Torque – Hydraulic Tubes and Fittings

NOTICE: *The torque values given are for dry torques.*

Standard Torque Data for Hydraulic Tubes and Fittings

Hoses / Tubes to Steel Fittings 37° Flared Fittings							
Size	Tubing OD		Thread Size	Nm		LB FT	
	Inches	mm		Min	Max	Min	Max
2	1/8	3.2	5/16-24	10	11	7	8
3	3/16	4.8	3/8-24	13	14	10	11
4	1/4	6.4	7/16-20	18	19	13	14
5	5/16	7.9	1/2-20	23	25	17	18
6	3/8	9.5	9/16-18	29	34	22	24
8	1/2	12.7	3/4-18	59	64	43	47
10	5/8	15.9	7/8-14	92	102	68	76
12	3/4	19.1	1-1/6-12	128	143	95	106
14	7/8	22.2	1-3/16-12	152	169	113	124
16	1	25.4	1-5/16-12	176	185	130	136
20	1-1/4	31.8	1-5/8-12	206	217	152	160
24	1-1/2	38.1	1-7/8-12	258	270	190	200
32	2	50.8	2-1/2-12	398	420	294	310

Fittings into steel / forged cylinder spuds, steel bodies, cast iron bodies O-ring Boss							
Size	Tubing OD		Thread Size	Nm		LB FT	
	Inches	mm		Min	Max	Min	Max
4	1/4	6.4	7/16-20	18	20	13	15
5	5/16	7.9	1/2-20	23	26	17	19
6	3/8	9.5	9/16-18	29	33	22	24
8	1/2	12.7	3/4-18	49	53	40	43
10	5/8	15.9	7/8-14	59	64	43	48
12	3/4	19.1	1-1/6-12	93	102	68	75
14	7/8	22.2	1-3/16-12	122	134	90	99
16	1	25.4	1-5/16-12	151	166	112	123
20	1-1/4	31.8	1-5/8-12	198	218	146	161
24	1-1/2	38.1	1-7/8-12	209	231	154	170

Fittings into aluminum bodies O-ring Boss							
Size	Tubing OD		Thread Size	Nm		LB FT	
	Inches	mm		Min	Max	Min	Max
4	1/4	6.4	7/16-20	9	15	7	11
6	3/8	9.5	9/16-18	23	34	17	25
8	1/2	12.7	3/4-18	34	54	25	40
10	5/8	15.9	7/8-14	41	75	30	55
12	3/4	19.1	1-1/6-12	75	108	55	80
14	7/8	22.2	1-3/16-12	108	129	80	95
16	1	25.4	1-5/16-12	115	163	85	120
20	1-1/4	31.8	1-5/8-12	163	224	120	165
24	1-1/2	38.1	1-7/8-12	183	258	135	190

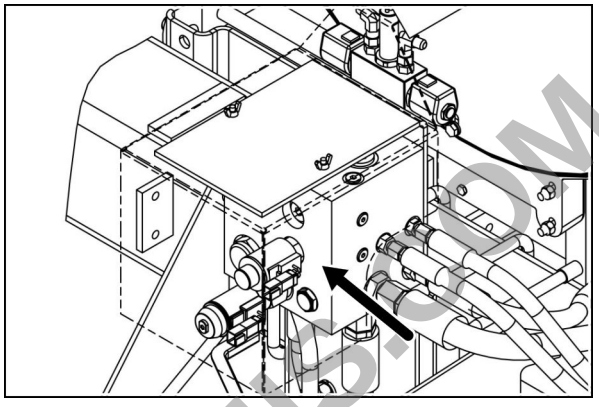
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PRIMARY HYDRAULIC POWER SYSTEM - Dynamic description

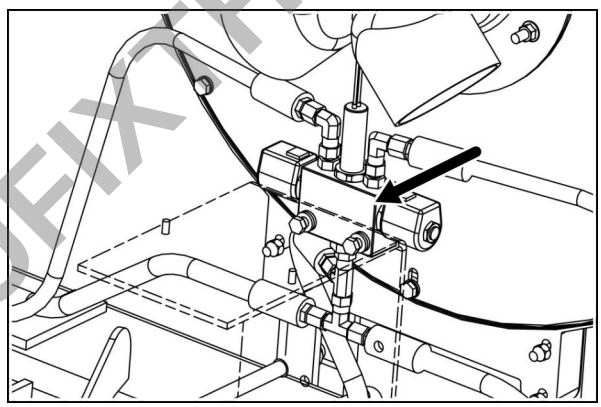
1220 Rigid Trailing

Trailing Rigid variable drive planters have three hydraulic circuits:
(1) the multivalve circuit which operates the vacuum fan and the seed drive motor. This circuit is always powered by a separate tractor remote valve which is dedicated to these functions.



RCIL06PTR046AAA 1

(2) the marker hydraulic circuit,



RCIL06PTR045AAA 2

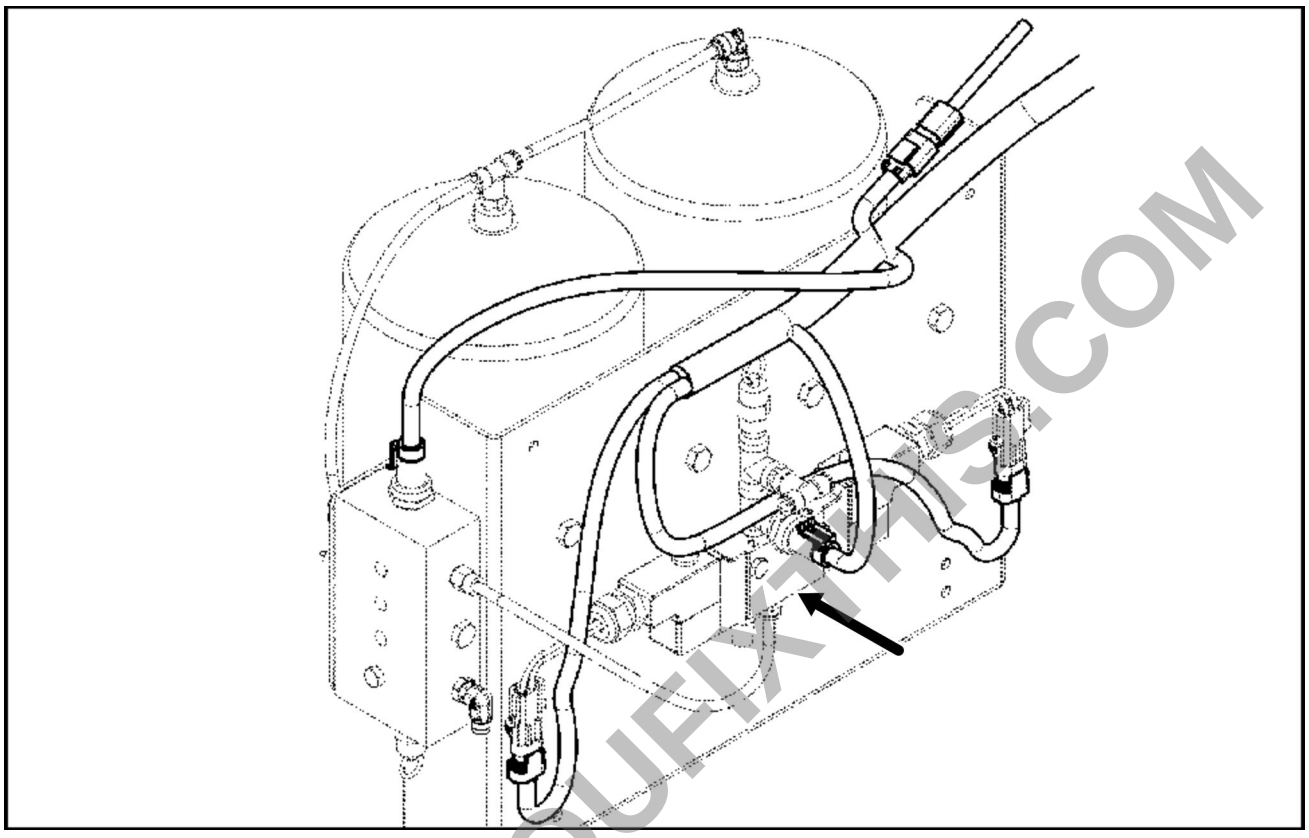
(3) the planter raise/lower hydraulic circuit.
Both the marker and the raise circuits are powered by a single tractor remote valve; the marker valve block controls fluid routing to the circuits.

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Command valve - Component localisation - Pneumatic Pilot Valve

1230 Mounted Stacker



410434C 1

Pneumatic Pilot Valve

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Wiring harness Main harness - Component diagram - Ground Drive - Before 2011

1210 Rigid Mounted

CONNECTOR	DESCRIPTION
X-001	Implement to Tractor
X-002	7-Pin Auxiliary Power / Lighting
X-003	Cooler Fan Power
X-008	Terminator
X-109	Left Hand Warning Light
X-110	Right Hand Warning Light
X-111	Left Hand Enhanced Lights
X-112	Right Hand Enhanced Lights
X-113	Hydraulic Pressure Switch
X-133	Right Hand Marker
X-134	Left Hand Marker
X-137	Frame Control
X-138	Manual Fold
X-202	Connects to Rate ECU (ECU 1A)
X-203	Connects to Rate ECU (ECU 1B)
X-210	Left Hand Seed Sensor
X-211	Right Hand Seed Sensor
X-212	Left Hand Sensor Jumper A
X-213	Left Hand Sensor Jumper B
X-214	Right Hand Sensor Jumper A
X-215	Right Hand Sensor Jumper B
X-217	Seed Hopper Bin Level
X-222	Wheel Ground Speed Sensor
X-226	Vacuum Sensor 1
X-233	Implement Status
X-234	Implement Status

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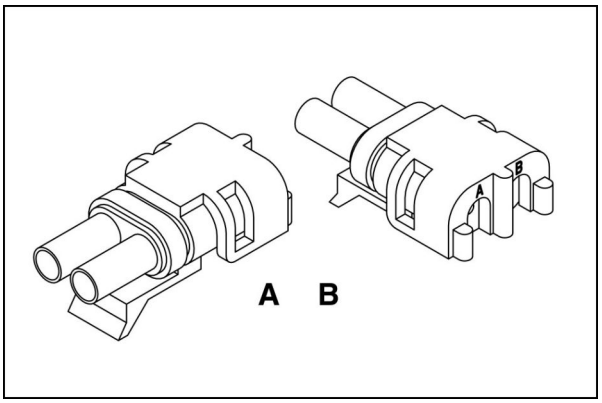
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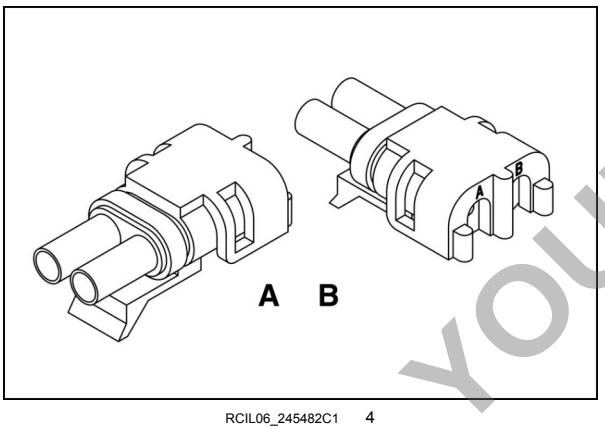
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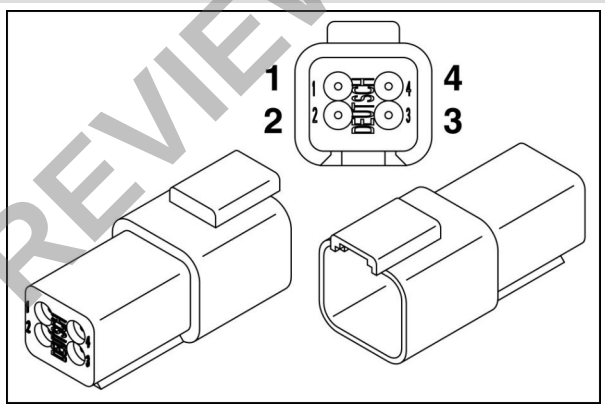
Connector B– 245482C1

Connector	Cavity/Pin	Circuit Description
 RCIL06_245482C1 3	A	LIGHT GND
	B	RH WARNING

Connector C – 245482C1

Connector	Cavity/Pin	Circuit Description
 RCIL06_245482C1 4	A	LIGHT GND
	B	LH WARNING

Connector D – 277905A1

Connector	Cavity/Pin	Circuit Description
 RCIL06_277905A1 5	1	RH ENHANCED
	2	LIGHT GND
	3	TAIL LIGHT
	4	LIGHT GND

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Repair or replace components as needed.

Reinstall all connectors and turn system power ON.

A. Fault code 27184 is logged. Go to Step 4.

B. Fault code is not logged. Return unit to field operation.

4. Check for loose connections in the Clutch Control N ECU power supply circuit.

   Inspect contacts T3 (ECU_GND) and W3 (ECU_PWR) of Connector **X-654** to the indicated Clutch Control ECU, as well as contacts B (ECU_PWR) and C (ECU_GND) on connectors **X-650** and **X-651** on the air clutch harness. Repeat the check of connectors **X-650** and **X-651** for any other daisy-chained air clutch harnesses.

   Inspect contacts 2 (ECU_GND) and 4 (ECU_PWR) of Connector **X-001** (2011 & after) / **X-020** (before 2011) and contacts B (ECU_PWR) and C (ECU_GND) of Connector **X-005**.
   Clean the connectors.

   Repair and/or replace bent or broken contacts.

   Reconnect all connectors.

   Turn system power ON.

   A. Fault code 27184 is logged. Go to Step 5.

   B. Fault code is not logged. Return unit to field operation.

5. Locate and repair any short in tractor harness between battery and contacts 2 and 4 of 9-pin implement connector (J501 typical), and between contacts 2 (ECU_GND) and 4 (ECU_PWR) of Connector **X-001** (2011 & after) / **X-020** (before 2011) and contacts B (ECU_PWR) and C (ECU_GND) of Connector **X-005**.

   Cycle system power.

   A. Fault code 27184 is logged. Go to Step 6.

   B. Fault code is not logged. Return unit to field operation.

6. Check for bent or shorted contacts on the **X-654** connector to the Clutch Control N ECU.

   Clean the connector.

   Repair and/or replace bent or broken pins.

   Turn system power ON.

   A. Fault code 27184 is logged. Go to Step 5.

   B. Fault code is not logged. Return unit to field operation.

7. Replace Clutch Control N ECU.

   Turn system power OFF.

   Remove and replace the Clutch Control N ECU.

   Install, program, set implement identification and re-calibrate the system.

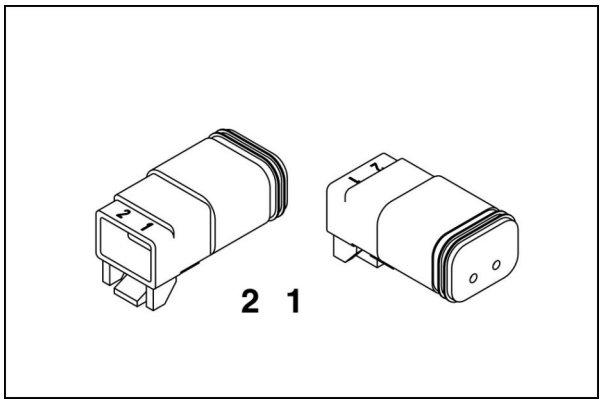
   A. Fault code 27184 is logged. Reinstall the original Clutch Control N ECU. Submit a concern through ASIST.

   B. Fault code is not logged again. Write the fault code on the failed controller. Return unit to field operation.

Mechanical Drive - 2011 & after:
Wiring harness - Electrical schematic frame 05 (A.30.A.88-C.20.E.05)
Variable Drive - 2011 & after:

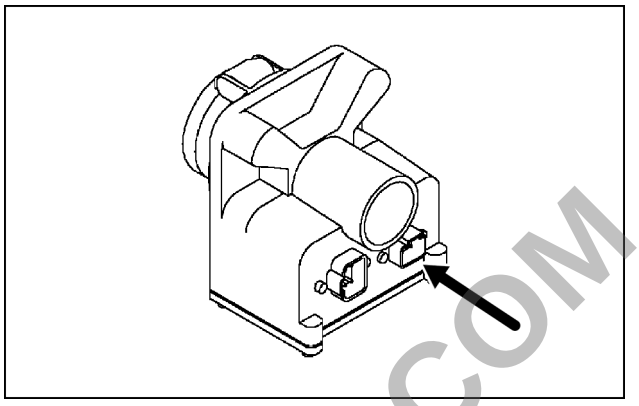
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J. Implement Connectors



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225316C1

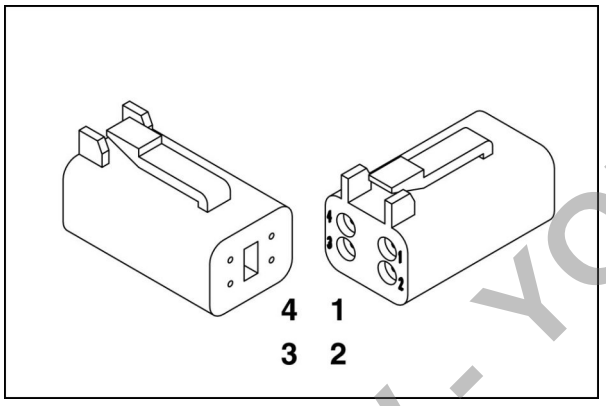


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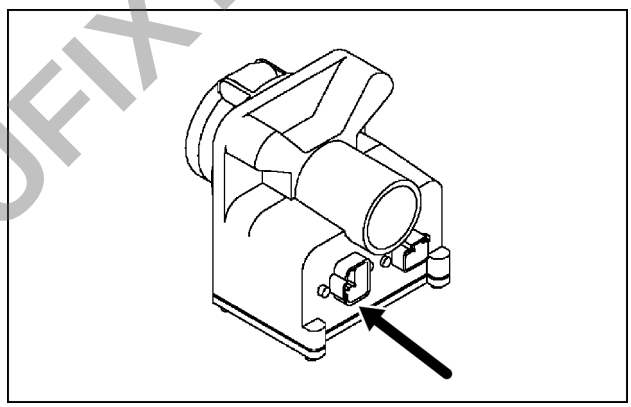
Databus Power to 9-Pin Implement Connector

Cavity/Pin	Circuit ID	Circuit Description	Next Connection
1	4B R-1.0	B+ SW	
2	8B B-1.0	CLEAN GND	



RCIL06_239451A1 9

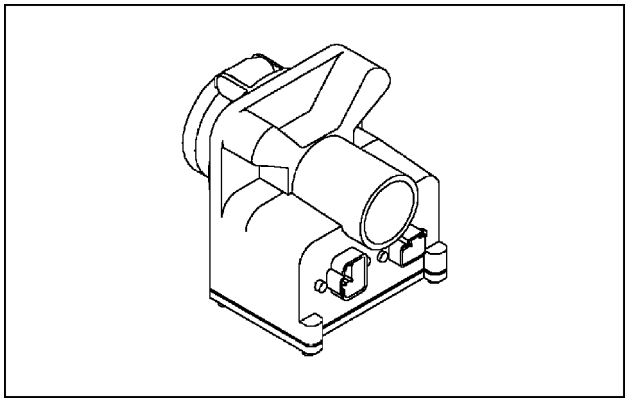
239451A1



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Cavity/Pin	Circuit ID	Circuit Description	Next Connection
1	11B R	CDB IMP B+	
2	12B Y	CDB IMP HI	
3	13B B	CDB IMP GND	
4	14B DG	CDB IMP LOW	



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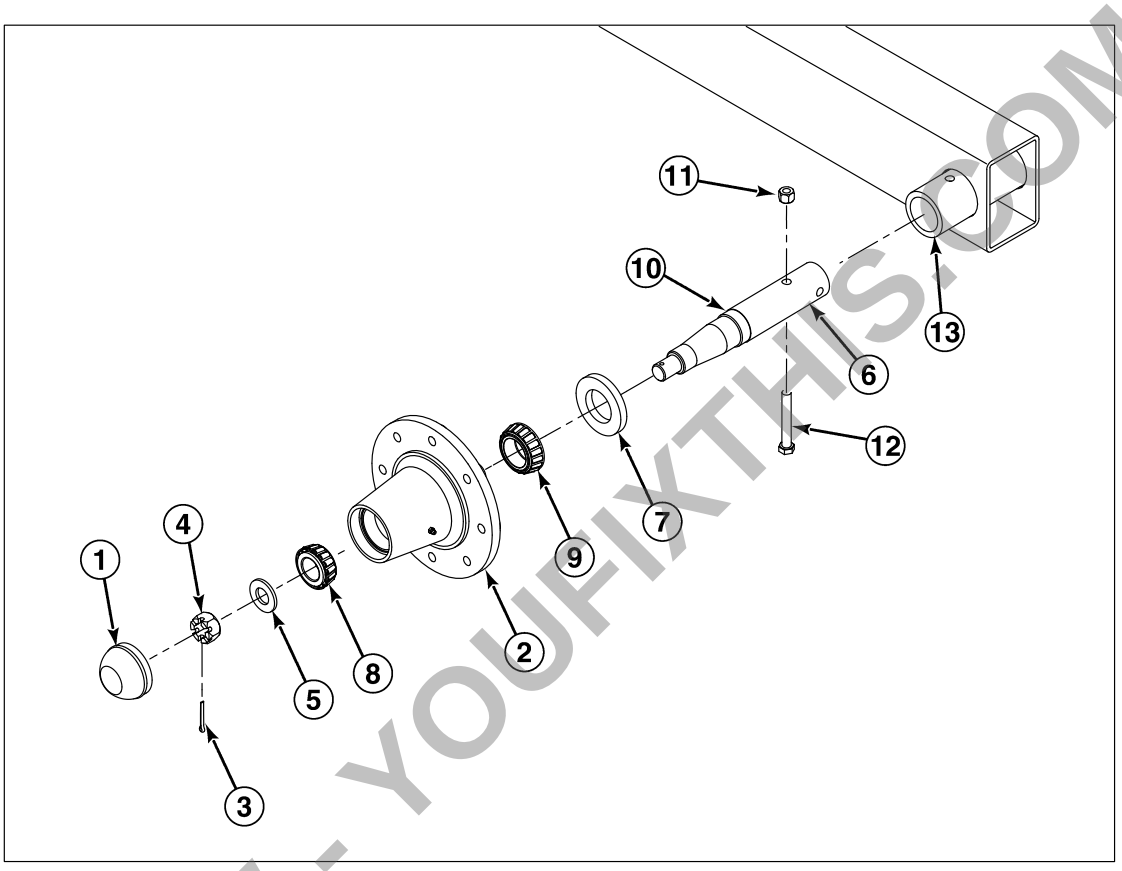
323597A1

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Axle - Assemble - Endwise transport wheel

1220 Rigid Trailing

Prior operation:
Axle - Disassemble (D.13.B)



rh04n165 1

1. If the bearing cups and cones require replacement, press new bearing cups (NOT shown) into the hub **(2)**.

NOTE: *Press the bearing cups into the hub **(6)** until they are fully seated.*

2. Pack both bearing cones **(8)** **(9)** with **CASE IH AKCELA MULTI-PURPOSE GREASE 251H EP** before installing. Pack the wheel hub with the same grease.
3. Lubricate the seal **(7)** with grease or petroleum jelly before installing in the hub **(2)**.
4. Install the spindle wear sleeve **(10)** on the spindle **(6)**.
5. Install the outer **(8)** and inner **(9)** bearing cones in the hub **(2)** and slide the hub onto the spindle **(6)**.

NOTE: *Make sure the seal **(7)** is installed against the inner **(9)** bearing cone without pinching.*

6. Install the washer **(5)** and nut **(4)** on the spindle **(6)**. Tighten the nut and check the wheel for ease of rotation. Wheel should rotate without too much end play or restriction. Install the cotter pin **(3)**. If necessary, loosen the nut until the cotter pin can be inserted.

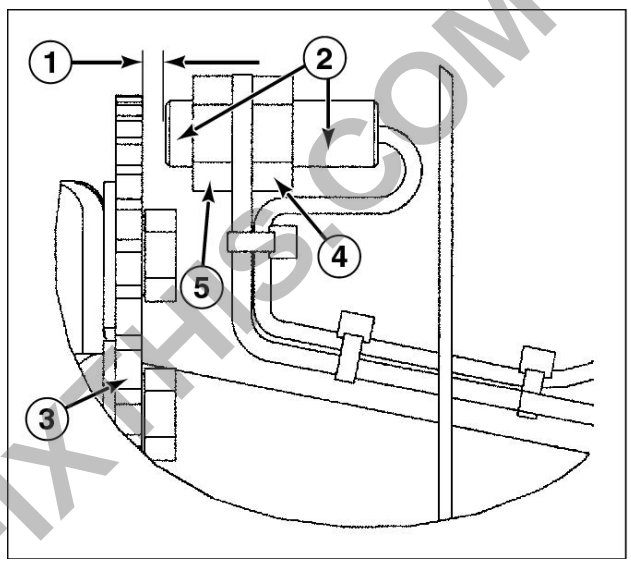
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Sensing system Ground speed sensor - Adjust

Prior operation:
For planters with dual arm drive wheel, Perform Step 5 of **Carrying wheel - Remove (D.50.C)** to remove the drive wheel covers (if equipped).
Prior operation:
For planters with single arm drive wheel, Perform Step 2 of **Carrying wheel - Remove (D.50.C)** to remove the wheel covers (if equipped).

1. Check the speed sensor adjustment. There must be a **2.5 mm** (**0.098 in**) gap **(1)** between the sensor **(2)** and sprocket **(3)**.

NOTE: *Inspect the sensor sprocket while adjusting the sensor to find any possible runout problems. The sensor should never be closer than* ***1.0 mm*** *or further than* ***4.0 mm*** *from the rotating sprocket.*



rh05a028 1

2. To adjust the sensor, loosen the tensioning nut **(4)**. Adjust the gap to the sprocket with the adjusting nut **(5)**, until the **2.5 mm** (**0.098 in**) distance is obtained. Tighten the tensioning nut. **(4)**.

Next operation:
For planters with dual arm drive wheel, Perform Step 8 of **Carrying wheel - Install (D.50.C)** to install the drive wheel covers (if equipped).
Next operation:
For planters with single arm drive wheel, Perform Step 3 of **Carrying wheel - Install (D.50.C)** to install the wheel covers (if equipped).

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Cylinder - Remove

1220 Rigid Trailing

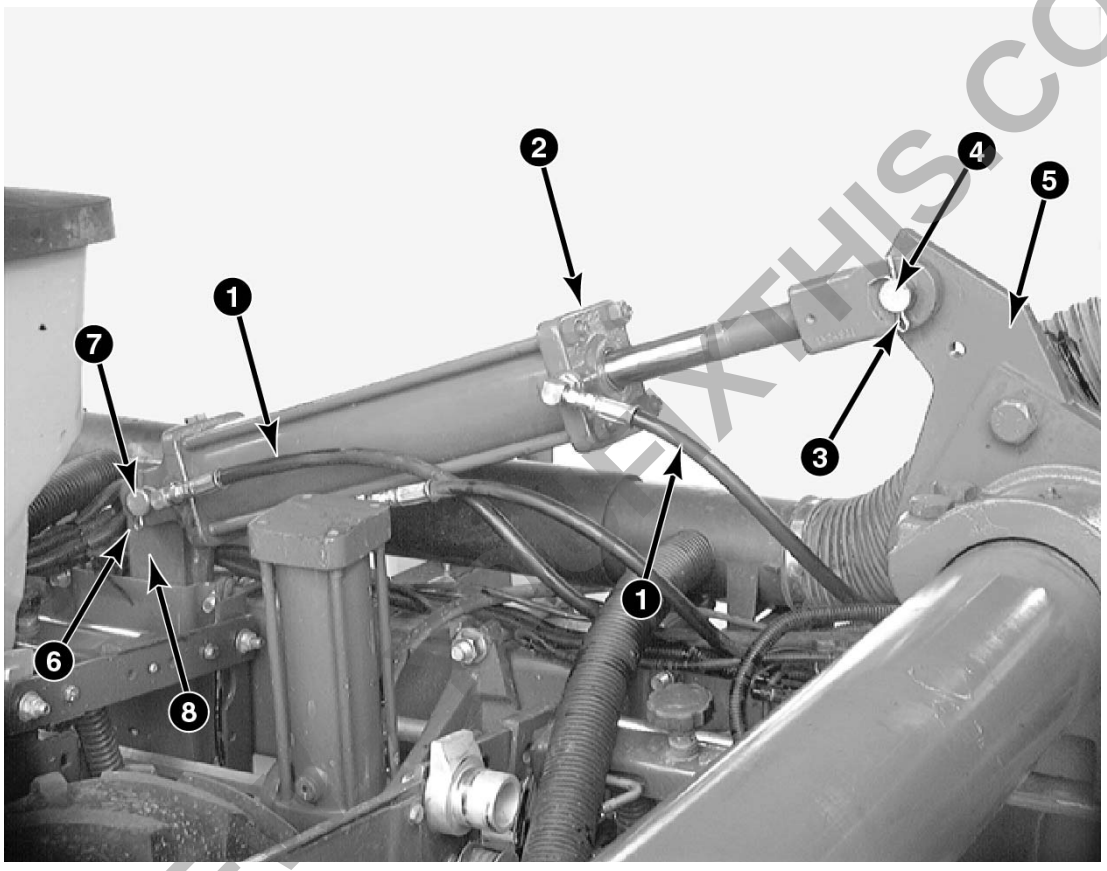
Locate the planter on a hard and level surface.

Lower the planter to the ground.

Lower the transport wheels until they are just resting on the ground and not lifting the planter.

Put the tractor remote lever for the endwise transport hydraulic circuit in the Neutral position to relieve pressure on the hydraulic circuit.

Turn the tractor OFF and remove the key from the keyswitch.



rh04k098 1

Endwise Transport Cylinder

1. Identify and tag the two hydraulic hoses **(1)** attached to the cylinder for ease of installation. Remove the hoses from the elbow fittings on the cylinder **(2)**. Plug or cap the hoses and ports.
2. Remove the cotter pin **(3)** from the clevis pin **(4)**. While supporting the rod end of the cylinder, remove the clevis pin from the cylinder rod clevis and the anchor plate **(5)**.
3. Remove the cotter pin **(6)** from the clevis pin **(7)**. While supporting the cylinder, remove the clevis pin from the cylinder base clevis and the frame mounting plate **(8)**.

Next operation:
8RN Trailing Rigid Planters **Cylinder - Disassemble (F.10.B)**

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Cylinder - Remove - Gull wing cylinder

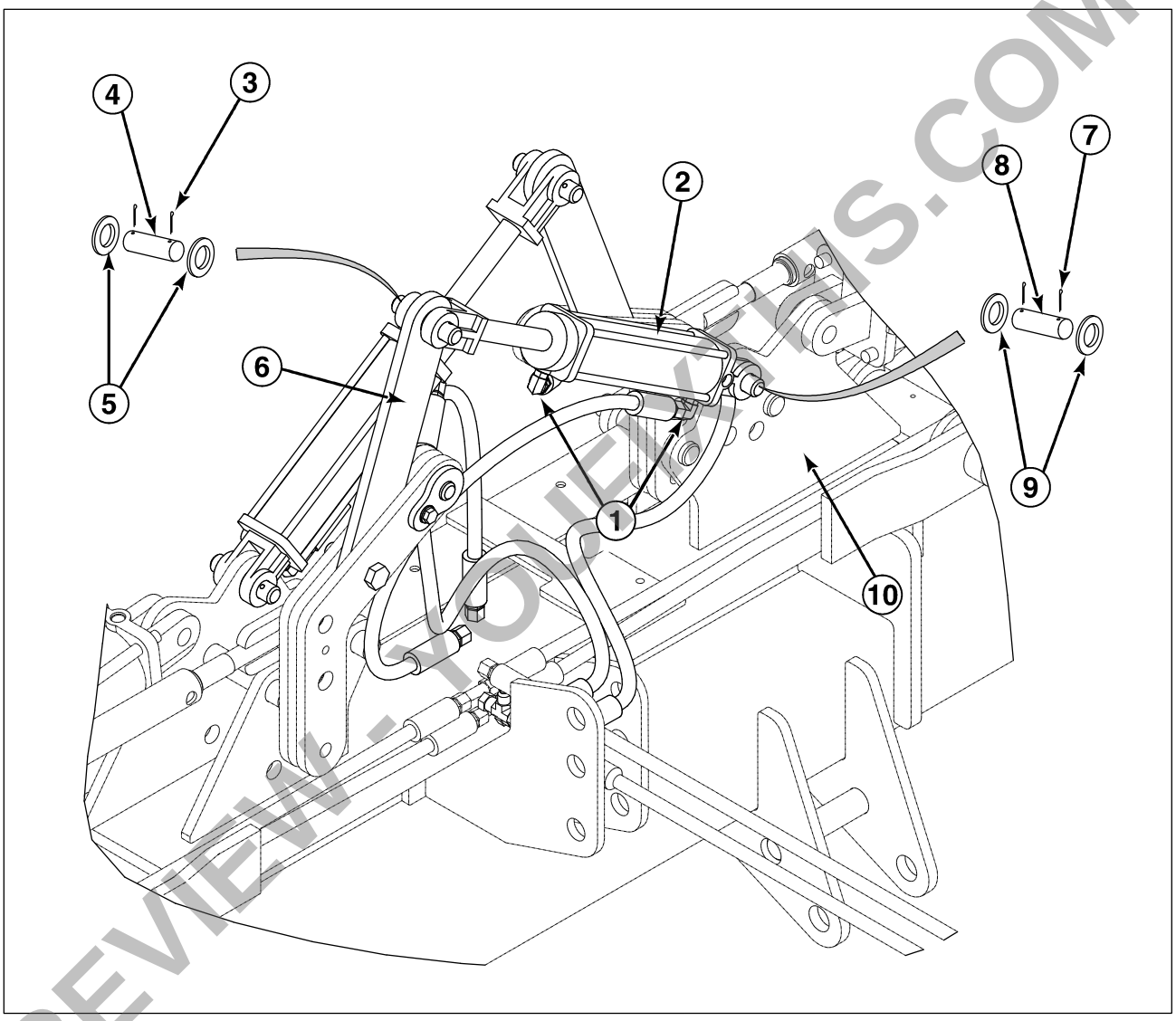
1230 Mounted Stacker

Locate the planter on a hard and level surface.

Lower the planter to the ground.

Put the tractor remote lever for the marker/fold valve in the Neutral position to relieve pressure on the hydraulic circuit.

Turn the tractor OFF and remove the key from the keyswitch.



rh04k056 1

Gull Wing Cylinder

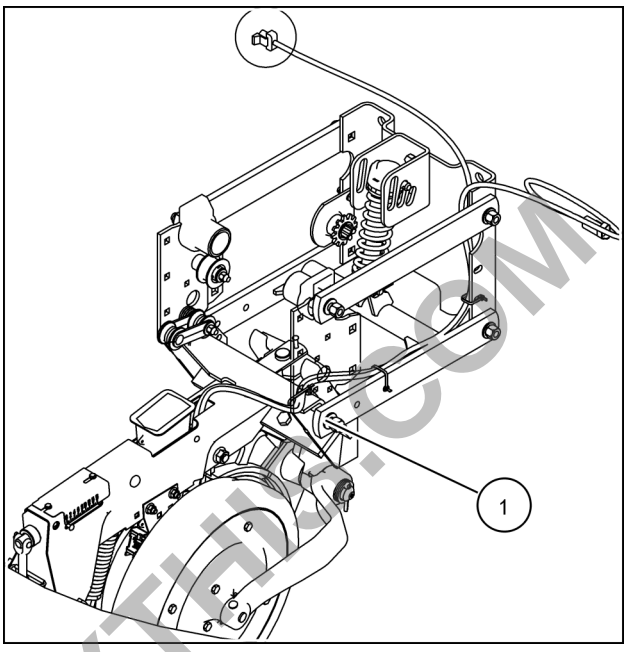
1. For ease of installation, identify and tag the two hydraulic hoses **(1)** attached to the gull wing cylinder **(2)**. Be prepared to catch a small amount of hydraulic oil. Remove the hoses from the fittings. Plug or cap the hoses and ports.
2. Remove the cotter pin **(3)** from the straight pin **(4)**. While supporting the rod end of the cylinder **(2)**, remove the straight pin and two washers **(5)** from the cylinder rod clevis and the link **(6)**.

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Parallel linkage row unit - Torque

Torque the row unit parallel linkage pivot bolts nut to **79 - 98 Nm** (**58 - 72 lb ft**).



RH06K207 1

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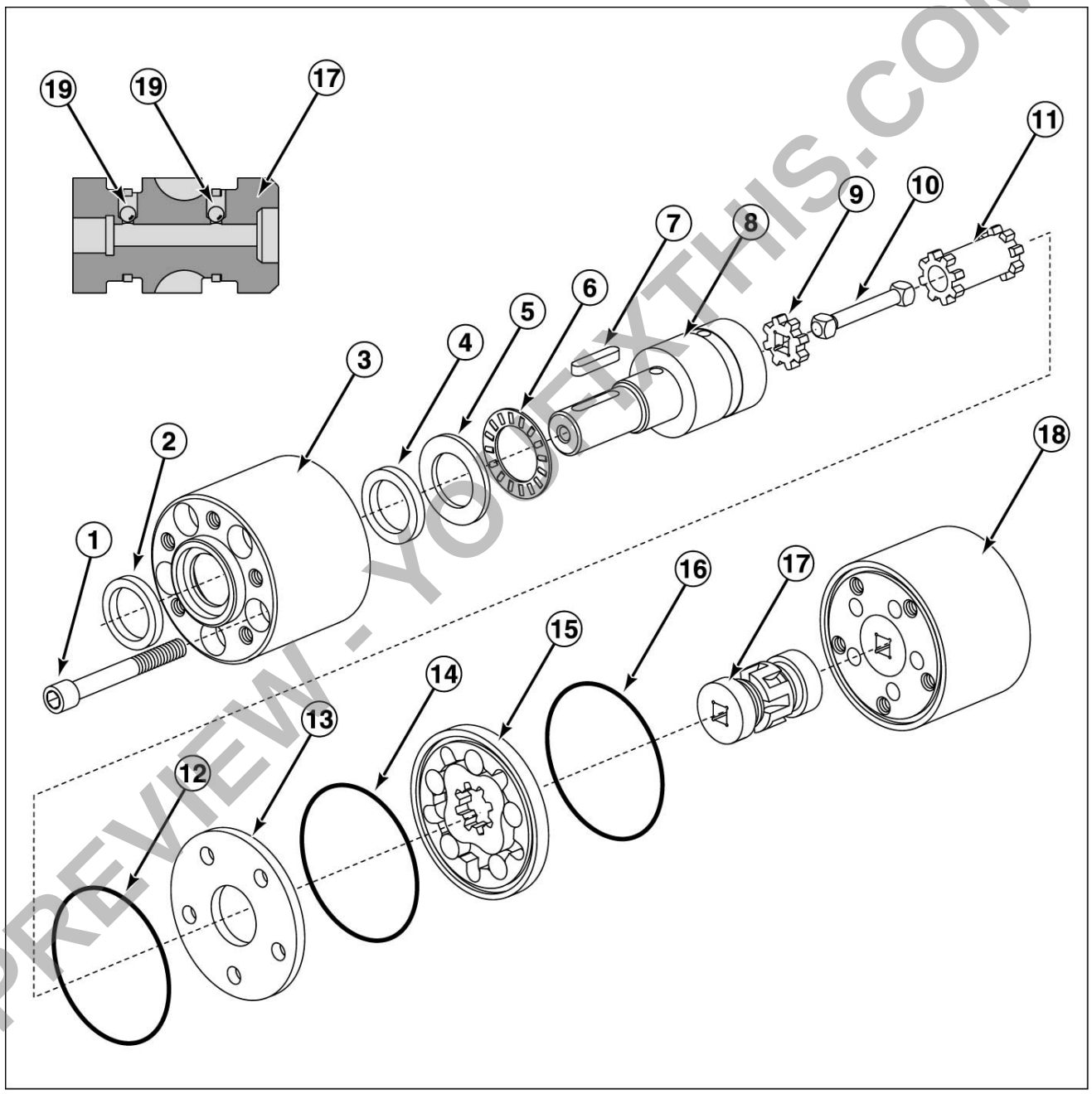
Variable drive Motor - Disassemble

1220 Rigid Trailing, 1230 Mounted Stacker

Cleanliness is extremely important when servicing hydraulic motors. Drain the hydraulic fluid from the motor, plug the ports and then clean the motor exterior.

Disassemble the motor in a clean work area.

Prior operation:
Variable drive - Remove (L.10.F)



rh04n201 1

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Motor - Static description

1220 Rigid Trailing

Symptom: Vacuum fan not up to speed or fan speed fluctuates.

Possible Cause	Action
Low flow or pressure from tractor remote valve.	Check the hydraulic couplers for the multivalve circuit for good connection. Check the in-cab control settings for the tractor remote valve. Use a flowmeter to test the flow rate from the tractor remote valve, if its output is questionable.
Low flow or pressure from the PTO pump system.	Check that the in-cab PTO control is set to **1000 RPM** or greater. Check fluid level in pump system reservoir.
Vacuum fan spool valve is plugged or contaminated.	With the system powered and the vacuum fan engaged, depress the manual plunger on vacuum fan proportional flow control valve. If fan speed changes, test the solenoid coil. If fan speed does not change, disassemble the spool valve from the multivalve block for cleaning and inspection. See **Control valve Flow control - Disassemble (L.10.H)**. Reinstall the valve and retest operation of the valve. If fan speed changes, test flow at the vacuum fan motor.
Vacuum fan solenoid coil is defective.	Remove the solenoid coil from the valve spool and test the coil with a multimeter. See **Control valve Flow control - Electrical test (L.10.H)**. If resistance reading is out of range, replace the coil. If the resistance reading is within range, check the Farming System for active fault codes.
Input line to the vacuum fan motor is blocked.	Flow test the supply line to the vacuum fan motor: Install a flowmeter in line between multivalve port M1 and the right hand motor port. Set vacuum level to maximum on the Display. With flowmeter load valve fully open, engage the tractor remote valve or PTO pump system. Note the flow rate for the supply port. If flow rate is **41.6 - 49.2 L/min** (**11 - 13 US gpm**), test the output line from the motor. If flow rate is NOT **41.6 - 49.2 L/min** (**11 - 13 US gpm**), check the multivalve block and supply line to the left hand motor port for blockage or contamination.

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SEEDING Marking system - Static description - AFS display

1210 Rigid Mounted, 1220 Rigid Trailing

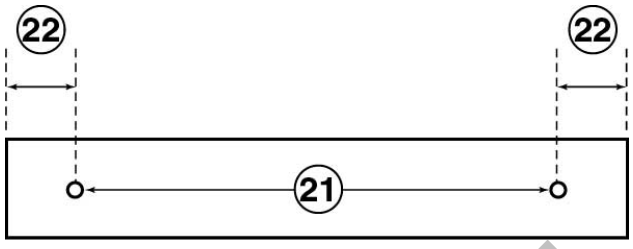
Symptom: Marker does not extend or retract.

Possible Cause	Action
Marker setup incorrect on the Display.	Check the marker settings on the planter setup screen, the frame screen and the user screen with the marker control module. Verify that marker manual or automatic alternating is turned ON and that the first marker to deploy is selected.
Transport lock pins are installed.	Check if the transport lock pins are installed in the transport position. Move the pins to their storage position if required.
Flow rate from the tractor remote system is too low.	Check fluid level for the tractor reservoir. Correct level if required. Check if the vacuum fan circuit is connected to the priority remote valve on a tractor so equipped. Move the vacuum fan circuit to another remote valve. Check the settings for the auxiliary valve for the marker/fold circuit. Adjust flow rate higher as required.
Marker electrical system is faulty.	Check the Fault screen on the Display for ECU fault codes related to the markers. Follow the troubleshooting procedure for the active fault code(s) to return the marker system to normal operation.
Marker spool valve is damaged (only one marker does not operate) or the marker valve block is contaminated (both markers do not operate).	Remove and disassemble the spool valve for the non-operating marker. Inspect the valve. Clean or replace the spool valve as required. Decontaminate the Marker/Fold valve block.

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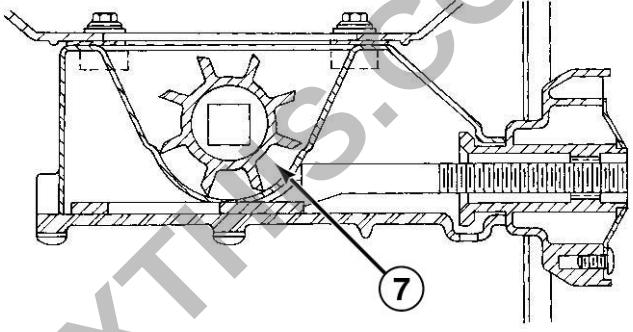
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2. Install the split pin **(9)** in the drive bar **(2)** hole. The dimension from the end of the drive bar to the center of the split pin hole must be **10.6 - 12.4 mm** (**0.42 - 0.49 in**) Check both ends of drive bar. Replace bar if either dimension is not correct.



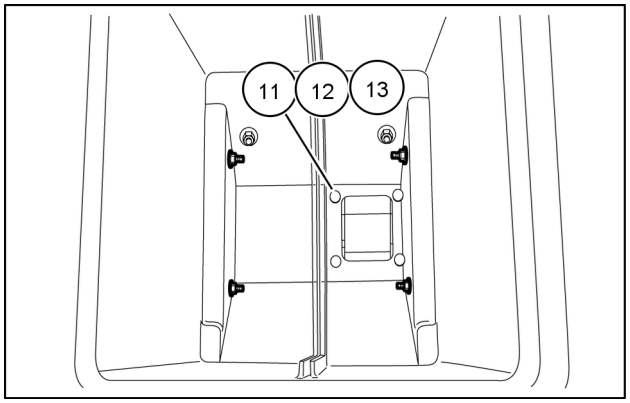
rh04h067 2

3. Install a housing bushing **(5)** and a bar bushing **(6)** in the left and right hand sides of the housing **(8)**.
4. Install the feed roller **(7)** in the housing **(8)**. The leading edge of the flutes must face the direction of rotation. Arrows on the housing show direction of rotation.



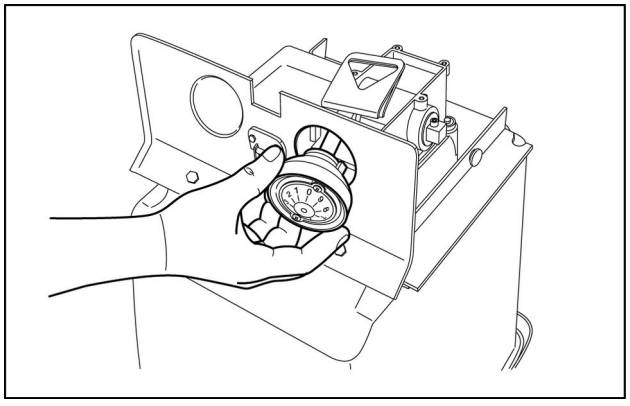
rh04h043 3

5. Install the split pin **(9)** in the left end of the drive bar **(2)**. Install the shims **(4)** and washers **(3)** on the drive bar as shown.
6. Install the cotter pin **(1)** in the right hand side of the drive bar.
7. Install a new gasket **(10)**, if required, on the housing **(8)**.
8. Position and support the housing **(8)** on the bottom of the hopper. Secure with rubber washers **(11)**, washers **(12)**, and bolts **(13)**.



RH04H060 4

9. Install the knob **(18)** and setting scale **(19)** on the rate control gauge **(17)**. Secure with screw **(20)**. Install the rate control gauge through the hopper support and on the housing.


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Hydraulic drive Motor - Static description

1220 Rigid Trailing

Symptom: Liquid fertilizer motor not up to speed or speed fluctuates.

Possible Cause	Action
Low flow or pressure from tractor remote valve. (The supply and return lines for liquid fertilizer are teed into the multivalve lines; both valve blocks should experience low flow problems if the tractor remote valve is the cause.)	Check the hydraulic couplers for the multivalve circuit for good connection. Check the in-cab control settings for the tractor remote valve. Use a flowmeter to test the flow rate from the tractor remote valve, if its output is questionable.
Low flow or pressure from the PTO pump system. (The supply and return lines for liquid fertilizer are teed into the multivalve lines; both valve blocks should experience low flow problems if the PTO pump system is the cause.)	Check that the in-cab PTO control is set to **1000 RPM** or greater. Check fluid level in pump system reservoir.
Liquid fertilizer spool valve is plugged or contaminated.	Disassemble the proportional flow control valve from the valve block for cleaning and inspection. See **Control valve Flow control - Disassemble (L.40.C)**. Reinstall the valve and retest operation. If motor speed is still incorrect, test flow at the liquid fertilizer motor.
Fertilizer solenoid coil is defective.	Remove the solenoid coil from the valve spool and test the coil with a multimeter. See **Control valve Flow control - Electrical test (L.40.C)**. If resistance reading is out of range, replace the coil. If the resistance reading is within range, check the Farming System for active fault codes.
There is blockage to or from the fertilizer drive motor.	Flow test the fertilizer drive motor: Install a flowmeter in line between fertilizer valve block port M and port A on the motor. With flowmeter load valve fully open, engage the tractor remote valve or PTO pump system. If flow rate is **9.5 - 13.25 L/min** (**2.5 - 3.5 US gpm**), flow is normal. If flow rate is NOT **9.5 - 13.25 L/min** (**2.5 - 3.5 US gpm**), check the fertilizer valve block, supply line and return line for blockage or contamination. Decontaminate or replace as required.

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INTRODUCTION

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Wiring harness - Electrical schematic frame 07 Variable - Lighting

1220 Rigid Trailing

Connector **X-002** – 7-Pin Light
Connector **X-003** – Auxiliary Power
Connector **X-109** – Left Hand Warning Light
Connector **X-110** – Right Hand Warning Light
Connector **X-111** – Left Hand Enhanced Lights
Connector **X-112** – Right Hand Enhanced Lights
Connector **X-203** – Connects harness to Rate ECU
Connector reference: **Connector - Component diagram 01 (A.30.A)**
Connector - Component diagram 03 (A.30.A)

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28234-Clutch Control n ECU CAN Bus Fault: CAN_L voltage is below normal. See operators manual.

1230 Mounted Stacker

Control Module : Clutch Control ECU

Cause:
(See above.)

Possible failure modes:

1. Low battery voltage.
2. Poor CAN_L connections to the Clutch Control N ECU.
3. CAN_L shorted low.
4. Excessive current on ECU_GND.
5. Faulty Clutch Control N ECU.

Solution:

1. Find out if the fault code is still active.

   Turn system power ON.

   Clear all fault codes from the Clutch Control N ECU.

   Cycle system power.

   A. Fault code 28234 is logged. Go to Step 2.

   B. Fault code is not logged. Return unit to field operation and monitor for recurring fault.
2. Check for low battery supply voltage.

   Turn system power ON. Disconnect Connector **X-001** (2011 & after) / **X-020** (before 2011) – the 9-Pin Implement to Tractor connector – from the tractor.

   Use a multimeter to measure voltage at the tractor connector – Connector J501 and P283 typical – between contact 4 (LB+) and contact 2 (LGND). Voltage should be greater than **12 V**, but less than **16 V**.

   A. Voltage outside of range. Go to Step 3.

   B. Voltage within range. Go to Step 4.
3. Check the Farming System harness and the tractor power system.

   Refer to Farming System harnesses in this manual and check the fuses and relays on the harnesses for this tractor. Test primary power and ground circuits as required.

   Repair or replace components as needed.

   Refer to the tractor Repair Manual and check the tractor electrical system.

   Check fuses, relays and the battery as needed. Repair or replace components as needed. Reinstall all connectors and turn system power ON.

   A. Fault code 28234 is logged. Go to Step 4.

   B. Fault code is not logged. Return unit to field operation.
4. Check for loose connections in the CAN_L wiring.

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20nn4-Digital Input Fault: Rate ECU Digital Input nn voltage below normal or shorted to ground. See operators manual.

1210 Rigid Mounted

Control Module : Rate ECU

Cause:
(See above.)

Possible failure modes:

1. Low battery voltage.
2. Bad connection in power wire to or signal line from the indicated device.
3. Power wire to the indicated device is shorted to low.
4. Device failure.
5. Faulty Rate ECU.

Solution:

1. Find out if the fault code is still active.

   Turn system power ON.

   Clear all fault codes from the Rate ECU.

   Cycle system power.

   A. Fault code 20nn4 is logged. Go to Step **2**.

   B. Fault code is not logged. Return unit to field operation and monitor for recurring fault.
2. Check for low battery supply voltage.

   Turn system power ON.

   Disconnect Connector **X-001** – the 9-Pin Implement to Tractor connector – from the tractor.

   Use a multimeter to measure voltage at the tractor connector – Connector J501 and P283 typical – between contact 4 (LB+) and contact 2 (LGND). Voltage should be greater than **12 V**, but less than **16 V**.

   A. Voltage outside of range. Go to Step **3**.

   B. Voltage within range. Go to Step **4**.
3. Check the Farming System harness and the tractor power system.

   Refer to Farming System harnesses in this manual and check the fuses and relays on the harnesses for this tractor. Test primary power and ground circuits as required. Repair or replace components as needed.

   Refer to the tractor Repair Manual and check the tractor electrical system. Check fuses, relays and the battery as needed. Repair or replace components as needed.

   Reinstall all connectors and turn system power ON.

   A. Fault code 20nn4 is logged. Go to Step **4**.

   B. Fault code is not logged. Return unit to field operation.
4. Check for loose connections between the Rate ECU and the device connected to the indicated digital input.

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27503-Rate ECU Power Fault: ECU_PWR voltage is above normal. See operators manual.

1230 Mounted Stacker

Control Module : Rate ECU

Cause:
(See above.)

Possible failure modes:

1. ECU_PWR shorted high.
2. Faulty Rate ECU.

Solution:

1. Find out if the fault code is still active.

   Turn system power ON.

   Clear all fault codes from the Rate ECU. Cycle system power.

   A. Fault code 27503 is logged. Go to Step **2**.

   B. Fault code is not logged. Return unit to field operation and monitor for recurring fault.
2. Check for short to voltage source higher than battery voltage (e.g. starter system) in Rate ECU power supply.

   Turn system power OFF.

   Disconnect Connector **X-203** (2011 & after) / **X-203** (before 2011) for Variable drive or Connector **X-203** (2011 & after) / **X-203** (before 2011) for Mechanical Drive, from the Rate ECU.

   Turn system power ON.

   Measure voltage between contact W3 (ECU_PWR) and contact T3 (ECU_GND).

   Voltage should be between **9.0 - 16.0 V**.

   Reconnect Connector **X-203** (2011 & after) / **X-203** (before 2011) for Variable drive or Connector **X-203** (2011 & after) / **X-203** (before 2011) for Mechanical Drive.

   If voltage is correct, go to Step 3.

   If voltage is not correct, locate and repair any short in tractor harness between battery and contact 4 of 9-pin implement connector (J501 typical), or between contact 4 (ECU_PWR) of Connector **X-001** (2011 & after) / **X-001** (before 2011)and contact W3 (ECU_PWR) of Connector **X-203** (2011 & after) / **X-203** (before 2011) for Variable drive or Connector **X-203** (2011 & after) / **X-203** (before 2011) for Mechanical Drive. If AccuRow option is installed on a pre-2011 harness, additionally check between contact 4 (ECU_PWR) of Connector **X-021** and contact 4 (ECU_PWR) of Connector **X-020**.

   Cycle system power.

   A. Fault code 27503 is logged.Go to Step **3**.

   B. Fault code is not logged. Return unit to field operation.

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12. **⚠ WARNING**

Unexpected movement!
When cylinders are connected to the machine hydraulic system, cycle the machine remote lever several times to remove air from the cylinder and hose. Air in the system can cause erratic operation or can cause equipment to drop unexpectedly.
Failure to comply could result in death or serious injury.

W0347A

Test operation of the hydraulic lift circuit.

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