

P002727

OPERATORS MANUAL

Volume 1 FORTIFIER 2212



MonTag

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1. INTRODUCTION / GENERAL INFORMATION

1.1 INTRODUCTION

Read and understand this manual before using your fertilizer applicator / seeder, and follow all of the safety instructions. Keep all manuals in a safe place inside your cab or manual holder at all times.

Some components on your fertilizer applicator / seeder may have separate instruction manuals. Where this manual indicates that you should read another manual, and you do not have that manual, contact your dealer or Montag Manufacturing for assistance.

Information provided in this manual was current as of the issue date. Montag Manufacturing reserves the right to make design changes without further notice or liability.

1.2 FORTIFIER 2212 SPECIFICATIONS

Montag GEN II-Fortifier 2212 Twin-Bin cover crop system for Hagie STS10 & STS12

Rows: 12 rows

[12 rows split to 48 rows (49 drops)] (4 sections)

[9 rows split to 36 rows (37 drops)] (3 sections)

Product Capacity (bin/total)*:

77.4/154.8 ft³ [2,192/4,383 L],

1.94/3.87 ton [1,760/3,511 kg]

Rate Capacity (bin/total)†:

8-50/16-85 lb/ac

[9-56/18-101 kg/ha]

Weight‡: 3,250 lb [1,474 kg]

Overall Height: 76.3 in [193.8 cm]

Overall Length: 97.0 in [246.4 cm]

Overall Width: 83.5 in [212.1 cm]

Product Fill Height§: 147.3 in [374.1 cm]

Product Fill Inlet Size: 6.55 ft² [0.61m²]

Product Outlet Hose Size:

Meter Outlet: 2.00 in [5.08 cm]

Boom Drop: 1.25 in [3.18 cm]

Req. Hydraulic Capacity: 25 gpm [95 Lpm]

Req. Hydraulic Press.: 2,950 psi [203 bar]

Compatible with 2014+ Hagie STS 10, or STS12, with 120' hybrid or 90' steel boom.

*Calculated using 50 lb/ft³ product density [0.801 kg/L]

†Calculated using 50 lb/ft³ product density, 30 in row spacing, and 10 mph [0.801 kg/L, 76 cm row spacing, and 16 km/h]

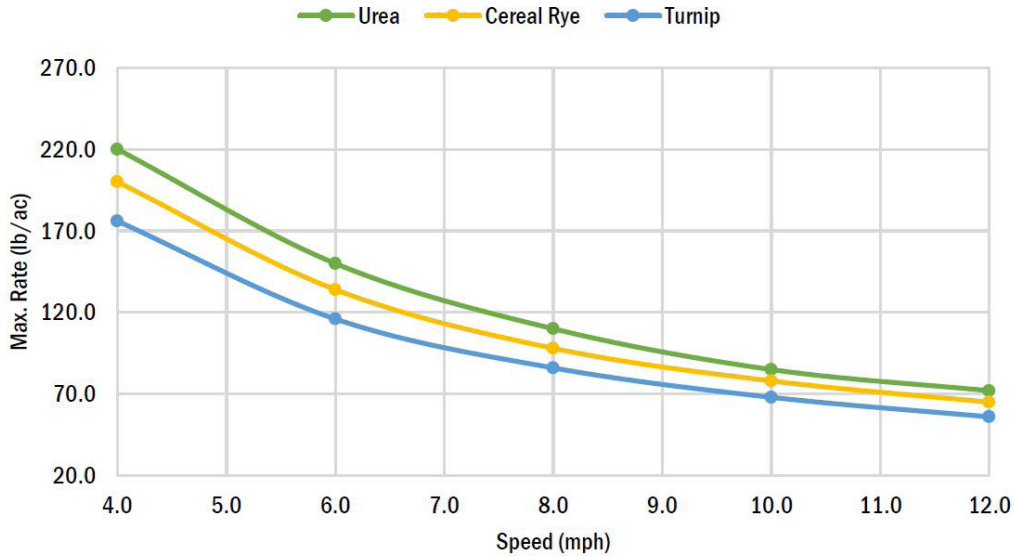
‡Unloaded, dry weight

§When installed on STS 12.



MAXIMUM RATE BY SPEED (TOTAL)

Maximum Rate by Speed (Total)



MAXIMUM RATE BY SPEED (TOTAL)

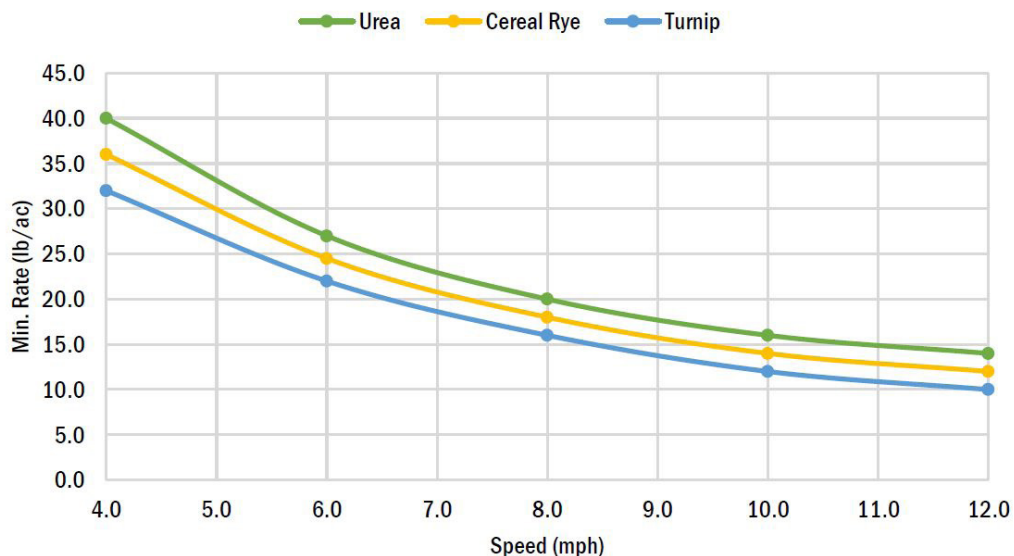
Urea (50 lb/ft ³)		Cereal Rye (45 lb/ft ³)		Turnip (39 lb/ft ³)	
Speed	Max. Rate	Speed	Max. Rate	Speed	Max. Rate
12.0	72.0	12.0	65.0	12.0	56.0
10.0	85.0	10.0	78.0	10.0	68.0
8.0	110.0	8.0	98.0	8.0	86.0
6.0	150.0	6.0	134.0	6.0	116.0

MINIMUM RATE BY SPEED (TOTAL)

Urea (50 lb/ft ³)		Cereal Rye (45 lb/ft ³)		Turnip (39 lb/ft ³)	
Speed	Min. Rate	Speed	Min. Rate	Speed	Min. Rate
4.0	40.0	4.0	36.0	4.0	32.0
6.0	27.0	6.0	24.5	6.0	22.0
8.0	20.0	8.0	18.0	8.0	16.0
10.0	16.0	10.0	14.0	10.0	12.0

MINIMUM RATE BY SPEED (TOTAL)

Minimum Rate by Speed (Total)



1.3 WARRANTY INFORMATION

MONTAG MANUFACTURING, INC.

LIMITED WARRANTY FOR NEW MONTAG EQUIPMENT

What this Limited Warranty Covers - Montag Manufacturing, Inc. ("Montag") warrants equipment manufactured by it to be free from defects in material and workmanship for the warranty period.

What this Limited Warranty Does Not Cover - Montag is not responsible for, and this limited warranty does not cover: (1) used parts, (2) any part that has been altered or modified in ways not approved by Montag, (3) depreciation or damage caused by normal wear and tear, (4) unauthorized repair or adjustments, (5) reimbursement for work completed by an unauthorized service center, (6) other equipment, crops, or property with which Montag equipment comes into contact, (7) components manufactured and warranted by other manufacturers such as tires and hydraulic equipment, (8) loss of time, loss of use, towing charges, or other incidental or consequential damages, or (9) to equipment which has been damaged as the result of, misuse, abuse, lack of proper protection during storage, accident, failure to follow the operating instructions and perform routine maintenance as provided in the operator's manual, fire, flood, "Acts of God" or other contingencies beyond Montag's control.

Warranty Term and Coverage - This limited warranty provides coverage for three years from the date the equipment is delivered to the first purchaser and extends to the original purchaser and any subsequent owner.

What Montag Will Do – (1) Montag will provide telephone consultation with a trained representative regardless of the location of the equipment. (2) For equipment located in the general geographic area served by a Montag dealer, Montag may, if Montag deems it necessary or expedient, send a trained technician to work on the equipment at the owner's place of business. (3) Equipment that requires service or repair at the Montag manufacturing facility or at an authorized Montag dealership must be transported or shipped to and from the Montag manufacturing facility or Montag authorized dealership at the owner's sole expense.

To Get Warranty Service – To get warranty service the owner must (1) report the defect to an authorized dealer and request repair within the warranty term, (2) present evidence of the warranty start date, and (3) make the product available to the dealer within a reasonable time. The owner can also contact Montag by U.S. Mail at 3816 461st Ave. Emmetsburg, Iowa 50536; by telephone at (712)-852-4572; by facsimile at (712)-852-4574; or by e-mail at support@montagmfg.com

Limitation of Implied Warranties and Other Remedies – To the extent permitted by law, Montag makes no warranties, representations or promises as to the quality, performance or freedom from defect of its equipment covered by this limited warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE PERIOD OF WARRANTY SET FORTH IN THIS LIMITED WARRANTY. THE OWNER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ARE SET FORTH IN THIS LIMITED WARRANTY. IN NO EVENT WILL MONTAG OR ANY MONTAG DEALER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages so the above limitations may not apply to you.) This warranty gives you specific legal rights, and you have also have other rights which vary from state to state.

No Dealer Warranty – The selling dealer makes no warranty of its own and the dealer has no authority to make any representation on behalf of Montag, or to modify the terms or limitations of this warranty in any way.


2. SAFETY

2.1 SECTION OVERVIEW

This section explains the level of risk and potential hazards associated with operating and maintaining Montag Fertilizer / Seeder Application Systems. The safety signs and their locations on the machine are also identified.

2.2 SAFETY

This Owner's Manual covers the fertilizer / seeder applicator produced by Montag Manufacturing. Before operating or servicing the fertilizer / seeder applicator, you must read, understand and follow the instructions and safety warnings in this manual. Always wear proper Personal Protective Equipment (PPE) for the job. Your fertilizer / seeder applicator may not be equipped with some of the optional equipment shown in the illustrations in this manual.

The safety information in this manual is denoted by the safety alert symbol: 

The level of risk is indicated by the following signal words.

DANGER

Indicates an imminently hazardous situation that, if not avoided, *will* result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION

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

NOTICE

Indicates a situation that could result in damage to the machine or other property.

2.2.1 KEEP ALL GUARDS IN PLACE

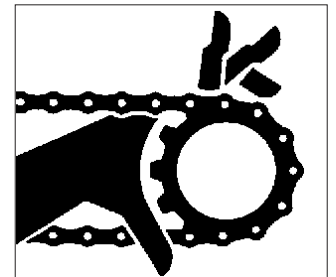
Remove guards only for adjustment and maintenance, install immediately when task is completed. Do not operate meter or fan with covers removed. Do not wear loose fitting clothing that can catch in rotating equipment.

WARNING

Severing hazard.

Rotating fans and moving chains can sever digits.

Always keep all guards and shields in place.



2.2.2 STAY AWAY FROM ROTATING AUGERS

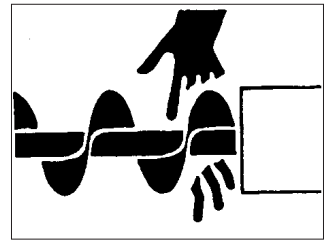
Keep hands and fingers away from metering augers unless coupler has been removed from auger drive motor.

⚠ WARNING

Severing hazard.

Rotating augers can sever digits.

Remove coupler from auger drive motor before touching metering augers.



2.2.3 KEEP RIDERS OFF EQUIPMENT

Never allow people on or near the equipment while it is moving. Riders can be thrown off or under the equipment, which may result in death or serious injury. Never climb on equipment while equipment is moving. Keep children away from equipment at all times.

Follow all safety instructions in Hagie owners manual.

⚠ WARNING

Crushing hazard.

Riders can fall from equipment, resulting in death or serious injury.

Never allow riders on the equipment.



2.2.4 AVOID HOT PARTS

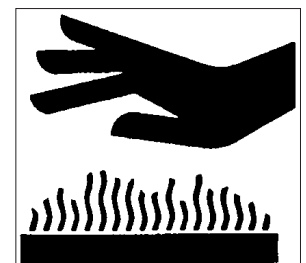
After several minutes of equipment operation, surfaces containing hydraulic fluid can become very hot.

⚠ WARNING

Burn hazard.

Do not touch hot hydraulic surfaces.

Do not work on hydraulic system when it is hot.



2.2.5 AVOID HIGH PRESSURE HYDRAULIC FLUID

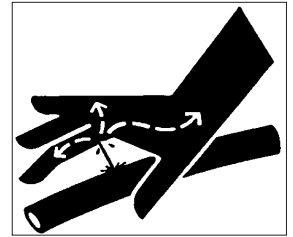
Always relieve hydraulic system pressure before performing any work on the system. Use a piece of cardboard or paper, not your hand, to check for leaks.

⚠ WARNING

Relieve pressure before disconnecting hydraulic lines.

Tighten all connections before applying pressure.

Seek medical attention immediately if fluid is injected into skin.



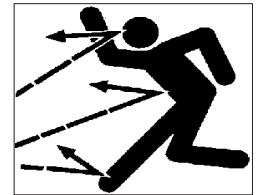
2.2.6 AVOID FLYING OBJECT INJURIES

When fan is running, debris can be thrown from the air outlet, causing injury or possible loss of sight.

⚠ WARNING

Projectile hazard.

Do not stand in front of air outlet while fan is operating.



2.2.7 AVOID LOSS OF CONTROL

Transporting Fortifier at excessive speed can result in loss of control, causing death or serious injury.

⚠ WARNING

Danger of loss of control when transporting Fortifier.

Remove all product from tank before transporting on roads.

Maximum speed for cart with full tank is reduced.

Follow all safety instructions in Hagie owner manual.

2.2.8 AVOID TIPPING CART

If ladders are installed on rear of dry tank, tank can tip over if people climb on stairs with Fortifier disconnected from implement, resulting in death or serious injury.

⚠ WARNING

Crushing hazard.

Do not climb on tank steps when Fortifier is disconnected from implement.

2.2.9 CLEARANCE

WARNING

Collision hazard.

Know the height, width and length of the equipment.

Always be aware of clearances.

2.2.10 MAINTENANCE

WARNING

Crushing hazard.

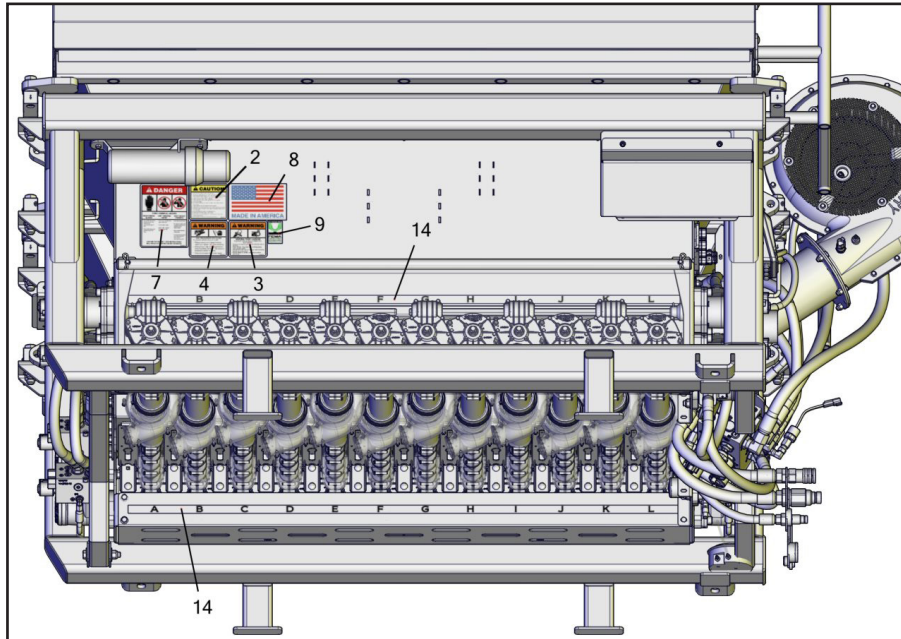
Before performing inspections, service or maintenance:

- Park the equipment on firm, level surface.
- Turn on parking brake, turn engine off and remove ignition key.
- Verify service locks are properly engaged.

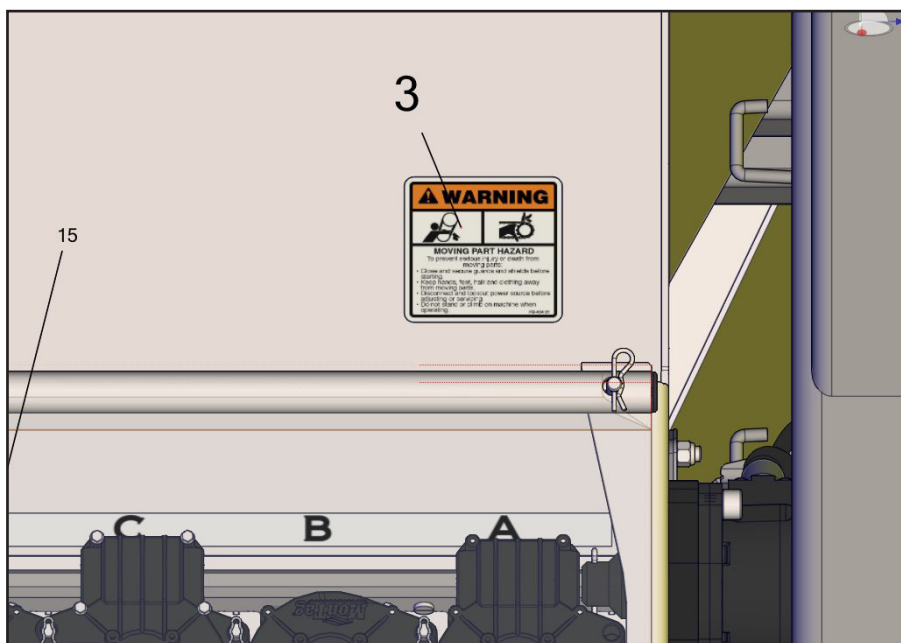
2.2.11 HAZARDS FROM MODIFYING YOUR FERTILIZER APPLICATOR / SEEDER

Before making any alteration, contact your dealer or Montag Manufacturing and describe the alteration you are contemplating. Altering may void the manufacturer's warranty.

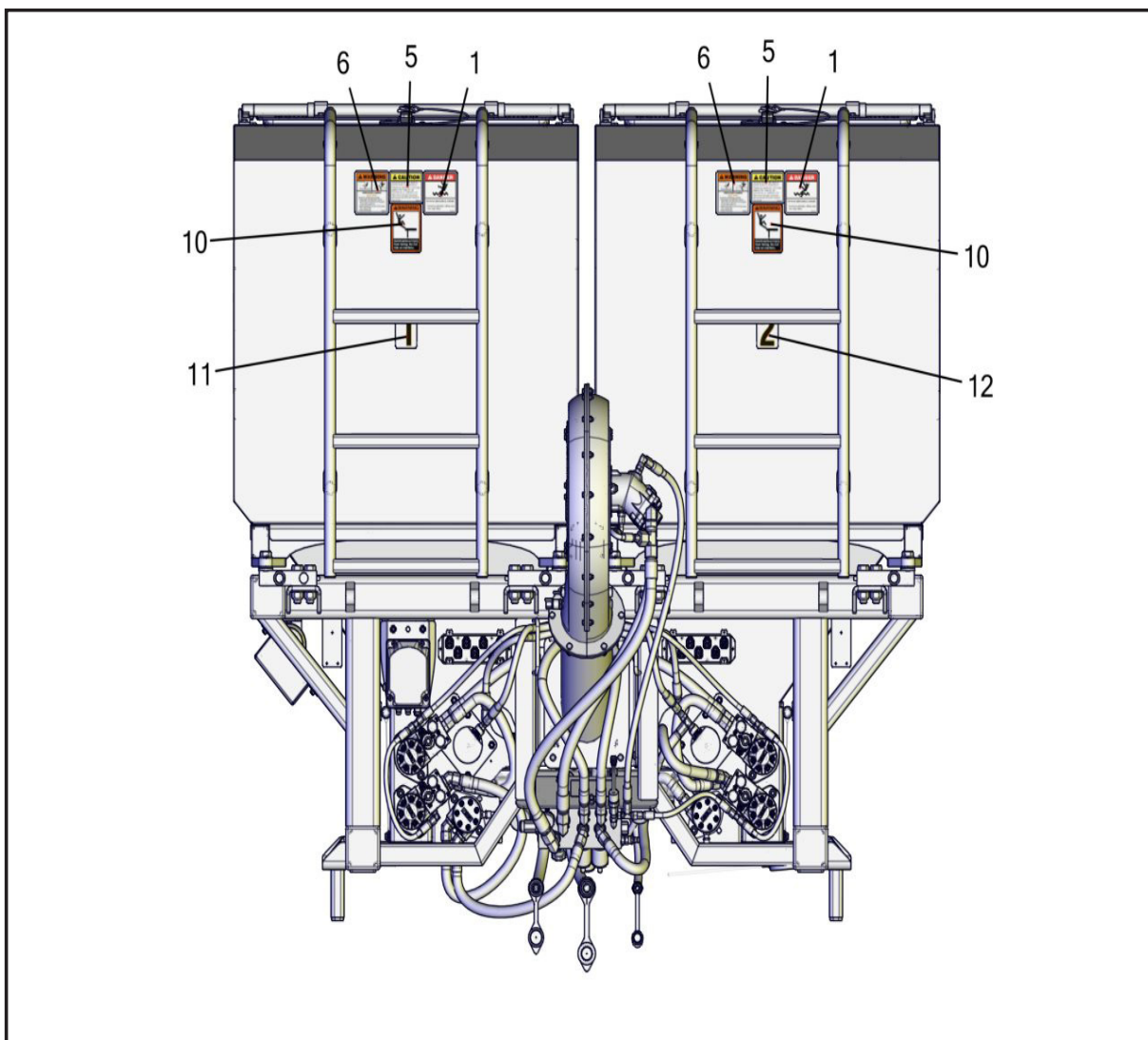
2.2.12 FORTIFIER WARNING LABELS



Fortifier Meter - catwalk location



Fortifier Meter - opposite catwalk



FortifierTank

2.2.13 SAFETY WARNING LABELS



Label 1



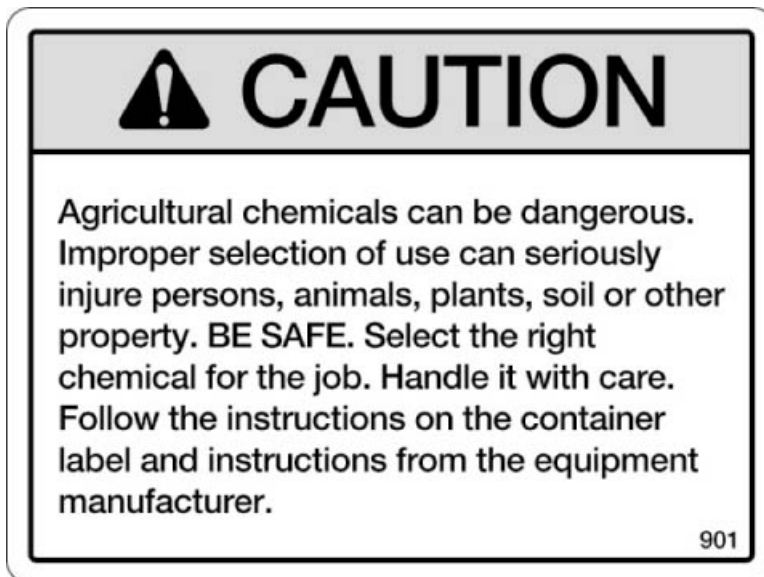
Label 2



Label 3



Label 4



Label 5



Label 6



Label 7

⚠ WARNING

To protect against death or serious injury, all labels must be on the machine and must be legible.

If any of these labels are missing or cannot be read, call Montag Manufacturing at 1-712-852-4572, or e-mail support@montagmfg.com, for replacement labels.

2.2.14 SAFETY DECAL CARE

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or have become illegible.
- Replaced parts that displayed a safety sign should also display the current sign.
- Safety signs are available from your Distributor or Dealer Parts Department or the factory.

How to Install Safety Signs:

- Be sure that the installation area is clean and dry.
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.

2.3 HIGHWAY AND TRANSPORT OPERATIONS

- Adopt safe driving practices:
 - Always drive at a safe speed relative to local conditions and ensure that your speed is low enough for an emergency stop to be safe and secure. Keep speed to a minimum.
 - Reduce speed prior to turns to avoid the risk of overturning.
 - Avoid sudden uphill turns on steep slopes.
 - Do not drink and drive!
- Comply with state and local laws governing highway safety and movement of farm machinery on public roads.
- Use approved accessory lighting flags and necessary warning devices to protect operators of other vehicles on the highway during daylight and nighttime transport. Various safety lights and devices are available from your dealer.
- The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.
- When driving the tractor and equipment on the road or highway under 40 kph (20 mph) at night or during the day, use flashing amber warning lights and a slow moving vehicle (SMV) identification emblem.
- Plan your route to avoid heavy traffic.
- Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.
- Be observant of bridge loading ratings. Do not cross bridges rated lower than the gross weight as which you are operating.
- Watch for obstructions overhead and to the side while transporting.
- Always operate equipment in a position to provide maximum visibility at all times. Make allowances for increased length and weight of the equipment when making turns, stopping the unit, etc.
- Pick the levellest possible route when transporting across fields. Avoid the edges of ditches or gullies and steep hillsides.
- Be extra careful when working on inclines.
- Maneuver vehicle at safe speeds.
- Avoid overhead wires or other obstacles. Contact with overhead lines could cause serious injury or death.
- Avoid loose fill, rocks and holes; they can be dangerous for equipment operation or movement.
- Allow for unit length when making turns.
- Operate the vehicle from the operator's seat only.
- Never stand alongside of unit with engine running or attempt to start engine and/or operate machine while standing alongside of unit.
- Never leave running equipment attachments unattended.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation. Correct all problems. Follow the maintenance safety procedures.
- Follow all Hagie operating instructions at all times.

3.1 FORTIFIER SYSTEM ASSEMBLY

3.1.1 INSTALL FORTIFIER ON HAGIE

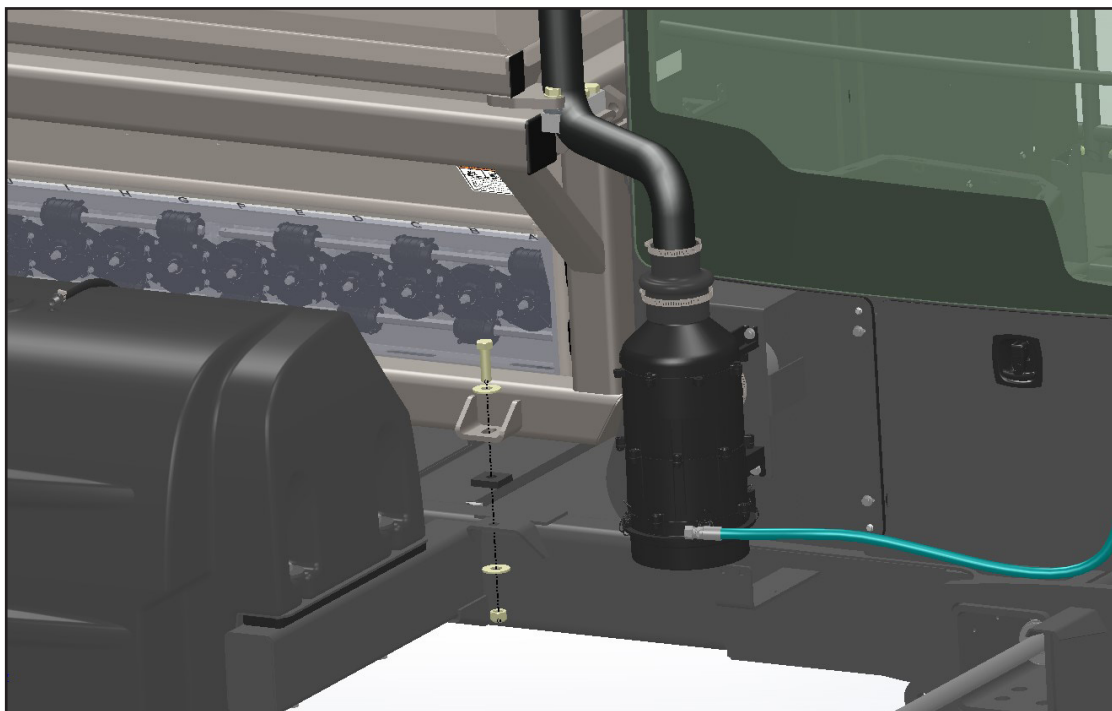
⚠ WARNING

Prevent death or serious injury.

Dry fertilizer dry box weighs approximately 3300 lbs (1500 kg).

Use adequate lifting and support devices.

1. Carefully position dry box on Hagie, with dry box frame fully aligned with machine chassis and four mounting brackets on dry box aligned with four mounting brackets on Hagie. Mount fan end to the rear of the Hagie. Care should be given to keep dry box from contacting window of cab. Be watchful of electrical harnesses and hydraulic components and hoses from being pinched between dry box and step or other points of contact on the Hagie.
2. Install (4) $\frac{3}{4}$ " x 2.5 bolts from kit K002107 in each mounting bracket as shown. Tighten lock nuts until they each contact the plate.
3. Alternate tightening nuts on bolt until each nut is tightened to 120 lb./ft. of torque.



3.2 CONNECT HYDRAULIC HOSES

3.2.1 CONNECT HYDRAULIC HOSES

⚠ WARNING

Pressurized fluids can penetrate the skin.

Hydraulic hoses can fail.

Inspect hoses before operation.

Replace damaged hoses.

NOTICE

Prevent damage to fertilizer fan drive motor.

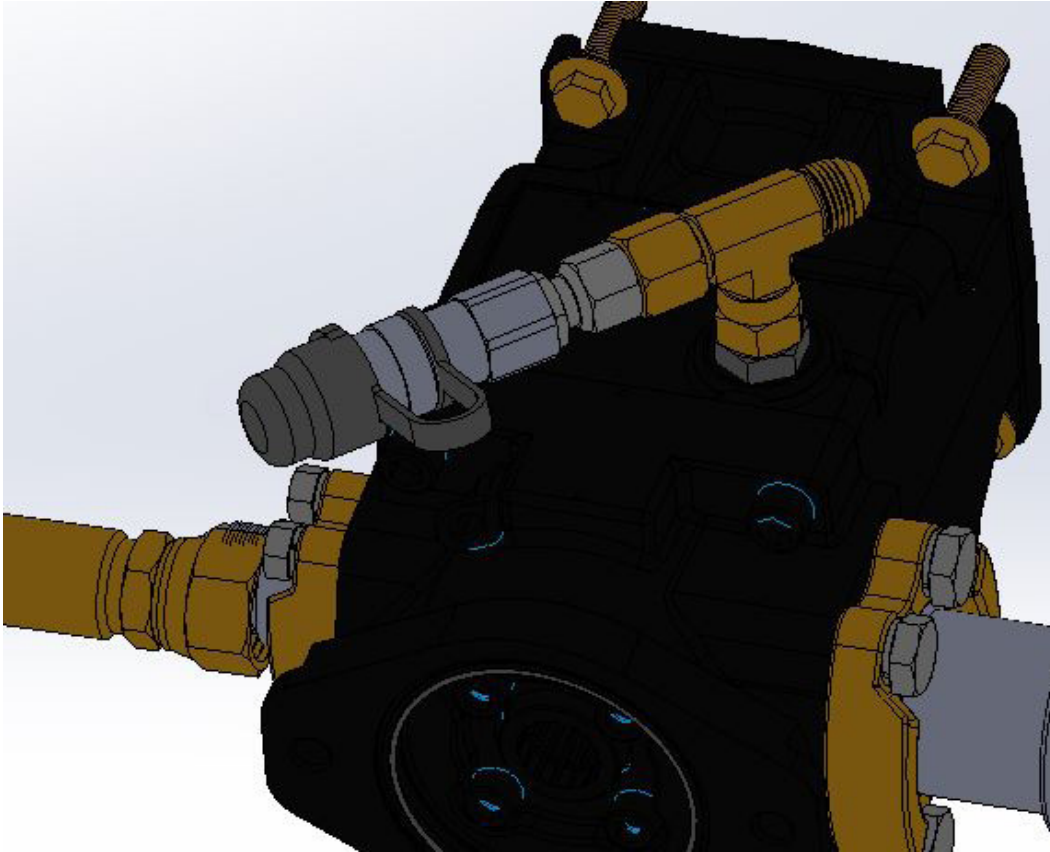
Hydraulic hose hook-up instructions for Fortifier

1. Connect a 1/2" hydraulic hose (case drain) with 3/8" male quick disconnect coupling from CD port on hydraulic block on Fortifier to Hagie case drain 3/8" female quick disconnect coupling located by pump.
2. Connect a 3/4" hydraulic hose (pressure) with 1/2" female quick disconnect from P port on hydraulic block on Fortifier to Hagie pressure 1/2" male quick disconnect coupling on PWM valve under step on Hagie.
3. Connect a 3/4" hydraulic hose (tank return) with 3/4" male quick disconnect from T port on hydraulic block on Fortifier to Hagie tank return 3/4" female quick disconnect coupling on PWM valve under step on Hagie.
4. First time use: Check operation of system to include direction of fan rotation and air flow from air chamber outlet tubes. Fan rotation should be clockwise as viewed from fan opening. Pressure gauges should read as follows:

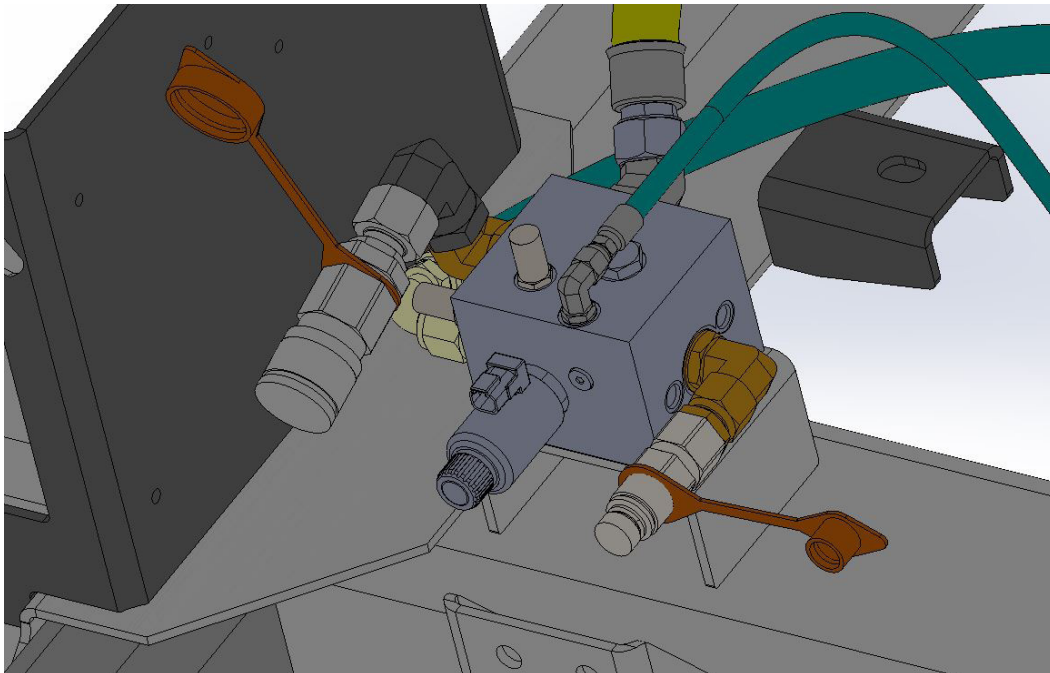
Inlet Pressure (GP Port Gauge)- 2800-2950 PSI (193-203 Bar). May have to turn up pressure at pump. See Hagie operators manual or JD dealer for instructions. Incorrect procedure can damage hydraulic pump.

Return Pressure (GT Port Gauge)- 0-200 PSI (0-14 Bar). If pressure is higher than specified, verify return hose is connected to motor return port. Look for restrictions at fittings, couplers and hoses.

3.2.2 CUMMINS ENGINE DIAGRAMS

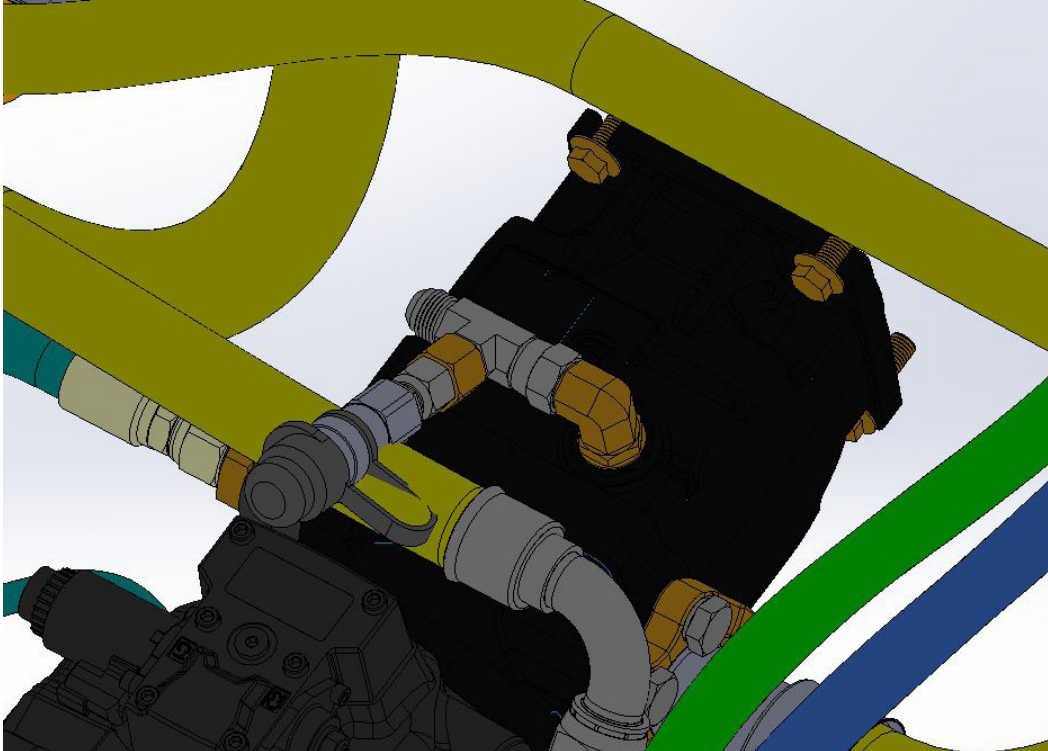


Hydraulic Case Drain Cummins Engine

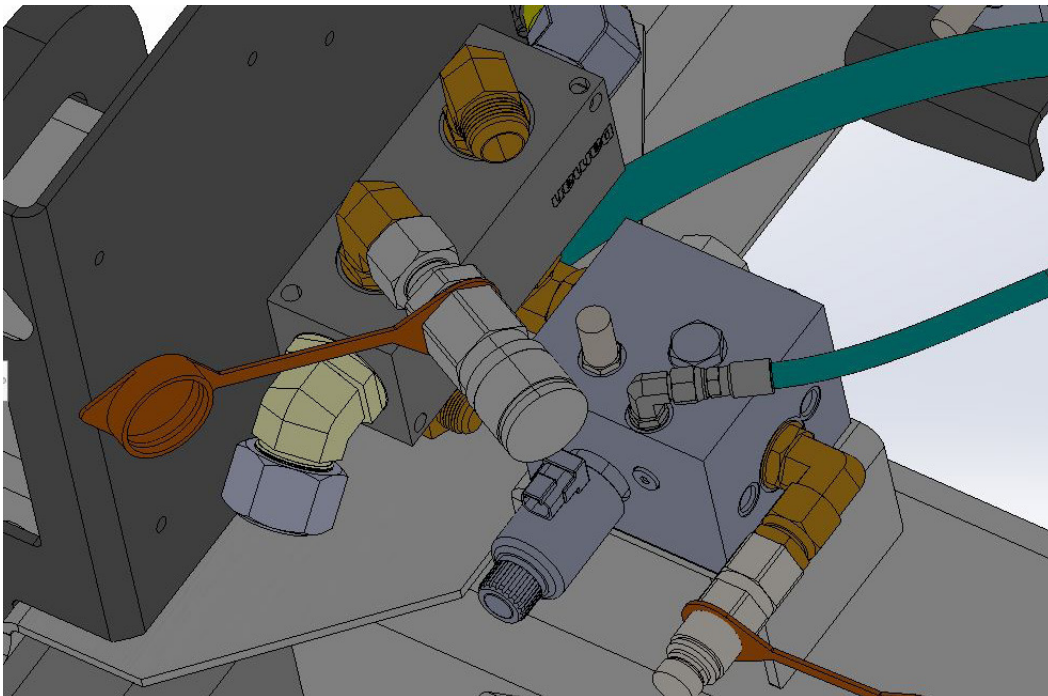


Hydraulic Press and Return Cummins Engine

3.2.3 JOHN DEERE ENGINE DIAGRAMS



Hydraulic Case Drain John Deere Engine



Hydraulic Press and Return John Deere Engine

3.2.4 ELECTRICAL HARNESS CONNECTIONS

CONNECT TO ISO

Connect ISO plug from Fortifier to receptacle under the Fortifier (above drop-down door). Be careful not to place in pinch area or wear point.

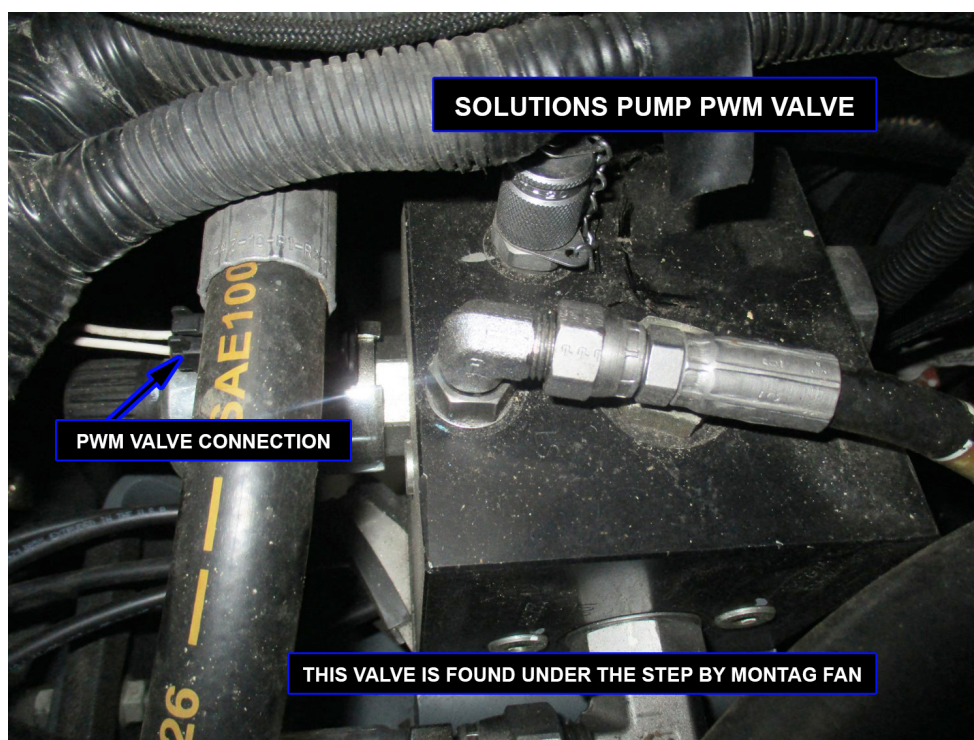
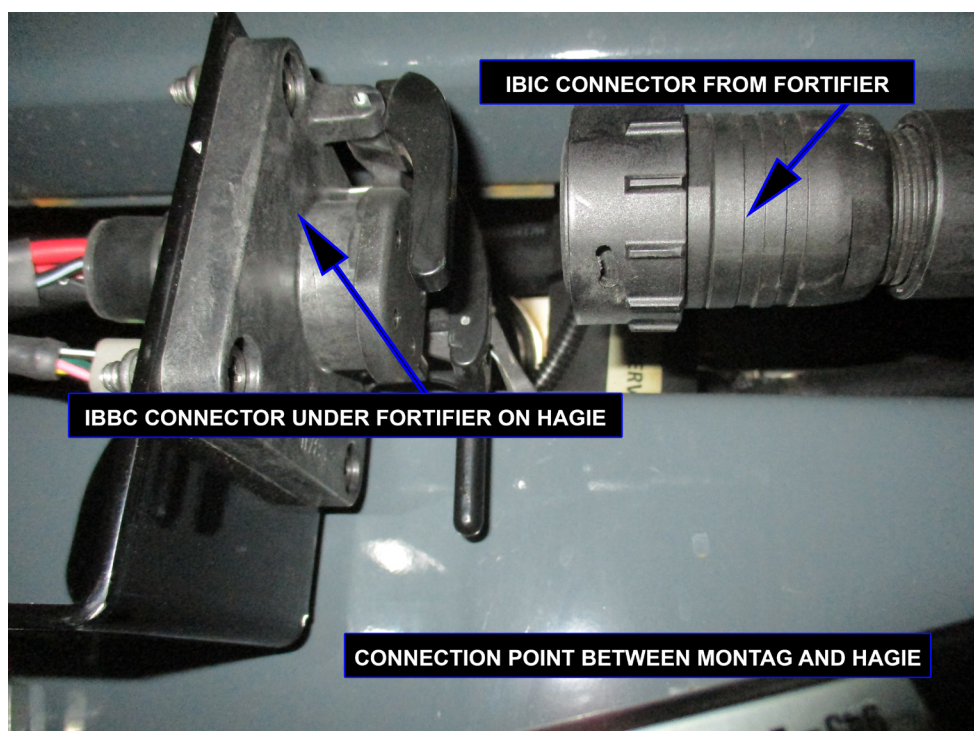
CONNECT PWM

Connect PWM 1 harness to solution pump PWM Valve on Hagie (under step by fan). Put cap on Hagie harness when unplugged from PWM Valve.

Run meter and check operation before filling tank.

CONNECT BIN LEVEL SENSORS

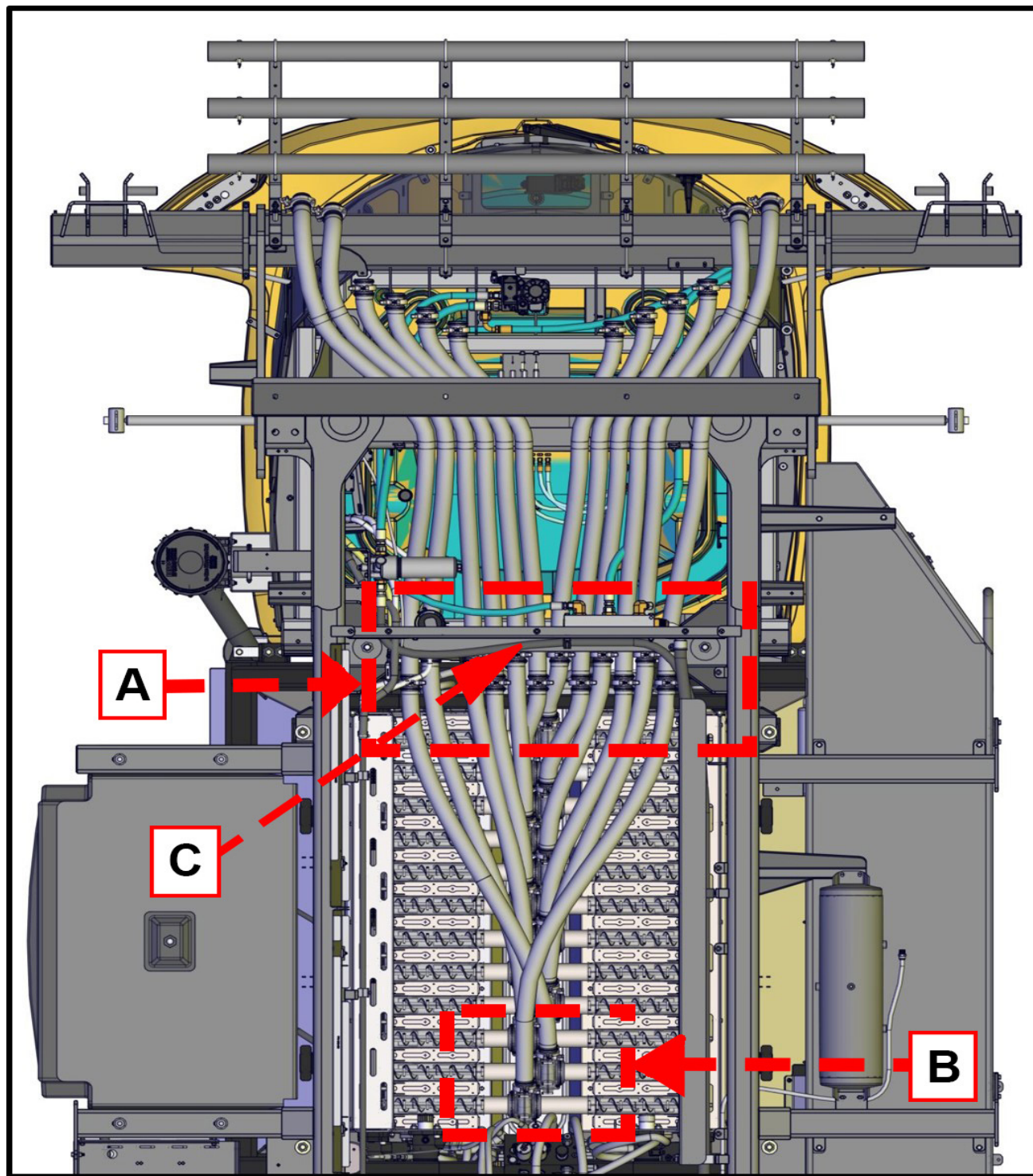
Plug the harness on Fortifier labeled TANK SNS into harness labeled TANK SNS on Hagie behind cab. This connection should be connected at time of Fortifier installation.



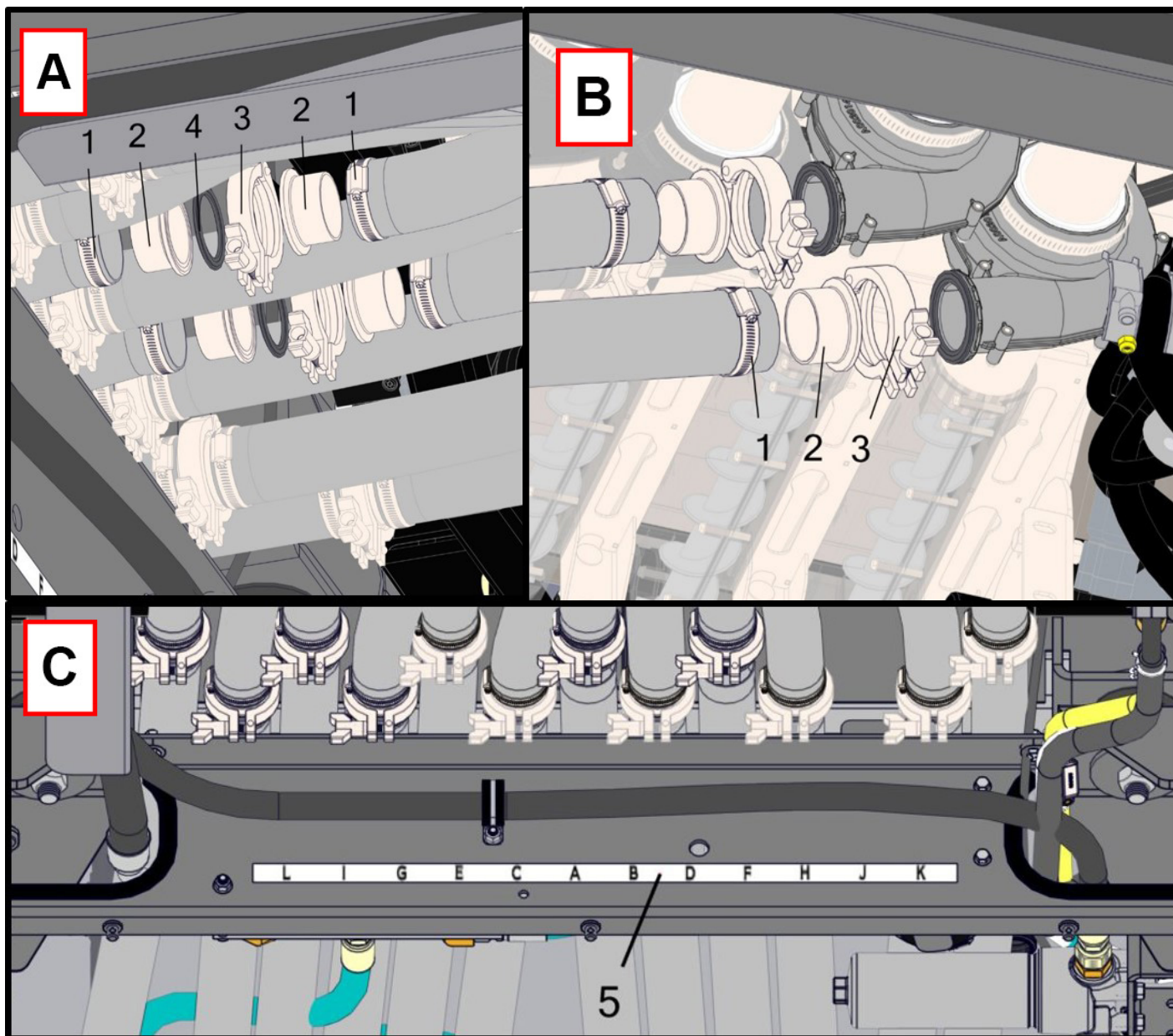
3.2.5 CONNECT AIR HOSES

For information on Connecting the Air Hoses - see Fortifier Installation guide.

HOSE CONNECTIONS

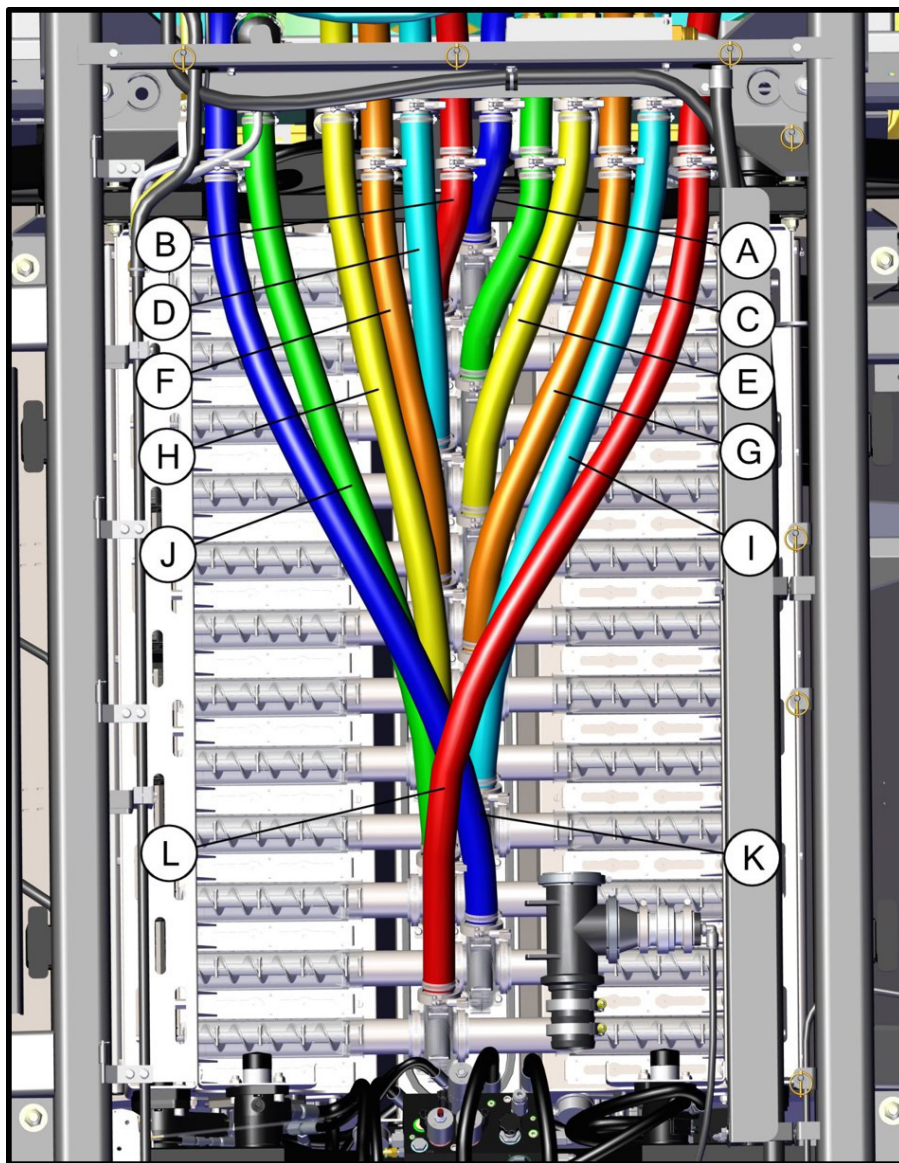


HOSE CONNECTIONS



AIR CHAMBER HOSES

VIEW OF BOTTOM OF MACHINE



Hose / Splitter	Hose Diameter	Approximate Hose Length	Boom Side (As Seen By Driver)
A	2"	9.5"	LEFT
B	2"	10"	RIGHT
C	2"	15.5" (1'3.5")	LEFT
D	2"	23" (1'11")	RIGHT
E	2"	29" (2'5")	LEFT
F	2"	29" (2'5")	RIGHT
G	2"	35" (2'11")	LEFT
H	2"	43" (3'7")	RIGHT
I	2"	49" (4'1")	LEFT
J	2"	57" (4'9")	RIGHT
K	2"	62" (5'2")	LEFT
L	2"	54" (4'6")	RIGHT

INSTALL FLANGES AND HOSE CLAMPS

CONNECT HOSES TO AIR CHAMBERS AND TRANSITION HOSES AS SHOWN USING SANITARY CLAMPS (AND O-RINGS FOR HOSE-TO-HOSE CONNECTIONS).

4.1. CONTROLLER SET UP

It is recommended to become familiar with the rate controller before adding product and going to the field. Read and understand the Dry Rate Controller Operation Manual, the Quick Start Reference Guide, and the Set-up Guide. See Appendix pages 54-59. Use these manuals to set up the controller for your specific application. Any updated information can also be found at MontagMfg.com. Consult your specific monitor manual for task controller functions of section control and prescription application. It is good at this time to verify that GPS speed is broadcasted on the ISOBUS and is being picked up by the Montag controller. It is suggested to make a dry run to validate all functions are set-up correctly and working together.

4.1.1 FILL FERTILIZER TANK

⚠ WARNING

Crushing hazard.

Before climbing onto tank platform:

- Park the equipment on firm, level surface.
- Turn on parking brake, turn engine off and remove ignition key.
- Verify service locks are properly engaged.

⚠ WARNING

Falling hazard.

Operator can fall off or into tank resulting in death or serious injury.

- Stand on platform only. Do not climb on tank or stand on screen.
- Keep screen cover on tank fill opening at all times.

⚠ WARNING

Fertilizer can be dangerous to people, animals, and the environment.

Read and follow the safety and handling instructions provided by the fertilizer manufacturer before filling fertilizer tank.

NOTICE

Fill tank only with amount of fertilizer / seed planned for application that day. Empty tank after daily use. Fertilizer / seed left in tank for extended periods can absorb moisture or cause compaction resulting in system blockage.

Fill tank to appropriate level so tank can be empty for transport upon roadway.

Failure to empty tank below specified level may lock Hagie out of road mode.

Install screen (A) on top of each tank.

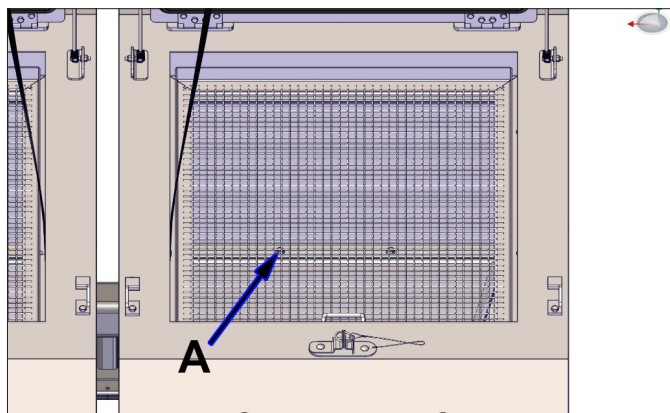
Stand on platform and fill tank with dry fertilizer / seed.

For low volumes, fertilizer / seed may need to be manually leveled across the entire meter for consistent application.

NOTICE

Moist fertilizer / seed can plug application system. Close tank cover immediately after filling to prevent moisture from entering system.

Close and latch fertilizer tank cover.



4.1.2 SLIDE GATE OPERATION FOR FORTIFIER

The slide gate closes the opening between the tank and the augers. By closing the opening this allows the augers to be purged, and also allows cartridges to be removed with product in the tank. The monitor has manual open and close buttons for the slide gate as soft keys on slide gate screen. On the home page the meter icons on the top of the page will show either a meter, a gate or half of each if in between full open or close state. On the slide gate page the road mode button will shut the gates when open and run augers for specified time to purge the product from the augers. At this time the road icon will appear on the status line when active. By touching the road mode again, the gates will open and the icon in the status line disappears.

See the [“ISOBUS DRY Rate Controller Operator Manual”](#) for more details.

1. Slide Gate Page



2. Open Slide Gate (green)



3. Close Slide Gate (red)



4. Road Mode



5. Open with Open Gate



4.1.3 SYSTEM AIR PRESSURE ADJUSTMENT

Air pressure is controlled by the fan RPM setting on the controller. As RPM is increased, the pressure is increased. When determining air pressure needed for each product and rate, start on the high range and lower to appropriate level.

**TOO MUCH AIR CAUSES PREMATURE WEAR ON AIR HOSES AND CAN CAUSE PRODUCT BRIDGING.
NOT ENOUGH AIR WILL CAUSE PRODUCT BLOCKAGE AND DAMAGED SHEAR COUPLERS.**

RECOMMENDED FAN RPM BY RATE	
RATE	RPM
40 LBS TOTAL /ACRE OR LESS	4000-4300
40 LBS TOTAL /ACRE OR MORE	4300-4900

Calculated using 10 MPH and 62 lb/ft³ product density

4.1.4 SYSTEM BLOCKAGE

If a hose becomes blocked and no product is coming from nozzles, it maybe necessary to open the system. If possible, open hoses at a sanitary clamp location. Note that the hose that is directly connected to the air chamber, no gasket is needed, but any other location there is a gasket that must be reinstalled (see 3.2.5). Remove blockage from hose. After reconnected, check air flow at each nozzle. It may be necessary to replace shear coupler if expended. Follow directions in 8.4 of this manual.

5. TROUBLESHOOTING

5.1 TROUBLESHOOTING FORTIFIER

5.1.1 FORTIFIER TROUBLESHOOTING CHART

Symptom	Problem	Solution
Scale drops off/doesn't show up	Digistar VT does not show up on homepage	Check Digistar ISO connection, the 6 pin Deutsch connector (18" whip out the bottom of the SL2140 ISO control box) for corrosion/damage/bad connection.
		Remove cover (4 screws) on the SL2140 ISO. On the right side there should be 4 blue LED on, and the 3 status LED on the left side should be off.
		Check system voltage, on Montag screen, under diagnostic button, under ECU, voltage should be 12.2V or greater.
		Check ISO Connector under Fortifier for corrosion/connection.
		Restart Hagie/Display.
		Verify all ISO connections are correct.
		If using a monitor that requires a USB key for data, try a different USB key, or try removing it.
Digistar VT good, not on Montag homepage	Scale interface not configured correctly on Montag side	Verify scale system setting is set to "Yes" on Montag VT.
		Verify Montag controller weights are set to "scale" rather than "calculated" (they should have a scale icon beside them)
Scales showing erratic readings	Possible bad Scale Link ISO node, j-box, or load cell	Verify correct Digistar Cal # for both tanks are setup 115030 and Cal 5333.
		Use GT 400 interactive troubleshooting guide and watch trouble shooting video under controller info tab on Montag website for troubleshooting diagnostics.
Calculated weight and actual weight off	Set-up incorrect	In hopper screen equalize weights and recheck.
		Check cal factor correct, check density of the product with Density scale.
		Check # of rows and total implement width.
		Configure as a new product and retry.
		Example set-up 30 lb./ac, 10 mph, 45lb/ft3, 12 row, 120' total width, Cal factor .036, the auger speed should be 45 ± 1 RPM auger speed
	Calibration factor off	Do calibration test- either catch or no-catch test.
		Verify no sheared couplers.
		Verify hydraulic motor drive shaft couplers are properly connected.
		No catch test calibration must be started with fan on and ended with fan on. Also start and stop test on level ground for scale accuracy.

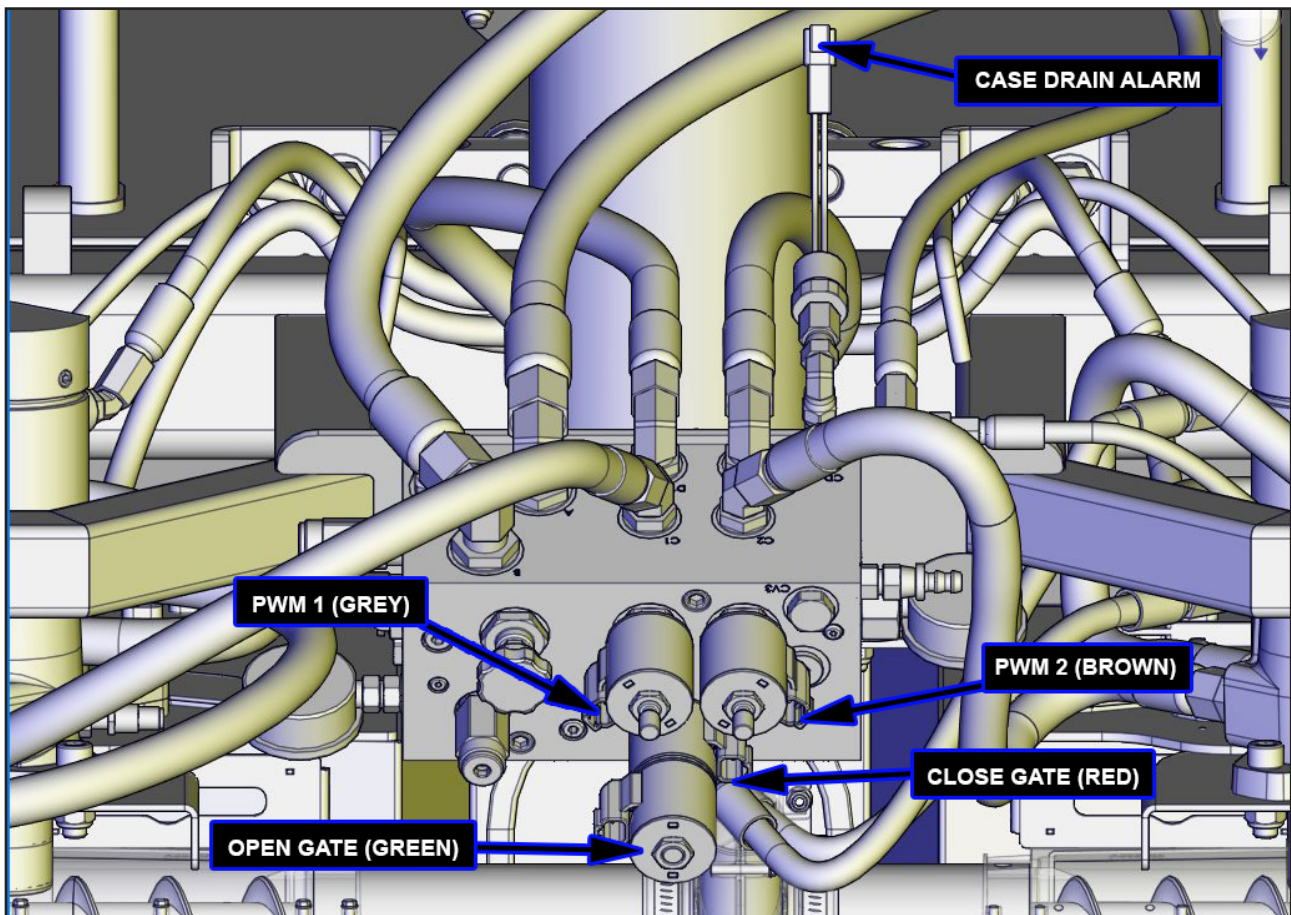
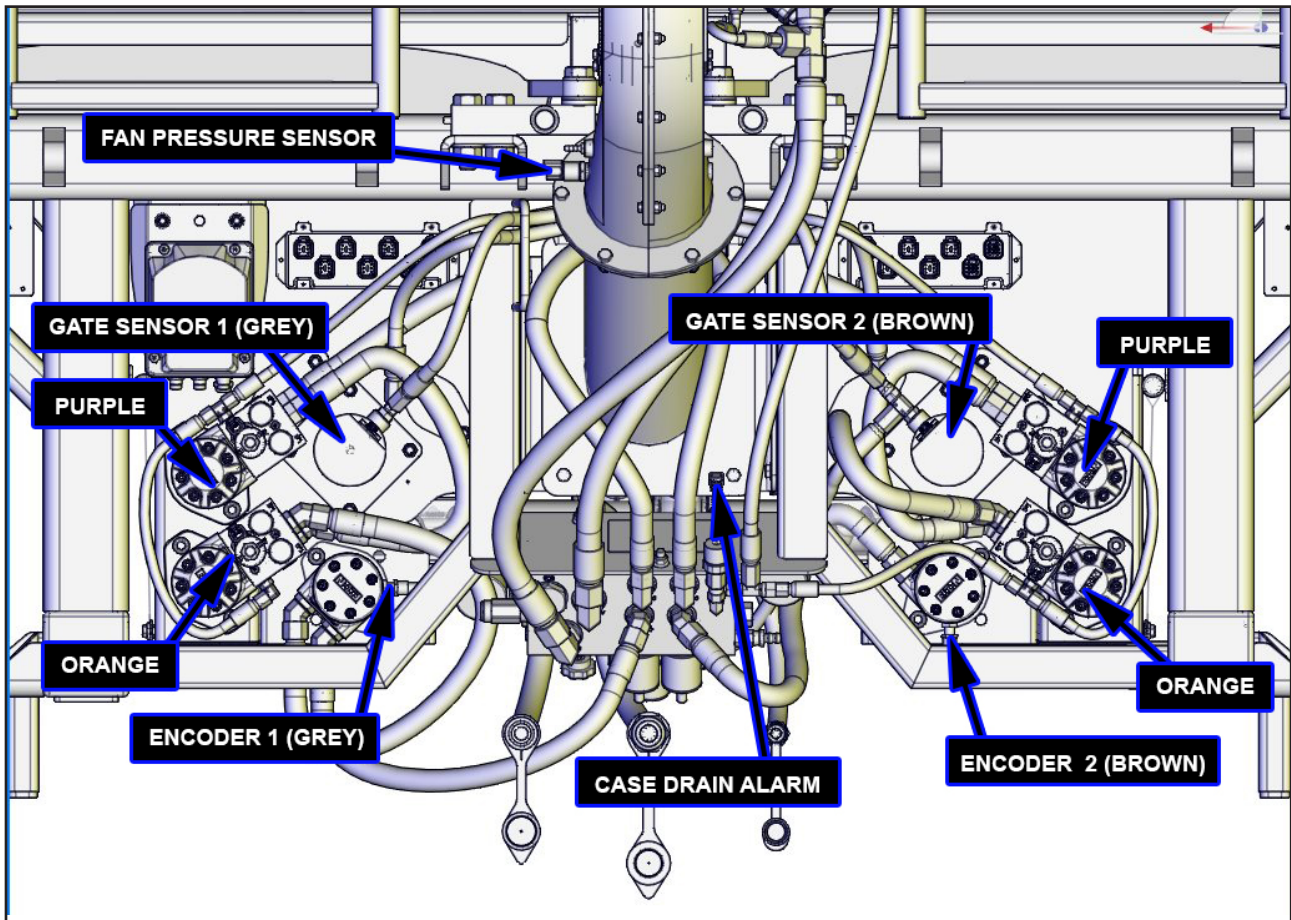
Symptom	Problem	Solution
Montag screen drops off/doesn't show up	Montag VT does not show up on home page	Check all ISO and power connectors under machine for corrosion/connection. Verify all ISO connections are correct.
		Restart machine/Display.
		If using a monitor that requires a USB key for data, try a different USB key, or try removing it.
		Check Digistar ISO connection, the 6 pin Deutsch connector (18" whip out the bottom of the SL2140 ISO control box) for corrosion/damage/bad connection.
		Remove liquid ECU from BUS. (JD2630)
Controller not working	Erratic and inconsistent results from controller	Delete object pool on monitor.
		Check system voltage, on Montag screen, under diagnostic button, under ECU, voltage should be 12.2V or greater.
Slide gate will not open	Slide gate will not function	Make sure hydraulic couplers are properly connected and fan is on.
		If in road mode, push road mode button to get to application mode
		Check slide gates from diagnostics screen.
		Verify solenoid and position sensor harness connections are good and harness is in good condition.
		Slide gates not calibrated or incorrect calibration. See calibration instructions in Controller Operation Manual.
	Slide gates open/close opposite controller	Harness connections at coil are swapped. Switch red and green harness at coil on hydraulic block on Fortifier.
No Product being delivered -All rows	Fan not turning	Verify all three hydraulic couplers are fully engaged
		With machine off and key removed, see if fan rotates by hand. If fan is not binding on housing, and does not rotate by hand, replace fan motor.
		Fan not calibrated or out of calibration. Calibrate per instructions in ISO Dry Rate Controller Operation Manual.
		Verify PWM connector is installed per section 3.2.4
	Fan air gauge pressure less than 12 inch H2O	Fan rotation must be clockwise (CW) when viewed from the screen side of fan. If rotation is not CW, see Hydraulic Schematics in Montag manual and plumb as shown for your machine.

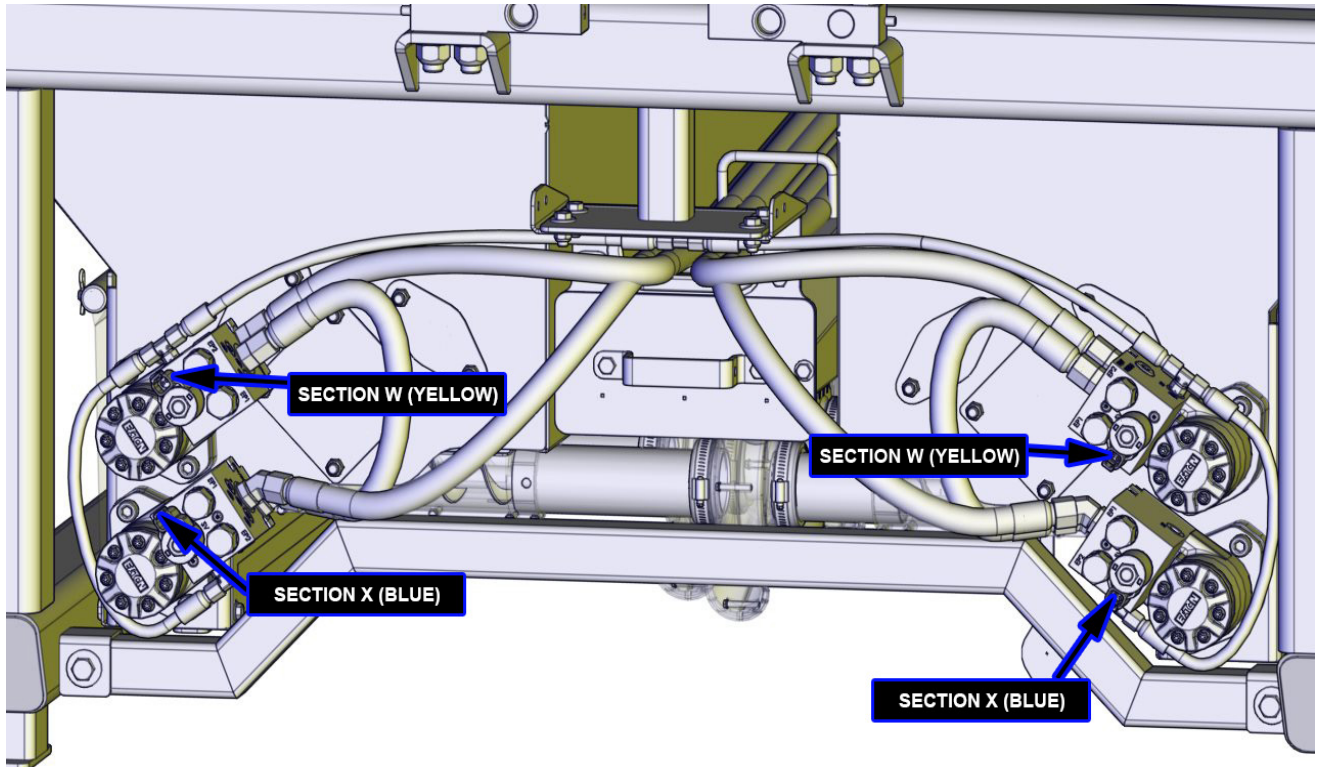
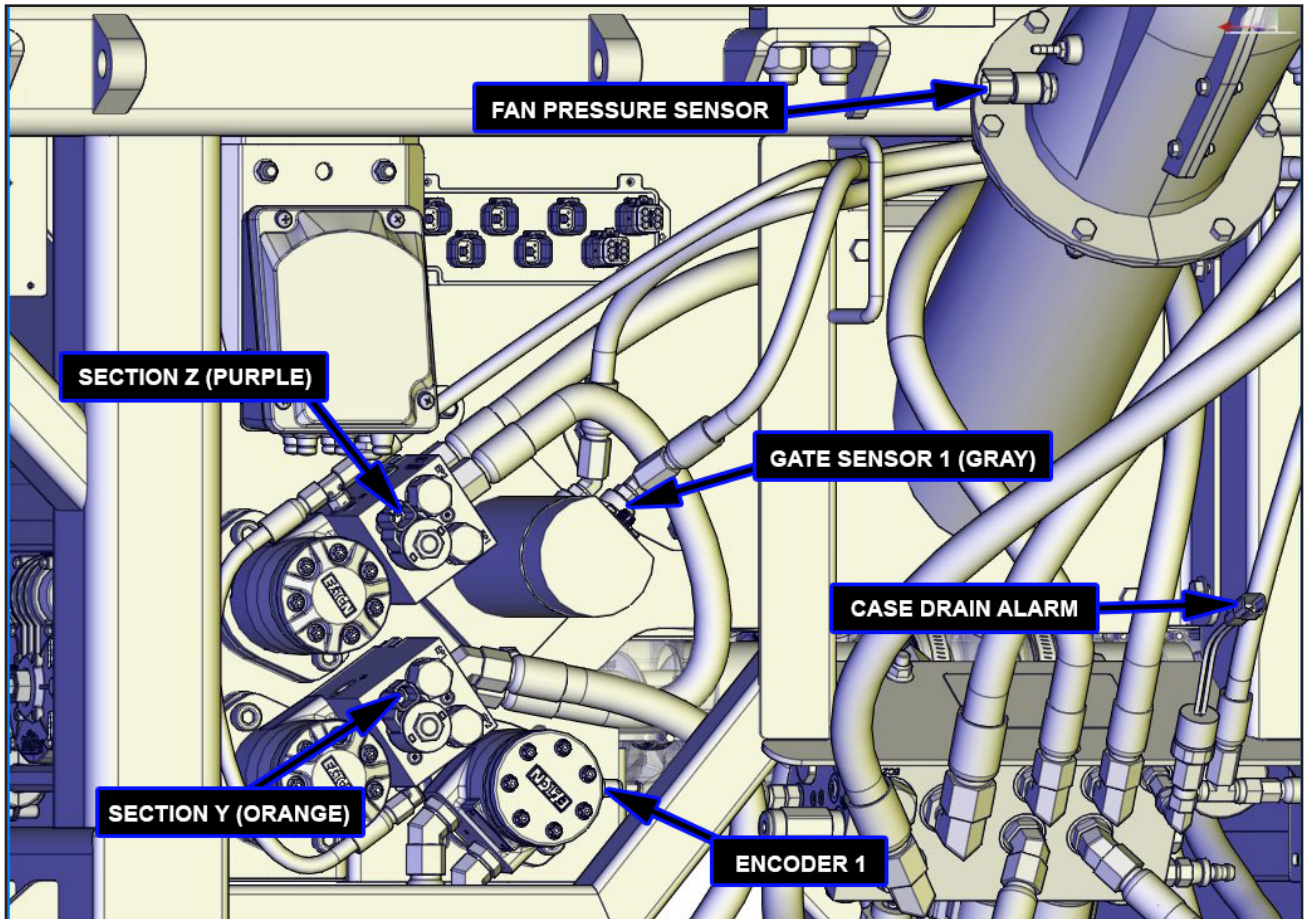
Symptom	Problem	Solution
		If analog gauge reads correct, but digital transducer reads incorrect, calibrate air sensor following instructions in controller operations manual.
		Set gap between fan and pick-up bolts to 1/4 inch (6MM).
		Check gap between fan impeller and end of housing (.0625-.156").
		Check for any air leaks in plenum tray or air chambers or anywhere in system.
	Augers turn wrong direction	Augers must turn CCW. Check hydraulic schematic and verify each hydraulic motor is in correct position.
		Check all augers and clean out system. Close slide gate and run meters in diagnostics mode. Check all augers for rotation and replace any sheared couplers. Clean out hoses and make sure air is coming out each hose at boom before starting to apply product.
	Auger(s) not turning	Confirm fan is running. Augers will only turn while fan is running. Confirm augers are not obstructed. Safely remove any obstructions by following clean-out instructions in section 9.9 in Montag manual.
		Check controller set-up is complete with correct product info (density, cal factor, rate, ground speed is registering. If using prescriptions, verify mapping is in correct format and entered correctly. Verify prescription icon is by rate on home screen, and a non-zero target rate is on display side.
		Verify sections are on and if using section control, be sure not located in an already applied area.
	Master switch not set up correctly	Follow instructions in controller manual for correct master switch set-up. When master is toggled on, the off master icon on the meter will switch to augers, section boxes will become lit, and boom section lights will switch on.

Symptom	Problem	Solution
	Problem with encoder or PWM valve	Shut slide gate and run meters in diagnostic screen. If still does not run, set meters to 100% and check for 12 VDC at PWM valve. Look for harness damage. If augers turn but no RPM, check encoder harness for given tank. Test for 12 VDC on pins 1 & 3 of encoder harness. Remove plastic cap over encoder motor shaft to verify hydraulic flow at encoder motor. If 12VDC at harness and motor turning replace/adjust sensor in motor. Follow replacement instructions as not to void any current warranty.
	Controller not seeing speed	Check that controller is seeing speed and correct speed when machine is moving. Verify GPS and display is properly set-up and functioning.
No Fertilizer in 1 or more rows	Coupler(s) sheared/hoses plugged	Check all augers and clean out system. Close slide gate and run meters in diagnostics mode. Check all augers for rotation and replace any sheared couplers. Clean out hoses and make sure air coming out each hose at toolbar before starting to apply fertilizer. See instructions for calculated and actual weight off.
		If using bin chaining, verify set up correctly as directed in controller operation manual. Combined auger speeds should be less than 130 RPM.
	Product Bridging	With fan still running look at auger cartridge for bridging or obstruction which does not allow product to flow evenly. Shut off fan and then back on to see if issue persists.
		Air pressure may be too high Open/close slide gate Product too moist or has too many fines
Not holding rate	Alarm "Metering drive cannot maintain target rate"	Check for correct product info (density, cal factor, rate).
		Augers RPM should be between 5- 105 range.
		Verify correct ground speed.
		Adjust meter amplification factor.
		Create a new product with correct numbers.
		Clear object pool by following monitor manufacturers instructions.
		Power cycle controller/display.
		Verify correct cal factor for that product for that meter.
		May need to increase ground speed if running to low of an auger speeds (under 10 RPM).

Symptom	Problem	Solution
One tank not holding rate	Set-up incorrect	Check for correct product info (density, cal factor, rate).
	Bad speed sensor cable	Shut slide gate and run meters in diagnostic, verify shaft RPM's for both tanks.
		Check all harnesses and harness connections to motor encoders and PWM valves.
		Power cycle controller/display.
Section Control not working	Sections turn off, but will not go back on	If running an Ag Leader, verify target rate entered on both Ag Leader and Montag.
		If section box gray with red X, then touch button again to shut off manual section button.
		If section box red with red X, then map or controller is turning section off. If in an already applied area, section will be red. Move to an area not applied yet, or shut off section control on display. If a prescription is loaded, move within map area.
		Verify look ahead and implement geometry settings are correct.
Mapping not working	Layers not set-up correctly	Contact monitor dealer for set-up instruction for 2 product application.
Rate is not correct	Using bin chaining	Follow instructions in controller operations manual. Total auger RPM must be under 130 RPM to prevent plugging.

5.1.2 FORTIFIER HARNESS CONNECTION





6.1 SECTION OVERVIEW

Montag Manufacturing uses some components produced by other manufacturers. Refer to the OEM manufacturer's information for specific maintenance instructions. If you do not have the manufacturer's information, contact your dealer or Montag Manufacturing for assistance.

Routine inspections, maintenance and service must be performed on your machine on a regular basis to insure safe and reliable operation. Inspections can be performed by a person trained in spotting potential problems. Service and repairs must be performed by a trained, qualified technician.

Note: In addition to this manual, also check the relevant component manufacturer's manual.

WARNING

Crushing hazard.

Before performing inspections, service or maintenance:

- **Park the equipment on firm, level surface.**
- **Place transmission in park, turn engine off and remove ignition key.**
- **Block the wheels.**
- **Lower all equipment to the ground or pavement.**

6.2 END OF SEASON INSPECTIONS

Perform the following inspections at the end of each season. Repair or replace worn and damaged parts.

- Inspect shear couplers - run augers and visually inspect all augers are turning.
- Inspect slide gate.
- Inspect fan.
- Inspect air and hydraulic hoses.
- Inspect augers.
- Inspect scales, controller, cables, and connections.

7.1 STORING THE FORTIFIER SYSTEM

⚠ WARNING

Fertilizer can be dangerous to people, animals, and the environment.

Wear eye protection and proper clothing. Read and follow the safety and handling instructions provided by the fertilizer manufacturer before removing the hoses or performing maintenance.

⚠ WARNING

Crushing hazard.

Before performing inspections, service or maintenance:

- Park the equipment on firm, level surface.
- Turn on parking brake, turn engine off and remove ignition key.
- Verify service locks are properly engaged.

Perform the following steps before storing your fertilizer / seeding application system.

1. Run out all product from the tanks
2. Let vinyl screen down take note of gearbox pattern and follow instructions on removing product cartridges. For instructions see SERVICE AND REPAIR 9.9 GEAR BOX AND CARTRIDGE REMOVAL FOR GEN II.
3. Follow instructions on removing Slide gate and sweep out any loose product in tank See section 9.11 SLIDE GATE REMOVAL / REPAIR FOR FORTIFIER
4. Thoroughly power wash dry box (inside and outside).
5. Remove fan guarding and inspect fan blades. If debris build-up, thoroughly power wash fan blade. Attention should be given that fan weights are not removed or moved in process of cleaning. All fan fins should be thoroughly cleaned, as improper cleaning will cause fan imbalance. Add fan guarding and start fan to remove water and debris.
6. Lay aside gearboxes for dry cleaning and power wash remaining components (be careful NOT to damage any gasket surfaces when power washing).
7. Inspect and replace any damaged parts.
8. Reinstall all components paying close attention to gearbox orientation. If needed consult row layout instructions for installing gearboxes in proper location. See page 44 in Appendix for instructions.
9. Run fan to blow water out of system.
10. Store tanks with top lids closed.



Before performing inspections, service or maintenance:

- Park the equipment on firm, level surface.
- Turn on parking brake, turn engine off and remove ignition key.
- Verify service locks are properly engaged

8.1 FAN DRIVE MOTOR

Relieve hydraulic system pressure before performing any work on hydraulic system. Use wood or cardboard to check for leaks.

⚠ WARNING

Relieve pressure before disconnecting hydraulic lines.

Tighten all connections before applying pressure.

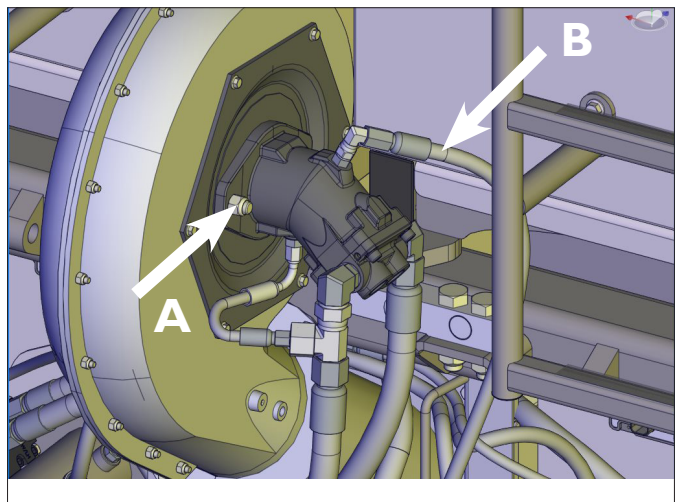
Seek medical attention immediately if fluid is injected into skin.

1. Relieve hydraulic pressure. Identify and remove hoses from motor.
2. Remove fan. See section 9.4.
3. Remove nuts (A) and remove motor.

NOTICE

Prevent fan drive motor damage.

Install motor with case drain port (B) located on top as shown.

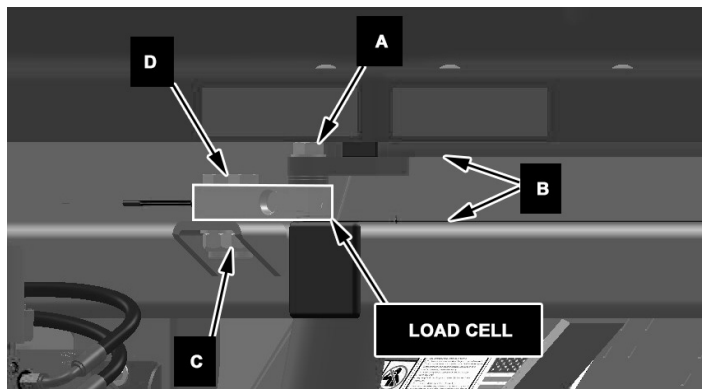


4. Position new motor with case drain port (B) located on top as shown.
5. Install and tighten nuts (A) to 16 lb/ft (22 Nm) of torque.
6. Install hoses. See Hydraulic Schematics in Section 10 Verify fan rotation on start-up.

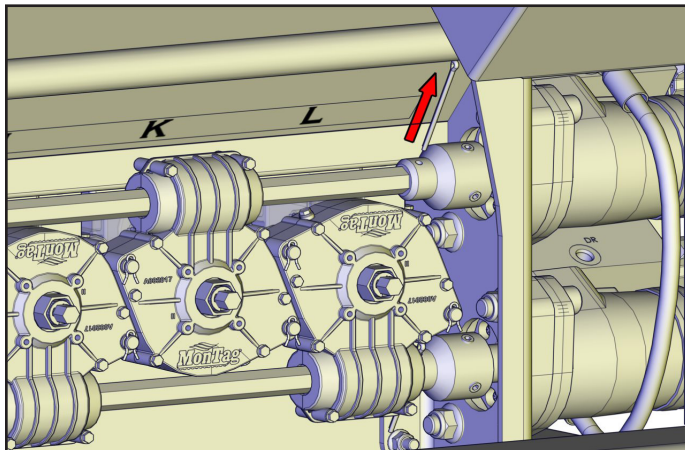
8.2 REPLACING LOAD CELLS ON FORTIFIER

If multiple load cells need replaced do one at a time following steps 1-8

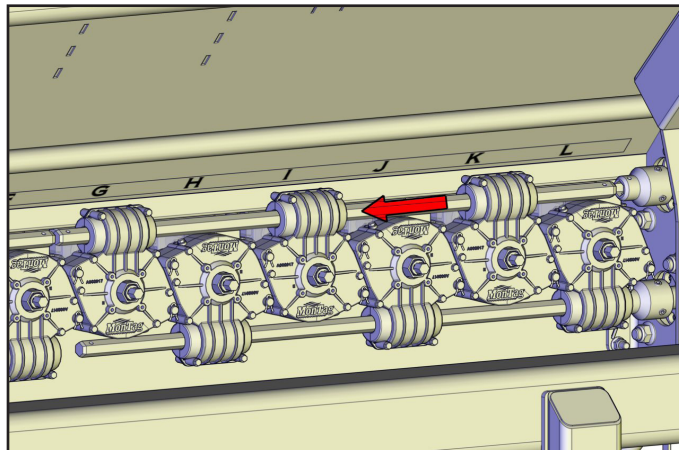
1. Remove bolt A and raise tank frame just enough to relieve pressure on load cell. CAUTION over lifting or allowing the tank to lower too far may cause damage to delivery components on bottom of tank.
2. Place a spacer or block in opening B that will safely support the weight of the tank and material you may have in it.
3. Remove nuts C, bolts D and load cell.
4. Install new load cell with nuts C snug but allow the load cell to move.
5. Insert bolt A into the load cell threads a few turns but do not tighten at this time.
6. Torque nuts C to 317 lb/ft.
7. Raise tank frame slightly off spacer and remove spacer.
8. Lower tank frame to load cell and torque bolt A to 354 lb/ft.



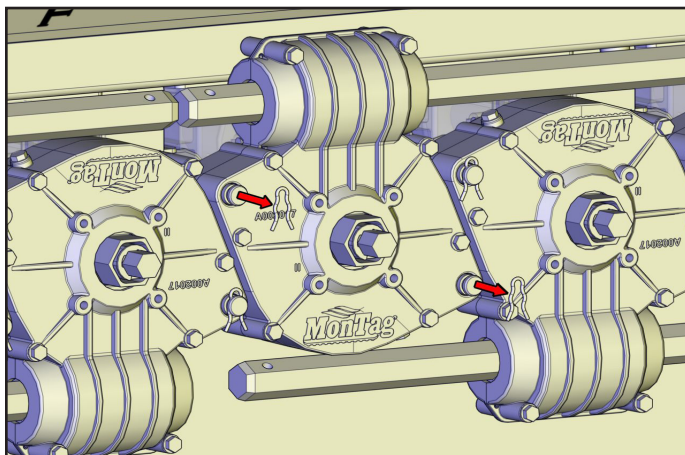
8.3 GEAR BOX AND CARTRIDGE REMOVAL FOR FORTIFIER



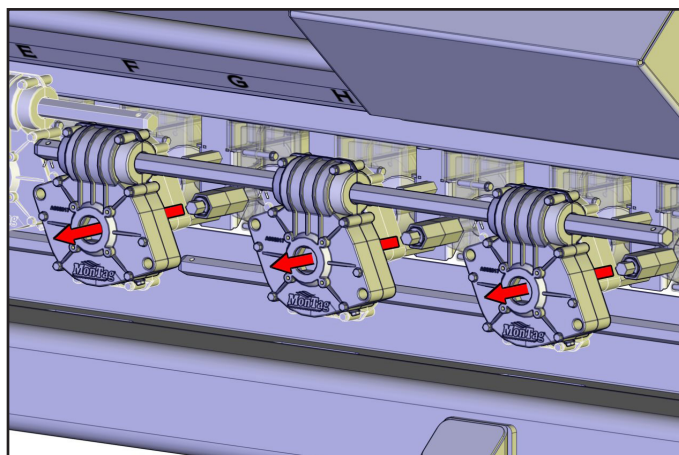
Lower vinyl screen for access to gearboxes.
Remove cotter pin from coupler / hex shaft.



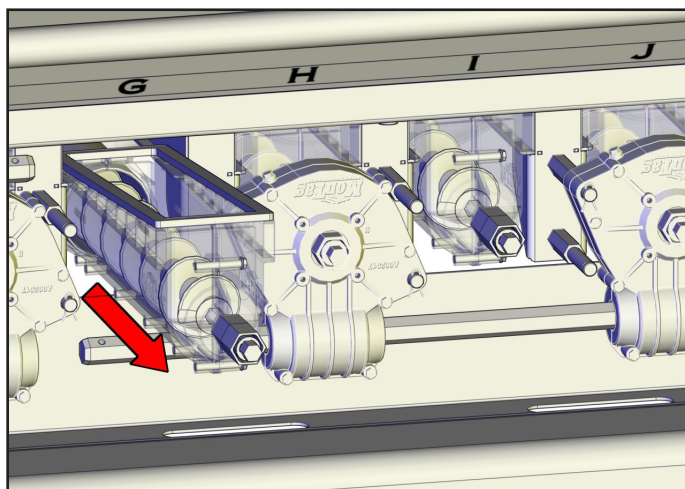
Slide hex shaft out through the gear boxes.



Before removing gear boxes **note orientation and spacing of gearboxes for proper installation when reassembling.** If installed incorrectly, section control will not function accurately.



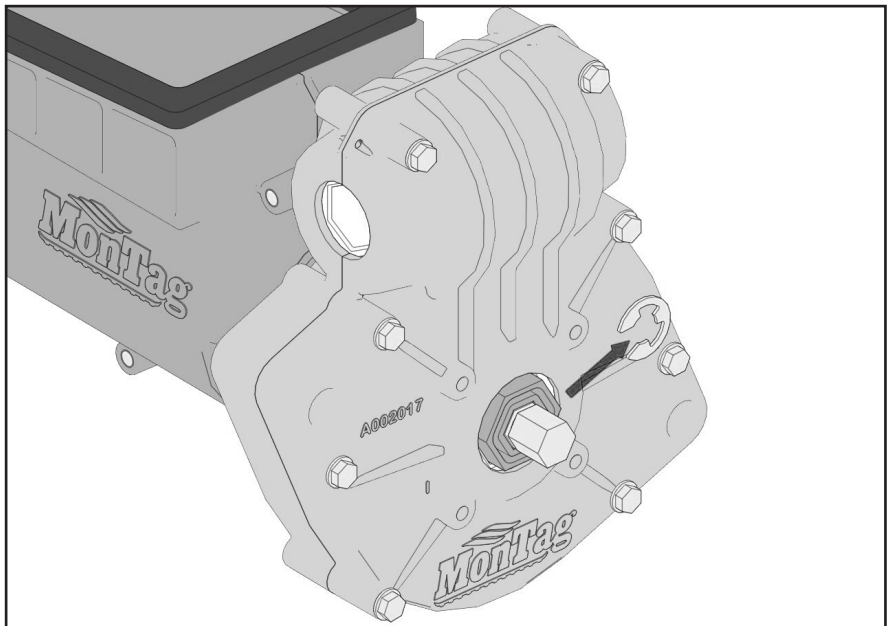
Remove clips from posts. Pull gear box straight out off of posts.



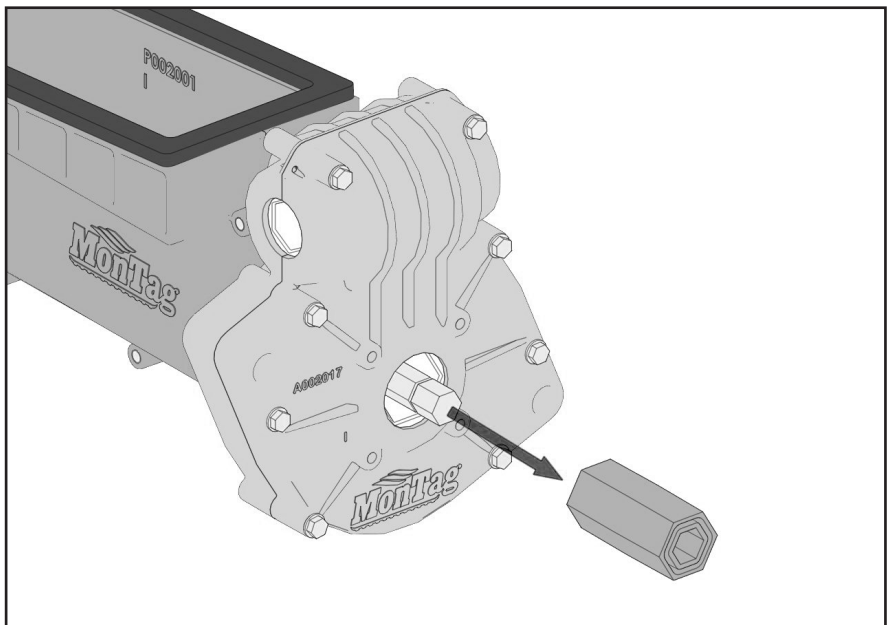
Pull cartridge straight out from hanger.

8.4 SHEAR COUPLER REPLACEMENT FOR FORTIFIER

1. Observe that auger shaft is not turning while drive shaft is turning, or hex coupler is twisted and sheared. Remove clip from hex shaft.



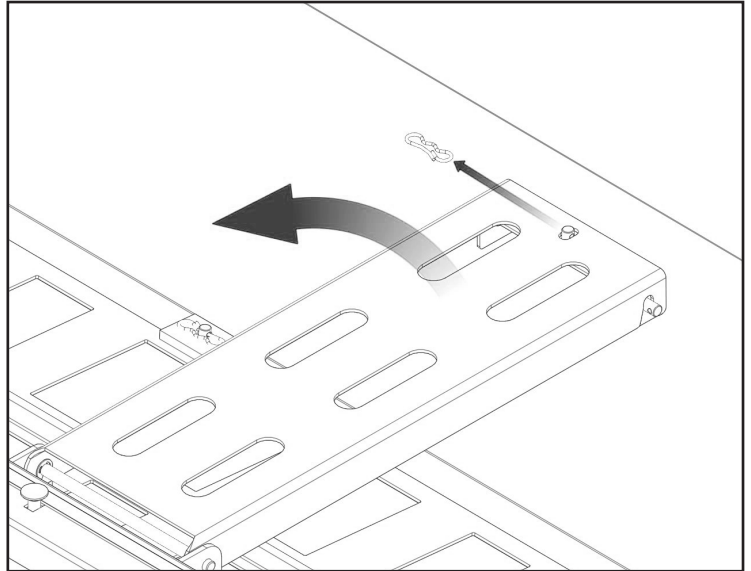
2. Use pliers to remove both pieces of coupler. Diagnose why coupler sheared. Check hoses for blockage and empty hoses by removing sanitary fittings on the air chamber if fan will not clear lines. Check for air flow at discharge of row. Make sure auger shaft turns freely with a 7/16" wrench or socket and then insert new coupler. Reattach clip onto shaft.



8.5 SLIDE GATE REMOVAL / REPAIR FOR FORTIFIER

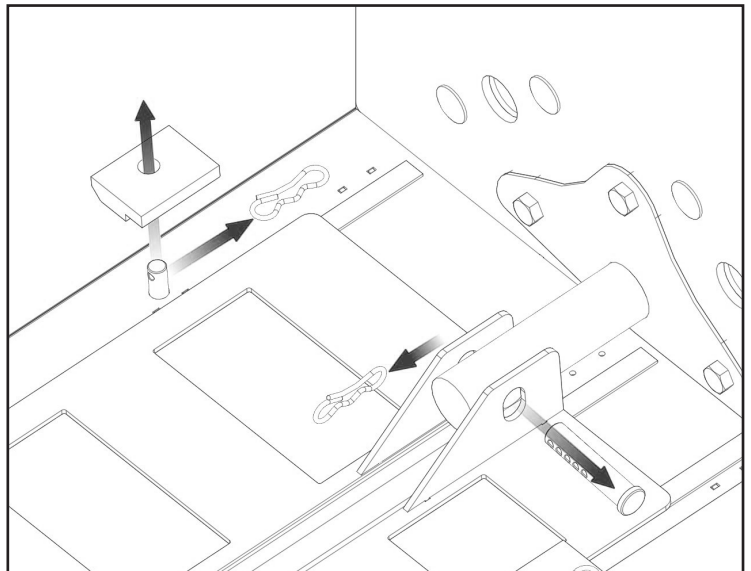
Step 1

1. Remove pin on (2) braces and flip up.



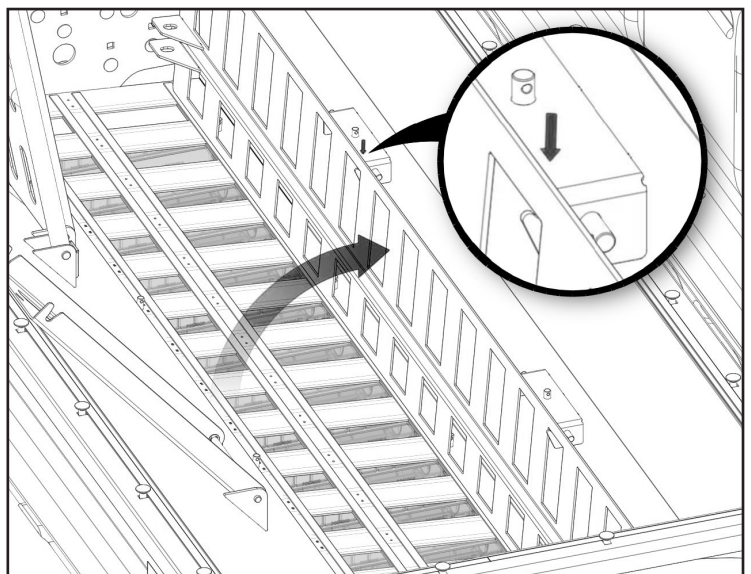
Step 2

1. Remove (10) pins on white slide gate fasteners and pin connecting slide gate to cylinder.



Step 3

1. Flip slide gate up and hook on brace support as shown.
2. Reverse order to reinstall



HOW TO READ ROW CONFIGURATION CHARTS FOR FORTIFIER

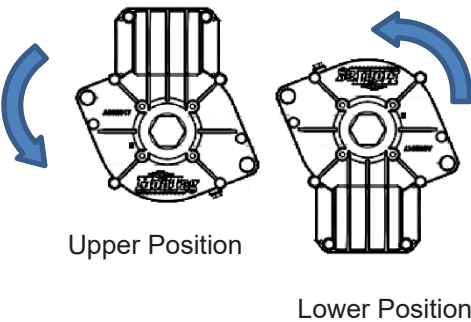
12 ROW UNIT											
12 Row 4 Section V12A424											
A	B	C	D	E	F	G	H	I	J	K	L
	12		11		10		9		8		7
1		2		3		4		5		6	

12 Row 4 section Shaft Configuration				Fan End
A&E	Sect W (Half) Top	Sect Z (Half) Top		D&H
B&F	Sect X (half) Bottom	Sect Y (Half) Bottom		C&G

The diagram above shows the hose connection for hoses going to boom splitters. The discharges from the meter are labeled alphabetically as are the splitter locations. A meter can be either configured as a 9 output or 12 output machine, depending on the boom length.

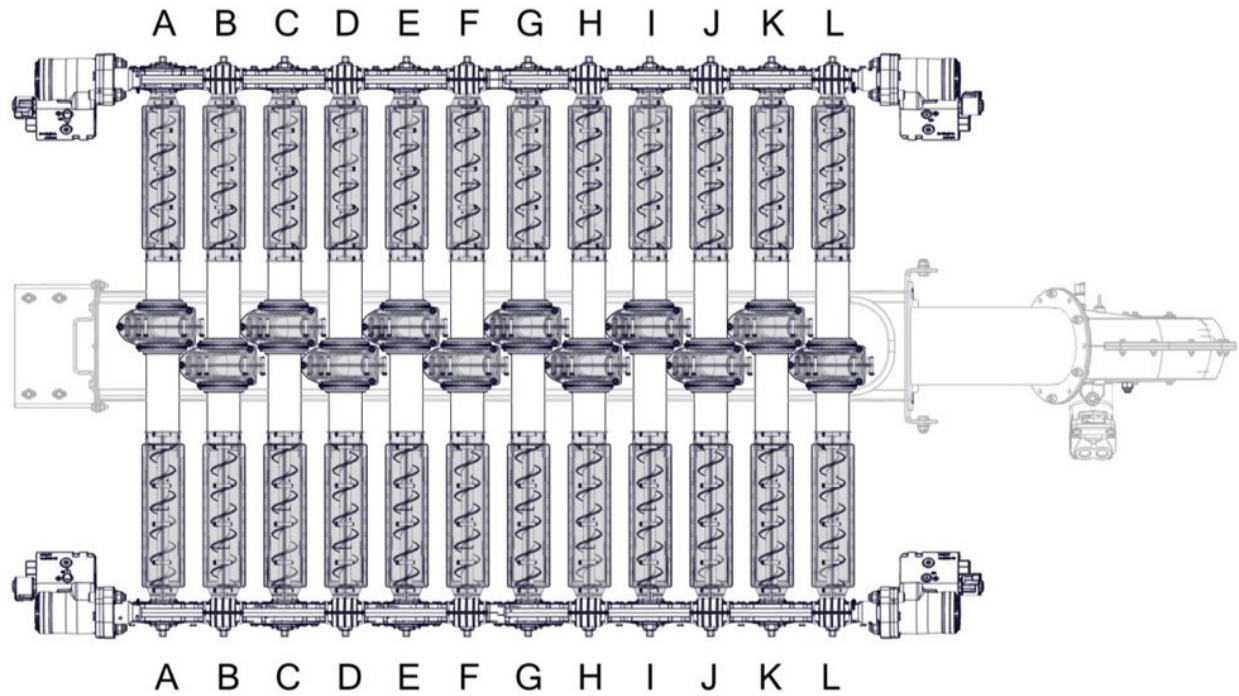
The chart shows the orientation of the gearbox for each output, the section each output is dedicated to, and which motors drive each section. **When gearboxes are removed, they must be reinstalled in the correct orientation for section control to function correctly.** Screw heads must be showing when mounted. Coloring on chart corresponds with color of motor harness leads on machine. For example, on a 12-output machine, outputs A, C, and E are on section W(yellow). For a 12-output machine, each section controls 3 outputs.

If motors are removed, they must be replaced in the correct position. On start-up verify auger rotation configuration to be CCW as shown by the blue arrows below. This should be checked with no product in auger. Incorrect rotation will shear hex to hex shear coupler and cause a no flow situation. If this happens, couplers must be replaced. Refer to motor shaft rotation sheet for proper configuration. Incorrect placement will cause reverse rotation and improper section control.



FORTIFIER SYSTEM - CONNECT AIR HOSES

The diagram below shows the row connection letters for hose manifold connection. Connect hose from corresponding letter to corresponding toolbar row according to row and section configuration chart for machine configuration.



12 ROW UNIT											
12 Row 4 Section V12A424											
A	B	C	D	E	F	G	H	I	J	K	L
1	12	2	11	3	10	4	9	5	8	6	7

12 Row 4 section Shaft Configuration				Fan End
A&E	Sect W (Half) Top	Sect Z (Half) Top	D&H	
B&F	Sect X (half) Bottom	Sect Y (Half) Bottom	C&G	

As an example, you are routing a 12 row 4 section, find the corresponding chart to use from the row configuration section of manual. Toolbar row 1 hose mounts to manifold A, row 2 to manifold C, etc. Allow enough hose, so when folding the boom, it does not pull off connections, but not too much that the hose pinches or kinks. Operate fold enough times to verify proper hose routing and lengths.

12 ROW UNIT													
12 Row 4 Section V12A424													
A	B	C	D	E	F	G	H	I	J	K	L	12 Row 4 section Shaft Configuration	
	12		11		10		9		8		7	A&E B&F	Sect W (Half) Top Sect X (half) Bottom
1		2		3		4		5		6			Sect Z (Half) Top Sect Y (Half) Bottom
blank	Section W	Section X	Section Y	Section Z	Meter Side View (fan to the right)							MOTORS	CW (A,C,F,H); CCW (B,D,E,G) Tank 1 (A,B,C,D), Tank 2 (E,F,G,H)

9 ROW UNIT													
9 Row 3 Section V09A423													
A	B	C	D	E	F	G	H	I	J	K	L	9 Row 3 section Shaft Configuration	
	9							8		7		A&E B&F	Section W (Full Shaft) Top Sect X (half) Bottom
		1		2	3	4	5		6				Sect Y (Half) Bottom
blank	Section W	Section X	Section Y	Section Z	Meter Side View (fan to the right)							MOTORS	CW (A,C,F,H); CCW (B,D,E,G) Tank 1 (A,B,C,D), Tank 2 (E,F,G,H)

Number represents boom location (left to right when viewed from cab), letter represents splitter identification and hook-up locations on hose manifold.

CALIBRATION INFORMATION - FORTIFIER

Controllers with Automatic Calibration Functions:

The Montag applicators fan must be running at normal operating pressure when performing automatic calibration functions on a controller such as PWM limits or performing catch tests/ no catch test.

Typical 120' Boom Controller Calibration to make 30" Row:

To test set-up, simulate running a cereal rye. Enter parameters including a density of 48 lbs/ft³, an application rate of 30 lbs/acre, calibration factor (see below) and simulated speed of 10 MPH. With no product in the tank, or slide gate shut, hit master switch to start augers. The auger shaft speed should be turning 49 RPM. If your machine corresponds with this example, all parameters are correct, proceed with correct parameters for your application. Do a calibration once running in the field to adjust calibration factor to your machine and products.

You can also download & install the “MontagCalc” app from the PlayStore onto your phone to enter in your custom parameters which will then give you your theoretical RPM to verify correct setup instead of using the above values.

Default Calibration Factor:

120' = .0312 cubic ft/rev

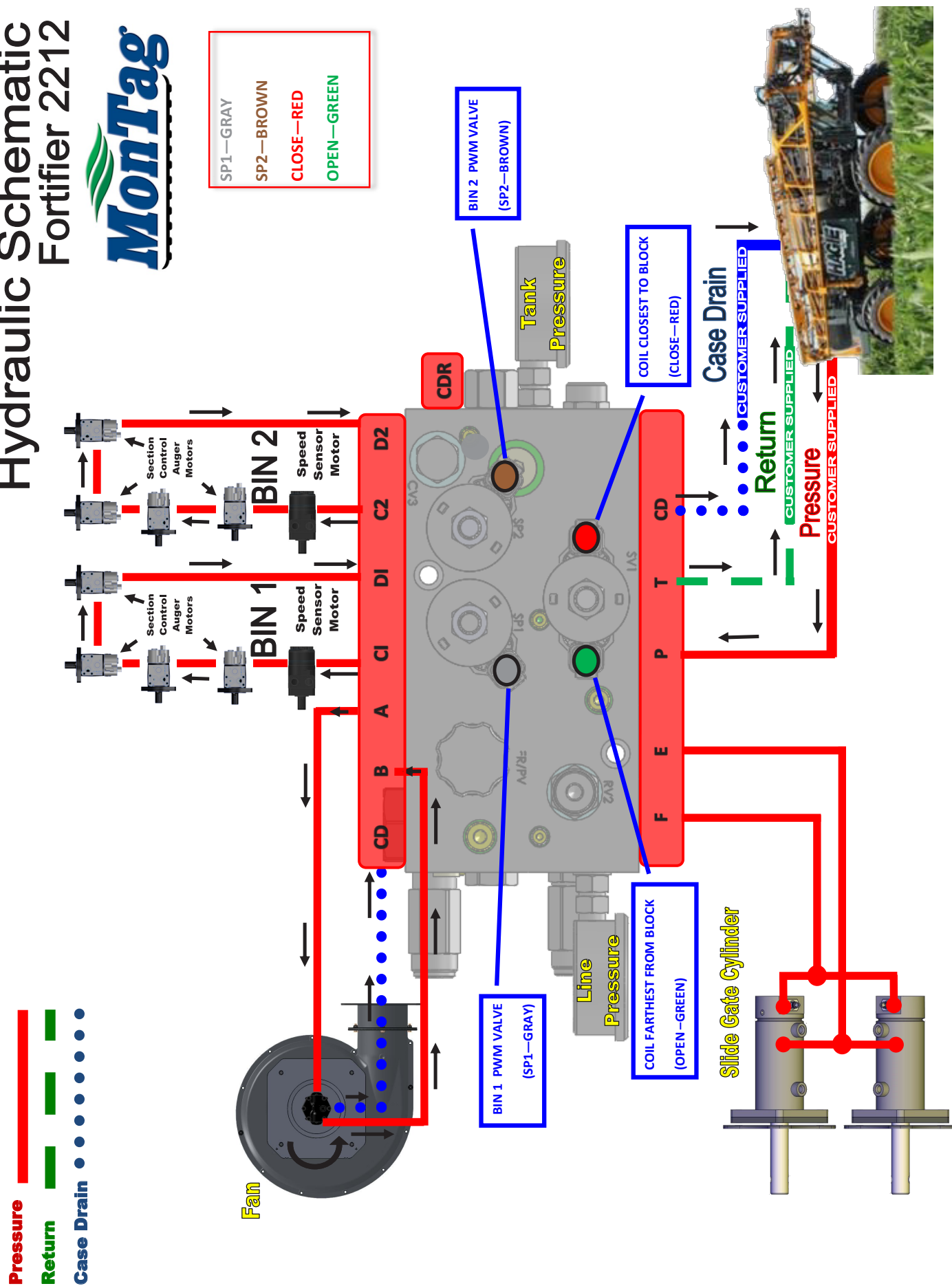
100' = .0260 cubic ft/rev

90' = .0234 cubic ft/rev

CALIBRATION INFORMATION FORTIFIER MONTAG SUPPLIED CONTROLLER

Flow Control Valve =	PWM Closed 12 Volt 110 Hertz
Encoder =	12 Volt 60 Pulses / Rev.
Auger Drive =	Gear Ratio 3.14 to 1
Meter Speed Sensor Cal # =	60 x 3.14 = 188.4 (pulses per auger revolution)
Low limit/High limit =	(Use default setting see controller manual for instructions) Auger RPM Fortifier meter 5 – 105 MAX
Tank Capacity =	1.94 Ton per tank 77 cu/ft
Displacement per Meter Outlet =	Fortifier Meter (2" hoses) 0.0026 Cubic ft. / Rev.
CFR (cubic ft / Revolution) =	Displacement per Meter Outlet X Number of Meter Outlets = CFR
Adjust CFR =	$\frac{\text{Actual Rate or Scale weight}}{\text{Desired Rate or Weight displayed on controller}} \times \text{Current CFR} = \text{New CFR Cal\#}$

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Installation Information

No. 4-1-106
July, 1997

EATON

Char-Lynn®
Motors

Speed Sensor

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1 Rotate the motor shaft until a (gear/target) tooth is centered in the speed sensor port. If this is not done, the sensor may be damaged during the operation of the motor.

2 Make sure the lock nut and its threads are clean and dry for the proper torque. Position the lock nut against the alignment nut as shown in Figure 1.

3 Move the washer and the o-ring up against the speed sensor body threads as shown in Figure 1.

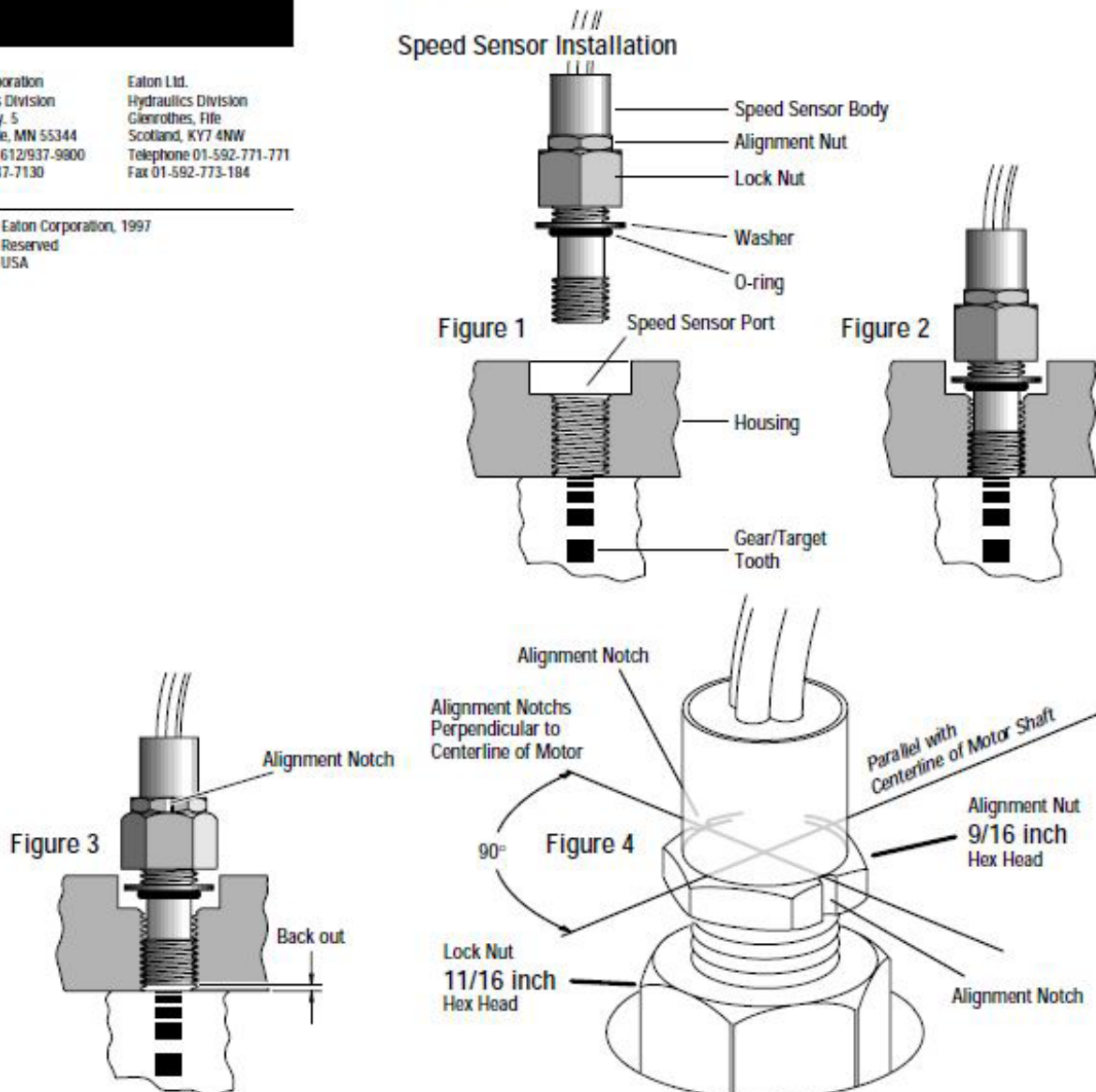
4 By hand, lightly thread the speed sensor body into the housing until the sensor touches against the motor (gear/target) tooth. Do not force the sensor against the (gear/target) tooth, damage may occur. Make sure the o-ring or the washer do not touch the housing — see Figure 2.

5 Turn the speed sensor body out one quarter turn (CCW) plus the additional amount (CCW) needed to make the alignment notches perpendicular to the motor shaft centerline ($90^\circ \pm 5$ degrees from the motor shaft centerline — Figure 3 and 4).

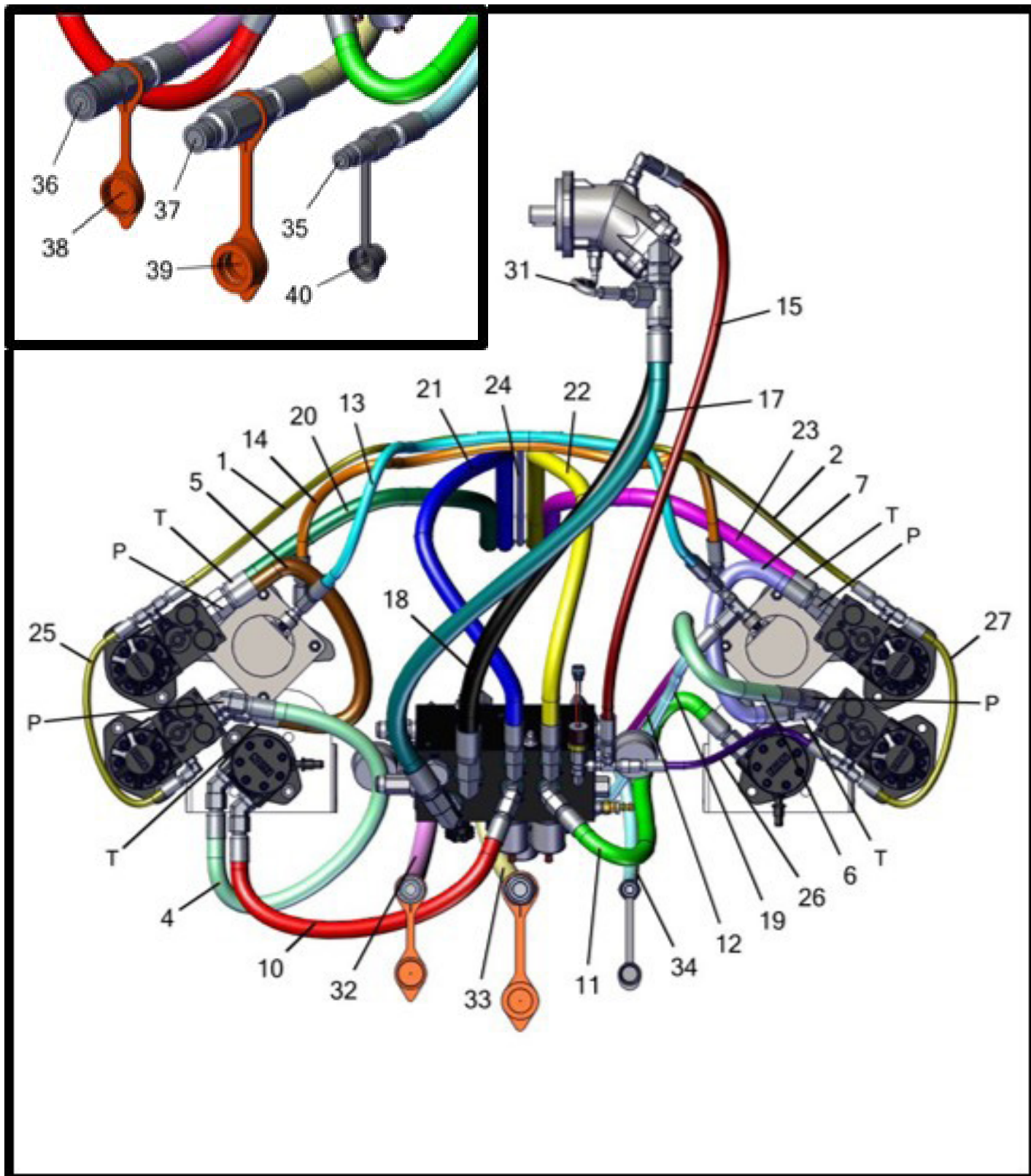
6 Maintain the speed sensor body alignment (Figure 4), and tighten the lock nut to 8,5-14 Nm [75-125 lb-in.] (torque values are for clean dry threads).

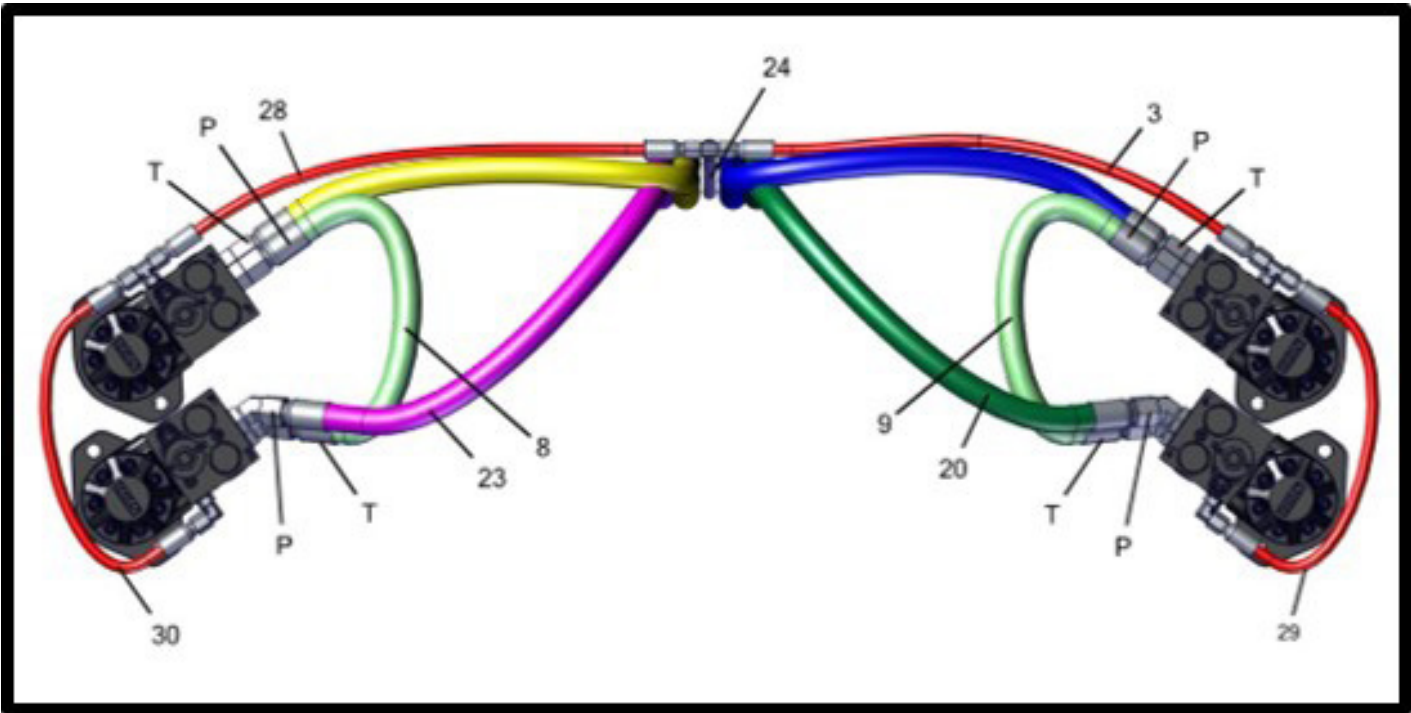
7 Check the speed sensor body for correct alignment (Figure 4), reinstall the sensor if it is not correct.

Speed Sensor Installation

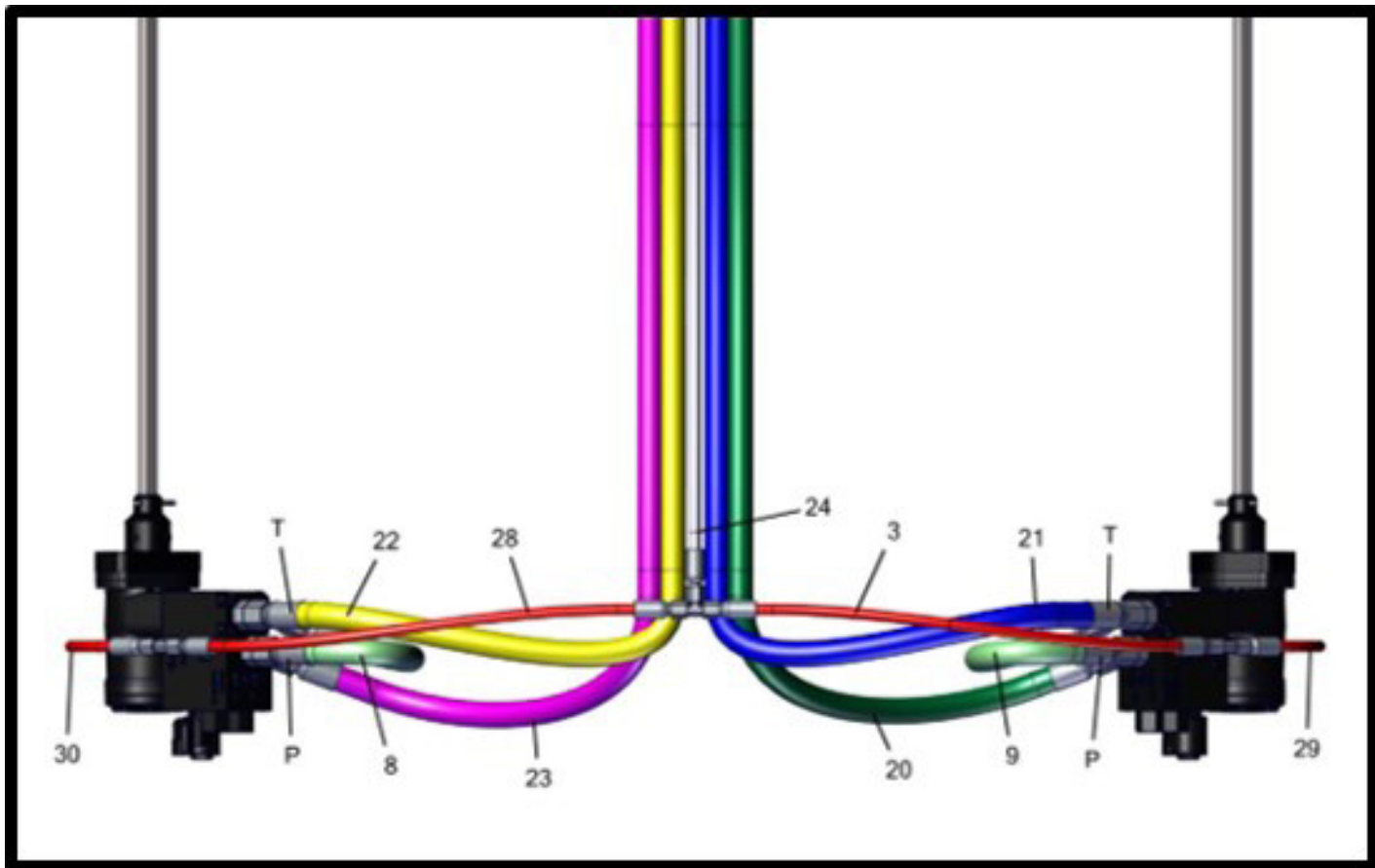


HYDRAULICS - FOUR SECTION HOSES - FRONT VIEW



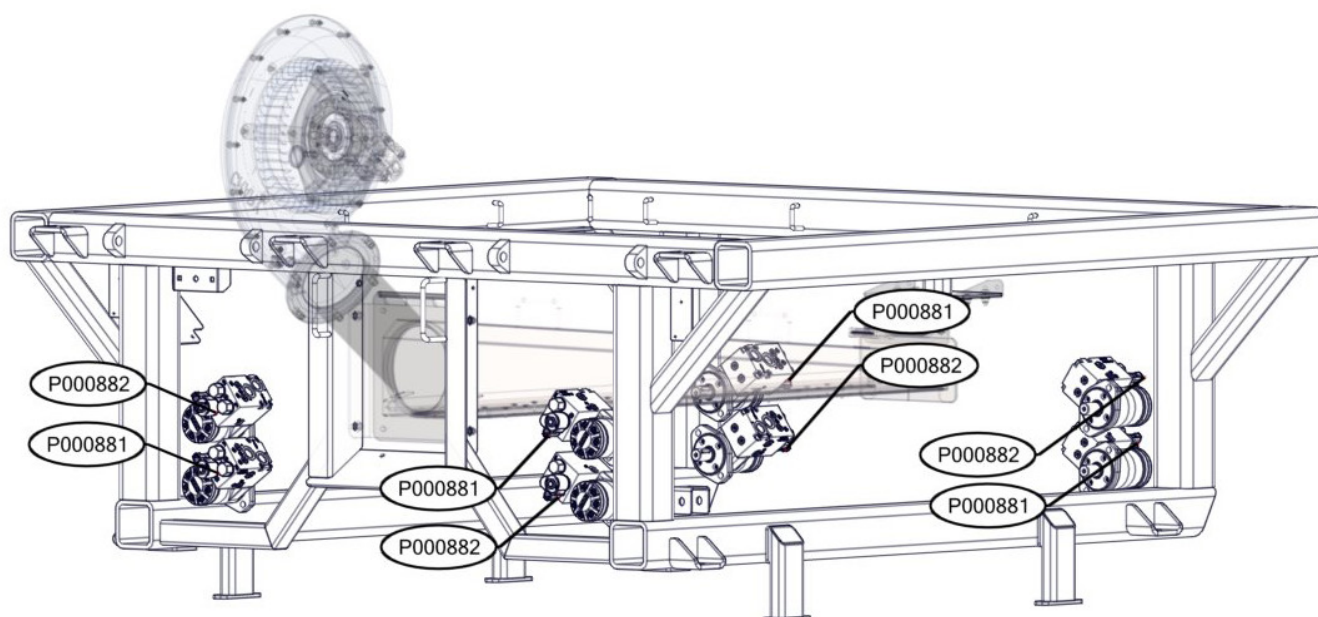


REAR VIEW



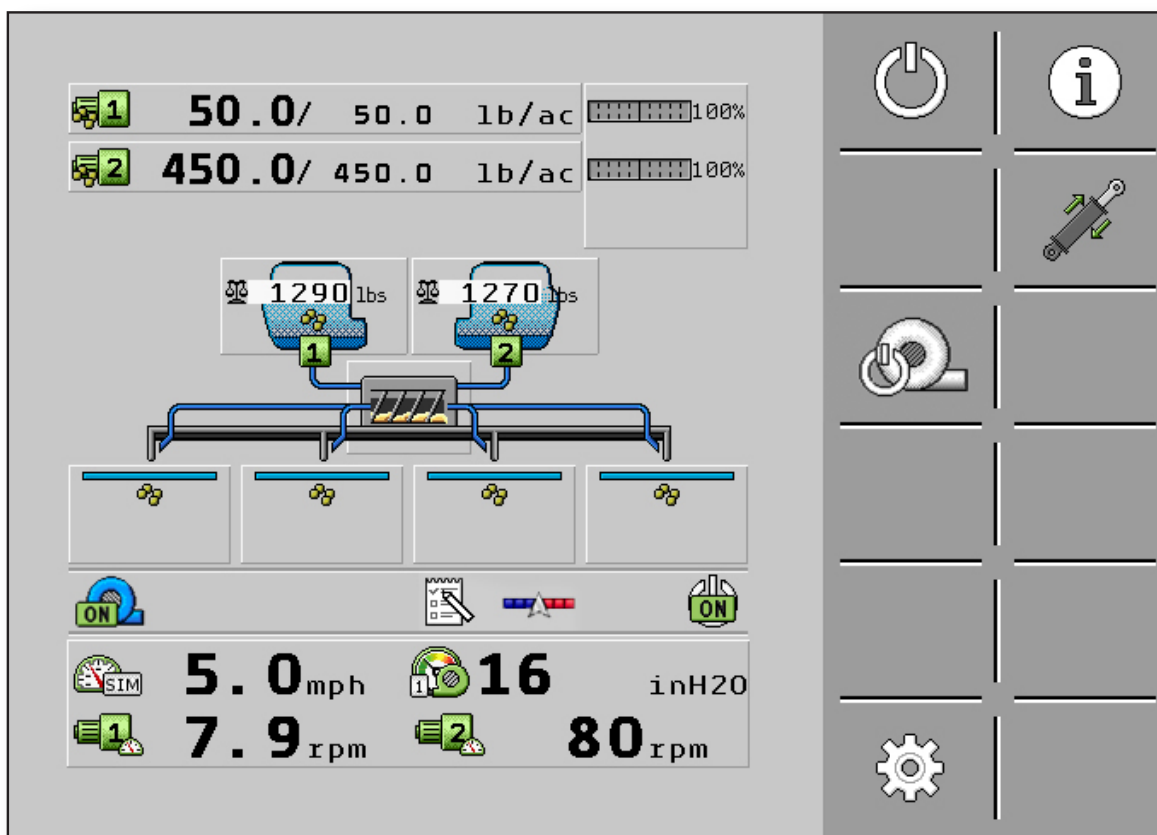
REAR TOP VIEW

HYDRAULICS - FOUR SECTION MOTORS



PART # P000881 HAS CW 2783-15 ENGRAVED ON MOTOR HYDRAULIC BLOCK AND PART # P000882 HAS CCW 2784-15 ENGRAVED ON MOTOR HYDRAULIC BLOCK.

ISOBUS Dry Rate Controller Set-Up Guide



For updated manuals and additional support materials, visit our website @ Montagmfg.com

Last Update: 10/18/2018

30285010-02-QR

SW Version 2.02.02.00

1 Implement Configuration

Manual Pages 38-40



CONFIGURATION
Implement

Blockage System
No
Working Position
No Workswitch
Weigh System
Yes
ext. Master Switch
No

2 Product Configuration

Pages 51-52



CONFIGURATION
Product 1

Renaming:
Cereal Rye
Product Type
Seed
Target Rate
50.0 lb/ac
Delta Rate
10 %
Calibration Factor
1 1.50 lbs/rev

Calculate correct cal factor for machine. Both meters must have values added.

Use density scale to determine density.

1. The accuracy of the Montag Air Cart depends on using the correct Calibration Factor. This value is for the entire implement width.

To find the Cal. Factor when using ft³/Rev, multiply the number of outputs for your setup by .0026. (.0026 is the starting number. This number may need to be adjusted by product or environment change.)

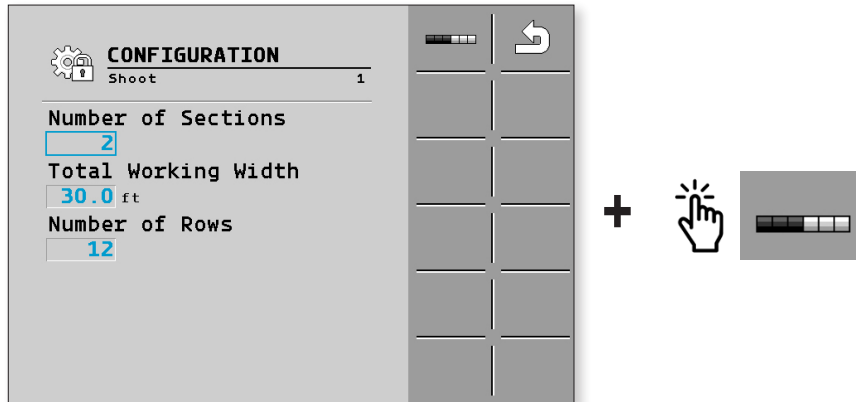
ft³/Rev Example: 12 outputs X .0026 = .0288

To find the Cal. Factor when using Lb/Rev, multiply the number of outputs for your setup by .0026 times the density. (.0026 is the starting number. This number may need to be adjusted by product or environment change.)

Lb/Rev Example: 12 outputs X .0026 X density = 2.184

3 Shoot Configuration

Pages 41-42



4 Slide Gate Sensor Calibration

Page 50

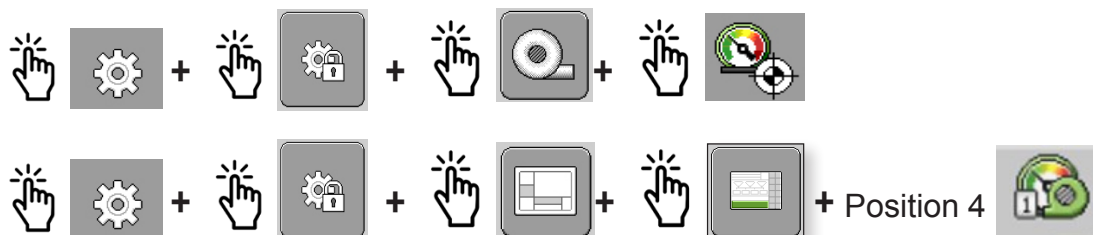
With hydraulics running...



5 Fan Pressure Sensor Calibration

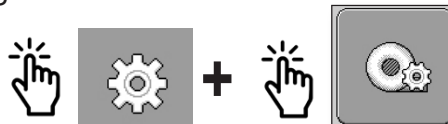
Pages 42-44 & 47

Follow the on screen commands.



6 Fan Settings

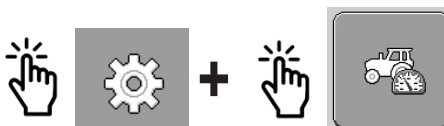
Pages 32-33



If using a Fortifier, set fan speed 4500-5500 RPM

7 Speed Settings

Pages 33-36



It is recommended to run in simulation speed with **no product** in the tank to check correct set-up

8 Hopper Info Screen

Pages 16 & 46



9 Hopper Settings

Pages 21-23



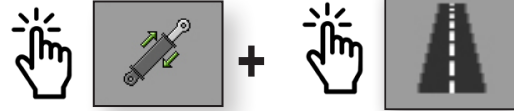
Equalizes calculated weight to scale weight. It is recommended to equalize your tanks after **every** fill.

Note: Pages numbers may not correspond to earlier manual versions. Some set-up features may also be unavailable in earlier software versions.

10 Additional Set-Up Features

Road Mode Feature

Page 12



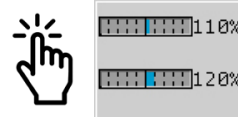
Slide Gate Feature

Page 19

	Gate Open - Tap the icon to open the gate incrementally. Press and hold the icon to open the gate completely.
	Gate Close - Tap the icon to close the gate incrementally. Press and hold the icon to close the gate completely.

Adjusting Rate in both Tanks

Page 61-62



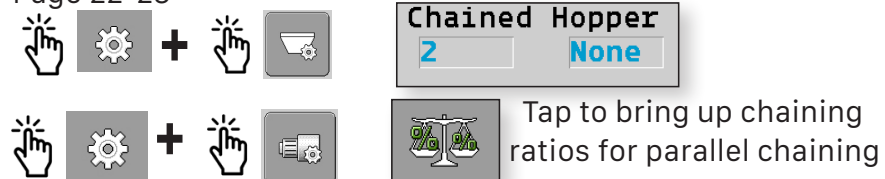
Using Prescriptions

Page 64



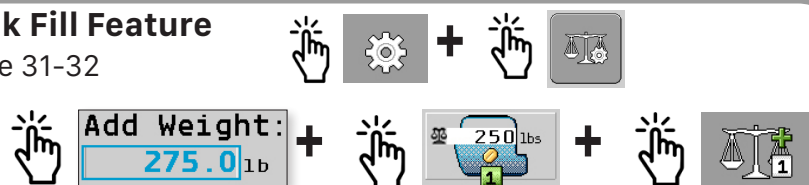
Bin Chaining Feature

Page 22-23



Tank Fill Feature

Page 31-32



Fill the hopper and watch the weight count down.