

M-218-19

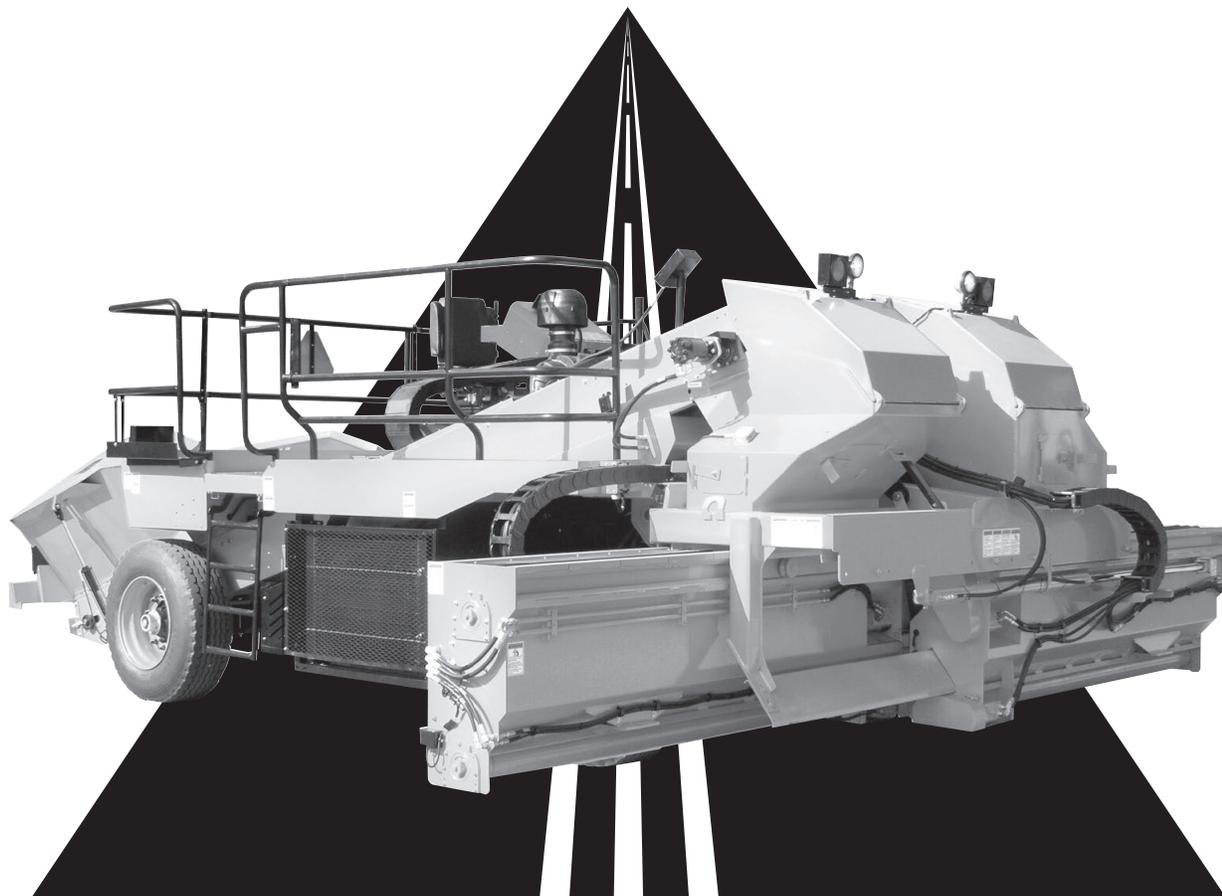
with RC36 Controller, 2012 and later
Supercedes M-218-13

Updated January 5, 2023

Troubleshooting Guide Chipspreaders

with RC36 Controller

Includes RC-28 controller Plug 1 & Plug 2 codes



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Troubleshooting Guide

Chipsreaders

M-218-19

Updated November 10, 2020

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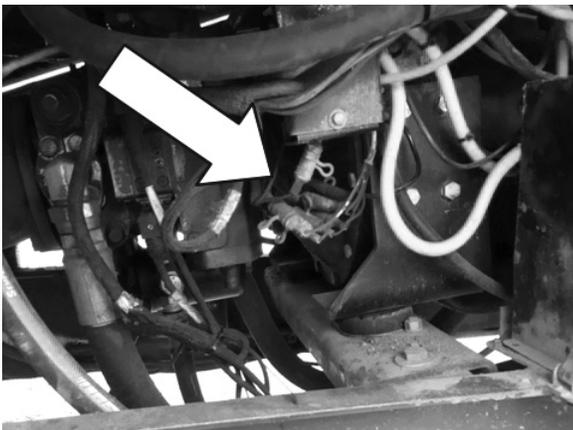
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Starter Does Not Crank

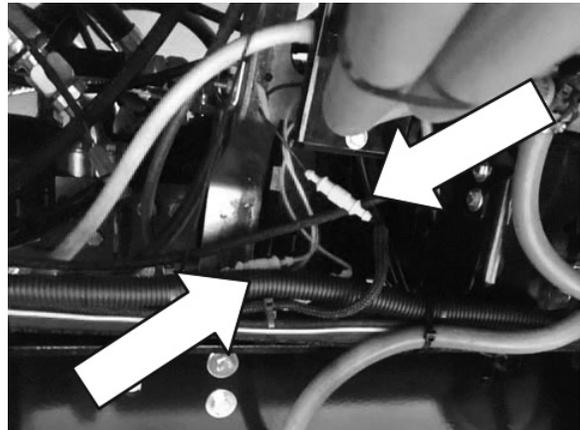
1. **Park/Drive switch in DrivePosition**
 - a. Park/Drive switch must be in Park to start machine
 2. **Emergency Stop ButtonPressed**
 - a. Twist Emergency Stop button to reset
 3. **Failed Relay or DisconnectedWire**
 4. **Replace/Repair FailedComponent**
-

Starter Cranks But Does Not Start

1. Does the information display show (ENGINE CAN) meaning no can buss communication to display. (If / Yes) go to #2.
2. Is the Tier 4 monitor (if equipped) receiving any engine data from the Cummins engine (ECM) controller (If / No) go to #3,(IF / Yes) go to #4.
3. Check fuses for Cummins Engine (ECM) Controller and operations. These fuses are located near the power and ground distribution hub at the right rear corner of the Cummins engine. There may be as many as (4) depending on the size of the Cummins engine.
Verify fuse size and connections with schematic for the machine
* Install replacement fuse with one no larger than the one removed.
Note: If unit is equipped with inline, yellow rubber insulated type fuse holders with glass fuses inside, the following procedure is recommended:
Pull fuse holder apart and make sure the ring is over the end of fuse. (Not just touching the end of the metal part of the fuse) this will give 12 vdc at the Cummins computer until there is a load placed on circuit.
Make sure the ring is tight and secure, with a good solder joint at the wiring end.
Inspect all connections: clean / repair / replace as needed
4. Check E-stop Switch / connections, possible issue on the fuel solenoid portion of the switch.
5. Check for issue with fuel solenoid / pump on Cummins engine.



Fuse Location Tier III Engines



Fuse Location Tier IV Engines



Machine Does Not Move

1. Start latch - Computer Locks Machine from Moving

- a. Place Park/Drive switch in Park and joystick to neutral. Move Park/Drive switch to Drive, moving joystick will now cause machine to move.

2. Speed Setpoint too Low

- a. Raise the speed setpoint by moving the SPEED switch up or pressing a memory button. The new setpoint will be displayed while changing the speed.

3. Brake pressure switch

- a. To Test - Turn off machine, unplug electrical connector on brake pressure switch, start machine and attempt to move machine. With the brake pressure switch unplugged the service brake alone will not stop the machine. If machine moves after unplugging brake pressure switch, replace switch.

4. Joystick Failure

- a. See Joystick Failure Section

5. Pump Failure

- a. If machine moves forward but a Pump Reverse Sol error is displayed when attempting reverse movement, then there is an electrical disconnect between the computer and pump or pump and ground
- b. If machine moves reverse but a Pump Forward Sol error is displayed when attempting forward movement, then there is an electrical disconnect between the computer and pump or pump and ground

6. Failed Charge Pump on the Drive Pump

- a. Install a 1000 psi gauge in the "G" port on the drive pump. With the engine at low idle the pressure should be around 400 psi. If the pressure reads close to 0 psi there is a problem with the charge pump.
-



Machine Speed Setpoint Limited to 200 FPM

1. Traction Control switch is activated

- a. The new machine has a maintained traction control switch. This can unknowingly be left on which sets the speed to 200 FPM the next time the machine is stopped.
- b. Turn right spreadroll switch off. If the speed can now be changed higher than 200 FPM then there is a problem inside the connector. The traction control and right spreadroll switch inputs to the computer are next to each other in the computer connector.
 - Remove the computer connectors, then reconnect and check to see if the speed can be changed higher than 200FPM.
 - Remove the input pins for the traction control switch and right spreadroll switch. Inspect wire crimps and remove any loose strands of wire. Reinstall pins.



Machine Speed Setpoint Limited to 400 FPM on 4WD (600 FPM on 2WD)

When a fault occurs limiting speed the machine will first come to a stop. The operator must then bring the joystick to neutral and move the joystick out of neutral to resume at the reduced speed. The computer must be reset and the fault corrected to resume normal operation.

1. No engine speed signal (**WARNING: ENGINE CAN**)

- a. Scroll to screen with engine speed. If engine is running but reads 0 rpm then there is a problem with the communication between the engine and computer. Check the engine communication harness for broken connection or wire.

2. No connection with drive motor(s) (**ALARM: FRONT MOTOR SOL FAILURE**)

- a. Enter the service screens with the machine in park. Scroll to "SERVICE: Front Motor". The Status should be approximately 0.40 Amps. If it reads 0.00 Amps there is a disconnection between the computer and the front motor.
- b. For 4WD unit repeat last step for Rear Motor.

3. No speed pickup signal (**ALARM: Speed Sensor Failure**)

- a. Reset any tripped circuit breakers
 - b. Check the connector at the speed pickup located on the front drive motor.
 - c. Check other connection between speed pickup and computer.
-



Speed Sensor Failure

1. See "Machine does not Move" section if speed sensor fault without machine movement
2. Check Circuit Breakers
3. Check Speed Sensor
 - a. Check for loose sensor
 - b. Check for loose wiring connections
4. Check Voltages at Speed Sensor Connector (with connector disconnected)
 - a. Wire #1 (12VDC)
 - b. Wire #2(Ground)
 - c. Wire #3 (Speed Signal, check continuity)
 - d. GN/Y Wire (Direction Signal, check continuity)
5. Check Voltages in Control Box (with connector connected)
 - a. Wire #1 (12VDC)
 - b. Wire #2(Ground)
 - c. Wire #3 (Speed Signal, 4-7 VAC while machine is moving)
 - d. GN/Y Wire (Direction Signal, 0 VDC Forward, 12 VDC Reverse)
6. Check Wires Connections at Computer
 - a. Speed signal (2-13)
 - b. Direction signal(1-41)



Uncommanded Motion Detection (UCMD)

1. UCMD direction

- a. Machine Moves wrong direction and shuts down engine
 1. The speed pickup shows the opposite direction of the computer command
- b. Speed pickup wired incorrectly or broken connection
 1. Correct or repair electrical connections

2. UCMD speed

- a. Joystick out of calibration
 1. Enter setup screens and recalibrate joystick
- b. Joystick microswitch needs to be adjusted
 1. When slowing the machine to a stop the engine shuts down. Computer is commanding the machine to be stopped but the neutral microswitch on the joystick holds the brake off and allows the machine to continue moving. When the computer sees this machine movement it shuts down the engine. One of the following errors will be shown. UCMD Shutdown: Speed or Warning Engine CAN.
 2. Remove the joystick from the housing, adjust the joystick microswitch away from the notched plate.



JoystickFault

1. Loss of supply power(+5V)
2. Loss of ground
3. Center tap is out of range ($2.5V \pm 1.0V$)
4. Reverse switch signal
 - a. Computer must see reverse switch signal within 2 seconds of moving reverse
 1. Reset circuit breakers
 2. Check Joystick Calibration
 3. Check reverse switch wires
 - b. Computer must not see reverse switch signal when moving forward



No Conveyor Movement

- 1. Conveyor Belt Stalled (noise from hydraulic pump should be heard)**
 - a. Turn Conveyor Speed to 100%, cycle conveyor switch on and off several times to break the belt free.
 - b. Center conveyor belt on head pulley and tail pulley, lower cutoff plate in rear hopper.
 - 2. Speed Set Too Low**
 - a. Adjust the conveyor speed to a higher percentage (normal use is around 75%)
 - 3. Conveyor Solenoid Failure**
 - a. Electrical disconnect between computer and conveyor solenoid. Find and repair loose or broken connection.
 - 4. Start Latch**
 - a. Move joystick to neutral, place Park/Drive switch in park. The conveyor switch will now function properly.
 - 5. In Auto**
 - a. Conveyor works with switch in on position but not in auto
 - Auto switch senses material. Ensure material is not in hood. Set switch distance to desired location.
 - Signal from auto switch not returning to computer.
 - b. Switch needs reset. Use steps in operations manual to reset switch.
-



No Auger Movement

- 1. Auger Stalled (noise from hydraulic pump should be heard)**
 - a. Turn auger speed to 100%, cycle auger switch on and off several times to break free.
- 2. Speed Set Too Low**
 - a. Adjust the auger speed to a higher percentage (normal use is around 75%)
- 3. Start Latch**
 - a. Move joystick to neutral, place Park/Drive switch in park. The auger will now function properly.
- 4. In Auto**
 - a. Auger works with switch in on position but not in auto.
 1. Check for holes in switch diaphragm.
 2. Ensure material is not touching switch.
 3. Signal from auto switch not returning to computer (check electrical connections).



Sonic Bin Switches

1. Setup

- a. Change Switching Distance (must be completed within 5 minutes of turning switch on).

1. Turn conveyor switch to auto
2. Hold A2 button on sonic switch until green lights flash
3. Place object desired distance from switch
4. Press A2

b. Set Mode

1. Hold A1 button while conveyor switch is turned to auto
2. Green light flashes 1, 2, 3 or 4 times between pauses
3. Press A2 button until green light flashes 2 times between pauses 4. Hold A1 for more than 2 seconds to save



Water Temperature Alarm

1. Verify coolant is exceeding 240° F using laser probe or mechanical temperature gauge.
2. Clean front of radiator
3. Check engine coolant level
4. Check for coolant leaks
5. With water temperature hot and engine at full throttle unplug the electrical connector at fan valve, if fan speed does not spin full speed there is a hydraulic problem
 - a. Valve not shifting completely
 - b. Damaged gear pump
 - c. Damaged fan motor
6. If overheating conditions persists, investigate further into radiator and/or engine problem.

Fuel Sender Alarm

1. Check fuel level. If not low on fuel proceed with step2.
2. Check for debris lying on top of sending unit(metallic).
3. Check wiring connection for loose or bad connection (frayed wire touching ground).
4. Disconnect wire from sending unit.

If alarm quits, (see figure 1 for resistance values)

If alarm persists, proceed to step 5.

5. Check wiring between sender and computer.
6. Check connection at computer (loose connector).
7. Check connection at computer terminal (P2-PIN19)

Computer Connection Identification on Page 22.

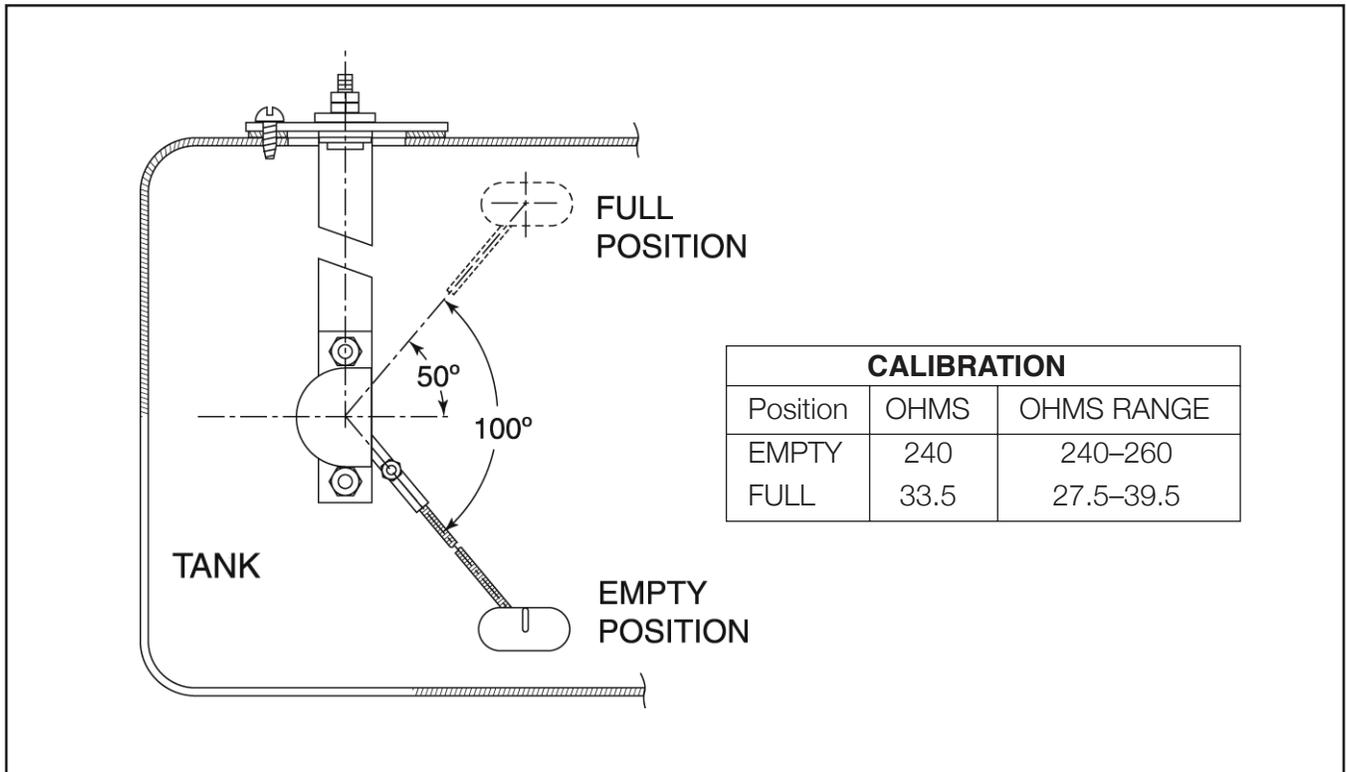


Figure 1. Fuel Level Sender Calibration

Hydraulic Oil Gets Hot

1. Check oil level
2. Verify temperature of hydraulic oil is above 180° F, using laser probe or mechanical temperature gauge
3. Check fan speed /airflow
 - a. Clean front of cooler to allow more airflow
 - b. If fan speed is too low, with engine running at full throttle, unplug fan valve connector
 1. If fan speed increases then there is an electrical problem
 2. Check temperature switch in hydraulic tank, switch should close when tank temperature is above 140° F
 - a. Check temperature switch wires in engine harness
 3. If fan speed does not increase there is a hydraulic problem
 - a. Valve not shifting completely
 - b. Damaged gear pump
 - c. Damaged fan motor
4. Check for Filter restriction (pop up indicator located on top of filter head)
5. Check Pump Orifice
 - a. If the orifice screen is plugged in load sense line, the pump will remain at high pressure
 1. For both sides on a variable hopper, hold the hopper in switch until the pump is heard at high pressure. This noise should decrease quickly when the switch is released. If it does not, see 'Auxiliary hydraulic pressure will not relieve' section.
6. Check Standby Pressure of Pump
7. Check High Pressure of Pump
8. Check Pressures of Functions to verify they are within normal limits
9. Identify Location of heat generation
 - a. Relief valve
 - b. Hydraulic quick coupling
10. See Hydraulic Oil Temperature Sender table for resistance values of displayed temperatures

Ohm Range (min)	Ohm Range (max)	Display Reading (temp °F)
0	325	100
296	324	105
266	295	110
236	265	115
211	235	120
185	210	125
168	184	130
152	167	135
138	151	140
125	137	145
111	124	150
101	110	155
94	100	160
86	93	165
81	85	170
74	80	175
68	73	180
64	67	185
58	63	190
55	56	195
52	54	200
47	53	205
44	46	210
41	43	215
37	40	220
34	36	225
29	33	230
28	28	235
26	27	240

Figure 2



Display Malfunction

1. Message on display
 - a. If display reads “ETNYRE NO COMMUNICATION” then the signal from the computer is not being received by the display
 1. Check green and Yellow wire connections
 2. Check fuse to computer
 3. Check power and ground to computer
 2. No message on display
 - a. Check power and ground to display
-



Unsteady Gates

1. Gate Current Too High
 - a. Adjust the following parameters: Right Gate Open, Right Gate Close, Left Gate Open, Left Gate Close. All of these values should be set between 0.9 and 1.0 amp. Use the CAL switch to adjust this value
 1. A value too high will cause the gates to tutter and not 5nd the desired gate opening
 2. A value too low will cause the gates to stop before reaching the desired opening. This will cause an unrepeatabe amount of material to be dropped on the ground
 3. The ideal setting will be the highest value which still allows the gates to settle on the desired gate opening



Gates will not operate (Hydraulic buss bar)

1. Make sure that Gate Arming Switches are turned (ON). Switches are located on operator's panel behind joystick.
2. Check (all) circuit breakers, including making sure there is power to both sides of circuit breaker asm.
3. Press gate override button and test gate operation.
If gate operates with override, there is a possible electrical issue. (Refer to # 6 and # 7)
If gate doesn't operate with override, there is a possible hydraulic issue. (Refer to # 5)
4. Check output gate commands located in the Service Screens (see operators manual)
5. Check hydraulic gate valve operation, override spool asm manually to test operation.
If gate operates with mechanical override, (Refer to #6 and #7)
If gate doesn't operate with mechanical override, (Refer to Operators Manual for instructions on testing hydraulic pressures).
6. Check gate transducer adjustments.(refer to checking solid state transducers)
7. Check gate null / scale calibration (Refer to operation manual for correct procedure).
8. Check joystick center roller micro switch / activating yes or no
9. Check power across gate switch in joystick handle / activating yes or no.

Note:

Service Screens (see operators manual) can be used to monitor most systems as they are being activated by the switches, and also being recognized by the controller and telling you (Active) or (De-active) on the display. You can select the individual screen of function you wish to monitor.

Note:

RH gate uses a gate hold feature. This is operated or changed in the computer set-up screens, and is utilized to achieve a straight line start when beginning to spread rock with a Variable Hopper ChipSpreader. This feature may also not allow gate to operate if unit is parked and operator is trying to cleanout or leave a pile for handwork.

If the (FPM) is malfunctioning, or not working the hold feature doesn't work and the RH gate will not open. Disabling the gate hold to (0) in the setup screens, will allow the RH gates to operate in manual mode.



Checking Solid State Gate Transducer

REXROTH COMPUTERS (FIXED AND VARIABLE HOPPER)

Wiring Color Code:

- A..... RED –RED
- B..... BLUE –WHITE
- C..... BLACK –BLACK

Adjustment Procedure:

1. Verify and make sure that gate is fully closed.
2. Test with wiring and sensors still connected (adapter available from Etnyre Part No. 7050350).
3. Check voltage on the red wire-transducer input voltage (5 VDC) not adjustable. Ground using black wire terminal.
4. Check voltage on the blue wire-transducer signal (0..5-1.5 VDC) ideal setting is (1.0 VDC) ground using black wire terminal.
5. Re-calibrate (null/scale) gate calibrations in computer set-up if adjustment made (See Figure 3 for proper adjustment procedure).

Material will need to be re-calibrated if transducer is adjusted.

6. Move transducer to simulate the gate opening, watch the transducer signal voltage as you actuate the transducer, the voltage should increase as the gate opens by 3 VDC over a 4-inch gate opening. Ensure that the signal is smooth and there is no interruption in the sweep of the transducer.

Transducer signal output voltage examples.

Transducer range detached from unit (0-5 VDC)

Transducer range attached to gate assembly (3 VDC)

(Example: If signal voltage is 1 VDC with gate fully closed, voltage with gate fully open should not exceed 4 VDC.)

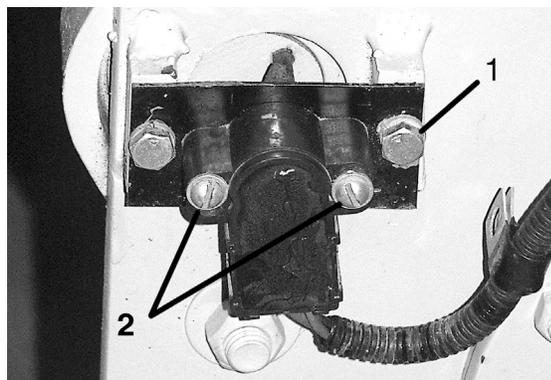


Figure 3

1. Mounting Bolts
2. Sensor adjustment screws, loosen and rotate sensor



Air Gates Out of Adjustment

(very loud noise as master power is turned on = off).

1. Identify if air gate(s) are out of adjustment or hydraulic gate buss arm(s) not operating properly.
 - ...air gate problem go to 2
 - ...hydraulic gate buss arm problem go to 3
2. Adjust air gates
 - a. Back off hydraulic gate arm adjustment screws between all hydraulic gate buss arms and air gates. (See figure 4)
 - b. Adjust air gate adjustment screws (see figure 4) to achieve a uniform gap of 1/16" across the spreadroll. Insure that there is air pressure applied to the gate forcing it closed during this adjustment.
 - c. Check all buss arm asm bolts to make sure that they are tight, (see figure 4) replace any bent or broken bolts.
 - d. Calibrate gate (null/scale) in computer set-up. Procedure for setting (null/scale) can be found in operation manual for machine. Gate transducer may need to be adjusted if you cannot achieve proper calibration.
 - e. With machine running and hydraulic pressure applied to hydraulic gate buss arm, turn air gate master power (ON) turn all individual air gate switches (ON) and allow air gates to open to hydraulic gate buss arm.
 - f. Adjust hydraulic gate buss arm adjustment screws and force air gates to close till the air gate adjustment screws touch and stop movement. Do not force screws past its contact with the stop because it can change the gate transducer setting and hydraulic gate arm position. (Repeat procedure on each indival gate)
 - g. Repeat step (2d) to 9erify null is still at (0.00) and scale is at (4.00).
3. Adjust hydraulic gate buss arm.
 - a. Calibrate gate (null/scale) in computer set-up. Procedure for setting (null/scale) can be found in operation manual for machine. Gate transducer may need to be adjusted if you cannot achieve proper calibration.
 - b. Refer to problem "Checking Solid State Gate Transducer" for gate transducer adjustment, if needed.

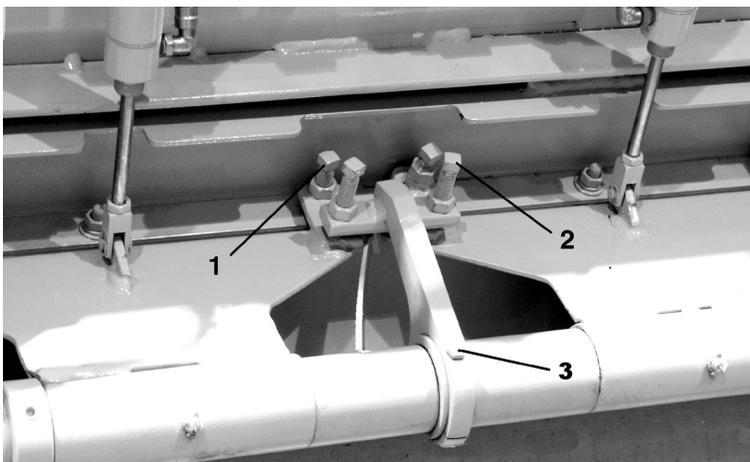


Figure 4

- 1) Air gate adjustment screw
- 2) Hydraulic gate buss arm adjustment screw
- 3) Buss arm asm bolt



Spreadroll Speed Fluctuating

1. Check auxiliary stand-by pressure. If the stand-by pressure is too low the pump will not come on stroke quick enough/ causing not enough pressure and flow will be supplied to the spread roll.

Check applicable chart for proper stand-by pressure. Procedures for adjusting stand-by pressure available in operation manual for machine.

2. Check and adjust speed of spread roll (RPM) at flow control cartridge.

On standard hopper units this cartridge is located in the gate/spread roll manifold (check applicable chart for proper (RPM) located in operation manual for machine.

On variable width hopper units this cartridge is located in the auger/spread roll manifolds. Left and right spreadrolls have separate cartridges. Check applicable chart located in the operation manual for the machine, for proper spreadroll RPM.

If the adjustment of spread roll RPM made in step 1 & 2 does not correct the problem, proceed with step 3.

3. Remove and inspect spread roll flow control cartridge for contamination or debris.

If no contamination is found or problem is not corrected, proceed with step 4.

4. Monitor auxiliary stand by pressure. Procedure for checking stand-by pressure is located in the operations manual for machine. Watch to see if spread roll speed follows the pressure (Example: as the pressure decreases the spread roll speed decreases etc.)

If this problem exists proceed to step 5.

5. Remove load sense checks (2) and inspect for contamination or debris (worn spring or pitted seat assembly).

Load sense check location:

The load sense checks (2) are located on the top of the auger, conveyor, spreadroll manifold (See figure 5).

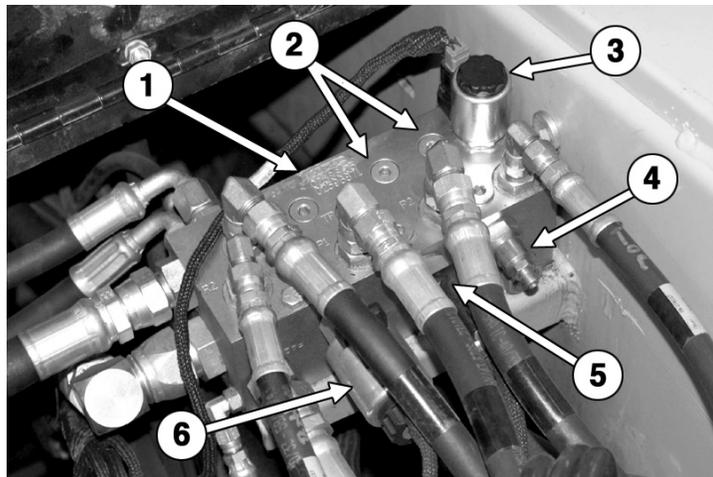


Figure 5

- | | | |
|----------------------------|-------------------------------|------------------|
| 1. Conveyor manifold block | 3. Spreadroll Valve | 5. Auger Valve |
| 2. Load Cense CheckValves | 4. Spreadroll SpeedAdjustment | 6. ConveyorValve |



Hydraulic Stand-by (load sense) pressure is fluctuating (needle not steady on gauge)

* This happens when the volume of oil present in the load sense system is too great, due to a missing or contaminated orifice or load sense check valve.

1. Check the orifice in load sense line fitting(s) attached to auxiliary hydraulic pump(s) load sense compensator valve. (See figure 6 item 3).

- a. Check to insure that the orifice is installed in fitting (set screw installed in side fitting with .040 hole drilled in it).
- b. Check the orifice for contamination
- c. Verify the orifice size (.040)

2. Check the compensator operation to ensure that pressure is responding to demand of hydraulic system. Procedure for checking stand-by pressure is in the operation manual for machine.

* Bad or contaminated load sense check valves can cause erratic stand-by pressures. (See figure 5 to identify location of load check valves).

a. Check and/or set the stand-by pressure. With the engine shut off, remove the load sense lines from the compensators and cap them off. (See figure 6 item 4, 5, 6 & 7) for the location of the lines. Check and set stand-by pressure using correct procedure in operation manual for machine. If proper stand-by pressure is obtained and remains steady with no fluctuating, proceed with step (b). If proper stand-by pressure is not achieved, possible pump and/or compensator problem.

b. Attach the load sense lines one at a time to determine which hydraulic manifold block has a contaminated or bad load sense check valve.

c. Check load sense check valve(s) for contamination, replace if needed.

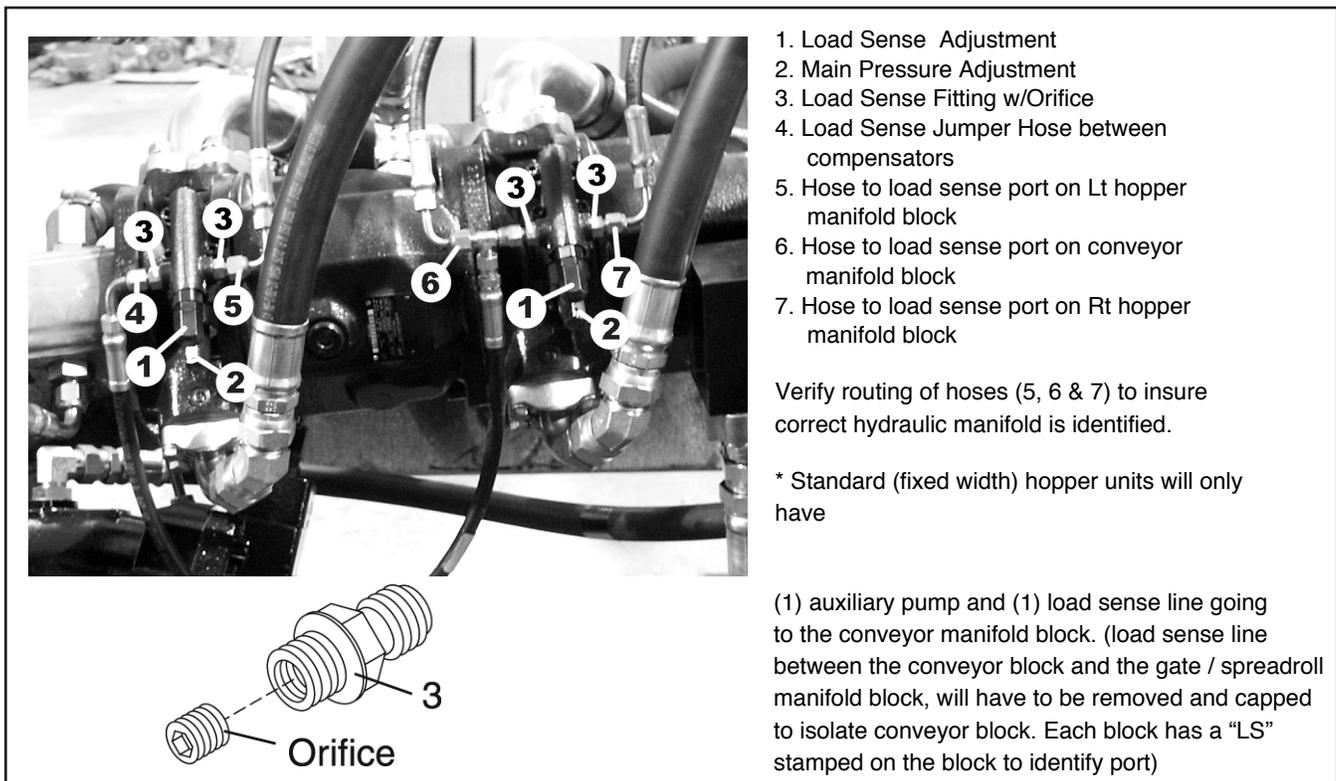


Figure 6



Overlap or streak in center when hoppers are fully extended.

This problem is adjustable as follows:

If the material is heavy in the middle and an overlap is present, the gate cut-off plate needs to be adjusted by sliding it in the hopper further (adjust both sides evenly). See figure 7.

If the material is leaving a void or streak down the center of the road, first adjust cut-off plate by sliding it out of the hopper further. See figure 7. If the cut-off plate cannot be adjusted any further, adjust the hopper (in/out) cylinder at the rod end of the cylinder. (Adjust both sides evenly). See figure 8.

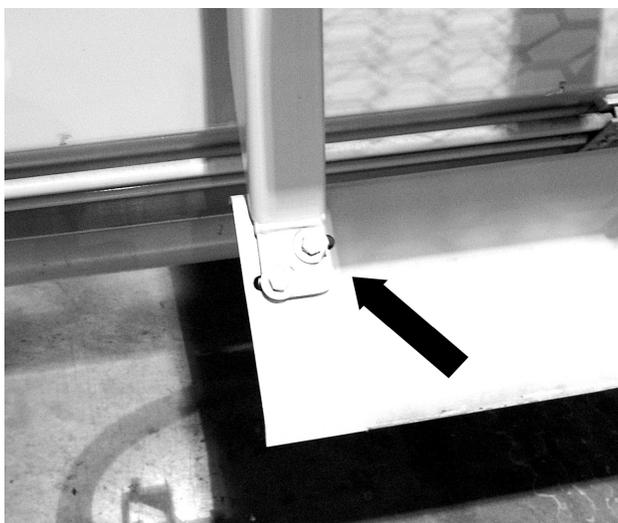


Figure 7.

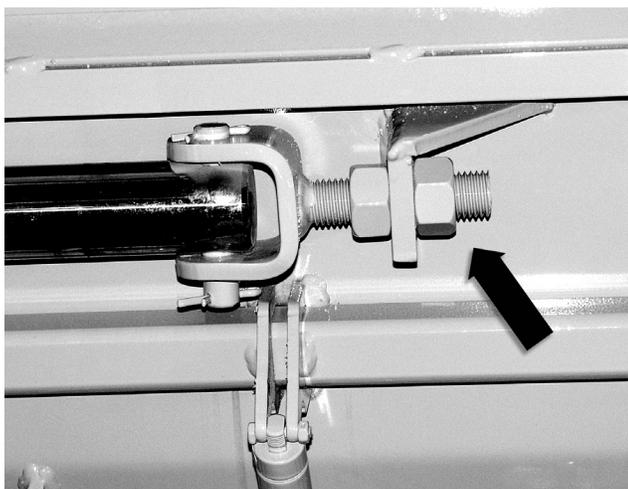


Figure 8.



No Gradability

1. Verify grade of incline (is grade too steep for machine to climb). All % calculations with combined weigh of (ChipSpreader/dump truck/aggregate) 80,000 lbs. Max.

Engine R.P.M. @ 2200 Computer speed set-point F.P.M. @ 200

2 Wheel Drive – 6-8%

4 Wheel Drive with 160cc motors 12-18%

Motor size (cc) stamped on tag, attached to top of drive motor.

If % of grade is acceptable proceed with # 2

2. 2 Wheel Drive Machines
 - a. Disconnect the electrical connector attached to the front drive hydraulic motor servo (secure wire).
 - b. Test unit on grade with 80,000lbs.
3. 4 Wheel Drive Machines
 - a. Disconnect the electrical connector attached to both front and rear drive hydraulic motor servos. (Secure wires)
 - b. Test unit on grade with 80,000lbs.

If disconnecting servo connectors allows machine to pull the grade, reconnect servos one at a time, and test unit to identify which motor servo is causing problem. (Servo is receiving power that is changing the position of the internal swash plate of the hydraulic motor).

If disconnecting hydraulic motor servo connectors does not correct or improve performance proceed with 4.

Procedures for checking hydraulic pressures can be found in operation manual for machine.

4. Check and verify hydrostat priority override(POR) hydraulic pressure.
5. Check and verify hydrostat main hydraulic pressure(FWD).
6. Check and verify hydrostat main hydraulic pressure(REV).



Auxiliary Hydraulic Pressure Will Not Relieve

Other Problems affected: Hydraulic oil temperature alarm

Problem is found during the process of checking pressures of the auxiliary hydraulic pumps 2 & 3. Pump #2 if fixed head unit.

The main pressure must relieve after checking main pressure or auxiliary pump will not de-stroke which creates heat and torque loss of engine and hard start condition if shut off between use.

To correct the problem:

1. Shut off machine.
2. Close and shut off main hydraulic suction valve.
3. Locate and cap off case drain at pump.
4. Remove compensator from hydraulic pump(s).
5. Remove load sense compensator cartridge.
6. Locate allen head 2mm (orifice) inside housing (see figure 9, next page)
7. Remove orifice.
8. Clean out orifice with strand of primary wire or torch cleaning kit (if small enough).
9. Re-install orifice.
10. Re-install cartridge.
11. Re-install compensator.
12. Uncap and reinstall case drain hose.
13. Open suction valve.
14. Install air regulator to hydraulic tank through vent filter connection.
15. Apply 3 – 5 lbs to hydraulic system to push out any trapped air in hydraulic system.

Start machine and operate all functions to ensure hydraulic oil circulation.

Check and adjust pressures. Procedure located in operation manual for machine. Be sure to have the correct manual for your machine.

Check to see if pressure relieves after main pressure is achieved.

If unable to adjust pressures on pump - pump may have sustained damage due to previous condition (won't stroke).

Isolation of pumps will be necessary to find out which pump is affected.

A10V(S)O Pressure/Flow control DFR(1)
 bleed-down orifice and damping orifice

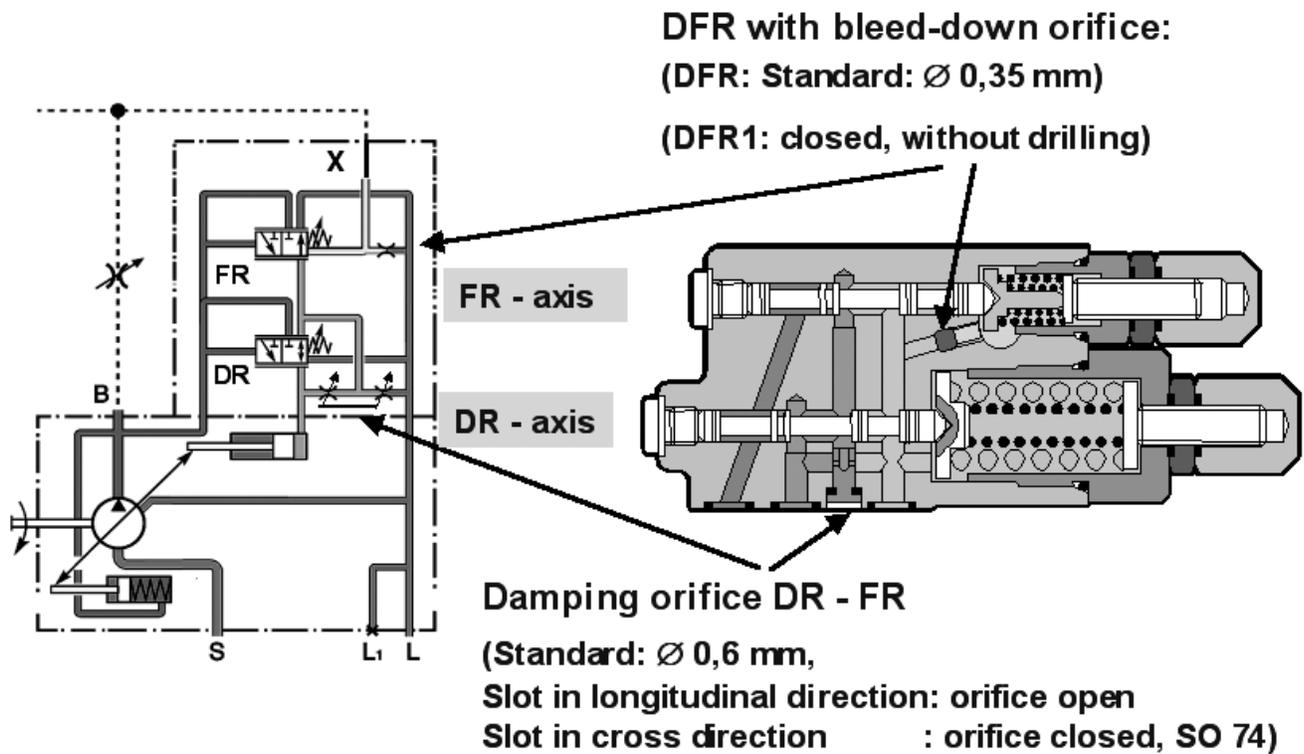


Figure 9



Computer Fault Screens

1. WARNING: ENGINE CAN

- A.) Computer lost connection with engine
 1. Machine comes to a stop
 2. Scroll button to clear error
 3. Setpoint limited to 400FPM
 4. Center joystick to move at limited speed
 5. Correct error and reset computer to resume normal operation

2. ALARM: PUMP FWD SOL FAILURE

- A.) Computer lost connection with pump reverse coil
 1. While not moving
 - a. Alarm can be cleared with scroll button
 - b. Machine can move reverse
 - c. Machine will not move forward until error is corrected and computer is reset
 2. While moving forward
 - a. Machine comes to a stop
 - b. Machine can move reverse
 - c. Machine will not move forward until error is corrected and computer is reset
 3. While moving reverse
 - a. Machine will continue in reverse
 - b. Alarm can be cleared with scroll button
 - c. Machine will not move forward until error is corrected and computer is reset
- B.) Pump coil shorted to 12 VDC

Computer Fault Screens (con't)

3. ALARM: PUMP REV SOL FAILURE

A.) Computer lost connection with pump reverse coil

1. While not moving
 - a. Alarm can be cleared with scroll button
 - b. Machine can move reverse
 - c. Machine will not move forward until error is corrected and computer is reset
2. While moving forward
 - a. Machine comes to a stop
 - b. Machine can move reverse
 - c. Machine will not move forward until error is corrected and computer is reset
3. While moving reverse
 - a. Machine will continue in reverse
 - b. Alarm can be cleared with scroll button
 - c. Machine will not move forward until error is corrected and computer is reset

4. ALARM: SPEED SENSOR FAILURE

A.) Computer not seeing expected feedback from speed pickup

1. Machine comes to a stop
2. Scroll button to clear error
3. Set point limited to 400FPM
4. Center joystick to move at limited speed
5. Correct error and reset computer to resume normal operation

Computer Fault Screens (con't)

5. ALARM: FRONT MOTOR SOL FAILURE

- A.) Computer electrically disconnected from front motor solenoid
 - 1. Machine comes to a stop
 - 2. Scroll button to clear error
 - 3. Setpoint limited to 400FPM
 - 4. Center joystick to move at limited speed
 - 5. Correct error and reset computer to resume operation

6. ALARM: REAR MOTOR SOL FAILURE

- A.) Computer electrically disconnected from rear motor solenoid
 - 1. Machine comes to a stop
 - 2. Scroll button to clear error
 - 3. Setpoint limited to 400FPM
 - 4. Center joystick to move at limited speed
 - 5. Correct error and reset computer to resume operation

7. ALARM: JOY STICK FAILURE

- A.) Joystick center tap voltage out of range
 - 1. Machine comes to a stop
 - 2. Error can be cleared but machine will not move until error is resolved and computer is reset
- B.) Reverse switch is made and joystick percentage is positive
 - 1. Machine comes to a stop
 - 2. Error can be cleared but machine will not move until error is resolved and computer is reset
- C.) Reverse switch is not made and joystick percentage is negative
 - 1. Machine comes to a stop
 - 2. Error can be cleared but machine will not move until error is resolved and computer is reset

8. WARNING: FUEL LEVEL LOW

- A.) Fuel level below 10%
 - 1. Error can be cleared by scroll switch
 - 2. Warning will return if still present after 5 minutes or if computer is reset

9. ALARM: HYDRAULIC OIL HOT

- A.) Hydraulic oil temperature above 180° F in tank
 - 1. See 'Hydraulic Oil gets Hot' section

Computer Fault Screens (con't)

10. ALARM: ENGINE COOLANT HOT

A.) Engine coolant temperature above 240° F

11. ALARM: BATTERY VOLTAGE LOW

A.) Computer supply voltage is below 11V.

12. ALARM: BATTERY VOLTAGE HIGH

A.) Computer supply voltage is above 15V.

13. EMERGENCY: SHUTDOWN UCM SPEED

A.) Computer sees movement from speed pickup when not sending a command

1. Engine shuts down, machine comes to a stop
2. Fast audible alarm
3. "WARNING: ENGINE CAN" displays on screen after a few seconds
4. Reset computer to stop audible alarm

14. EMERGENCY: SHUTDOWN UCM DIRECTION

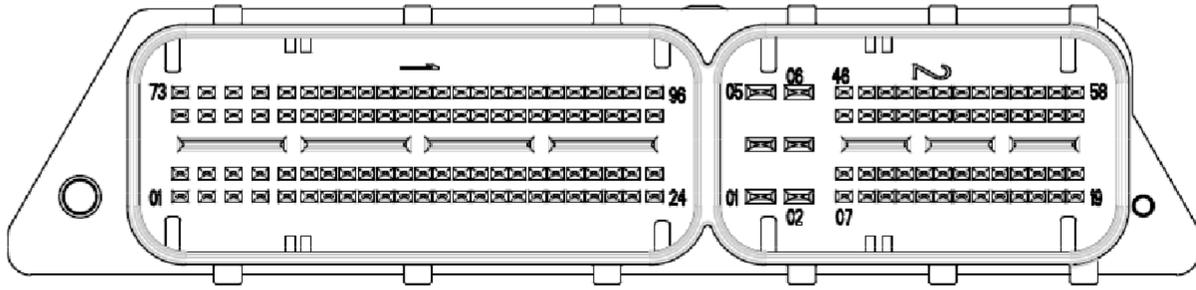
A.) Computer sees 12 VDC on direction wire from speed pickup when moving forward

1. Engine shuts down, machine comes to a stop
2. Fast audible alarm
3. "WARNING: ENGINE CAN" displays on screen after a few seconds
4. Reset computer to stop audible alarm
5. See Schematic for proper wiring of this circuit

B.) Computer sees 0 VDC in direction wire from speed pickup when moving reverse

1. Engine shuts down, machine comes to a stop
2. Fast audible alarm
3. "WARNING: ENGINE CAN" displays on screen after a few seconds
4. Reset computer to stop audible alarm

RC-28 Controller



Computer shown upside down of normal installation

Plug 1 (Large)

- 1-07 Fault Indicator
- 1-19 Left Auger In
- 1-20 Right Auger In
- 1-22 Ground
- 1-23 Ground
- 1-24 Ground
- 1-25 Front Motor Solenoid
- 1-26 Right Auger Solenoid
- 1-28 Brake Release
- 1-30 Left Auger Solenoid
- 1-32 Joystick Wiper
- 1-33 Center Tap
- 1-34 Save
- 1-35 Cal -
- 1-36 Rate -
- 1-37 Cal +
- 1-39 Fuel Level Sender
- 1-42 Memory 5
- 1-43 Memory 4
- 1-44 Memory 2
- 1-47 Enable Left Gate
- 1-48 Enable Right Gate
- 1-49 Left Conveyor Solenoid
- 1-50 Right Conveyor Solenoid
- 1-51 Left Gate Open Solenoid
- 1-52 Right Gate Open Solenoid
- 1-53 Pump Forward Solenoid
- 1-54 Rear Motor Solenoid
- 1-57 Speed +
- 1-58 Scroll +

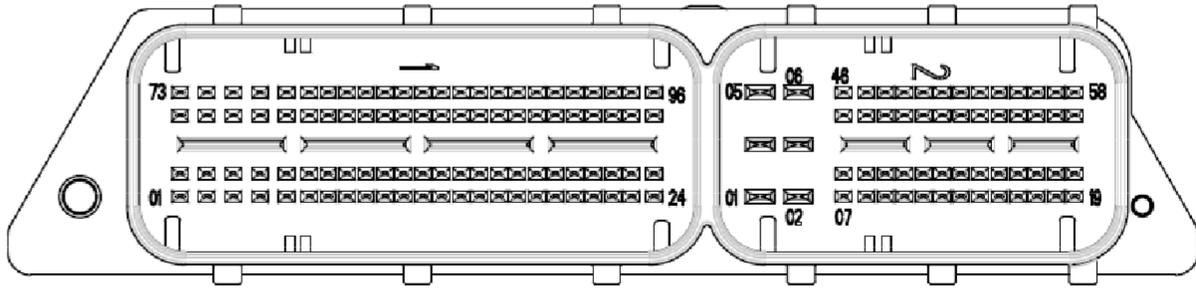
- 1-59 Right Gate Override
- 1-75 Left Gate Close Solenoid
- 1-76 Right Gate Close Solenoid
- 1-77 Pump Reverse Solenoid
- 1-89 Backup Alarm
- 1-90 UCMD Shutdown

Plug 2 (Small)

- 2-01 12 VDC
- 2-02 Ground
- 2-03 12 VDC
- 2-04 12 VDC
- 2-05 12 VDC
- 2-06 12 VDC
- 2-07 Ground
- 2-09 Service Brake Signal
- 2-10 Rate+
- 2-11 Memory 1
- 2-12 Enable Left Spreadroll
- 2-13 Speed Sensor Signal
- 2-14 Scroll -
- 2-15 CAN Diagnostics High
- 2-16 CAN Diagnostics Low
- 2-17 Right Gate Wiper
- 2-20 Ground
- 2-22 Size -
- 2-23 Left Gate Override
- 2-24 Memory 3
- 2-25 Speed Sensor Direction
- 2-26 Hydraulic Oil Temp
- 2-28 12 VDC

- 2-31 Left Gate Wiper
- 2-33 Ground
- 2-34 Traction Control
- 2-35 Left Conveyor In
- 2-36 Park Brake
- 2-38 Size +
- 2-39 Reverse Switch
- 2-40 12 VDC
- 2-41 Right Spreadroll Solenoid
- 2-43 Left Spreadroll Solenoid
- 2-45 12 VDC
- 2-46 Ground
- 2-47 Right Conveyor In
- 2-48 Enable Right Spreadroll
- 2-50 Drive Enable
- 2-52 Speed -
- 2-53 CAN 2 High
- 2-54 CAN 2 Low
- 2-55 Left Gate Pot +
- 2-58 12 VDC

RC-36 Controller



Computer shown upside down of normal installation

Plug 1 (Large)

1-01 Right Auger Solenoid
 1-19 Left Auger In
 1-20 Right Auger In
 1-22 Ground
 1-23 Ground
 1-24 Ground
 1-26 Left Auger Solenoid
 1-30 Left Conveyor Solenoid
 1-31 Right Conveyor Solenoid
 1-33 Reverse Switch
 1-34 Cal-
 1-35 Cal+
 1-36 Rate-
 1-38 Hydraulic Oil Temp
 1-39 Joystick Wiper
 1-40 Right Conveyor In
 1-41 Speed Sensor Direction
 1-44 Memory 1
 1-47 Enable Left Gate
 1-48 Enable Right Gate
 1-49 Right Spreadroll Solenoid
 1-51 Left Spreadroll Solenoid
 1-53 Right Gate Open Solenoid
 1-57 Speed+
 1-58 Scroll+
 1-59 Right Gate Override
 1-64 Right Gate Wiper

1-65 Memory 5
 1-66 Left Gate Wiper
 1-67 Memory 2
 1-69 Memory 3
 1-70 Memory 4
 1-77 Right Gate Close Solenoid
 1-79 Left Gate Open Solenoid
 1-80 Left Gate Close Solenoid
 1-83 Pump Forward Solenoid
 1-84 Pump Reverse Solenoid
 1-85 Rear Motor Solenoid
 1-86 Front Motor Solenoid
 1-91 Fault Indicator
 1-92 Brake Release
 1-94 Backup Alarm
 1-95 UCMD Shutdown

Plug 2 (Small)

2-01 12 VDC
 2-02 Ground
 2-03 12 VDC
 2-04 12 VDC
 2-05 12 VDC
 2-06 12 VDC
 2-07 Ground
 2-09 Service Brake Signals
 2-10 Rate+

2-11 Save
 2-13 Speed Sensor Signal
 2-14 Scroll-
 2-15 CAN Diagnosis High
 2-16 CAN Diagnosis Low
 2-17 Enable Left Spreadroll
 2-18 Fuel Level Sender
 2-19 5 VDC Supply
 2-20 Ground
 2-22 Size-
 2-23 Left Gate Override
 2-26 Enable Right Spreadroll
 2-27 Traction Control
 2-28 12 VDC
 2-30 Left Conveyor In
 2-31 Joystick Center Tap
 2-33 Ground
 2-36 Park Brake
 2-38 Size+
 2-40 12 VDC
 2-45 12 VDC
 2-46 Ground
 2-50 Drive Enable
 2-52 Speed-
 2-53 CAN Work High
 2-54 CAN Work Low
 2-58 12 VDC



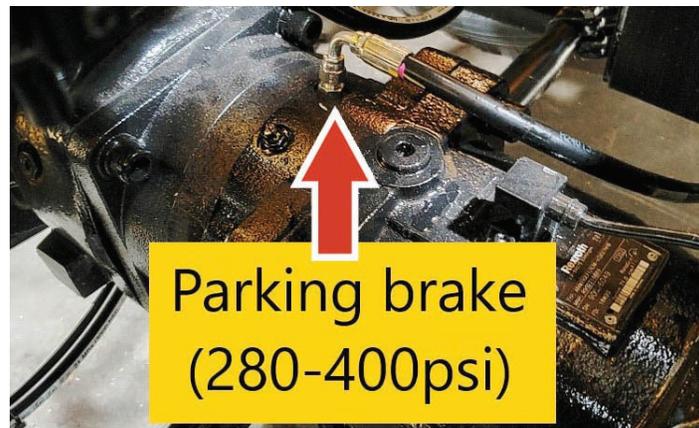
Emergency Driveline Disengage Procedure

This procedure can be used to move your machine out of the middle of the road, when a rare breakdown occurs that disables the machine from moving. (Rexroth RC Computer).

1. Install (2) 04MB x 04MJ fittings, Etnyre # 9410200, (1) in each test port of the high pressure distribution block bolted to the side of the pump. This block connects the main drive hydraulic hoses going out to the drive motors. (Remove 04MB plug and install new fitting on both sides of pump)
2. Install (1) 04 x 65 inch hydraulic hose with 04FJX fittings, Etnyre # 3181497 across between fittings installed. (This creates a loop on the drive system without hydraulic oil flowing thru pump and relief system).



3. Disable or release the park brake unit (mounted in front of drive motor on front axle)



Emergency Driveline Disengage Procedure (con't)

4. If the engine of the machine does not run, or there is an issue with the pump that supplies pressure to release the parking brake, a port-a power will have to be modified with a 04 FJX connection to attach to parking brake unit and apply pressure to release the park brake unit. (Approximately, 280-400 psi required)
5. In the event the engine runs and you are able to release the park brake unit, only loop hose is required, along with an operator to release the park brake. This can be done by placing the controls in drive mode and pushing the joystick in the direction of movement also steering the machine if needed while very slowly moving machine off the road or loading on to a transport trailer.

Note:

RC Controlled units have directional safety protocols in place that will shut down the engine of the unit if the direction differs from the joystick positioning including neutral (0) FPM or no movement. No engine / No Hydraulics to release brake.

Note:

This procedure is for emergency situations only

This procedure is only to move machine extremely slow (crawl) your machine off the road or to slowly load machine on to transport trailer.

This procedure is not intended for travel or moving machine a long distance (damage could occur if not done correctly)