does, the neutral setting (of the controller) on the Hydrostatic Pump requires adjustment. Contact Hagie Customer Support for assistance.



Hydrostatic Pump Controller
-Typical View

Repair/Replacement

Contact Hagie Customer Support for assistance.

Auxiliary Gear Pumps

Repair/Replacement

Contact Hagie Customer Support for assistance.

Wheel Motors

Repair/Replacement

Contact Hagie Customer Support for assistance.

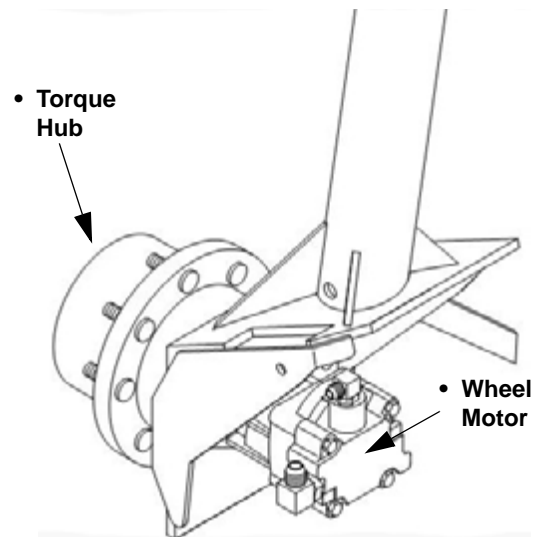
Torque Hubs®

Repair/Replacement

Contact Hagie Customer Support for assistance.

Refer to “Service - Lubrication” located elsewhere in this section for further information on greasing the Torque Hub Seal Boot.

Refer to “Service - Fluids” located elsewhere in this section for further information on maintaining and changing Torque Hub oil.



-Typical View

SERVICE - ROOF ACCESS

NOTICE

Use care when removing the roof panel and place it in a safe location while servicing.

The Roof Panel may be removed to service items such as:

- A/C and Heater Blower
- A/C and Heater Hoses
- Radio Memory Fuse/In-Line Power Fuse
- Speakers/Speaker Wiring
- Field Lights
- Work Lights
- Headlight/Wiper/Flasher Control Panel

To Remove the Roof Panel

1. Remove the six (6) Roof Panel Mounting Bolts and Washers (located on top of cab roof) and set aside.



Roof Panel Mounting Bolts/Washers
(Located on top of cab roof)
-Typical View

2. Remove Roof Panel and set aside.



Roof Panel Removal
-Typical View

3. Reverse steps to reinstall Roof Panel, ensuring no wires become pinched.

NOTE: When reinstalling the roof panel mounting bolts, ensure the washers are seated properly to help maintain weather seal of the cab roof.

SERVICE - MISCELLANEOUS

Air Bag Pressure

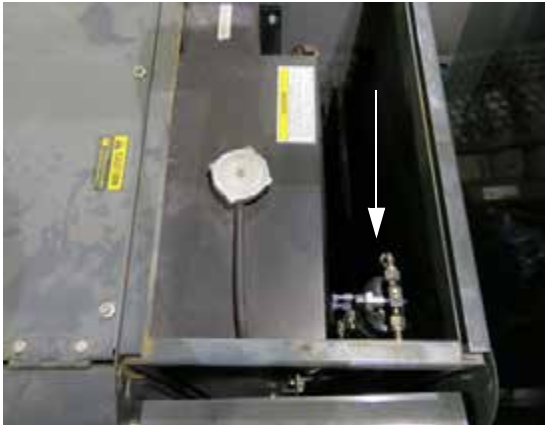
The Air Bags (located on each leg) automatically adjust pressure to compensate for load weight and field conditions. Inspect Air Bags daily for leaks and/or cracking.



Air Bag
(Located on each leg)
-Typical View

A/C System Receiver/Dryer

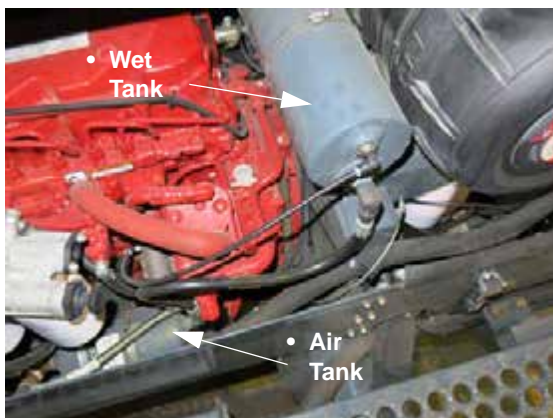
The A/C System Receiver/Dryer (located behind cab near the radiator - remove radiator screens to access) should be replaced if the A/C loop is ever open (e.g. when replacing a compressor or condenser line, etc.)



A/C System Receiver/Dryer
(Located behind cab near the radiator -
remove radiator screens to access)
-Typical View

Air Tank/Wet Tank

Drain the Air and Wet Tanks (located on the left-hand side of machine - open hood to access) daily to prevent system condensation and contamination by slowly releasing the Tank Drain Valve on each.



Air and Wet Tanks
(Located on the left-hand side
of machine - open hood to access)
-Typical View



Tank Drain Valve
-Typical View

Solution Pump

In the event that the Solution Pump (located near front of machine) loses its prime:

- Remove the Solution Plug (located on the poly-cross on top of pump).
- Pour solution through the cross until pump is full.
- Replace the plug and resume operation.



Solution Pump
(Located near front of machine)
-Typical View

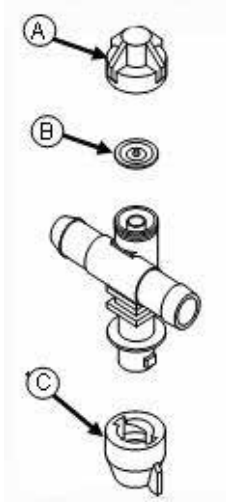
Nozzle Diaphragms

At the beginning of each season, remove each nozzle body cap (A) and inspect the diaphragm (B) for wear or fit. Replace diaphragms every 1,000 hours of operation, or as necessary.

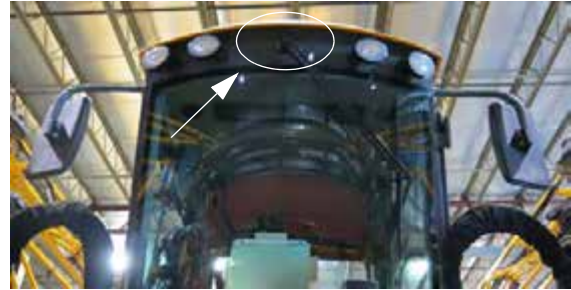
Spray Tips



At the beginning of each season (or as required), remove a random sample of spray tip caps (C) and inspect the nozzle tips. If the tips are plugged or worn, clean or replace them. Replace spray tips every 1,000 hours of operation.



Nozzle Diaphragms and Spray Tips
-Typical View



Windshield Washer Fluid Spray Nozzle
(Located near top of exterior cab)
-Typical View

Washing the Machine

Wash the machine daily to remove any harmful chemical residue, which can be corrosive to paint and steel.

NOTE: Always wash machine thoroughly after applying liquid nitrogen.

As often as possible, thoroughly wash the machine and apply paint to any place where the paint is light or missing.

For replacement decals or touch-up paint recommendations, contact the Hagie Customer Support department.

Wiper Blade

Do not allow the Wiper Blade to run on a dry windshield, as this will shorten the life of the blade and/or cause scratching on the windshield.

NOTE: Replace the windshield wiper blade (39"/99 cm) as necessary.

The Windshield Washer Fluid Spray Nozzle is adjustable. The fluid spray pattern should be inspected at the beginning of each season, and adjusted as necessary.



SERVICE INTERVALS

Service Point	Initial	Daily/ Before Each Use	As Required	50 Hrs.	100 Hrs.	250 Hrs. **	500 Hrs. **	1000 Hrs.
Check Lug Nut Torque	X							
Check Engine Oil Level		X						
Check Radiator Coolant Level		X						
Check Radiator Grille Screens		X						
Check Engine Drive Belt		X						
Check A/C Compressor Belt		X						
Check Filter Minder® Level		X						
Check Hydraulic Reservoir Level		X						
Check Battery		X						
Check for Leaks Around the Machine		X						
Check Windshield Washer Fluid Level		X						
Check and Drain Primary Fuel Filter (Water Separator)		X						
Drain Wet Tank/Air Tank		X						
Check Leg Mount Bolt Torque		X						
Check Air Bags (visual)		X						
Grease Leg Lubrication Zerks		X						
Check Solution Line Strainer		X						
Clean Solution Line Strainer			X					
Check Spray Nozzle Diaphragms and Tips			X					
Replace Windshield Wiper Blade			X					
Fill Windshield Washer Fluid Reservoir			X					



SECTION 8 –
MAINTENANCE AND STORAGE

Service Point	Initial	Daily/ Before Each Use	As Required	50 Hrs.	100 Hrs.	250 Hrs. **	500 Hrs. **	1000 Hrs.
Clean Radiator Grille Screens			X					
Change Engine Drive Belt			X					
Change A/C Compressor Belt			X					
Charge A/C Compressor *			X					
Change Air Intake Filter (Filter Minder)			X					
Replace High Pressure In- Line Filter			X					
Change Battery			X					
Replace Fuses and Circuit Breakers			X					
Replace Cab Charcoal Filter			X					
Clean Cab Fresh Air (Paper) Filter			X					
Clean Cab Recirculation Filter			X					
Replace Cab Recirculation Filter			X					
Check Tire Pressure			X					
Lubricate Boom/Breakaway Grease Zerks			X					
Lubricate Transom/Lift Arm/ Lift Cylinder Grease Zerks			X					
Lubricate Hydraulic Tread Adjust Bearing Slide Path			X					
Check Lug Nut Torque				X				
Change Wheel Hub Oil (Break-in)				X				
Lubricate Torque Hub® Grease Zerk/Seal Boot				X				
Check Wheel Hub Oil Level					X			
Clean Battery					X			
Change Engine Oil Filter						X		
Change Engine Oil						X		



Service Point	Initial	Daily/ Before Each Use	As Required	50 Hrs.	100 Hrs.	250 Hrs. **	500 Hrs. **	1000 Hrs.
Change Wheel Hub Oil						X		
Change Hydrostatic Charge Pressure Filter						X		
Change Hydraulic Suction Filter						X		
Change Primary Fuel Filter (Water Separator)							X	
Change Secondary Fuel Filter							X	
Check Radiator Coolant Concentration							X	
Change Hydraulic Reservoir Oil							X	
Change Radiator Coolant								X
Change Spray Nozzle Diaphragms and Tips								X

* Use proper equipment.

** 250-500 hours or yearly, whichever occurs first.

STORAGE

Preparing For Storage

1. Perform daily level checks, lubrication, and bolt/linkage inspections, as required in this manual.
2. Every other season, drain the coolant from the engine and radiator. Probe the drain holes during drainage to ensure they are not clogged by sludge, scale, or other deposits.
Fill the cooling system to the top with a 50/50 water/antifreeze mixture. Run the engine to operating temperature and recheck level.
3. Add a fuel stabilizer to the fuel and fill the tank.
4. Run the engine until it reaches operating temperature, then drain the engine oil. Refill with fresh oil of recommended weight and install a new lubricating oil filter element.

5. With the engine at normal operating temperature, cycle all hydraulic functions, including the steering.
6. Release tension on all belts.
7. Use plastic bags and water-resistant adhesive tape to seal the air intake opening, all exhaust manifold openings, engine oil filter cap, hydraulic oil tank breather cap, and fuel tank caps.
8. Disconnect and remove batteries. Completely clean and charge the batteries. Coat the terminals with dielectric grease and store the batteries in a cool place (above freezing).
9. Thoroughly wash the machine. Touch up any painted surfaces that are scratched or chipped.

NOTE: For paint touch-up recommendations, contact the Hagie Customer Support department.

10. Replace worn or missing decals. Refer to “Safety Decals” provided in the *Safety*

and Precautions Section for proper location of warning decals and corresponding part number.

NOTE: For decal replacement, contact the Hagie Customer Support department.

11. Apply multi-purpose grease to coat exposed hydraulic cylinder rods to prevent rusting, which could result in cylinder damage.
12. If the machine must be stored outside, cover with a waterproof cover.

Removing From Storage

NOTICE

Protective compounds such as grease can harden under exposure to weather conditions. Be sure to remove any dried grease and reapply new, if necessary.

1. Inspect the condition of and test the air pressure of all tires.
2. Carefully unseal all openings that were previously sealed in the “Preparing for Storage” process.
3. Clean and reinstall the batteries. Be sure to attach the battery cables to the proper terminals.
4. Tighten all belts. Inspect and replace any worn belts.
5. Check the engine oil, hydraulic oil, and engine coolant levels, and add if necessary.

NOTE: A mixture of 50/50 water/antifreeze will cool adequately in the summer, as well as protect in winter.

6. Thoroughly clean the machine.
7. Perform all recommended services as instructed elsewhere in this section.
8. For starting instructions, refer to “Engine - Starting” provided in the *Engine and Drive Systems Section* elsewhere in this manual.

SECTION 9 – MISCELLANEOUS

TRANSPORTING

When driving on a public roadway or elsewhere, be aware of any situation where the machine will be passing under an object with a clearance lower than the transporting height of the machine.

CAUTION

Hagie Manufacturing Company does not recommend any form of transportation other than driving the sprayer. Loading the sprayer onto a trailer may result in sprayer rollover.

WARNING

- Never operate the sprayer on a public roadway with solution in the tanks.
- Never load or unload the sprayer with solution in the tanks.
- Stopping the sprayer on trailer ramps may cause the sprayer to tip over.

CAUTION

DO NOT operate the machine at speeds exceeding 20 mph (32 km/h) with solution in the tanks. Operating speeds exceeding 20 mph (32 km/h) with fully loaded tanks may result in tire blow-out or wheel hub damage and will void the warranty.

WARNING

When transporting the sprayer, observe the following to avoid serious injury or death:

- Check for adequate clearance before driving under any overhead obstructions.
- Contact with power lines may result in serious injury or death.



CAUTION

Do not transport the machine without booms folded and in cradle. Failure to comply may result in injury or equipment damage.

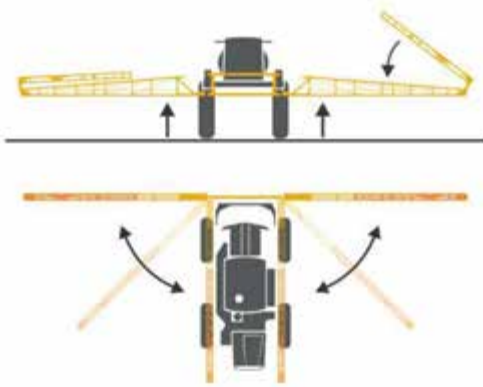
Cradling the Booms

CAUTION

Booms must be in FOLDED position when cradled. Failure to comply will result in property damage.

NOTE: Always cradle the booms before traveling, transporting, or parking for an extended period of time.

- Fold outer boom extensions IN.
- Raise transom all the way UP.
- Fold main boom sections IN toward the machine.



NOTE: When boom reaches the last 8-10 degrees of travel, it will automatically slow down to avoid impact with the cradle.

- Raise each individual boom level until it clears the outer cradle stop.
- Fold the boom IN toward cradle back-stop.
- When boom touches the back-stop, lower boom level until the full weight of the boom is resting in cradle.

Driving the Sprayer on a Public Roadway

1. Always have the booms in the folded and cradled position when driving or transporting the machine.
2. Use the flashing Hazard/Warning Lights, day or night to warn other drivers, unless prohibited by law.
3. Know and obey all state laws for driving agricultural equipment on a public roadway.
4. Adjust machine speed to suit the conditions.
5. Slow down and use turn signals before turning.
6. Pull over to the side of the road before stopping.
7. Keep a proper lookout and maintain control of the machine.
8. Do not drive under trees, bridges, wires, or other obstructions unless there is adequate clearance.

9. Use extra care before entering or exiting a public roadway.
10. Ensure the SMV (Slow Moving Vehicle) emblem is properly displayed to warn other drivers, unless prohibited by law.
11. Do not drive the machine on a public roadway with solution in the tanks.

Loading



WARNING

Keep all persons away from trailer when loading or unloading the sprayer. Failure to comply may result in serious injury or death.

NOTICE

Read and understand the trailer manufacturer's operation manual. Hitch the trailer to the pulling vehicle according to their recommendations.

NOTICE

The loaded height and width of the trailer must conform to state law in which it is being used. Do not exceed the trailer manufacturer's recommendations on loaded weight.

1. Pull the trailer to flat ground.
2. Apply the pulling vehicle's parking brake and turn the engine OFF.
3. Use tire chocks to keep the trailer from moving.
4. Fold the booms and lower into cradles.
5. Lower the trailer ramps and set the ramp spacing for the machine's tread width setting.

6. Have an attendant help guide you onto the trailer.
7. Allow enough room between the sprayer and the pulling vehicle for turning.
8. Secure the sprayer onto the trailer using the recommended securement restraints (see trailer manufacturer's operation manual).
9. Cover or remove the SMV (Slow Moving Vehicle) emblem when traveling over 25 mph (40 km/h).

Unloading

1. Pull the trailer to flat ground.
2. Apply the pulling vehicle's parking brake and turn the engine OFF.
3. Use tire chocks to keep the trailer from moving.
4. Lower the trailer ramps and set the ramp spacing for the machine's tread width setting.
5. Carefully release the securement restraints.
6. Have an attendant help guide you off of the trailer.
7. Uncover or replace the SMV (Slow Moving Vehicle) emblem.

Towing

NOTICE

Sprayer should never be towed under any circumstances. Machine damage will occur and will void the power train warranty.



Contact Hagie Customer Support if towing is unavoidable.

WHEEL TREAD AND ROW SPACING

(Non-Hydraulic Tread Adjust Machines)

NOTE: Refer to the Hydraulic Systems Section elsewhere in this manual for information on adjusting Hydraulic Tread Width.

Knowing the row spacing of the field that is intended to be sprayed, refer to the following steps to obtain desired tread setting.

Adjusting Tread Width

1. Park machine on level ground.
2. Shut engine OFF.
3. Loosen the Leg Mounting Bolts (located on the front and rear legs) **on one side of the machine only.**

CAUTION

Loosen leg mounting bolts only enough to allow for free movement of leg on mainframe. **DO NOT** remove bolts under any circumstances.

4. Loosen Rear Lock Nut (located on leg brace) to allow one leg to move further than the other without binding (when adjusting tread setting).



Rear Lock Nut
(Located on leg brace)
-Typical View

5. Lubricate the slide path in which the leg mount will travel along mainframe (approximately 30”/76 cm).

NOTE: Refer to “Service - Lubrication” provided in the Maintenance and Storage Section elsewhere in this manual for further information.

6. Place a suitable prop item (e.g. wood block) beneath the air bag mounting plate (before raising the machine) to prevent the suspension from telescoping, as shown in the following photo.



-Typical View

⚠ CAUTION

Empty solution tanks before raising the machine.

7. Raise the machine until the tires (on the side being adjusted) are just touching the ground.

To Adjust Tread Width Out

- Place a suitable prying tool beneath the center of tire and pry out at the same time, while simultaneously pushing out at the top of the leg, as shown in the following photo.



-Typical View

- Carefully lower machine to the ground, which in turn, will allow the leg to slide outward.
- Repeat procedure until desired tread is obtained.
- Observe tread width indicator (located on each leg).



Tread Width Indicator
(Located on each leg)
-Typical View

To Adjust Tread Width In

- Raise the machine until the tires (on the side being adjusted) are just off the ground.
- Carefully lower the machine to the ground, which in turn, will allow the top of the leg to slide in on the mainframe.
- Re-tighten Leg Mounting Bolts.
- Re-tighten the Leg Brace Lock Nut.
- Repeat previous procedure to adjust and set the legs on opposite side of machine.

NOTE: All four tread width indicators should have identical readings after tread adjustment is complete.

HAND WASH SYSTEM

CAUTION

The Hand Wash System is not a substitute for Personal Protective Equipment (PPE). Always use the proper PPE (safety eye wear, face shields, protective clothing, etc.) when handling agricultural chemicals.

NOTICE

Keep hand wash tank full of fresh water at all times for immediate use should contact with hazardous chemicals occur.

NOTICE

Fill hand wash tank with fresh water only.

Filling the Hand Wash Tank

- Remove Fill Cap (located on top of Hand Wash Tank) and set aside.



Hand Wash Tank
(Located near rear left-hand side of machine)
-Typical View

- Fill Hand Wash Tank with fresh water.
- Reinstall Fill Cap.

To Dispense Fresh Water

- Turn Hand Wash Valve (located near bottom of Hand Wash Tank) in the “clockwise” (Open) position.
- Close Hand Wash Valve when finished.



TROUBLESHOOTING

Problem	Possible Cause	Suggested Remedy
Engine will not crank	<ul style="list-style-type: none">• Dead battery• Poor battery connections• Neutral Safety Switch• Starter or starter relay• Lock-out Switch in LOCKED position	<ul style="list-style-type: none">• Charge or replace battery• Clean and tighten battery connections• Adjust and/or replace, if necessary• Test, rebuild, or replace• Inspect switch
Engine will not start	<ul style="list-style-type: none">• Fuel tanks empty• Clogged fuel filter• Cold weather• Low starter speed	<ul style="list-style-type: none">• Fill fuel tanks• Replace fuel filters• Refer to the engine manufacturer's user guide for cold weather starting• Check starter and battery
Engine overheats	<ul style="list-style-type: none">• Engine overload• Dirty radiator core/grille screens• Faulty radiator cap• Loose or faulty fan belt• Faulty thermostat• Low coolant level	<ul style="list-style-type: none">• Reduce load• Remove all foreign material and clean all items• Replace cap• Tighten or replace fan belt• Replace thermostat• Refill to proper level with recommended coolant mixture
Engine misfires: runs uneven/low power	<ul style="list-style-type: none">• Water in fuel• Dirty air cleaner element• Poor grade of fuel• Fuel tank vent clogged• Clogged fuel filter	<ul style="list-style-type: none">• Drain, flush, replace filter, fill system• Replace element• Drain system, change to a better grade fuel• Open fuel tank vent (in cap)• Replace fuel filter
Engine knocks	<ul style="list-style-type: none">• Low oil level in crankcase• Cold engine	<ul style="list-style-type: none">• Add oil to full mark• Allow proper warm-up period - refer to engine manufacturer's user guide



<p>Machine will not move in either direction</p>	<ul style="list-style-type: none"> • Engine speed too low • Oil level in hydraulic reservoir low • Control linkage • Clogged filter • Faulty hydrostatic pump • Air leak in suction line • Low charge pressure 	<ul style="list-style-type: none"> • Set engine at operating RPM before moving the machine • Fill hydraulic reservoir to proper level with approved oil • Repair or replace • Replace filter • Replace pump • Inspect and tighten all fittings on suction line • Refer to “Hydrostatic Charge Pressure Filter” elsewhere in this manual
<p>Machine will move in only one direction</p>	<ul style="list-style-type: none"> • Faulty Flow Divider Valve 	<ul style="list-style-type: none"> • Replace valve
<p>Hydrostatic System responding slowly</p>	<ul style="list-style-type: none"> • Engine speed too low • Oil in hydraulic reservoir low • Cold oil • Plugged filter • Partially restricted suction line • Internal damage 	<ul style="list-style-type: none"> • Set engine at operating RPM before moving the machine • Fill hydraulic reservoir to proper level with approved oil (see Service: Fluids elsewhere in this manual) • Allow adequate warm-up period • Check and replace filter • Inspect for collapsed suction hose • Replace hydrostatic pump or motor
<p>Noisy Hydrostatic System</p>	<ul style="list-style-type: none"> • Cold oil • Low engine speed • Oil level in hydraulic reservoir low • Air in system • Internal pump damage 	<ul style="list-style-type: none"> • Allow adequate warm-up period • Increase engine speed • Fill hydraulic reservoir to proper level with approved oil (see Service: Fluids elsewhere in this manual) • Inspect and tighten all fittings on suction line • Replace pump
<p>External oil leaks</p>	<ul style="list-style-type: none"> • Loose or faulty fittings • Damaged o-ring • Faulty hose 	<ul style="list-style-type: none"> • Tighten or replace • Inspect, if damaged - replace • Replace hose



<p>Entire Hydraulic System fails to function</p>	<ul style="list-style-type: none"> • Oil level in hydraulic reservoir low • Oil not reaching pump • Faulty hydraulic pump 	<ul style="list-style-type: none"> • Fill hydraulic reservoir to proper level with approved oil (see Service: Fluids elsewhere in this manual) • Prime the pump by removing suction hose from reservoir. Hold removed end higher than the pump. Hand-feed two quarts of approved oil through the suction hose by bumping engine with starter (ensuring NOT to start the engine). Reinstall hose. Tighten all fittings. • Replace hydraulic pump
<p>Noisy hydraulic pump</p>	<ul style="list-style-type: none"> • Collapsed suction hose (caused by cold oil) • Oil level in hydraulic reservoir low • Air leak in suction line 	<ul style="list-style-type: none"> • Allow for adequate warm-up period • Fill hydraulic reservoir to proper level with approved oil (see Service: Fluids elsewhere in this manual) • Inspect and tighten all fittings on suction hose
<p>Solution pump will not prime</p>	<ul style="list-style-type: none"> • Low water level in pump • Air leak in suction line • Solution Tank Valve closed 	<ul style="list-style-type: none"> • Ensure solution tanks are not empty (solution pump is self-priming) • Inspect and tighten all fittings on suction line • Open Solution Tank Valve, allow air to leave the system
<p>Erratic reading on pressure gauge</p>	<ul style="list-style-type: none"> • Orifice in back of gauge clogged • Faulty gauge • Air leak in suction line • Solution Strainer plugged • Glycerin leaking from pressure gauge 	<ul style="list-style-type: none"> • Remove pressure gauge, clean orifice, reinstall • Replace gauge • Inspect and tighten all fittings in suction line • Check/clean solution strainer • Replace gauge

SECTION 9 –
MISCELLANEOUS



<p>Malfunction of electric solution valve</p>	<ul style="list-style-type: none"> • Faulty ground • Dirty contact terminals • Separation in wire • Faulty switch • Short in solenoid coil • Bad valve 	<ul style="list-style-type: none"> • Clean and tighten ground • Clean contact terminals • Check continuity and replace wire • Replace switch • Inspect, replace if necessary • Replace valve
<p>Solution pump not producing normal pressure</p>	<ul style="list-style-type: none"> • Clogged line strainer screen • Air leak in suction flow to pump • Restricted solution flow to pump • Suction hose collapsed • Internal restriction of diaphragm (such as buildup of chemical) • Hydraulic failure 	<ul style="list-style-type: none"> • Remove screen, clean thoroughly, tighten strainer cap to avoid air leak • Inspect and tighten all fittings on suction line • Ensure the Solution Tank Valves are completely open • Obstruction at inlet end of hose, causing high vacuum on hose - remove obstruction • Disassemble, inspect, clean, reassemble • Contact Hagie Customer Support for assistance
<p>Entire electrical system is dead</p>	<ul style="list-style-type: none"> • Dead battery • Poor battery connection • Low charging rate • No charging rate • Lockout Switch in LOCKED position 	<ul style="list-style-type: none"> • Charge or replace battery • Clean and tighten battery connections • Tighten alternator belt • Replace alternator • Inspect switch
<p>All gauges on instrument panel not working</p>	<ul style="list-style-type: none"> • Blown fuse • Poor ground 	<ul style="list-style-type: none"> • Replace fuse • Clean and tighten ground
<p>Tachometer/MPH-km/h indicator not working</p>	<ul style="list-style-type: none"> • Blown fuse • Loose connections at sensor/alternator • Faulty sensor 	<ul style="list-style-type: none"> • Replace fuse • Tighten or replace connectors • Replace sensor
<p>Light system does not function</p>	<ul style="list-style-type: none"> • Blown fuse • Burned out bulb • Separation or short in wire • Blown fuse • Faulty switch • Ignition switch is OFF 	<ul style="list-style-type: none"> • Clean and tighten ground • Replace bulb • Check continuity and replace wire • Replace fuse • Replace switch • Turn ignition switch to the ON position



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