Foreword

P Series Air Carts	

Technical information

This information in this manual has been structured using a unique coding environment. This is the way in which technical information is created, stored, and retrieved in the Technical Information Database. The coding has aligned locations with the warranty system.

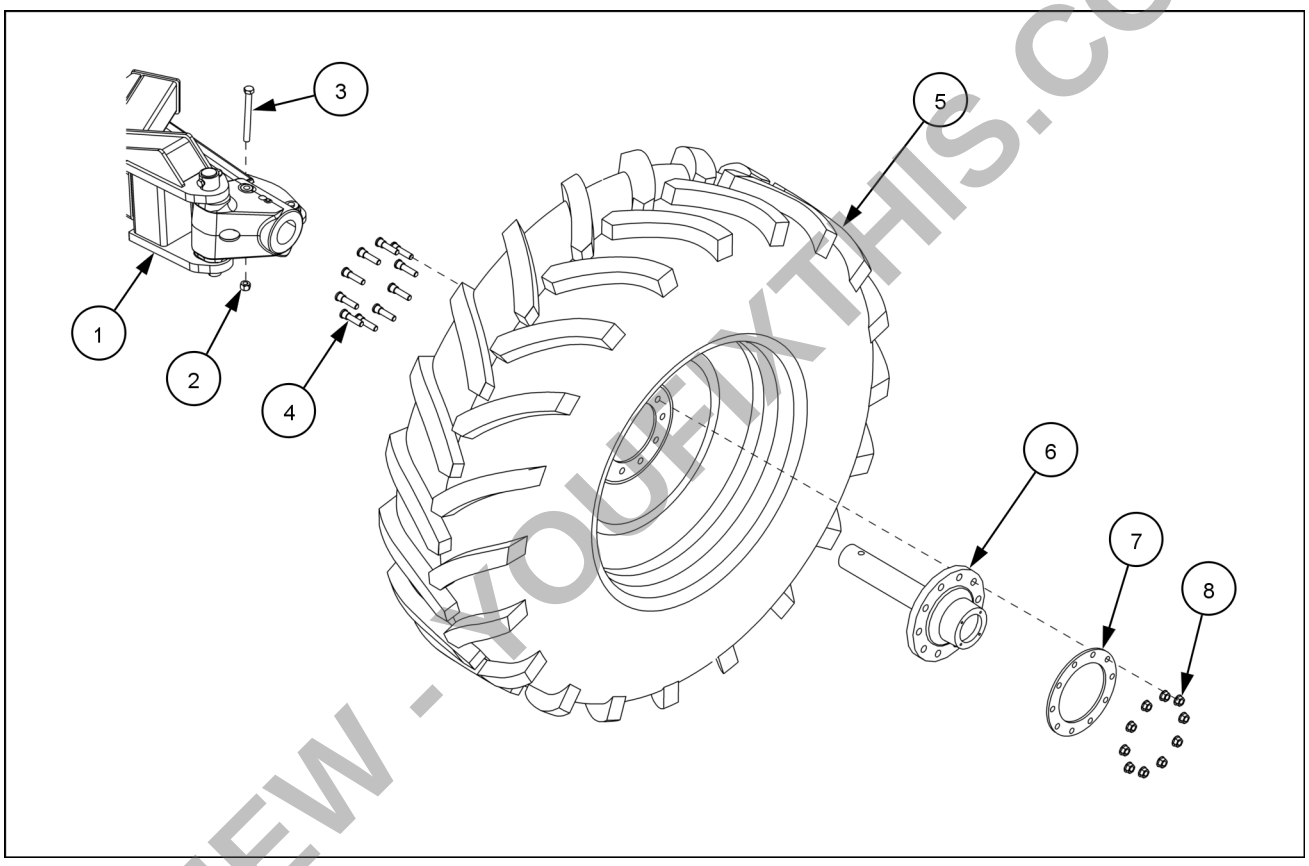
All hydraulic information is now in Section 35. All Electrical / Electronic information is now in Section 55. Mechanical information is now in the section for that part or system.

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Non-powered front axle - Remove

1. Loosen and remove the nuts **(8)**.
2. Remove the rim **(7)**.
3. Remove the stud bolts **(4)**.
4. Remove the wheel **(5)** from the hub **(6)**.
5. Loosen and remove the nut **(2)** from the knuckle **(1)**.
6. Remove the bolt **(3)** from the knuckle **(1)**.
7. Remove the hub and spindle **(6)** from the knuckle **(1)**.

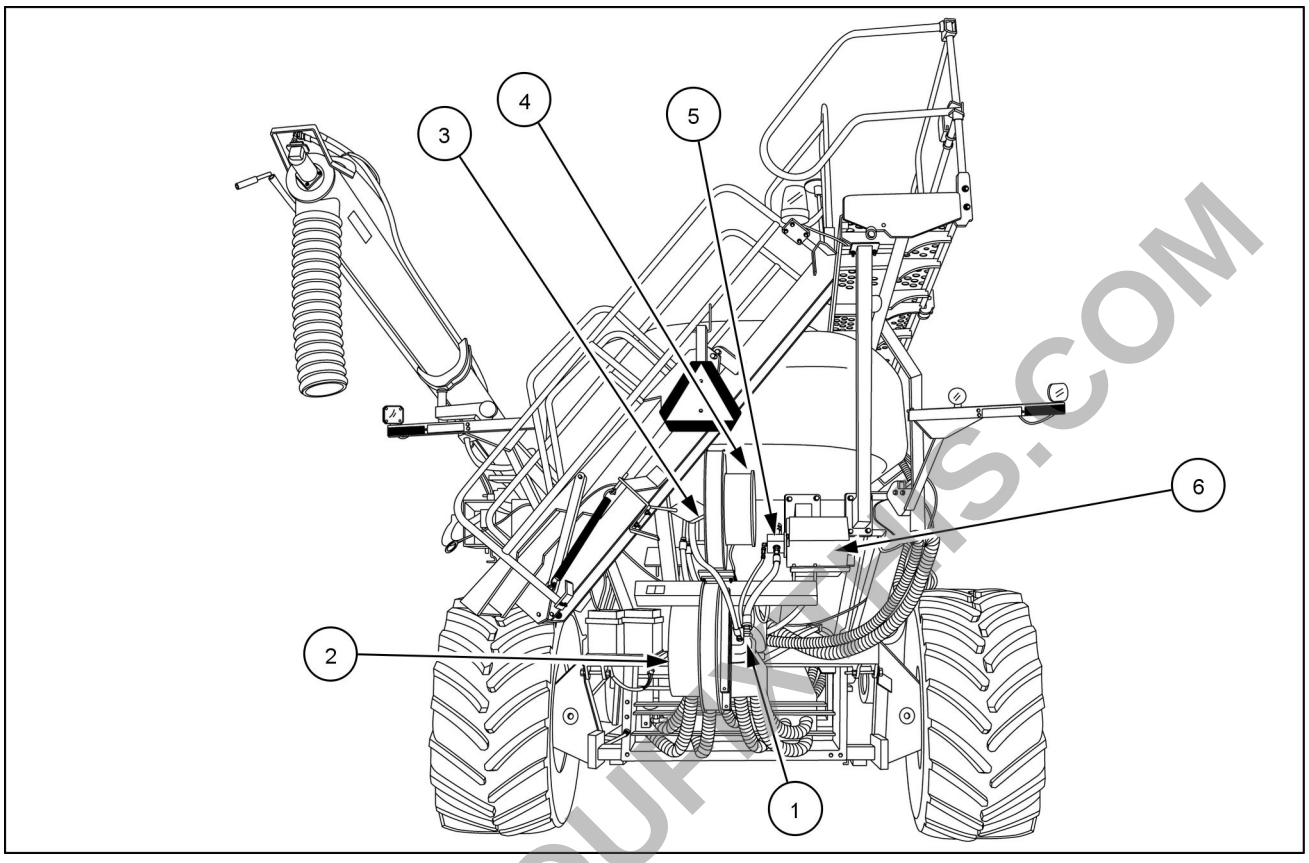


SAVM15SE00728FA 1

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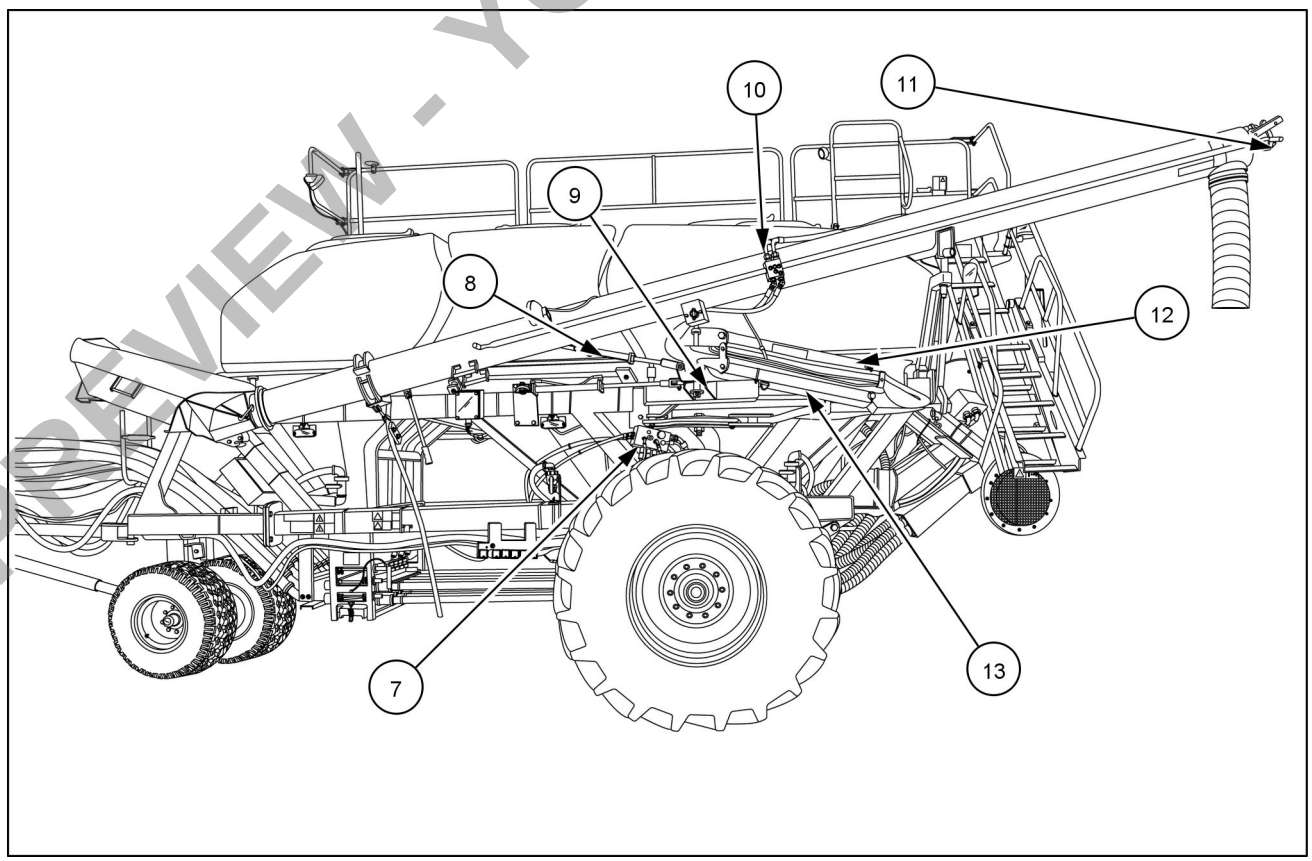
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Hydraulic systems - Overview



SAIL15SE00439FA 1

Fans and alternator



SAIL15SE00440FA 2

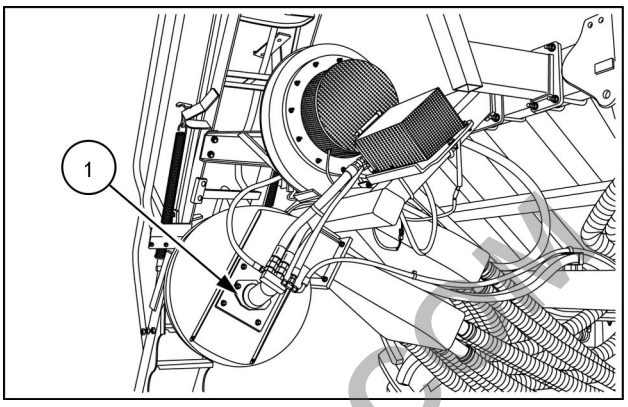
Deluxe auger

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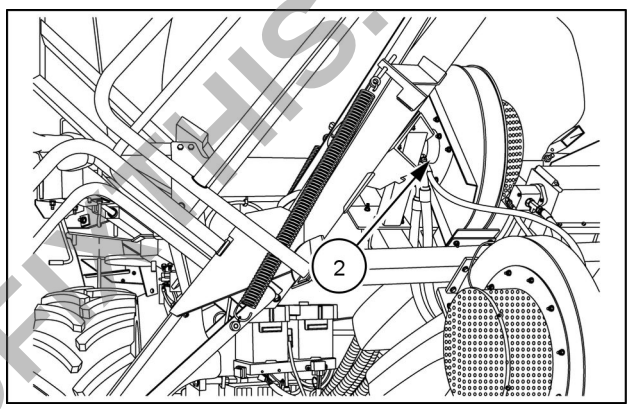
Motor - Detailed view

Lower fan motor **(1)**.



SAIL15SE00426AA 1

Upper fan motor **(2)**.



SAIL15SE00425AA 2

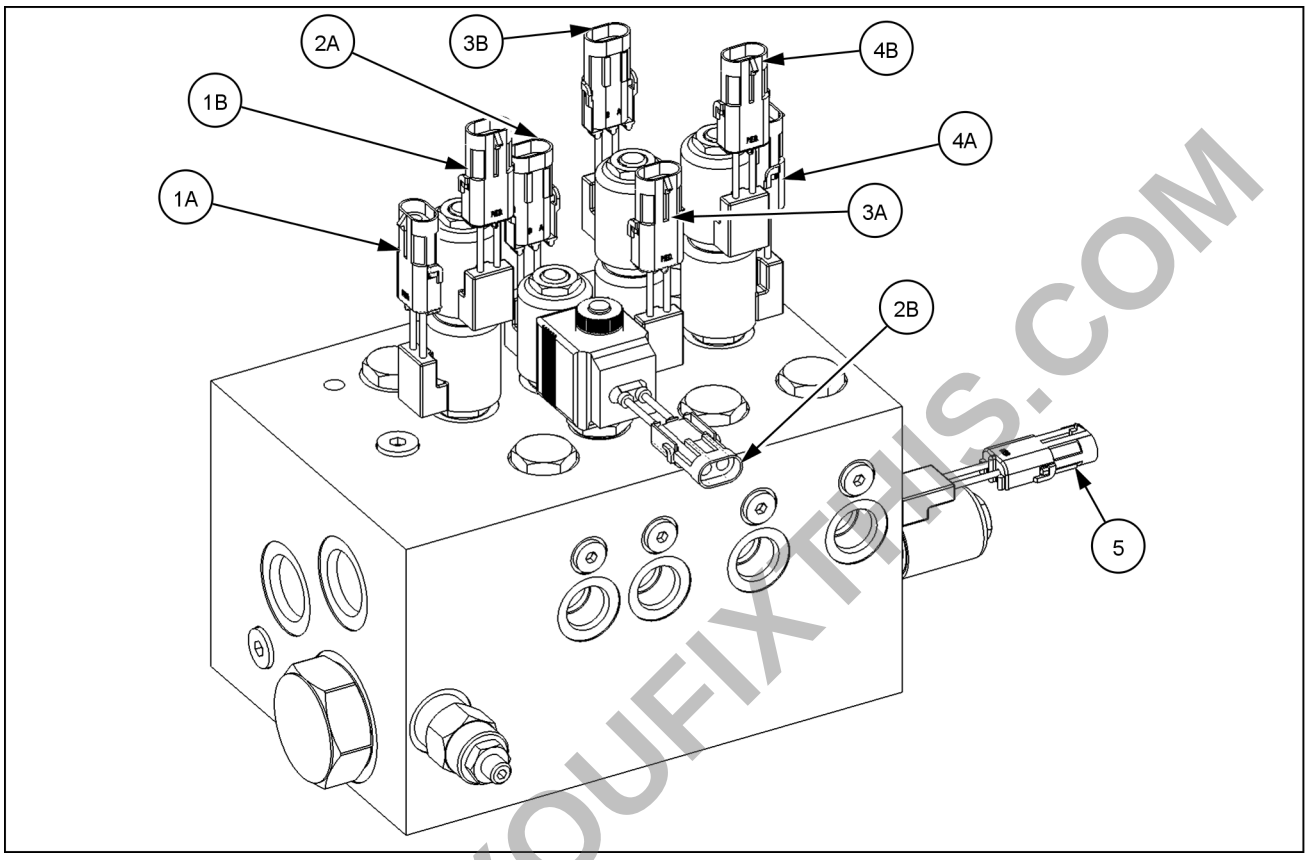
Motor type	Fixed displacement piston
Motor displacement	**16 cm³/rev** (**1 in³/rev**)
Maximum operating pressure	**20684 kPa** (**3000 psi**)

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Seeding auger control valve - Overview - valve functions

The labels on the deluxe auger electrical harness correspond to the valve functions.



SAPE12SE00169FA 1

Label	Function
1A	ARM_IN — Rotate arm assembly in
1B	ARM_OUT — Rotate arm assembly out
2A	LIFT
2B	LOWER
3A	AUX_EXTEND — Fold outer auger arm out
3B	AUX_RETRACT — Fold outer auger arm in
4A	TILT_DOWN
4B	TILT_UP
5	MOTOR

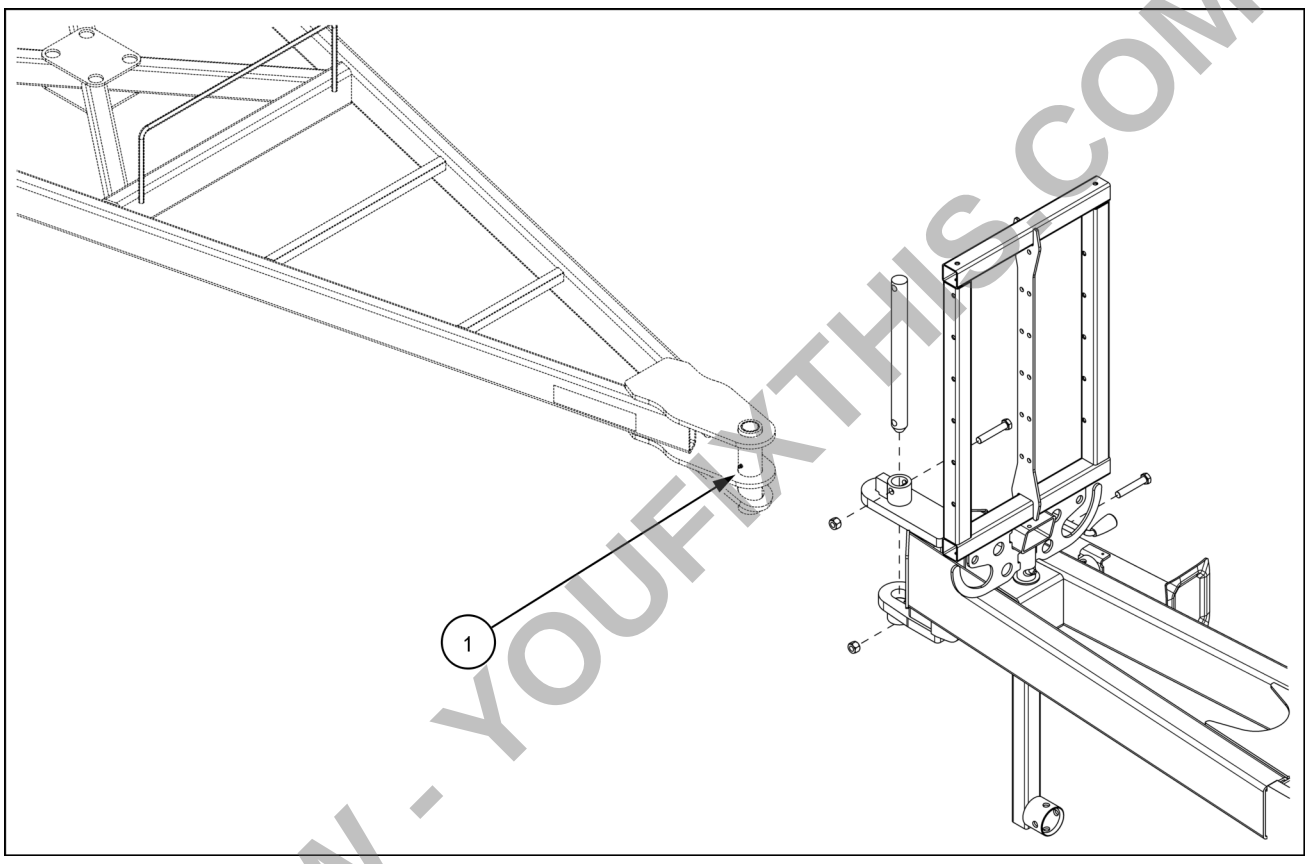
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Drawbars and towing hitches - Check

P4580	

1. For all carts with a hitch pole, check the pin connection at the middle of the hitch pole. This is where the air cart hitch and the drill field hitch are connected.
2. Grease the hitch pin **(1)** with **NEW HOLLAND AMBRA GR-9 MULTI-PURPOSE GREASE**.



SAIS15SE00417FA 1

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Electrical system - Dynamic description

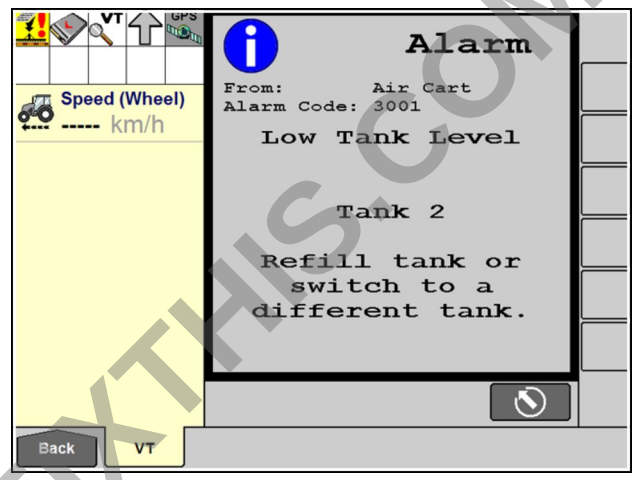
There are three levels of operator alarms. The color reflects the severity or operational impact of the alarm.

- Grey indicates a minimal (or no) impact on seeding.
- Yellow indicates that the seeding operation may not be able to continue.
- Red indicates that seeding may be seriously affected, or the operation will not be able to continue.

3001 – “Low Tank Level”

This alarm informs the operator that the amount of product in the indicated tank is getting low.

- The alarm is raised if the following conditions are all consistently true for **10.0 s**.
  1. Low tank sensor has no active faults
  2. Tank button on RUN screen is ON.
  3. Meter master soft key is ON.
  4. Tank low product sensor input is digital 1 (high), indicating no product is detected.
- The alarm is cleared immediately if any of 1, 2, or 3 above is no longer true. The alarm is cleared if the sensor input is consistently digital 0 (low) over **10.0 s**, indicating that product is being detected.

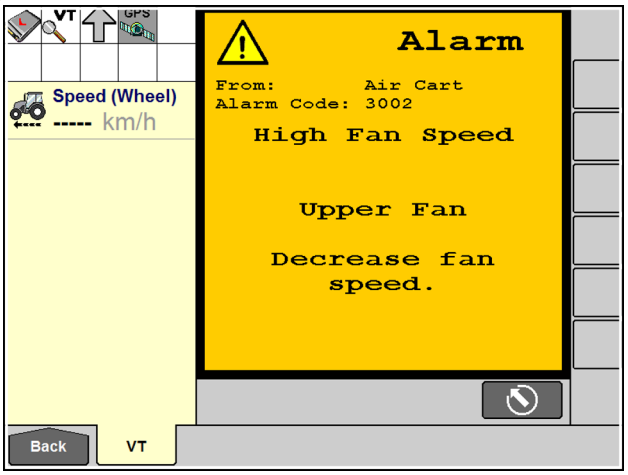


SAIL16SE00253AA 1

3002 – “High Fan Speed”

This alarm informs that the speed of the indicated fan is higher than the operator- settable high fan threshold.

- The alarm is raised if the following condition is consistently true for **10.0 s**.
  1. The fan RPM is greater than the operator-settable high fan threshold.
- The alarm is cleared if any one of the following conditions is met:
  1. The fan RPM is consistently less than or equal to the operator-settable high fan threshold for **1.0 s**.
  2. The 3003 low fan speed alarm has been newly raised for the same fan.
- The high fan RPM alarm check is always active because the fan RPM should never exceed the upper limit or damage may result. For single-shoot implements with a single fan, there is only one 3002 alarm and its text generically refers to the “Fan”. For double-shoot implements with dual fans, two separate 3002 alarms can be active at the same time for the two fans. The fan alarm text refers specifically to the “Upper Fan” or “Lower Fan”.

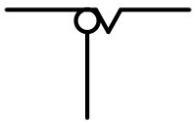
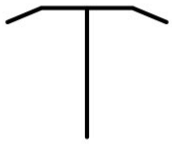
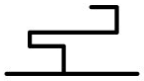
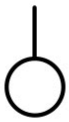
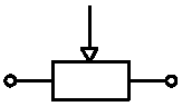
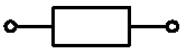
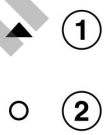


SAIL16SE00173AA 2

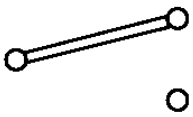
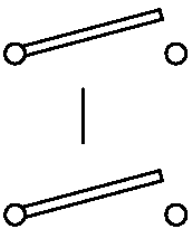
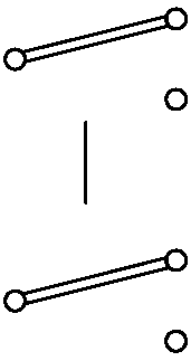
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Wiring harnesses - Electrical schema symbol legend

ACTUATORS				
 Lever	 Hand	 Foot	 Temperature	
 Liquid level float	 Pressure	 Coil	 Diode	
 Variable resistor	 Resistor	 Magnetic	 1 - Momentary contact 2 - Maintained contact	

HOUSINGS				
 Vacuum switch	 Pressure switch	 Temperature switch	 Motor	 Lamp

CONTACT CONFIGURATIONS				
 S.P.S.T.	 S.P.D.T.	 D.P.S.T.	 D.P.D.T.	

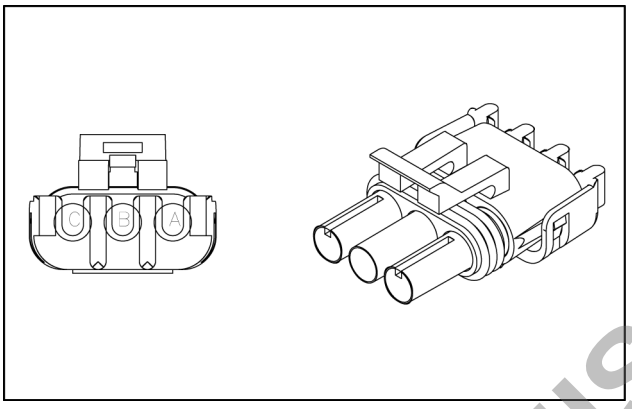
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Wire connectors - Component diagram 01 350 Bu tow behind

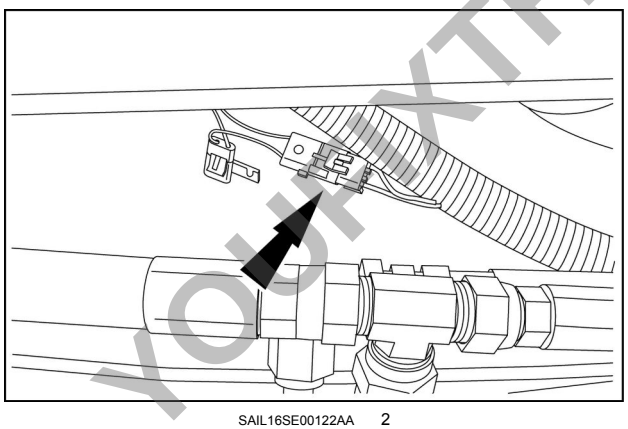
P2350	

X-014 - AUGER CONTROL (87644909) (Female)



87644909 1

87644909



SAIL16SE00122AA 2

Pin	From	Wire	Description	Color-Size	Frame
A	SP-AC01-P-X	230	GND	BK - 2	**SHEET 01**
C	SP-AC04-P-X	235	PWR	OR - 2	

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Electrical components - ECU description 350 Bu tow behind

P2350	

A-001 - UCM 2B (ECU)

Component Type	ECU
Wiring frames	**SHEET 03**
Connectors	**X-202B (Female)**

A-002 - UCM 1A (ECU)

Component Type	ECU
Wiring frames	**SHEET 03**
Connectors	**X-201A (Female)**

A-003 - UCM 4A (ECU)

Component Type	ECU
Wiring frames	**SHEET 04**
Connectors	**X-204A (Female)**

A-004 - UCM 1A (ECU)

Component Type	ECU
Wiring frames	**SHEET 07**
Connectors	**X-201A (Female)**

A-005 - UCM 3B (ECU)

Component Type	ECU
Wiring frames	**SHEET 06**
Connectors	**X-203B (Female)**

A-007 - UCM 1A (ECU)

Component Type	ECU
Wiring frames	**SHEET 08**
Connectors	**X-201A (Female)**

A-008 - UCM 3B (ECU)

Component Type	ECU
Wiring frames	**SHEET 01**
Connectors	**X-203B (Female)**

A-009 - UCM 4B (ECU)

Component Type	ECU
Wiring frames	**SHEET 06**
Connectors	**X-204B (Female)**

A-011 - UCM 4A (ECU)

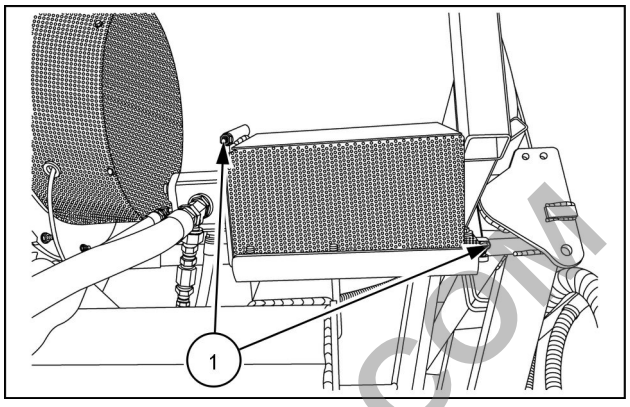
Component Type	ECU
Wiring frames	**SHEET 02**
Connectors	**X-204A (Female)**

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Alternator - Remove

1. Remove these two bolts **(1)** to access the alternator.



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Battery - Replace

NOTE: *Ensure the batteries are matched (identical),and are fully charged prior to proceeding.*

Battery specification

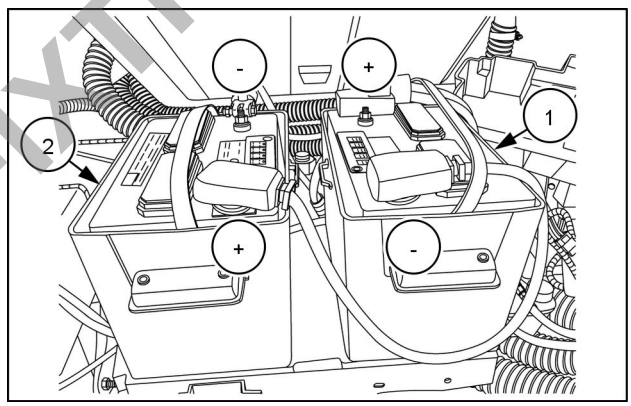
Quantity 2: **12 V** negative ground **12 V** lead acid, deep cycle, BCI group size 24, minimum 120 minutes RC (reserve capacity)

1. Replace both batteries at the same time, using the exact same battery for both. Mismatched batteries will cause under charging on one and over charging on the other battery and will result in reduced battery life.
2. If charging the air cart batteries with a **12 V** charger, connect it to one battery at a time and charge both batteries equally. The air cart must be off (tractor key off) when charging one battery at a time.

Connect batteries — tow-behind air cart

NOTE: *The battery boxes are located at the rear left of the air cart.*

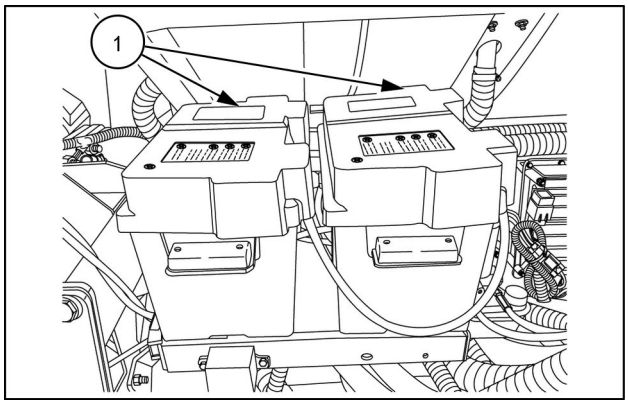
3. Use an inter-battery cable to connect the battery 1 **(1)** negative post to the battery 2 **(2)** positive post.
4. Connect the positive cable from the alternator to the battery 1 **(1)** positive post, and connect the negative cable from the alternator to the battery 2 **(2)** negative post.



SAIL15SE01154AA 1

NOTE: *Ensure the battery cable routing is as shown.*

5. Place the battery covers **(1)** on the battery boxes. Orient the covers so that the cables are routed as shown.



SAIL15SE01152AA 2

6. Install the straps around the battery box and cinch tightly to secure the battery covers.

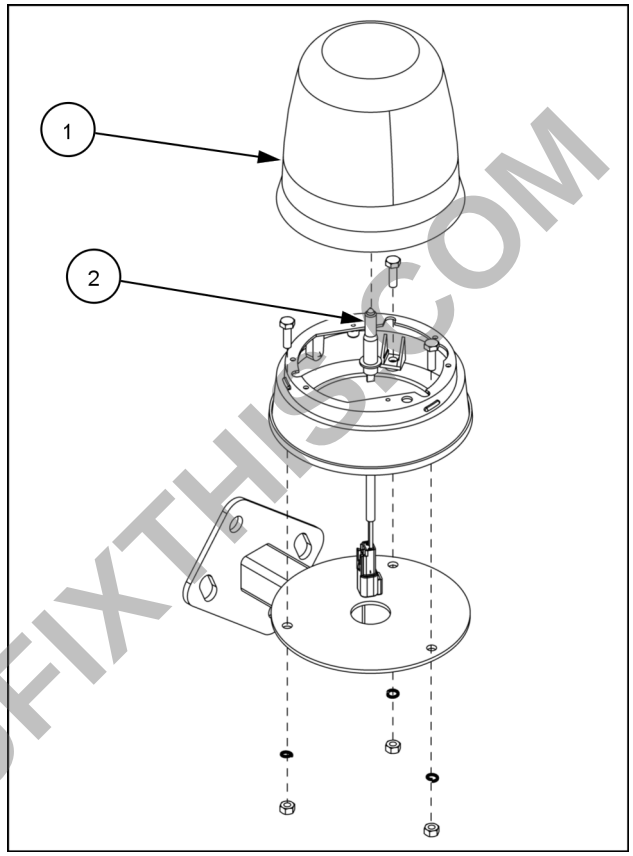
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Beacon - Replace light bulb

NOTE: *The light is shown dis-assembled from the mount. You should not need to dis-assemble the light this far to replace the bulb.*

1. Remove the plastic lens **(1)**.
2. Replace the bulb **(2)**. The bulb specification is :H1, **12 V**, **55 W**.



SAPE15SE00449BA 1

3. Replace the lens **(1)**.

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Rate meter drive motor - Technical Data

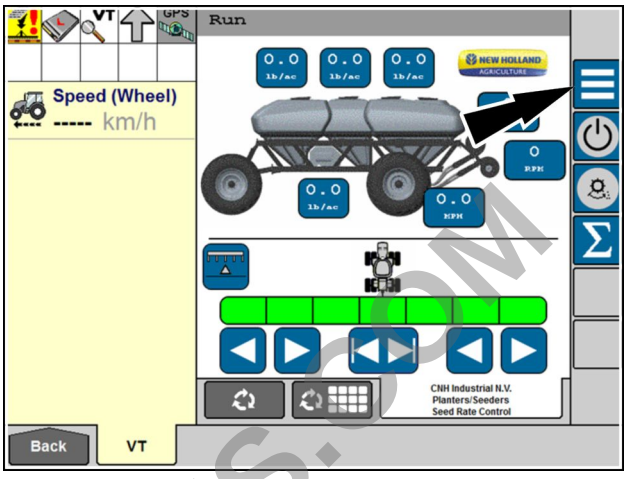
Continuous operation	**4 – 95 RPM** at **2 N·m** (**20 lb in**) from **10 – 40 °C** (**50 – 104 °F**), **22 – 32 V**
Efficiency	**50%** minimum at **2 N·m** (**20 lb in**), **22 – 32 V**
Speed range	**4 – 95 RPM**
Operating voltage	**22 – 32 V**
Nominal torque	**2 N·m** (**20 lb in**)
Peak torque	**6 N·m** (**50 lb in**)

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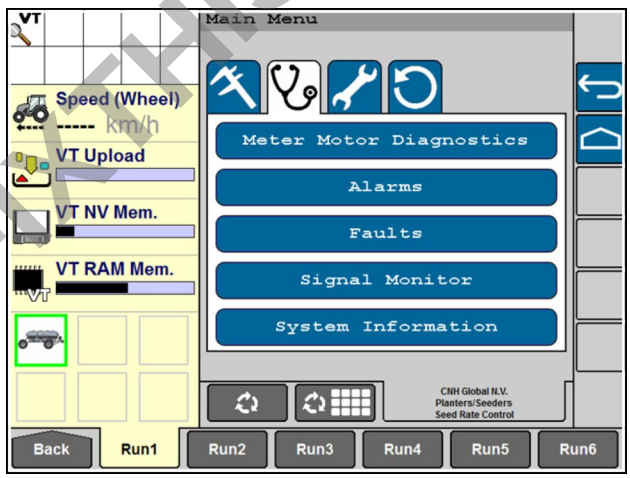
Cab seeding controls - Check motor

1. Select the main menu button .



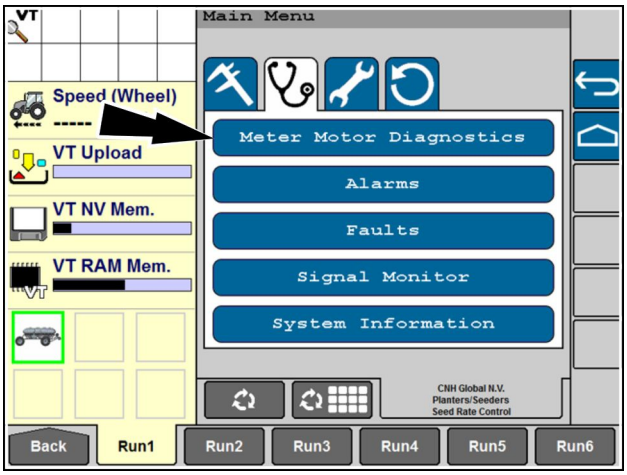
SAIL15SE01062AA 1

2. Select the diagnostics tab .



SAIL15SE00582AA 2

3. Select ”Meter Motor Diagnostics”.

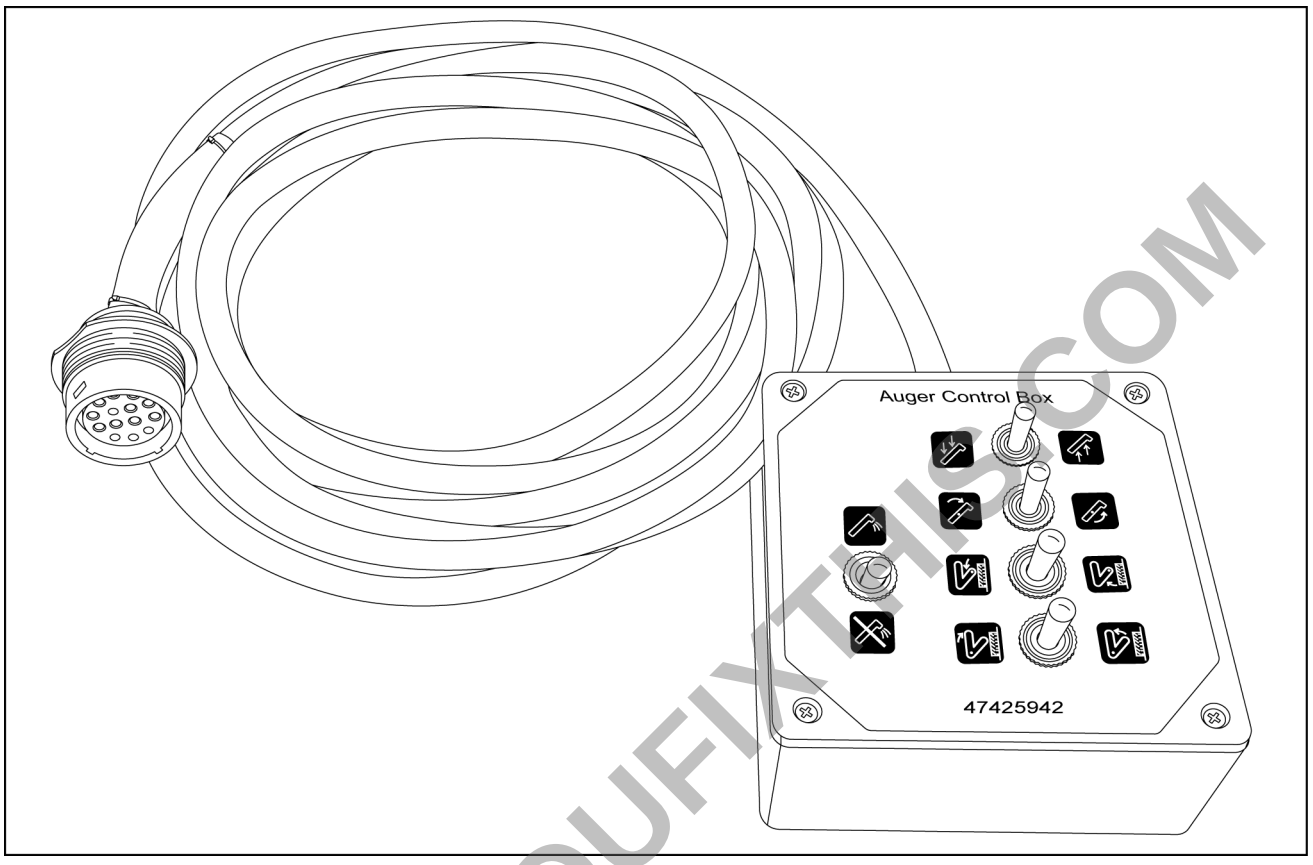


SAIL15SE00582AA 3

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Auger - Special tools



SAIL12SE00722FA 1

The deluxe auger on air carts is controlled by a wireless remote control system.

The deluxe auger control box 47425942 can temporarily replace the wireless transmitter and receiver should either of them fail, or if the transmitter has been misplaced or lost.

The auger control box provides all of the auger control functions of the wireless system via five toggle switches mounted in a wired control box: raise / lower, tilt up / tilt down, rotate arm assembly out / in, fold outer arm out / in, and auger motor on / off. The icons for each function match those on the wireless remote control for ease of use and the four toggle switches that move the auger are positioned the same as on the wireless remote control.

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Controller Area Network (CAN) data bus - Problem solving UCM

OPERATION

The UCM is a highly reliable device that is often misdiagnosed as the cause of implement electronic problems. Warranty return data shows that only a small percentage of returned UCMs are actually defective. It is important to eliminate all external causes prior to replacing the UCM to avoid unnecessary replacement.

The following fault codes generally indicate an internal fault in the Rate ECU.

SPN - FMI	Signal Name	Condition
520241–04	Internal 8.5V Reference	Voltage too low

Replacing the UCM will generally eliminate this fault. If it does not eliminate the fault, re-install the original UCM and look for external causes.

For other fault codes eliminate all possible external causes before replacing the UCM.

TROUBLESHOOTING

For unresponsive UCM, check the following before replacing the UCM:

- heck power and ground connections to the UCM: damaged wires, terminals not fully seated in connector body, dirty or damaged terminals.
- Check for normal voltage on ECU_PWR relative to ECU_GND and on 12VA, 12VB, 12VP relative to GND at the UCM.
- Check CAN bus connections between tractor and the UCM.
- Check that CAN bus voltages are normal (each **~2.5 V** relative to ground) at the UCM.
- If the problem is intermittent repeat the above steps while flexing the harness in various locations to see if the harness has any intermittent connections
- Check CAN bus terminator and the terminator connector and its terminals.
- Check to see if the EST can capture the UCM for programming. A UCM that has not been programmed or had a failed programming attempt will not be visible on the display in the tractor.
- If the UCM becomes unresponsive after installing or updating software, use the EST to capture the UCM and then reprogram the software.
- In rare cases, the operation of the UCM may be affected by a strong source of electromagnetic interference (EMI) such as airport radar or an FM radio transmitter. If EMI is suspected, move to another location away from the EMI source to eliminate this as a possible cause.

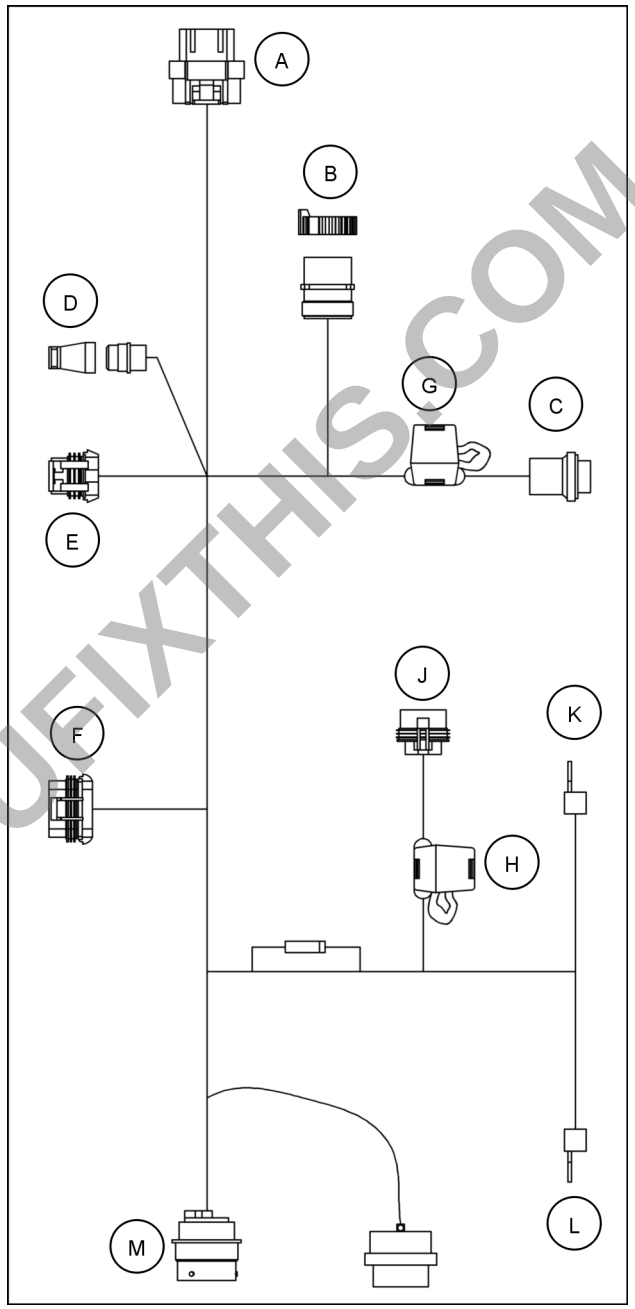
NOTE: *If the problem persists after replacing the UCM re-install the original UCM and continue looking for external causes.*

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Precision farming system - Overview - Universal tractor harness with GPS

A		**Display Connector** **X-001** (87410948)
B		**Implement Diagnostic Connector** **X-002** (310057A1)
C		**Auxiliary Power** **X-003** (225165C1)
D		**Radar** **X-004** (247724A1)
E		**CAN BUS Terminator** **X-005** (256348A1)
F		**GPS Receiver** **X-006** (182081A1)
	Pin A	Switched B+
	Pin B	GPS Transmit
	Pin C	GPS Communication GND
	Pin D	GPS Receive
	Pin E	Clean GND
G		**10 Amp Fuse** (13972)
H		**30 Amp Fuse** (13972)
J		**Power Relay** **X-007** (297910A1)
K		**Positive Battery Connection** **X-008**
L		**Negative Battery Connection** **X-009**
M		**Implement Connection** **X-010** (352506A1)



410271C 1

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401TMM-07 - Tank T - Motor MM - Motor Stall detected. Check meter cartridge for obstruction.

Control Module: Air Cart UCM

Context:
The indicated motor reported a stall condition to the air cart UCM. This procedure covers codes: 401101-7, 401102-7, 401103-7, 401104-7, 401105-7, 401106-7, 401107-7, 401108-7, 401109-7, 401110-7, 401111-7, 401112-7, 401201-7, 401202-7, 401203-7, 401204-7, 401205-7, 401206-7, 401207-7, 401208-7, 401209-7, 401210-7, 401211-7, 401212-7, 401301-7, 401302-7, 401303-7, 401304-7, 401305-7, 401306-7, 401307-7, 401308-7, 401309-7, 401310-7, 401311-7, 401312-7, 401401-7, 401402-7, 401403-7, 401404-7, 401405-7, 401406-7, 401407-7, 401408-7, 401409-7, 401410-7, 401411-7, 401412-7

Cause:
Meter roller binding, meter roller/box bearing failure, motor mechanical failure, motor electrical failure, meter box damage.

Possible failure modes:

1. Meter roller binding due to foreign object in meter cartridge (e.g. rock, fertilizer lump).
2. Meter roller binding due to build-up of material in meter cartridge.
3. Failure of bearing in meter roller.
4. Failure of bearing on motor shaft.
5. Motor mounting boss damage causing motor shaft misalignment.
6. Failure of motor internal gearbox.
7. Failure of motor internal electronics.

Solution:

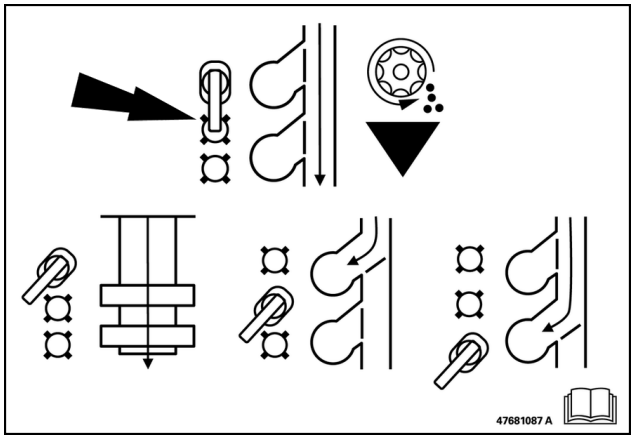
1. Pull out meter cartridge and inspect thoroughly for foreign objects or build-up of material on the meter roller or in the meter cartridge.
   A. If present, clean out and reinstall cartridge. Return to field operation and monitor for recurring fault.
   B. If not present, go to step **2**.
2. Check that the bearing in the meter roller turns smoothly and with low resistance.
   A. If bearing is bad, replace bearing or meter roller. Return to field operation and monitor for recurring fault.
   B. If bearing is good, go to step **3**.
3. Perform the procedure described in **Rate meter drive motor - Service instruction (55.516)** to turn only the affected motor.
   A. If stall reoccurs, go to step **4**.
   B. If stall does not reoccur, return to field operation and monitor for recurring fault. Stall was likely due to an obstruction that has been cleared.
4. Remove motor from meter bank. Check the meter bank bearing.
   A. If bearing is bad, replace bearing.
   B. If bearing has come out of recess in meter bank, glue bearing back into place. Go to step **5**.
5. With the affected motor still removed from the meter bank, perform the procedure described in **Rate meter drive motor - Service instruction (55.516)** to turn only the affected motor.
   A. If stall reoccurs, replace motor. Return to field operation and monitor for recurring fault.

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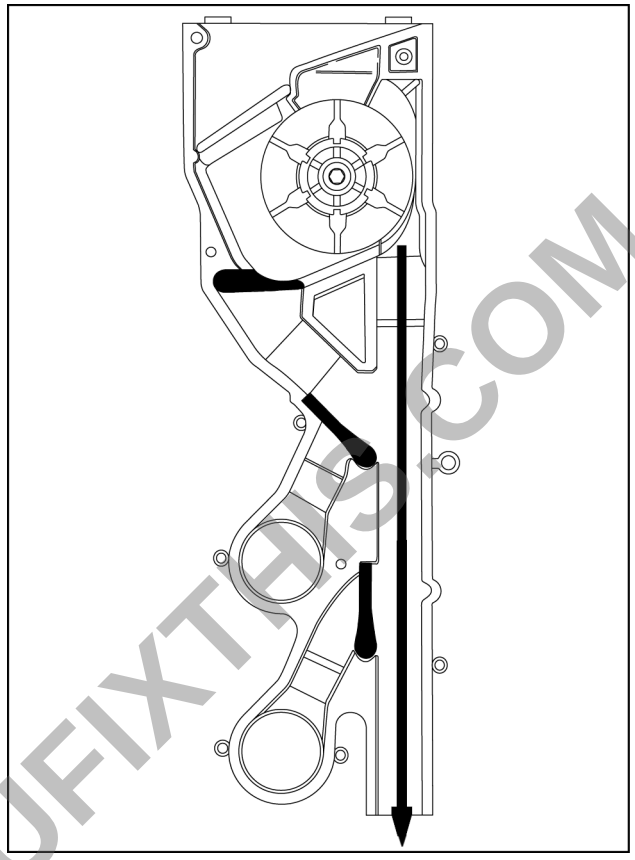
Meter gate position

Calibration

During calibration, the seed gates are closed to the meters. Product moves through the meter cartridges and through the meter bank into the calibration bag.



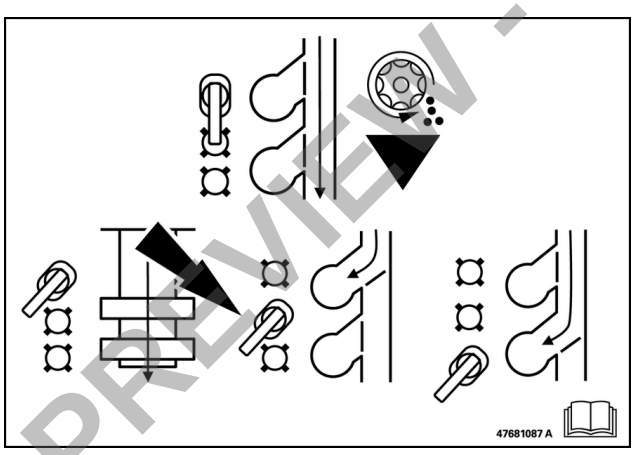
47681087 1



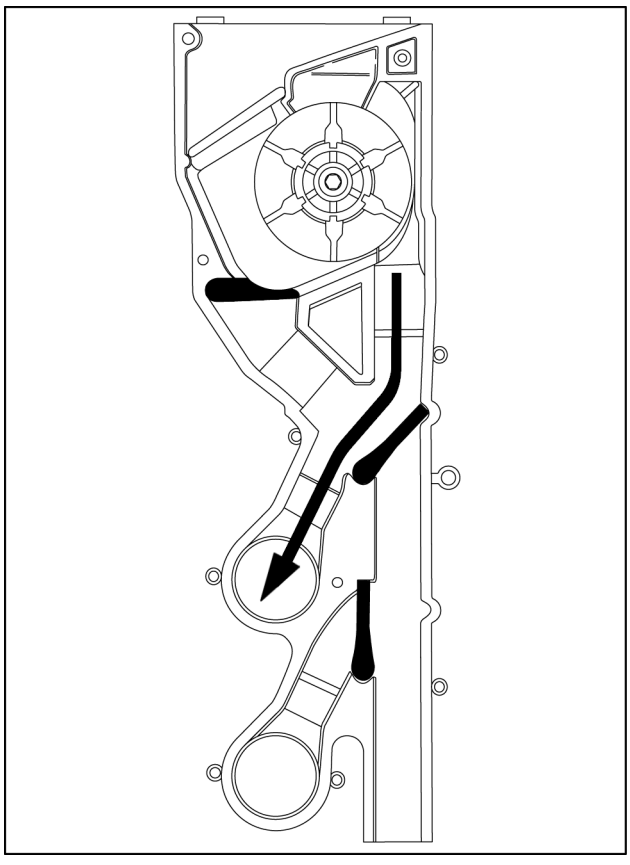
SAIL15SE01078BA 2

Top run

If the top run is selected the seed gate is open so that product flows into the top manifold tubes.



47681087 3



SAIL15SE01080BA 4

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Product handling and delivery drive system - Service instruction deluxe auger or conveyor service position

Follow this procedure for safe service of the hydraulics on the deluxe auger or conveyor.

A hoist capable of supporting **900 kg** (**2000 lb**) minimum is required.

Select level, firm ground to perform the procedure.

Shut-off the tractor and remove the key.

Some or no hydraulic functions available

⚠ CAUTION

Suspended load!
Do not stand under the conveyor when you service or clean out the conveyor. The conveyor can fall rapidly if the hydraulics fail.
Failure to comply could result in minor or moderate injury.

C0185A

⚠ CAUTION

Suspended load!
Do not stand under the auger when you service or clean out the auger. The auger can fall rapidly if the hydraulics fail.
Failure to comply could result in minor or moderate injury.

C0187A

⚠ CAUTION

Suspended load!
The conveyor may drop a short distance when the latch releases.
Failure to comply could result in minor or moderate injury.

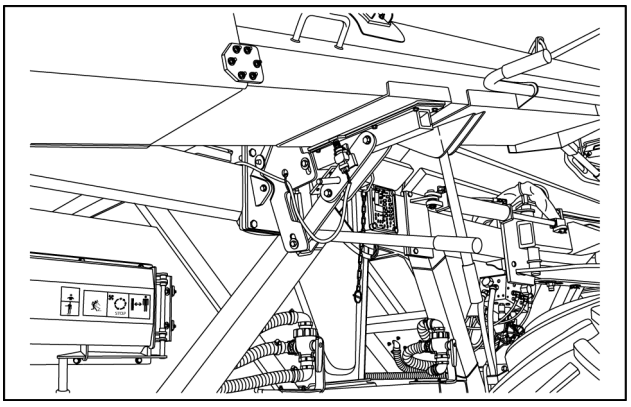
C0186A

NOTICE: *The functions of the auger will be locked out in transport position.*

NOTE: *This procedure shows a conveyor. Follow the same procedure for deluxe auger service.*

1. In case of a block failure or a complete loss of hydraulic function, the deluxe auger/conveyor will need to be serviced in transport position.
2. Keep the transport latch in the locked position with the lock pin installed.

NOTICE: *Do not open the front latch during service until the conveyer is supported.*



SAIL16SE00050AA 1

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Platform - Assemble platform support link - 950 bushel air carts only

⚠ WARNING

Fall hazard!
When working on top of equipment without safety rails at heights of more than six feet, use a certified safety harness. Anchor the safety harness to a fixed structure above the worker's body.
Failure to comply could result in death or serious injury.

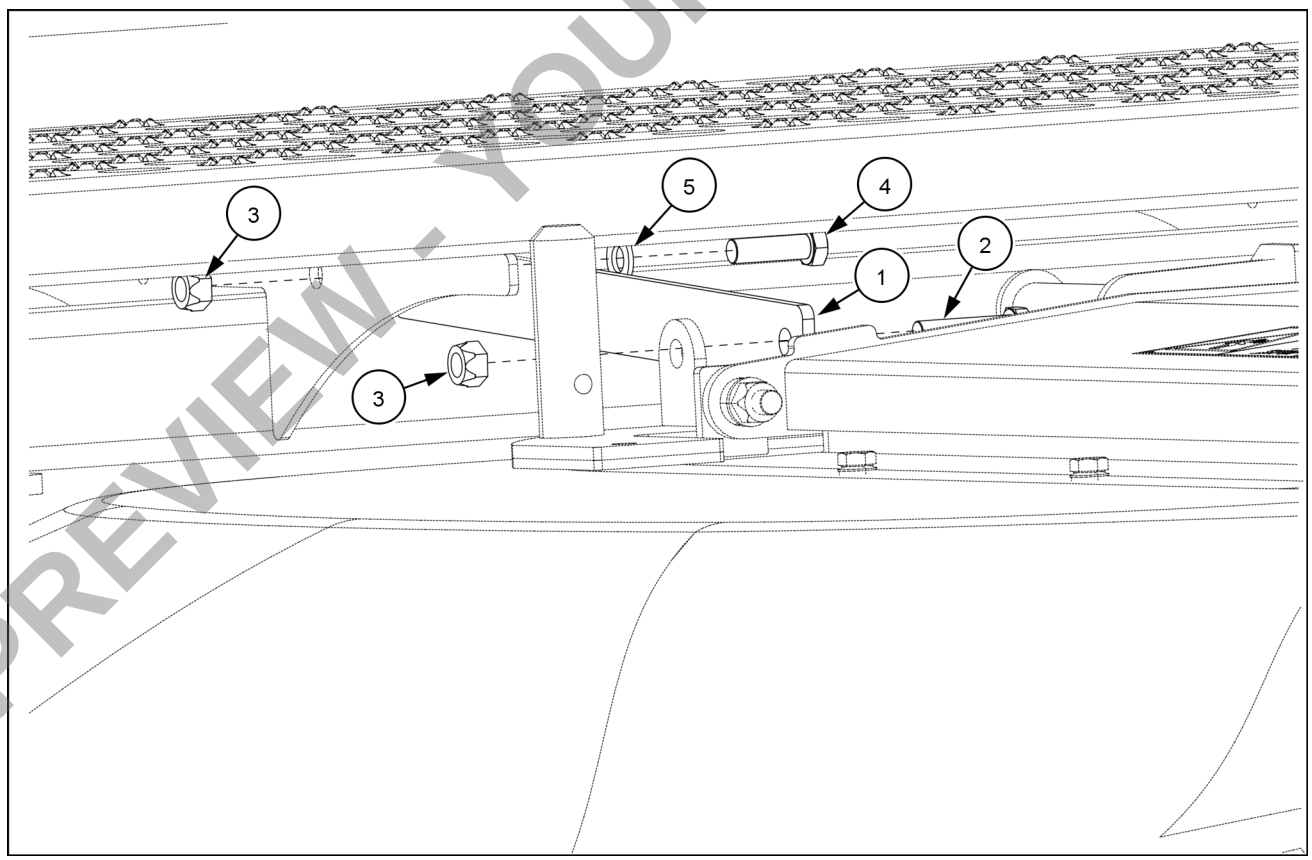
W0923A

NOTE: *The platform support link hardware can be found in the calibration storage box found on the front of your 950 bushel air cart. The link is installed on the top of tank 1 only.*

Platform support link installation

REF	ITEM#	DESCRIPTION	REPLACEMENT PART# (SERVICE PART)
1	47753034	PLATE, PLATFORM SUPPORT LINK	47753034
2	9706702	BOLT, M12X50 CLASS 8.8 ZND	9706702
3	100038	NUT, PREV TORQUE METAL M12 CL8 ZND	100038
4	86629541	BOLT, M12X40 FULL CL8.8 ZND	86629541
5	86511324	WASHER, 13 X 24 X 2.5MM CST ZND	86511324

1. Install the link plate **(1)** to the flange on the tank lid with one bolt **(2)**, and one nut **(3)**.
2. Install the slotted end of the link plate **(1)** to the platform with one bolt **(4)**, one washer **(5)**, and one nut **(3)**.



SAVM15SE01155FA 1

3. Torque nuts as per the bolt torque section of this manual.

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[55.640] Electronic modules 55.9
[55.785] Precision farming system 55.10
[55.DTC] FAULT CODES 55.11
Metering system 61
[61.904] Product metering 61.1
Seeding 77
[77.100] Product handling and delivery drive system 77.1
[77.101] Seeding fan system 77.2
[77.150] Auxiliary tank fill system 77.3
[77.904] Air distribution system 77.4
Platform, cab, bodywork, and decals 90
[90.108] Decals and plates 90.1
[90.110] Operator platform less cab 90.2
[90.118] Protections and footboards 90.3

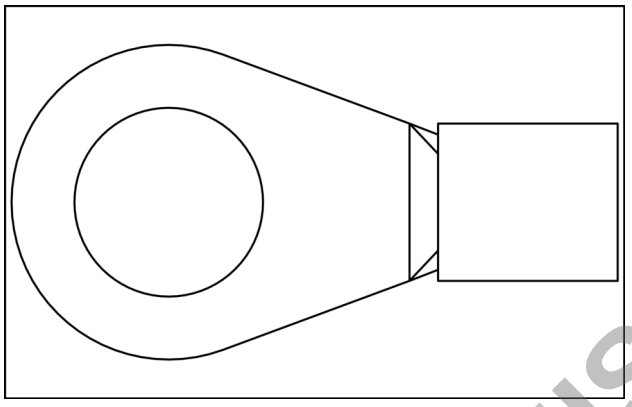
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Wire connectors - Component diagram 44 350 Bu tow behind

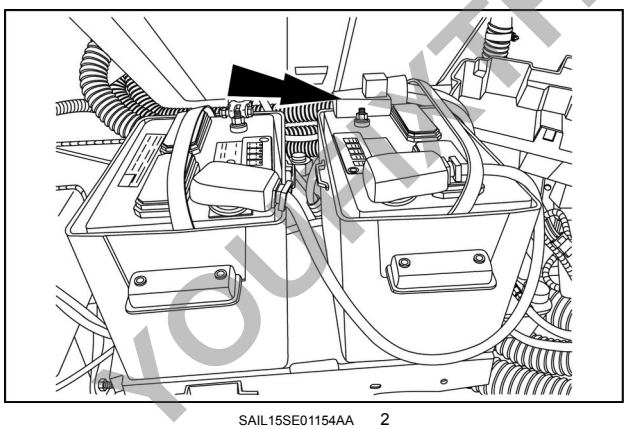
P2350	

X-440 - RING TERMINAL TO 24V BATTERY POS (+) (47663139)



47663139 1

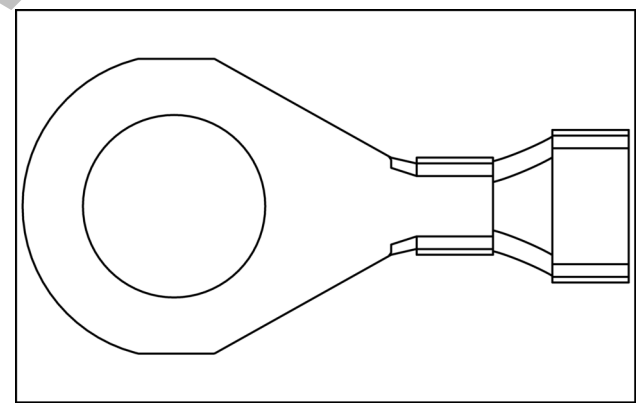
47663139



SAIL15SE01154AA 2

Pin	From	Wire	Description	Color-Size	Frame
1	**X-441 pin 1** RELAY 1 IN	232	BATTERY	RD - 13	**SHEET 09**

X-441 - RELAY 1 IN (47607318)



47607318 3

47607318

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Electrical systems - 55

Alternator - 301

P2350, P3440, P3550 , P4460, P4580, P4760, P4950

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