M-233-23
Units with RC Controllers

Standard Hopper &
Variable Width Spread Hopper
ChipSpreader

Updates &
Service Material

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Standard Hopper & Variable Width Spread Hopper Chipspreaders

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Quick Reference Guide
for Calibrating Materials on Computerized Chipspreaders

How To Set Memory

1) Adjust application rate.

2) Adjust aggregate type.

3) Adjust speed setpoint (FPM)

4) Press (**SAVE**)

5) Select save location - 1, 2, 3, 4, or 5.

Gate Calibration

This is the process of adjusting the gates to put out the desired amount of material, given in pounds-per-square-yard (**lbs/yd²**)

(Standard Fixed Hopper uses only left side calibration for this procedure.)

It is recommended that you adjust the individual air gates, calibrate Null/Scale, verify spread roll speeds (96-100 RPM) and check the measurements of your testing tarps (1 yd²) prior to calibrating material settings. This will ensure accuracy on both hoppers as well as overall machine performance.

Adjusting Calibration for Aggregate *(Not individual memories).*

1) Calibration Switch up or down.

0.0% lbs/yd²	0.0% Right Cal.	Higher Cal. % Less Aggregate Lower Cal. % More Aggregate

2) Adjust lbs/yd with Cal. Switch up or down.
(maximum adjustment per session is 4.9lbs)

3) Press (**SAVE**) to save right side calibration.

4) Press Scroll Down for left calibration.

0.0% lbs/yd²	0.0% Left Cal.	Higher Cal. % Less Aggregate Lower Cal. % More Aggregate

5) Adjust with Calibration Switch up or down.
(maximum adjustment per session is 4.9lbs)

6) Press (**SAVE**) to save left side calibration.

7) To Exit: Push Scroll Switch up twice to return to main screen.

Quick Reference Guide
for Set-Up Screens / Service Screens

Set-Up Screens:

To Enter: Hold Calibration Switch down.

Turn on Ignition Switch.

Release Cal. Switch (after computer has fully booted-up.)

Use Scroll Switch to change screens.

Use Cal. Switch to make changes.

To Exit: Scroll though to last screen set-up: Save and Exit.

Press (**SAVE**).

Service Screens:

To Enter: Hold Scroll Switch down.

Turn on Ignition Switch.

Release Scroll Switch (after computer has fully booted-up.).

Use Scroll Switch to change screens.

To Exit: Turn off Ignition Switch.

NOTE **-** If hydraulics or machine operation are necessary for testing or calibrating, make sure to start machine while holding the Calibration or Scroll switch down to enter the appropriate screens.

Chipspreader Computer Set-Up Screens
Fixed Hopper Computer Set-Up

Computer Set Up

The computer must be set up and the various sensors calibrated for the particular Chipspreader that the computer is installed in. This is normally done at the factory, and the settings are retained in the computer's non-volatile memory. Normally an entire set up does not have to be done in the field, but if a joystick or a gate transducer is replaced, that particular item would have to be re-calibrated. In the case of a gate transducer, it should be mechanically set using the procedure described under "Hopper Gate Transducer Adjustment" before re-calibrating the computer. In order to do that, you must enter the set up screens and follow through the various screen as described below. If an item is already properly set, you can just scroll by it to the next item, until you get to the one that needs to be re-calibrated. If any one item is changed, you must save it using the procedure described at the end of the various screens.

Set Up Screens

The following screens are entered by holding the Calibration Switch either up or down while turning the ignition key on and releasing the switch after the computer has fully booted up.

IMPORTANT: The setup of the computer should be performed with the ignition key on, but the engine not running, excpet for calibrating the gates or when hydraulics are required.

⚠ CAUTION

Always place the mode selector switch in the park position when the Chipspreader is stopped avoid accidental movement of the machine.

These screens are used to configure the computer to the particular Chipspreader and to calibrate the control stick, gates, and application rate. The first screen will appear when the ignition key is released from the start position.

SETUP: FIRMWARE
Version 1.XX

This screen shows the version of firmware which is loaded in the machine (Version 1.01 for example). Push the "Scroll" switch down to move to the next screen.

SETUP: MODE
WORK MODE

This screen is used to set the machine in ship mode or work mode. In ship mode, the speed setpoint is fixed at 300 FPM. Work mode allows the operator to adjust the speed setpoint in the main operator screen. Use "Cal." switch to toggle between work and ship mode. Push the "Scroll" button down to move to the next screen.

SETUP: DRIVE
4 WHEEL DRIVE

This screen is used to set the type of drive in the machine. Either 2 wheel or 4 wheel drive. Push the "Scroll" switch down to move to the next screen.

SETUP: HOPPER
FIXED

This screen is used to set the type of hopper installed on the machine. Use the "Cal." switch to toggle bewteen fixed and variable-width hoppers. When this is set for your machine, push the "Scroll" switch down to move to the next screen.

SETUP: UNITS
ENGLISH

This screen is used to set the display units to either english or metric. Use the "Cal." switch to toggle between english and metric units. Once set for your machine, push the "Scroll" switch down to move to the next screen.

SETUP: JOYSTICK
Actual 0%

This screen is the entry screen for calibrating the joystick. It should say 0% with the stick in neutral. If the stick is pushed full forwards, the reading should change to 100% and if pulled fully back into reverse, the reading should change to -100%. If it does not at any of these positions, place the stick in neutral. Be sure it is in neutral and then push the "Cal." switch. **Once you have pushed the "Cal." switch you must complete the sequence or you *will* *[cont'd next page]***

[SETUP: JOYSTICK cont'd] **have lost the existing calibration of the joystick.**

SETUP: JOYSTICK
Neutral 2.4 volts (±0.3V)

Push the "Cal." switch down to calibrate the neutral position. Once pressed, the display will change to:

SETUP: JOYSTICK
Max Forward 2.4 volts (±0.3V)

Push the stick fully forward; the reading should change to approx. **4.4 volts**. When you have the stick fully forward, push the "Cal." switch down to calibrate the full forward position of the control sick. After the full-forward calibration has been completed, the display will proceed to the next calibration screen.

SETUP: JOYSTICK
Max Reverse 4.4 volts

Pull the stick to the full reverse position; the reading should change to approx. **0.7 volts**. When you have the stick fully rearward, push the "Cal." switch down to calibrate the full reverse position of the control stick. After the full-reverse calibration has been completed, the display will proceed to the next calibration screen.

SETUP: JOYSTICK
Actual -100%

Return control stick to neutral. Display should return back to 0%. If not, recalibrate accordingly. Once you have finished the control stick calibration, push the "Scroll" switch down to change to the next screen.

SETUP: GATE OPENING
Maximum: 4.00 Inches

This screen is used to set the maximum gate opening for the front hopper. Standard machines have a 4-inch gate opening and big chippers have a 5 inch gate opening. If the maximum gate opening is set incorrectly, the machine's application rate will be off. Use the "Cal." switch to toggle between 4" and 5" gate openings. Once this has been set for the machine, push the "Scroll" switch down to move to the next screen.

SETUP: RIGHT NULL
Actual: 0.00 Inches

This screen is not used for a fixed hopper unit. Push the "Scroll" switch down to move to the next screen.

SETUP: RIGHT SCALE
Actual: 0.00 Inches

This screen is not used for a fixed hopper unit. Push the "Scroll" switch down to move to the next screen.

SETUP: LEFT NULL
Actual: 0.00 Inches

This screen is used to set the actual closed position of the left gate. This number should read 0.00 inches. If not, set it to 0.00 using the "Cal." switch down. When it is set to this value, hit the "Scroll" switch down to move to the next screen.

SETUP: LEFT SCALE
Actual: 0.00 Inches

This screen is used to set the actual open position of the gate. The number will read 0.00 inches until the left gate override is actuated. When override is actuated, the screen should read 4.00 inches. If it does not show the 4.00 inches, use the "Cal." switch push down to set the values back to 4.00. When the left gate override is released, the number on the screen should turn back to 0.00

⚠ WARNING

Never put hands in between gate & spread roller or gate & rear of hopper to clear obstruction. The gate could move at any time and cause severe injury

The calibration done in these setup screens is to adjust the open and close thresholds on the proportional valves controlling the gate cylinder. These thresholds determine the speed at which the gates open and close.

The right gate is not on a fixed hopper. Push the "Scroll" switch down to scroll past the right gate setup screens.

SETUP: RIGHT OPEN
0.000 Amps

This screen is not used for a fixed hopper. Push the "Scroll" switch down to move to the next screen.

SETUP: RIGHT CLOSE
0.000 Amps

This screen is not used for a fixed hopper. Push the "Scroll" switch down to move to the next screen.

SETUP: LEFT OPEN
RC-28 0.860 amps
RC-36 0.920 amps

Use the "Cal." switch to adjust the current up or down to increase or decrease the speed at which the gate closes. Adjusting this value too high will cause the gates to hunt around the desired gate opening. Adjusting this value too low will cause a delay of the gate opening. Push the "Scroll" switch down to move to the next screen.

SETUP: LEFT CLOSE
RC-28 0.920 amps
RC-36 0.980 amps

Use the "Cal." switch to adjust the current up or down to increase or decrease the speed at which the gate closes. Adjusting this value too high will cause the gates to hunt around the desired gate closing. Adjusting this value too low will cause a delay of the gate opening.

SETUP: SAVE AND EXIT
Press Save to Exit

Press the "Save" button to save any changes that were made.

Chipspreader Computer Set-Up Screens
Variable-Width Hopper Computer Set-Up

Computer Set Up

The computer must be set up and the various sensors calibrated for the particular Chipspreader that the computer is installed in. This is normally done at the factory, and the settings are retained in the computer's non-volatile memory. Normally an entire set up does not have to be done in the field, but if a joystick or a gate transducer is replaced, that particular item would have to be re-calibrated. In the case of a gate transducer, it should be mechanically set using the procedure described under "Hopper Gate Transducer Adjustment" before re-calibrating the computer. In order to do that, you must enter the set up screens and follow through the various screen as described below. If an item is already properly set, you can just scroll by it to the next item, until you get to the one that needs to be re-calibrated. If any one item is changed, you must save it using the procedure described at the end of the various screens.

Set Up Screens

The following screens are entered by holding the Calibration Switch either up or down while turning the ignition key on and releasing the switch after the computer has fully booted up.

IMPORTANT: The setup of the computer should be performed with the ignition key on, but the engine not running, excpet for calibrating the gates or when hydraulics are required.

⚠ CAUTION

Always place the mode selector switch in the park position when the Chipspreader is stopped avoid accidental movement of the machine.

These screens are used to configure the computer to the particular Chipspreader and to calibrate the control stick, gates, and application rate. The first screen will appear when the ignition key is released from the start position.

SETUP: FIRMWARE
Version 1.XX

This screen shows the version of firmware which is loaded in the machine (Version 1.01 for example). Push the "Scroll" switch down to move to the next screen.

SETUP: MODE
WORK MODE

This screen is used to set the machine in ship mode or work mode. In ship mode, the speed setpoint is fixed at 300 FPM. Work mode allows the operator to adjust the speed setpoint in the main operator screen. Use "Cal." switch to toggle between work and ship mode. Push the "Scroll" button down to move to the next screen.

SETUP: DRIVE
4 WHEEL DRIVE

This screen is used to set the type of drive in the machine. Either 2 wheel or 4 wheel drive. Use "Cal." switch to toggle between 2WD and 4WD power that this is set for your machine. Push the "Scroll" switch down to move to the next screen.

SETUP: HOPPER
VARIABLE

This screen is used to set the type of hopper installed on the machine. Use the "Cal." switch to toggle bewteen fixed and variable-width hoppers. When this is set for your machine, push the "Scroll" switch down to move to the next screen.

SETUP: UNITS
ENGLISH

This screen is used to set the display units to either english or metric. Use the "Cal." switch to toggle between english and metric units. Once set for your machine, push the "Scroll" switch down to move to the next screen.

SETUP: JOYSTICK
Actual 0%

This screen is the entry screen for calibrating the joystick. It should say 0% with the stick in neutral. If the stick is pushed full forwards, the reading should change to 100% and if pulled fully back into reverse, the reading should change to -100%. If it does not at any of these positions, place the stick in neutral. Be sure it is in neutral and then push the "Cal." switch. **Once you have**

pushed the "Cal." switch you must complete the sequence or you will have lost the existing calibration of the joystick.

SETUP: JOYSTICK
Neutral Approx. 2.4 volts (±0.3V)

Push the "Cal." switch down to calibrate the neutral position. After pushing the "Cal." switch down, the display will then proceed to the next calibration screen.

SETUP: JOYSTICK
Max Forward Approx. 2.4 volts (±0.3V)

Push the stick fully forward; the reading should change to approx. **4.4 volts**. When you have the stick fully forward, push the "Cal." switch down to calibrate the full forward position of the control sick. After the full-forward calibration has been completed, the display will proceed to the next calibration screen.

SETUP: JOYSTICK
Max Reverse Approx. 4.4 volts

Pull the stick to the full reverse position; the reading should change to approx. **0.7 volts**. When you have the stick fully rearward, push the "Cal." switch down to calibrate the full reverse position of the control stick. After the full-reverse calibration has been completed, the display will proceed to the next calibration screen.

SETUP: JOYSTICK
Actual -100%

Return control stick to neutral. Display should return back to 0%. If not, recalibrate accordingly. Once you have finished the actual control stick calibration, push the "Scroll" switch down to change to the next screen.

SETUP: GATE OPENING
Maximum: 4.00 Inches

This screen is used to set the maximum gate opening for the front hopper. Standard machines have a 4-inch gate opening and big chippers have a 5 inch gate opening. If the maximum gate opening is set incorrectly, the machine's application rate will be off. Use the "Cal." switch to toggle between 4" and 5" gate openings. Once this has been set for the machine, push the "Scroll" switch down to move to the next screen.

SETUP: RIGHT NULL
Actual: 0.00 Inches

This screen is used to set the actual closed position of the right gate. This number should read 0.00 inches. If not, set it to 0.00 using the "Cal." switch push down. When it is set to this value, hit the "Scroll" switch down to move to the next screen.

SETUP: RIGHT SCALE
Actual: 0.00 Inches

This screen is used to set the actual open position of the gate. The number will read 0.00 inches until the right gate override is actuated. When override is actuated, the screen should read 4.00 inches for fixed hopper and standard variable hopper, 5.00 inches for "Big" hopper. If it does not show the 4.00 inches or 5.00 inches, use the "Cal." switch down to set the values back to 4.00 or 5.00 inches. When the right gate override is released, the number on the screen should turn back to 0.00. Use "Scroll" switch down to move to the next screen.

SETUP: LEFT NULL
Actual: 0.00 Inches

This screen is used to set the actual closed position of the left gate. This number should read 0.00 inches. If not, set it to 0.00 using the "Cal." switch, push down. When it is set to this value, use the "Scroll" switch down to move to the next screen.

⚠ WARNING

Never put hands in between gate & spread roller or gate & rear of hopper to clear obstruction. The gate could move at any time and cause severe injury

SETUP: LEFT SCALE
Actual: 0.00 Inches

This screen is used to set the actual open position of the gate. The number will read 0.00 inches until the left gate override is actuated. When override is actuated, the screen should read 4.00 inches or 5.00 inches for "Big" hoppers. If it does not show the 4.00 inches or 5.00 inches, use the "Cal." switch to set the values back to 4.00 inches or 5.00 inches. When the left gate override is released, the number on the screen should turn back to 0.00.The calibration done in these setup screens is to adjust the open and close thresholds on the proportional valves controlling the gate cylinder. These thresholds determine the speed at which the gates open and close.

SETUP: RIGHT OPEN
RC-28 0.860 amps
RC-36 0.920 amps

Use the "Cal." switch to adjust the current up or down to increase or decrease the speed at which the gate opens. Adjusting this value too high will cause the gates to hunt around the desired gate opening. Adjusting this value too low will cause a delay of the gate opening.

SETUP: RIGHT CLOSE
RC-28 0.920 amps
RC-36 0.980 amps

Use the "Cal." switch to adjust the current up or down to increase or decrease the speed at which the gate closes. Adjusting this value too high will cause the gates to hunt around the desired gate opening. Adjusting this value too low will cause a delay of the gate closing or not closing at all.

SETUP: LEFT OPEN
RC-28 0.860 amps
RC-36 0.920 amps

Use the "Cal." switch to adjust the current up or down to increase or decrease the speed at which the gate opens. Adjusting this value too high will cause the gates to hunt around the desired gate opening. Adjusting this value too low will cause a delay of the gate opening.

SETUP: LEFT CLOSE
RC-28 0.920 amps
RC-36 0.980 amps

Use the "Cal." switch to adjust the current up or down to increase or decrease the speed at which the gate closes. Adjusting this vlaue too high will causet he gates to hunt around the desired gate closing. Adjusting this value too low will cause a delay of the gate closing or not closing at all.

SETUP: GATE OPEN HOLD
Distance - 18.0 Inches

This screen is used to set the delay of the right gate on a variable-width hopper. This value should be set to 18.0, except for special units. The value corresponds with how long the computer allows the chipspreader to travel (in inches) before the gates begin opening (ex. 10.0 = 10 inches of travel before gate opening). The left gate is unaffected by changing this number.

SETUP: GATE SHUT HOLD
Distance - 18.0 Inches

This screen is used to set the delay of the right gate on a variable-width hopper. This value should be set to 18.0, except for special units. The value corresponds with how long the computer allows the chipspreader to travel (in inches) before the gates begin to close (ex. 10.0 = 10 inches of travel before gate closing). The left gate is unaffected by changing this number.

SETUP: SAVE AND EXIT
Press Save to Exit

Press the "Save" button to save any changes that were made.

Chipspreader Computer Service & Diagnostic Screens For both Fixed & Variable Hoppers

SERVICE SCREENS

The service screens are entered by holding the "Scroll" switch either up or down while turning the ignition key on. The first four screens are the same as the "Operator Screens" that are commonly shown in daily machine operation.

CAUTION: When in the service screens, all interlocks are disabled, and it is possible to open the gates in the manual mode while standing still.

20.0	**3/8**	**400**
lb/yd^2	**Chip**	**FPM**

This screen shows the application rate set point, aggregate preset, and the speed set point when standing still. To move to the next screen, push the "Scroll" button down.

LEFT CONVEYOR	**RIGHT CONVEYOR**
0%	**0%**

Operation speed percentage will display on screen when switches for L & R conveyors are turned (ON), and then back to 0 when switched (OFF). To move to the next screen, push the "Scroll" switch down.

LEFT AUGER	**RIGHT AUGER**
0%	**0%**

Operation speed percentage will display on screen when switches for L & R augers are turned (ON), then back to 0 when switched (OFF). To move to the next screen, push the "Scroll" switch down.

100ºF	**60 PSI**	**15%**
WATER	**OIL**	**FUEL**

This screen shows the engine coolant temperature on the left, the engine oil pressure in the center, and the remaining fuel in the fuel tank on the right. To move to the next screen, push the "Scroll" switch down.

100ºF	**2200 RPM**	**13.8V**
HYD OIL	**ENGINE**	**BATTERY**

This screen shows the hydraulic oil temperature on the left, the engine RPM in the center, and the system voltage on the right. To move to the next screen, push the "Scroll" switch down.

120.8	**7550 FT**
ENGINE	**CHIPPED**

This screen shows the hours on the machine on the left and the feet chipped on the right. To move to the next screen, push the "Scroll" switch down. *Now we are proceeding to the first of the actual service screens*.

SERVICE: RIGHT NULL
Actual: 0.00 Inches

This screen shows the actual position of the right gate. Push the "Scroll" switch down to move to the next screen.

SERVICE: LEFT NULL
Actual: 0.00 Inches

This screen shows the actual position of the left gate. Push the "Scroll" switch down to move to the next screen.

SERVICE: Aggre. Last.
Status: De-activated

This screen shows the position of the "Size" switch. Push the "Size" switch up and the display should change to "Activated" until the switch is released. Push the "Scroll" switch down to move to the next screen.

SERVICE: Aggre. Next
Statues: De-activated

This screen shows the position of the "Size" switch. Push the "Size" switch up and the display should change to "Activated" until the switch is released. Push the "Scroll" switch down to move to the next screen.

SERVICE: Appl. Rate -
Status: De-activated

This screen shows the position of the “Rate” switch. Push the “Rate” switch down and the display should change to “Activated” until the switch is released. Push the “Scroll” switch down to move to the next screen.

SERVICE: Appl. Rate +
Status: De-activated

This screen shows the position of the “Rate” switch. Push the “Rate” switch up and the display should change to “Activated” until the switch is released. Push the “Scroll” switch down to move to the next screen.

SERVICE: Cal. Rate -
Status: De-activated

This screen shows the position of the “Cal.” switch. Push the “Cal.” switch down and the display should change to “Activated” until the switch is released. Push the “Scroll” switch down to move to the next screen.

SERVICE: Cal. Rate +
Status: De-activated

This screen shows the position of the “Cal.” switch. Push the “Cal.” switch up and the display should change to “Activated” until the switch is released. Push the “Scroll” switch down to move to the next screen.

Be sure the “Park/Drive” Mode switch is in the park position before performing the next sequence of checks.

SERVICE: L GATE SEL
Status: De-activated

This screen shows the position of the “Left Gate Selector” switch on the computer. Put the “Left Gate Power” switch up, push the stick out of neutral, and depress the thumb switch. Display should now be “Activated”. Next, depress the thumb switch to turn the “Gates Active” light off. The display should be de-actiaved. Turn the thumb switch back on, push “Left Gate Power” switch down, and the display should change to deactivated.

SERVICE: L. GATE OVER
Status: De-activated

This screen shows the position of the “Left Gate Override” switch. Push the left gate override button down and the display should change to “Activated” as long as the switch is held down and returned to de-activated when the button is released. Push the “Scroll” switch down to move to the next screen.

SERVICE: R. GATE SEL
Status: De-activated

This screen shows the position of the “Right Gate Selector” switch to the computer. Put the “Right Gate Power” switch up and depress the thumb switch. The display should change to “Activated”. To test the deactivated display, depress the thumb switch to turn the “Gates Active” lights off. The display should be deactivated Turn the thumb switch back on, push the “Right Gate Power” switch down, and the display should be deactivated. Push the “Scroll” switch down to move to the next screen.

SERVICE: R. GATE OVER
Status: De-activated

This screen shows the position of the “Right Gate Override” switch. Push the “Right Gate Override” switch down and the display should change to actiavted as long as the button is held down and returned to deactivated when the button is released. Push the “Scroll” switch down to move to the next screen.

SERVICE: BRAKE INPUT
Status: De-activated

This screen shows the position of the “Service Brake” pedal. Push the “Service Brake” pedal down and the display should change to “Activated” as long as the switch is held down. Push the “Scroll” switch to move to the next screen.

SERVICE: Appl. Rate -
Status: De-activated

This screen shows the position of the “SAVE” button. Push the “SAVE” button down and the display should change to “Activated” as long as the button is held down. Push the “Scroll” switch to move to the next screen.

SERVICE: Memory Setup
Status: De-activated

The onboard Chipspreader computer has the ability to memorize 5 operation presets. These presets can be accessed at any time through the computer's five "Memory" pages. The steps to access each screen are the exact same.

For example, to access Memory 1, start by pushing the "Memory 1" button down and the display should change to "Activated" as long as the button is held down. To exit the Memory page, push the "Scroll" switch down to move to the next screen. These steps are interchangeable with all 5 memory presets.

SERVICE: VEH. SPEED -
Status: De-activated

This screen shows the position of the "Speed" switch. Push the "Speed" switch down and the display should change to "Activated" as long as the switch is held down. Push the "Scroll" switch down to move to the next screen.

SERVICE: VEH. SPEED +
Status: De-activated

This screen shows the position of the "Speed" switch. Push the "Speed" switch up and the display should change to "Activated" as long as the switch is held down. Push the "Scroll" switch down to move to the next screen.

SERVICE: RELEASE
Status: De-activated

This screen shows the "Parking Brake Release" status of the Park/Drive switch. With the Park/Drive switch in (PARK), the display should be deactivated. When the switch is selected to (DRIVE), the display should change to "Activated". Switch back to (PARK) once completed, and hit the "Scroll" switch down to move to the next screen.

SERVICE: LEFT CONV.
Status: De-activated

This screen shows the operation status of the left conveyor. Display should change to active when switch is turned to (ON) and deactive when switch back to (OFF).

SERVICE: RIGHT CONV.
Status: De-activated

This screen shows the operation status of the right conveyor. The display should change to "Activated" when right conveyor switch is turned (ON) and return to deactivated when turned back (OFF)

SERVICE: BATTERY
Status: 12.3 volts

This screen shows the condition of the battery and recharging system. With the engine not running the battery voltage will be displayed. When the engine is running, the display will show the output voltage of the alternator. Push the "Scroll" switch down to move to the next screen.

SERVICE: Front Speed
Status: 0 hertz

This screen shows the frequency being measured in the front motor feedback circuit. Push the "Scroll" switch down to move to the next screen.

SERVICE: Left Gate
Status: 0.00 volts

This screen shows the voltage being measured in the left gate feedback circuit. Push the "Scroll" switch down to move to the next screen.

SERVICE: Right Gate
Status: 0.00 volts

This screen shows the voltage being measured in the right gate feedback circuit. Push the "Scroll" switch down to move to the next screen.

SERVICE: Forward
Status: 0.00 amps

This screen shows the current to the forward solenoid of the pump. Push the "Scroll" switch to move to the next screen.

SERVICE: Reverse
Status: 0.00 amps

This screen shows the current to the reverse solenoid of the pump. Push the "Scroll" switch to move to the next screen.

SERVICE: Front Motor
Status: 0.39 amps

This screen shows the current to the front coil in either a 2WD or 4WD machine. Push the “Scroll” switch down to move to the next screen.

SERVICE: Rear Motor
Status: 0.39 amps

This screen shows the current to the rear motor in a 4WD machine. Traction Control switch can also be tested by activating the switch and monitor the display for an increase in amperage to approx. 1.09 amps and then return to 0.39 amps once switch is returned to (OFF).

SERVICE: Left Close
Status: 0.00 amps

This screen shows the current left gate closing solenoid. Push the scroll switch down to move to the next screen.

SERVICE: Left Open
Status: 0.00 amps

This screen shows the current to the left gate opening solenoid. Push the “Scroll” switch down to move to the next screen.
SERVICE: Right Close
Status: 0.00 amps

This screen shows the current to the right gate closing solenoid. Push the “Scroll” switch down to move to the next screen.

SERVICE: Right Open
Status: 0.00 amps

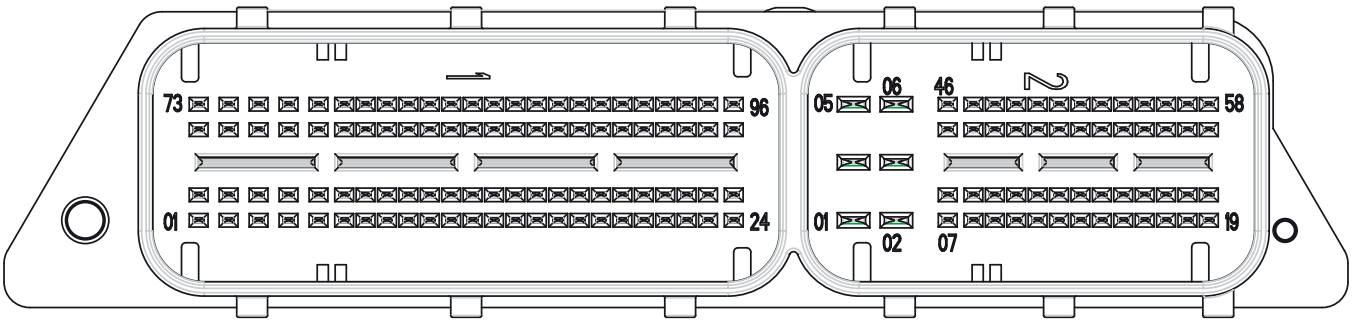
This screen shows the current to the right gate open solenoid. Push the “Scroll” switch down to move to the next screen.

2hrs	**0Ft**
ENGINE	**CHIPPED**

From this screen, hitting the “Scroll” switch down will keep bringing you back to the service screens. Switching the “Scroll” button up 3 times will take you back to the top operating screen.

RC 36 Controller

Computer shown upside down of normall installation.



Software Version 1.09 thru 1.12 connection pin out description.

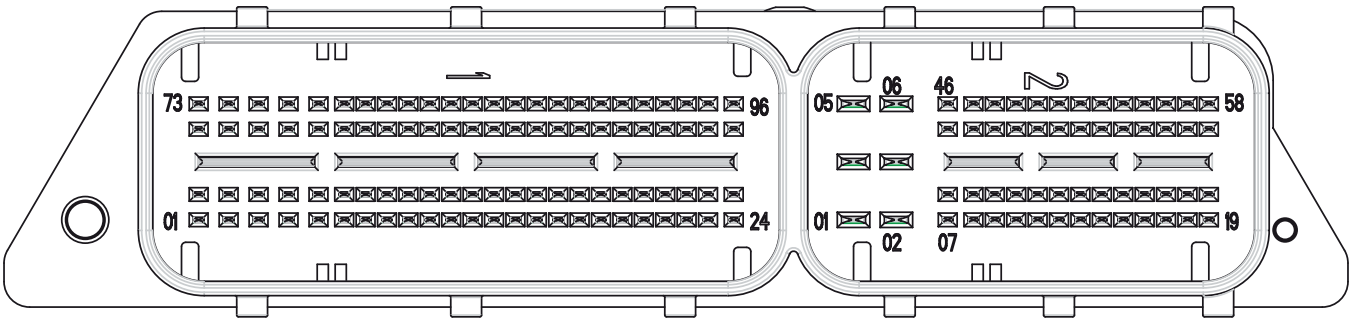
Plug 1 (Large)
1-01 Right Auger Solenoid
1-19 Left Auger In
1-20 Right Auger In
1-22 Ground
1-23 Ground
1-24 Ground
1-26 Left Auger Solenoid
1-30 Left Conveyor Solenoid
1-31 Right Conveyor Solenoid
1-33 Reverse Switch
1-34 Cal –
1-35 Cal +
1-36 Rate –
1-38 Hydraulic Oil Temperature
1-39 Joystick Wiper
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
1-60 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 Close Solenoid
1-80 Left Gate Open 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 Power 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

For further assistance, call Etnyre Service Department at (1-888-586-1899).

RC 28 Controller

Computer shown upside down of normall installation.



Software Version 1.20 and higher connection pin out description.

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 Temperature
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

For further assistance, call Etnyre Service Department at (1-888-586-1899).

Programming Ultrasonic Sensor

Pre-programmed # 3161250

Non-programmed # 6704045

Programming Direction of Operation.

1. Turn ignition switch to (On) and place Conveyor Selector Switch to (Auto).
2. Disconnect harness from sensor if it is currently plugged in.
3. Press and Hold the A1 (Down) while connecting harness and supply power to the sensor.
4. Monitor (Green) light flashes (flash x2 - pause - flash x2) to change press A2 until correct pattern is transmitting.
5. Press A1, (Red) light flashes (flash x3 - pause - flash x3) to change press A2 until correct pattern is transmitting.
6. Press and Hold A1 (3 seconds) and release.
7. This completes the directional programming of the sensor.

Programming Sensor for Distance to Aggregate.

(On-Off) in Auto Mode

1. Turn ignition switch to (On) and place Conveyor Selector Switch to (Auto).
2. Press and hold down A2 (Down) until lights flash.
3. Place object in front of beam, at the distance you desire conveyor to turn (Off). Approx. 9-10 inches.
4. Press A2 to confrim setting.
5. Press and Hold A1 (Down) until lights flash.
6. Place object in front of beam, at the distance you desire conveyor to turn (Off). Approx. 9-10 inches.
7. Press A1 to confirm setting.
8. This completes the distance programming of the sonic sensor.

Chipspreader Speed Sensors (1999 & newer)

Used with Spicer Axles and MDC Controllers

This sensor is mounted to read off of the driveline coupling between Parking Brake unit and the axle housing. ***(Note: alignment mark on the hex portion of the sensor needs to be in-line with the gear rotation and sensor needs to maintain a 1/16" clearance or gap to the gear.)***

Packard connector and harness wiring:

A. Red Wire / 12vdc
B. Black Wire / Ground
C. Clear or White Wire / Signal to Controller 9-10vac
D. Shield / Ground

Used with Kessler Axles and MDC Controllers

This sensor is mounted and screwed into the side of the axle housing, and reads off a ring assembly inside the drive coupling housing. Please verify by installing a screwdriver or object longer than the sensor into the opening and ensure that the lug of the ring assembly is blocking the opening inside the housing (move machine if needed). Once this has been verified, install sensor by hand, until you feel it bottom out. Back out a 1/2 turn and secure with the jam nut. (No alignment required).

Packard connector and harness wiring:

A. Red Wire / 12vdc
B. Black Wire / Ground
C. Clear or White Wire / Signal to Controller 9-10vac
D. Shield / Ground

Used with Kessler Axles and RC Controllers

This sensor is mounted to the topside of the Rexroth Hydraulic Motor in front of the shifting tower, which also has wiring connected to it for the shift coil. Sensor is mounted with (2) bolts and seals with an O-ring at the base of the sensor. (No adjustment required).

Deutsch connector and harness wiring:

A. Black Wire #1 / 12vdc
B. Black #2 / Ground
C. Black #3 / Signal to Controller 9-10vac
D. GN/Y / Direction signal (0vdc Fwd and 12vdc in Rev)

Chipspreader Speed Sensors (1999 & newer) *cont'd.*

Used with Kessler Axles and RC Controllers (Ver. 2)

This sensor is mounted to the topside of the Rexroth Hydraulic Motor in front of the shifting tower, which also has wiring connected to it for the shift coil. Sensor is mounted with (1) bolt and seals with an O-ring at the base of the sensor. (No adjustment required).

Packard connector and harness wiring:

A. Black #1 / 12vdc

B. Black #2 / Ground

C. Black #3 / Signal to Controller 4-7vac

D. GN/Y / Direction signal (0vdc Fwd, 12 vdc Rev)

Chipspreader Computer Fault Screens

1. WARNING: ENGINE CAN

A. Computer lost connection with engine

i. Machine comes to a stop.

ii. Scroll button to clear error.

iii. Setpoint limited to 400 FPM.

iv. Center joystick to move at limited speed.

v. Correct error and reset computer to resume normal operation.

2. ALARM: PUMP FWD SOL FAILURE

A. Computer lost connection with pump forward coil

1. While not moving

a. Alarm can be cleared with scroll button

b. Machine can move in 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 in 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

3. 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 in 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 in reverse

c. Machine will not move forward until error is corrected and computer is reset.

3. While moving reverse

a. Machine will continue to 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

i. Machine comes to a stop.

ii. Scroll button to clear error.

iii. Setpoint limited to 400 FPM.

iv. Center joystick to move at limited speeds

v. Correct error and reset computer to resume normal operation.

5. ALARM: FRONT MOTOR SOL FAILURE

A. Computer electrically disconnected from front motor solenoid

i. Machine comes to a stop.

ii. Scroll button to clear error.

iii. Setpoint limited to 400 FPM.

iv. Center joystick to move at limited speeds

v. Correct error and reset computer to resume normal operation.

6. ALARM: REAR MOTOR SOL FAILURE

A. Computer electrically disconnected from rear motor solenoid

i. Machine comes to a stop.

ii. Scroll button to clear error.

iii. Setpoint limited to 400 FPM.

iv. Center joystick to move at limited speeds

v. Correct error and reset computer to resume normal operation.

7. ALARM: JOYSTICK 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 butm achine 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 180ºF in tank.

1. See “Hydraulic Oil gets Hot” section. (pg 69).

10. ALARM: ENGINE COOLANT HOT

A. Engine coolant temperature above 240ºF

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 on 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.

Service Bulletin

Service Bulletin Number: 4021566	**Released Date**: 27-aug-2012
Diesel Exhaust Fluid (DEF) Specifications for Cummins® Selective Catalytic Reduction (SCR) Systems	

Diesel Exhaust Fluid (DEF) Specifications for Cummins® Selective Catalytic Reduction (SCR) Systems

This document provides specifications, usage, and handling requirements of Diesel Exhaust Fluid (DEF). Other names for DEF are listed below.

- UreaAqueous
- Aqueous Urea Solution (AUS 32)
- AdBlue™
- NOx Reduction Agent
- Catalyst Solution
- Stableguard™ 32

The following topics are included in this document:

1. DEF Characteristics and Specifications
2. Handling, Storage, and Shelf Life of DEF
3. DEF Cleanliness Practices
4. Contamination and Incorrect Fluid
5. Testing
6. Disposal and Cleaning of DEF
7. First Aid

DEF used on Cummins® engines **must** meet the requirements as outlined in the specifications section of this document.

For further information, reference the DEF manufacturer's Material Safety Data Sheet.

Note : Cummins Inc. is **not** responsible for failures or damage resulting from what Cummins Inc. determines to be abuse or neglect, including but **not** limited to: operation without correctly specified DEF, lack of maintenance of the aftertreatment system, improper storage or shutdown practices, and unauthorized modifications of the engine and aftertreatment system. Cummins Inc. is also **not** responsible for failures caused by incorrect DEF or by water, dirt, or other contaminants in the DEF.

1. DEF Characteristics and Specifications

⚠ WARNING ⚠

Diesel exhaust fluid (DEF) contains urea. Do not get the substance in your eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Do not swallow internally. In the event the diesel exhaust fluid is ingested, contact a physician immediately.

Reference the Materials Safety Data Sheet (MSDS) for additional information.

⚠ CAUTION ⚠

Never attempt to create DEF by mixing agricultural grade urea with water. Agricultural grade urea does not meet the necessary specifications required and the aftertreatment system may be damaged.

DEF has the following characteristics:

- Nontoxic and nonpolluting
- Nonflammable
- Stable and colorless
- Odor of slight ammonia
- Composed of urea and water
- Biodegradable

The urea content of DEF solution **must** be 32.5 percent ± 0.7 percent by weight. It **must** meet the International Standard ISO 22241-1 for diesel engines. There is no acceptable substitute.

For engines using SCR operating in the United States and Canada, DEF certified by the American Petroleum Institute (API) is recommended for use. A symbol on the container or dispensing system will indicate certification. See image below.

11900149

Never add water, or any other unauthorized fluid, to the DEF tank. The Aftertreatment system may be damaged and the DEF solution quality will be compromised.

⚠ CAUTION ⚠

Do not add any chemicals/additives to the diesel exhaust fluid in an effort to prevent freezing. If chemicals/additives are added to the diesel exhaust fluid, the aftertreatment system may be damaged.

DEF freezes at approximately -11°C [12°F]. The DEF system is designed to accommodate these temperatures and does **not** require any intervention by the owner or operator.

2. Handling, Storage, and Shelf Life of DEF

For detailed information on handling, transportation, and storage of DEF, reference ISO 22241-3.

Handling:

DEF is **not** hazardous but short-term exposure can cause acute irritation. Proper personal protective equipment should be utilized when handling DEF. For more information, refer to the First Aid section of this document.

Select materials may become corroded if contact with DEF occurs for an extended period of time. See the list of materials below.

- Carbon steel, zinc coated carbon steel, and mild iron
- Nonferrous metals and alloys: copper, copper alloys, zinc, and lead
- Solder containing lead, silver, zinc, or copper
- Aluminum alloys
- Magnesium and magnesium alloys
- Plastics or metals coated with nickel

If material contact with DEF occurs, clean the surface immediately. Reference the Disposal, Cleaning and Contamination/ Incorrect Fluid of DEF section of this document for additional information.

Storage:

Only approved containers should be utilized to transport and store DEF. Containers made of polyethylene, polypropylene and stainless steel (Grade 316) are recommended.

Some DEF containers include a paper seal under the cap. The seal will degrade over time and will contribute to DEF contamination. These containers **must** be identified and inspected regularly once opened to prevent contamination.

Shelf Life:

Many factors effect DEF shelf life. Temperature and duration are major contributors. **Always** check the concentration of DEF or replace DEF with new if DEF quality or expiration are questionable.

DEF has an expected shelf life of 18 months minimum when stored under the following conditions.

- Storage temperature between -5°C to 25°C [23°F to 77°F]
- Sealed containers
- Avoiding direct sunlight

Shelf life is reduced by 6 months for each 5°C [9°F] increment above recommended temperatures. For example, 30°C [86°F] = 12 month shelf life, 35°C [95°F] = 6 month shelf life, etc.

Long term storage in a vehicle (in excess of 6 months) is **not** recommended. If long term storage is necessary, periodic testing of the DEF is recommended to make sure the concentration does **not** fall out of specification. See the Testing section of this document.

3. DEF Cleanliness Practices

Materials that come into contact with DEF **must** be free from any contamination, oil, fuel, dust, detergents, and any other chemicals.

Containers, funnels, and other equipment that will handle or store DEF should be cleaned before use. Wash thoroughly and rinse with distilled water. If distilled water is unavailable, rinse with tap water then rinse with DEF.

Follow these recommended practices to avoid contaminating DEF during routine maintenance tasks.

- Clean the DEF tank prior to opening the DEF tank for filling.
- Clean the dispensing nozzle prior to filling the DEF tank.
- Ensure the dispensing nozzle is kept in the DEF tank during filling to minimize drops and mishandling.
- Ensure proper filtration is used for DEF tank venting to atmosphere.
- Close DEF ports during operation or repair.
- Clean out dust and debris before using a coupler/insert connection.
- Ensure a proper DEF storage container is being utilized and inspected as necessary. Refer to Handling, Storage and Transporting of DEF section of this document.
- Conduct periodic inspections and eliminate areas where DEF has crystallized.

4. Contamination and Incorrect Fluid

Never add water, or any other unauthorized fluid, to the DEF tank. The Aftertreatment system may be damaged and the DEF solution quality will be compromised. This may effect DEF in the following ways.

- Change the DEF concentration levels
- Introduce contaminants
- Change DEF chemical properties
- Alter the freeze point of DEF
- Alter characteristics of the DEF solution

If an unauthorized fluid is added to the DEF tank, contact a local Cummins® Authorized Repair location to determine the appropriate repair direction.

If water has been added to the DEF tank perform the following steps.

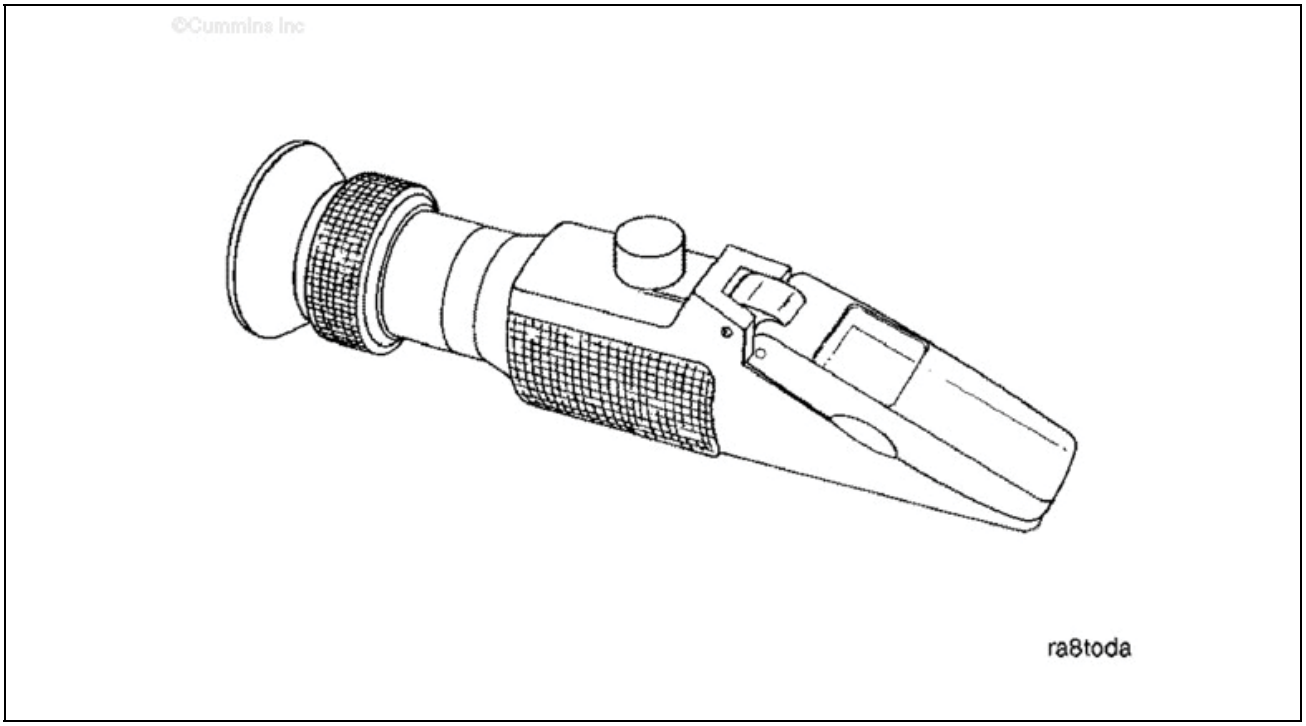
- Drain the DEF tank
- Flush with distilled water
- Refill the DEF tank with new or quality DEF
- Check the DEF concentration

5. Testing

The correct concentration of DEF is critical to engine and aftertreatment system health and performance.

To test the concentration of DEF, use Cummins® DEF refractometer, Part Number 4919554. Follow the instructions provided with the service tool.
For detailed instructions on testing DEF, reference ISO 22241-2.

Note : When using the Cummins® DEF refractometer service tool, the acceptable DEF measurement specification is 32.5 +/- 0.7 percent. This specification takes into consideration the refractometer tool tolerances, variability, and calibration when measuring DEF concentration.



6. Disposal and Cleaning of DEF

If a small amount of DEF is spilled, rinse and clean immediately with water. Spilled DEF, if left to dry or wiped away with a cloth, will leave a white residue. Failure to clean spilled DEF from a surface may result in an incorrectly diagnosed leak of the DEF dosing system.

If a large amount of DEF is spilled, perform one of the following.

- Transfer it into a suitable container. Label the container correctly.
- Cover it using an absorbent material.

Dispose of DEF according to local environmental regulations. Do **not** empty into the drainage system. Do **not** empty/release into surface water.

7. First Aid

Follow these recommended practices when working with DEF. For additional information regarding the proper handling of DEF, refer to the manufacturer's Material Safety Data Sheet.

DEF is **not** hazardous but short-term exposure can cause acute irritation.

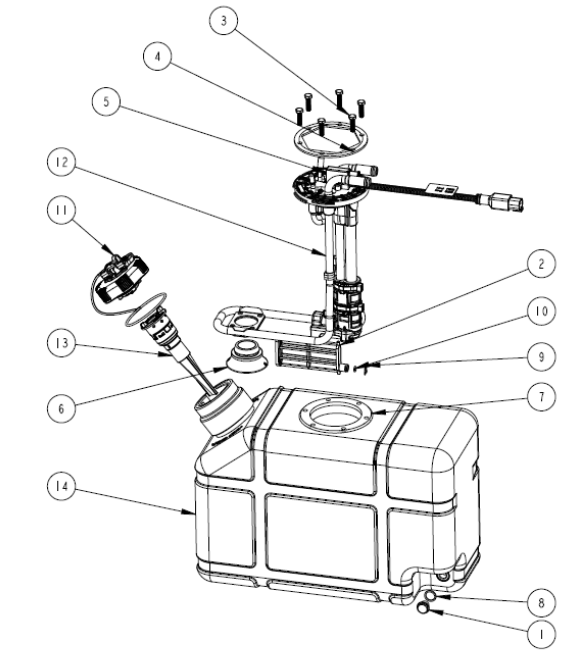
- Avoid breathing vapor or mist.
- Protect eyes. In case of contact with eyes, flush with water for a minimum of 15 minutes.
- Protect skin. In case of contact with skin, wash with soap and water.
- Do **not** ingest. If ingested, contact a physician immediately.

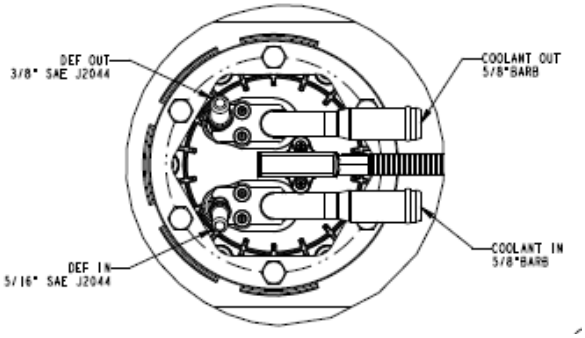
Document History

Date	Details
xxxx-xx-xx	Module Created
2012-3-5	QSOL Quick Fix|Reason: Spelling Error|Notes: none
2012-8-27	Urea content spec change
2015-1-8	Reformatted. Updated DEF cleanliness practices.
2015-2-5	none
2016-9-13	Updated Urea Solution (AUS 32) to Aqueous Urea Solution (AUS 32)
2021-1-22	Quick Fix application:

Last Modified: 22-Jan-2021

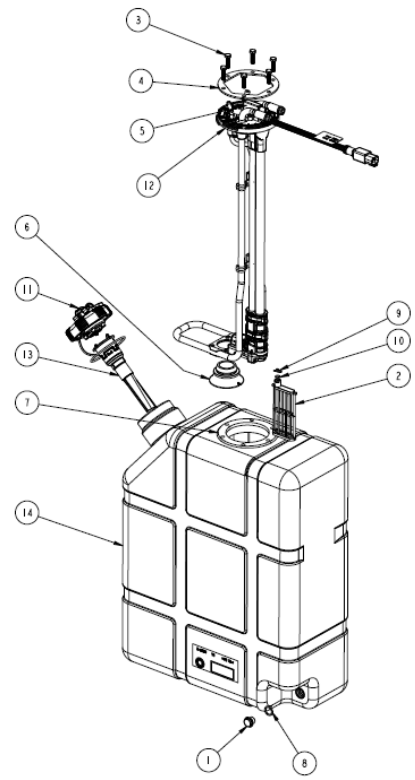
Etnyre Chipspreader DEF Tanks

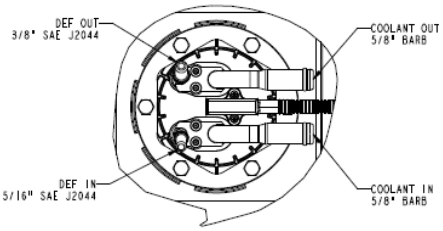




DEF Tank # 7051337 (5 Gal) Available Parts

Etnyre #	Part Description	# Req
7051337	DEF Tank Assembly Complete	1
N/A	Plug, Drain	1
N/A	Housing, Liquid Filter	1
N/A	Bolt	6
N/A	Ring, Retainer	1
N/A	Valve, Air vent	1
N/A	Grommet	1
N/A	Ring, Retainer	1
N/A	Washer	1
N/A	Clip, Retaining	1
N/A	Ring, Centering	1
7051822	Cap, Filler	1
7051656	Header, DEF Tank	1
7051590	Filter, DEF	1
N/A	Reservoir	1
N/A	Sensor, Quality	1





DEF Tank # 7051426 (10 Gal) Available Parts

Etnyre #	Part Description	# Req
7051426	DEF Tank Assembly, Complete	
N/A	Plug, Drain	1
N/A	Housing, Liquid Filter	1
N/A	Bolt	6
N/A	Ring, Retainer	1
N/A	Valve, Air vent	1
N/A	Grommet	1
N/A	Ring, Retainer	1
N/A	Washer	1
N/A	Clip, Retaining	1
N/A	Ring, Centering	1
7051822	Cap, Filler	1
7051656	Header, DEF Tank	1
7051590	Filter, DEF	1
N/A	Reservoir	1
N/A	Sensor, Quality	1

Chipspreader Front Hopper Spread Roll Specifications & Straightening Procedures

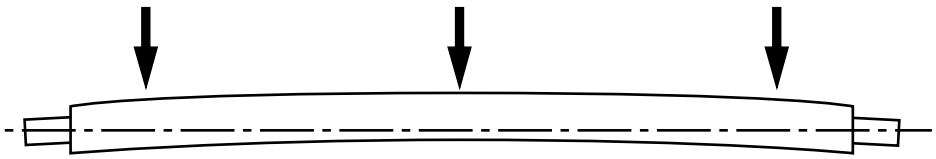
The most common cause of the spread roll becoming bent is the careless handling of the hopper.

The spread roll length varies based on the hopperette size and style.

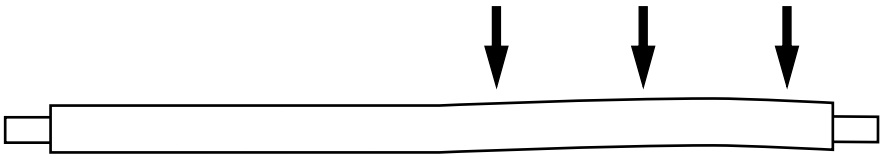
Spread roll diameter is (6.00) inches with a minimum diameter of (5.75) inches. Once this minimum limit is exceeded, the air operated gates will not reach the spread roll properly with the gate wear plates in the correct (flush) placement. Extending the wear plates outward will cause the air gates to not function properly. *(See operator's manual for proper hopper gate wear plate adjustments.)*

The following procedures can be used in most cases to straighten the spread roll. On some units, it might be necessary to replace the spread roll if the straightening procedures fail.

1. Loosen the bearing shaft set screws on both ends of the spread roll.
2. Determine the high place on the spread roll at three places, 2 feet in from each end and the middle. This can be done by spinning the spread roll and marking with any suitable marker. 1/8" total is the maximum allowable movement for the spread roll.
3. Using an acetelene-ox torch with a small tip (or equivalent heating device), heat the spread roll on the **high** side at the 3 places that are marked. Starting with the center, heat to cherry red about 3/4" diameter, then heat the ends in the same manner as the center.
4. Let the spread roll cool.
5. Re-check the straightness as is Step 2 and if not still straight within 1/8", repeat Steps 3 & 4. Do not heat in the same place, move approximately (2.00) inches to either side. Do not heat spread roll more than 3/4" diameter spot, it will warp the roll beyond repair. Take your time when heating so that the heat moves in an even path around your heat spot.
6. When letting the spread roll cool, let it do so naturally. Do not force the cooling by using water or any other coolant.



Spread Roll Out in Center as Described Above

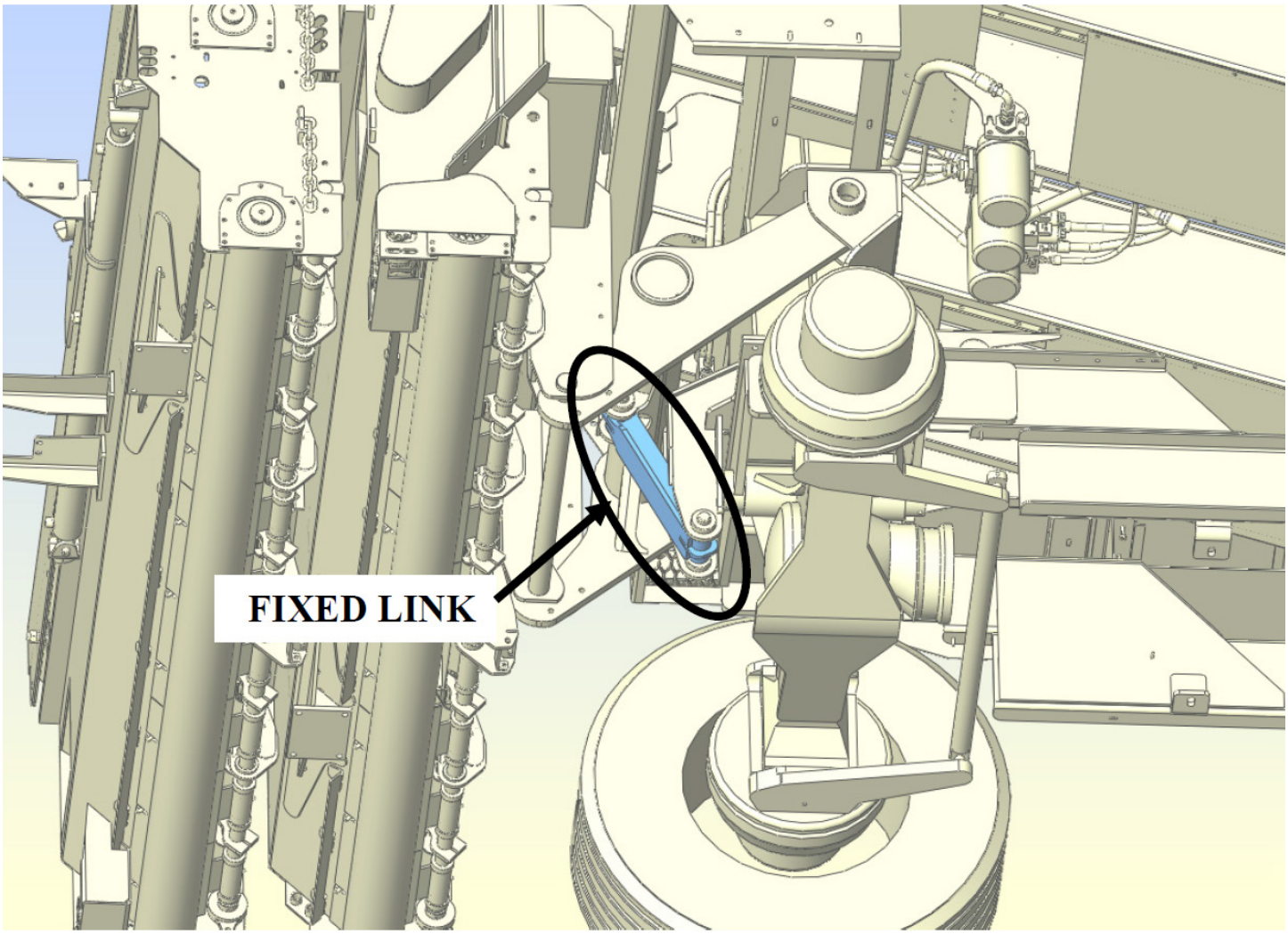


Spread Roll Out on End
Heat with only a 1/2" spot at these three marks, let cool, then check.

9100383
Hopper Raise/Lower Conversion Instructions

1. Remove fixed link from behind the hopper.

The fixed link is pinned to support arms coming off of the main chipspreader frame, and to the carry arm weldment. These pins will be reused with the hopper raise/lower cylinder.



Continue ⟶

2. Install hydraulic hoses and counterbalance valve to hopper raise/lower cylinder.

(Note: It is not necessary to do this step before installing the cylinder; however, it can make the job easier. This can also be done after the cylinder is installed.)

Use Page 32 out of the Etnyre Chipspreader Parts Manual as a guide.

Install the counterbalance valve to the base end of the cylinder using a 06MB-08MP adapter (6604055).

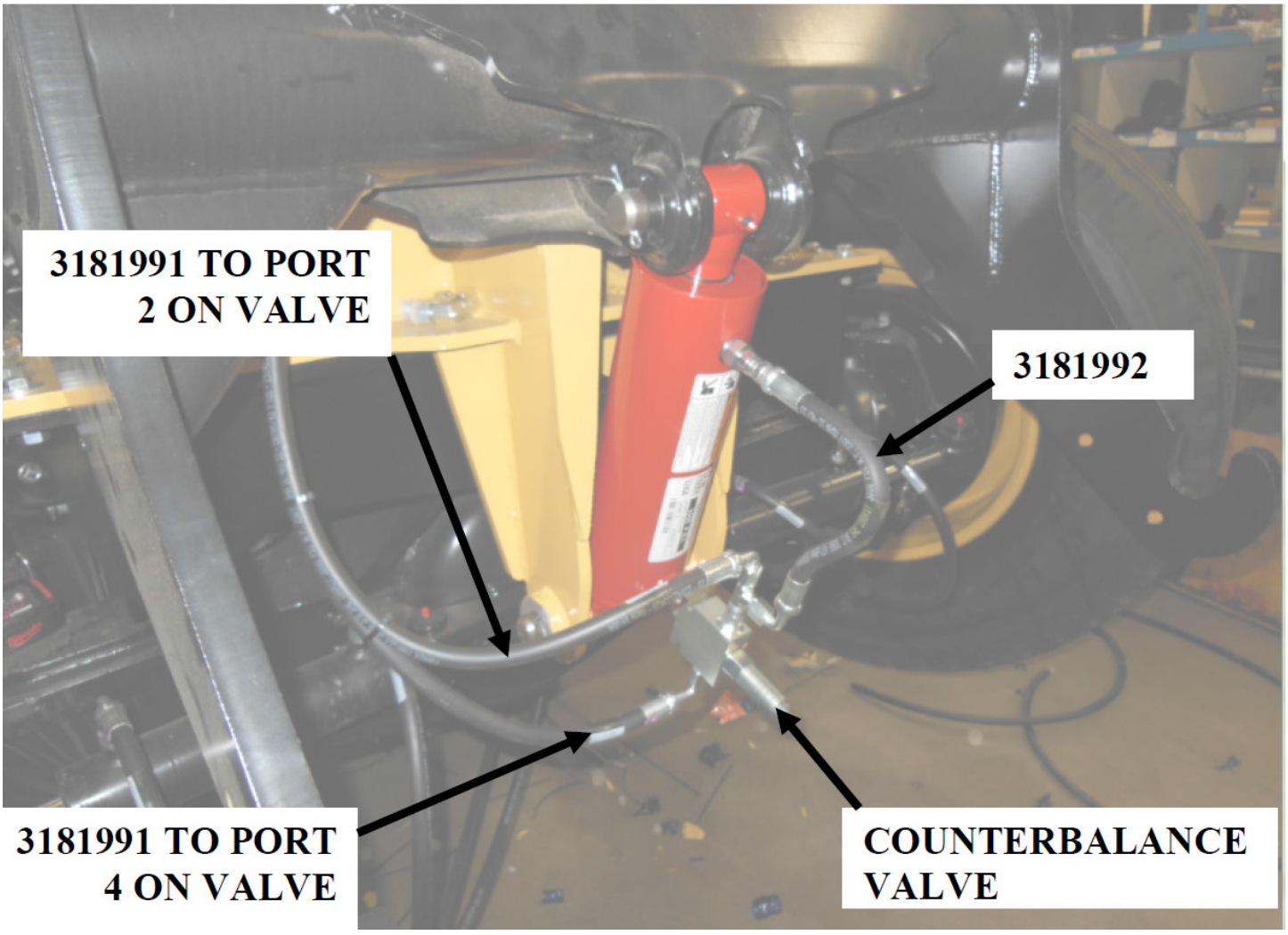
Attach hose 3181991 to port 2 of the counterbalance valve using adapter 9410202.

Attach hose 3181992 to the rod end of the cylinder using adapter 6601491.

Attach the other end of hose 3181992 to tee 9410332, and connect tee to counterbalance valve with adapter 9410202.

Attach hose 3181991 to tee.

(Note: The free ends of the two 3181991 hoses will be attached to a hydraulic valve later on.)



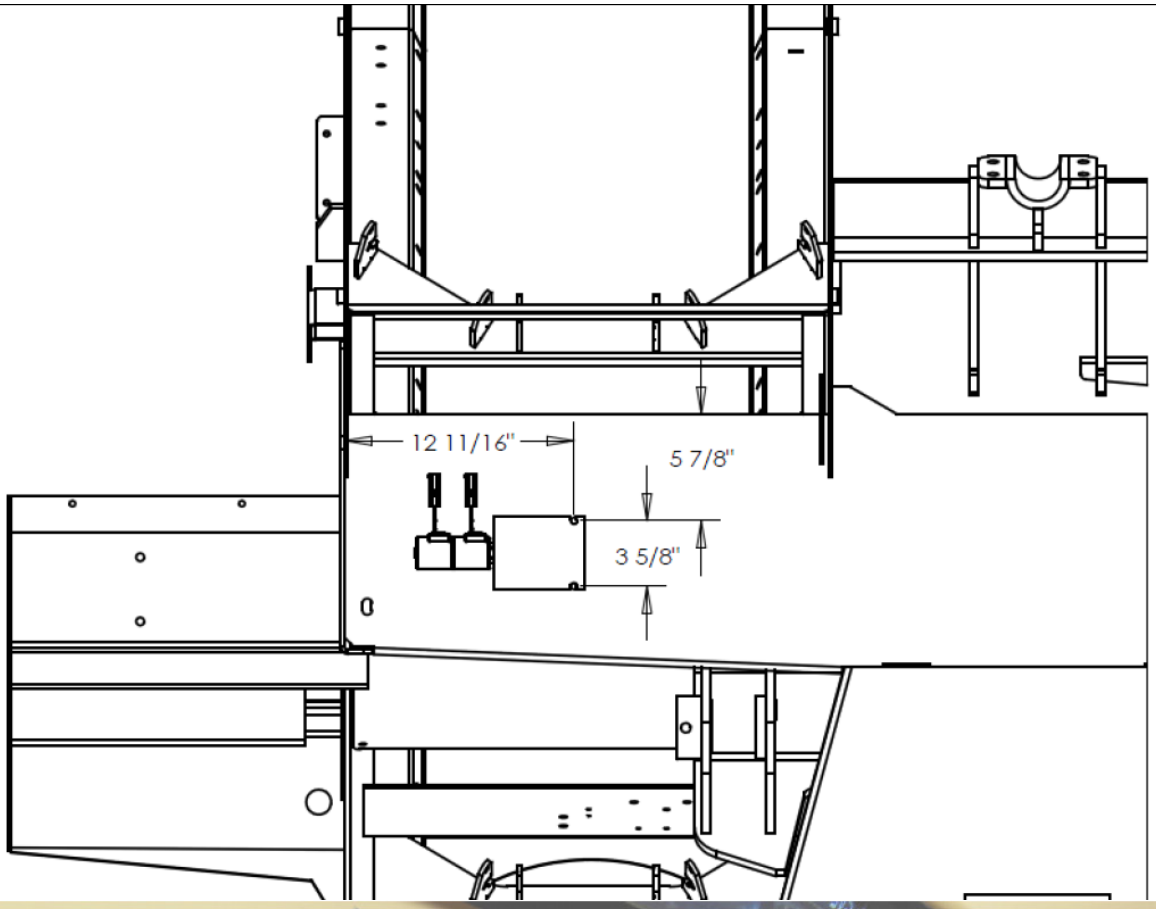
2. Install the hopper raise/lower cylinder.

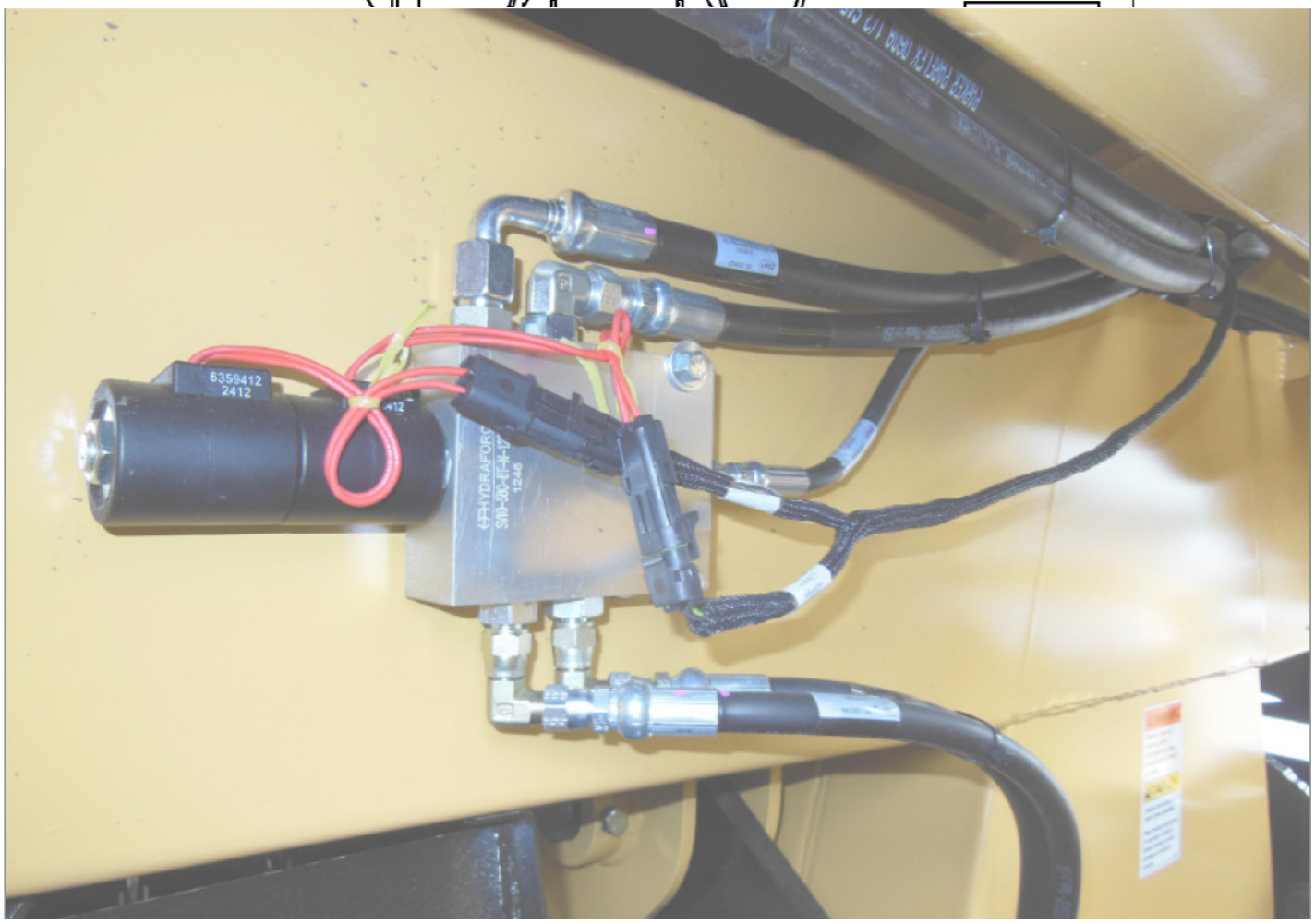
Using the pins removed in step one, install the base end of the hopper raise/lower cylinder to the chipspreader frame and the rod end of the carry arm weldment.

3. Mount hydraulic valve to chipspreader frame.

Mount the hydraulic valve 6604010 to the front face of the chipspreader frame according to the dimensions seen on the next page. Ports 3 and 5 should face up, and ports 2 and 4 should face down.

Continue ⟶





Continue ⟶

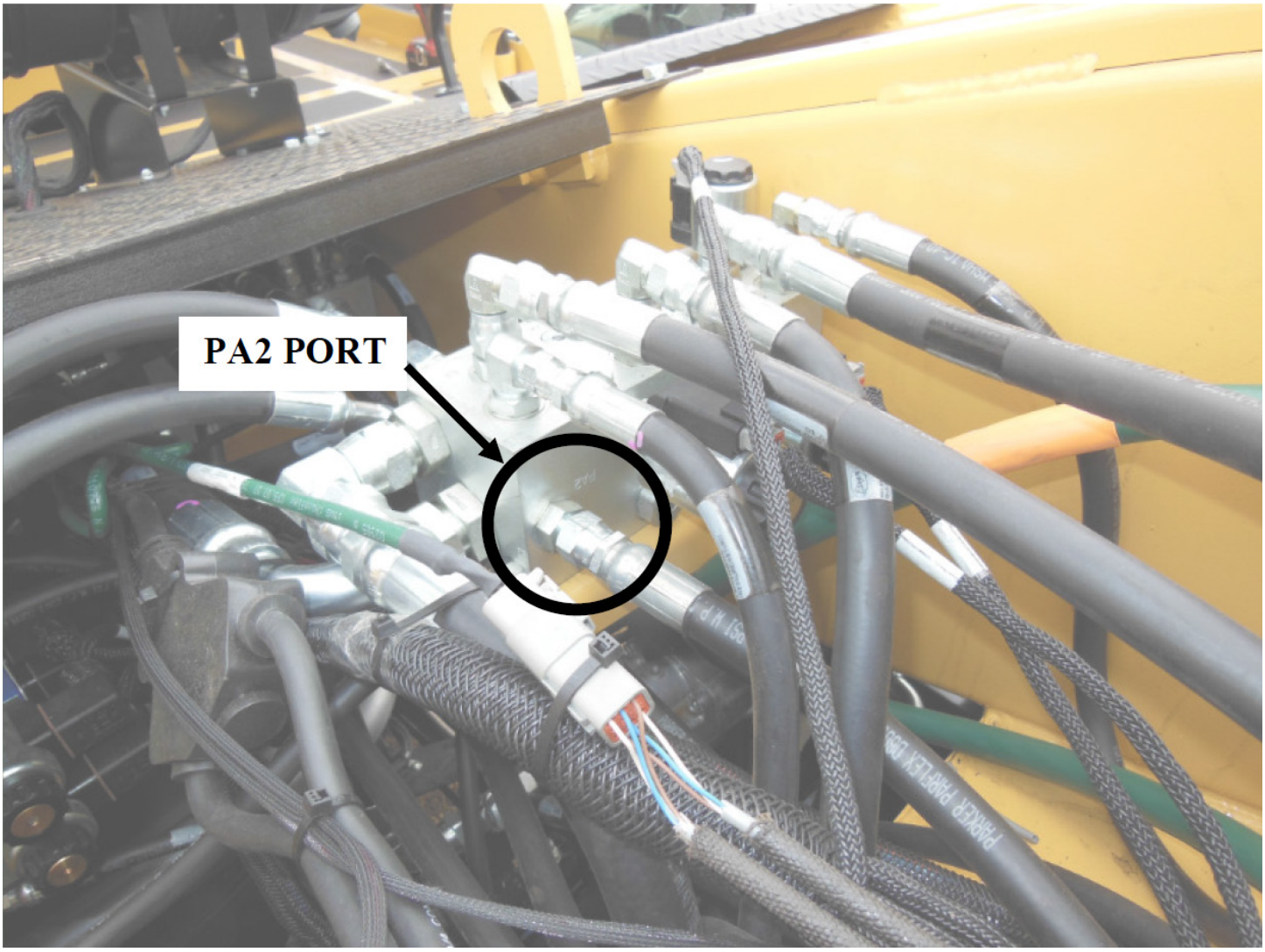
5. Install hoses from hopper raise/lower cylinder to hydraulic valve.

Attach the 3181991 hose that is coming from the tee off to the top of the counterbalance valve to port 2 on the hydraulic valve adapter 6602133.

Attach the 3181991 hose that is coming from port 2 of the counterbalance valve on the cylinder to port 4 on the hydraulic valve using adapter 6602133.

6. Install pressure hose to hopper raise/lower valve.

Attach the straight end of hose 3182262 to the PA2 port on the front motor hydraulic manifold that is located between the conveyors using adapter 9410203. Attach the other end (with the 90º degree hose end) to port 5 in the hopper raise/lower hydraulic valve using adapter 3182159.



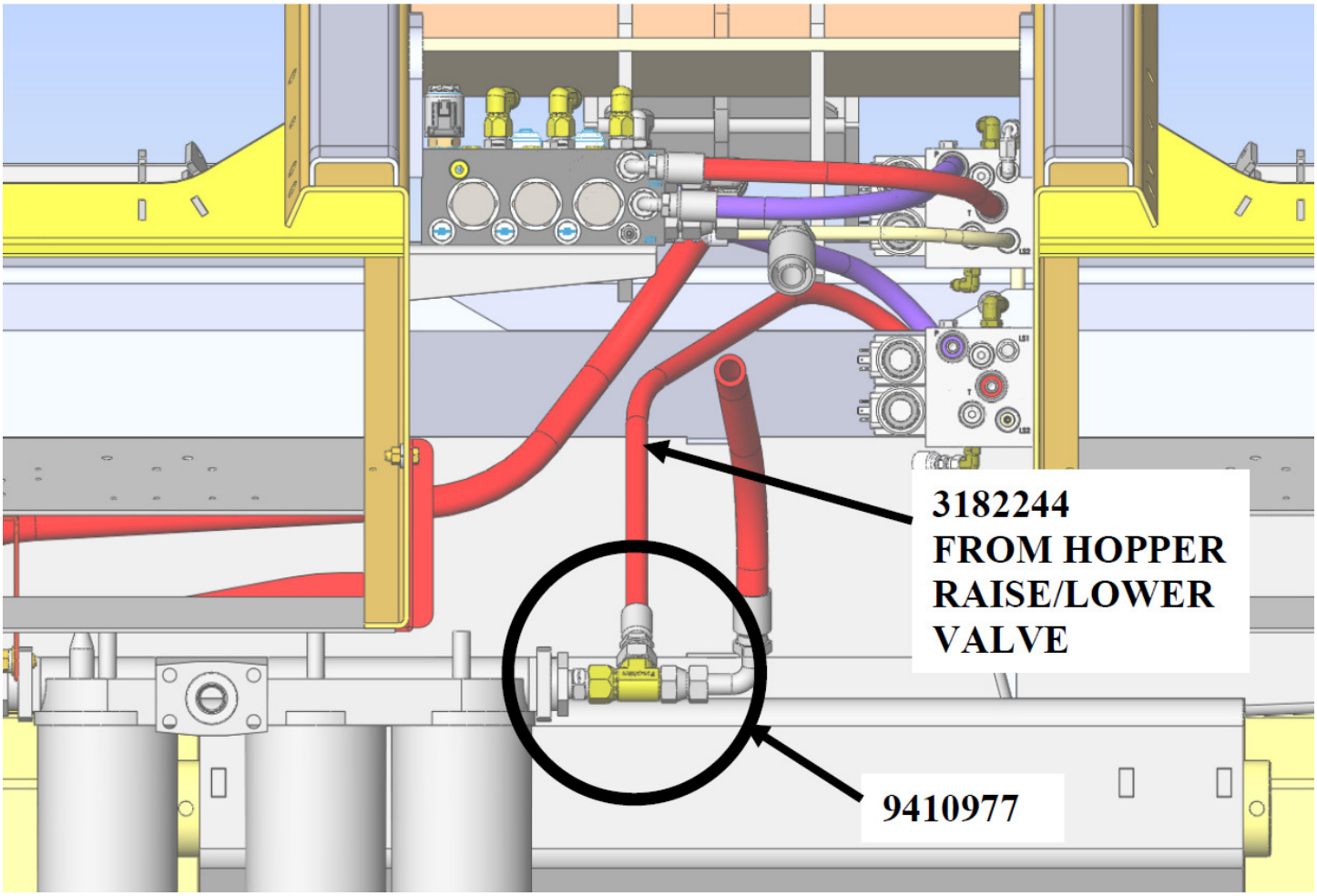
Continue ⟶

7. Install return hose to hopper raise/lower valve.

Attach the smaller hose end side of hose 3182244 to port 3 of the hopper raise/lower hydraulic valve using elbow 9410977.

Install tee 9410335 between the inner-most port of the hydraulic filter assembly and the existing return hose so that the brand of the tee is facing up and towards the front of the machine.

Attach the larger hose end side of 3182244 to the tee.

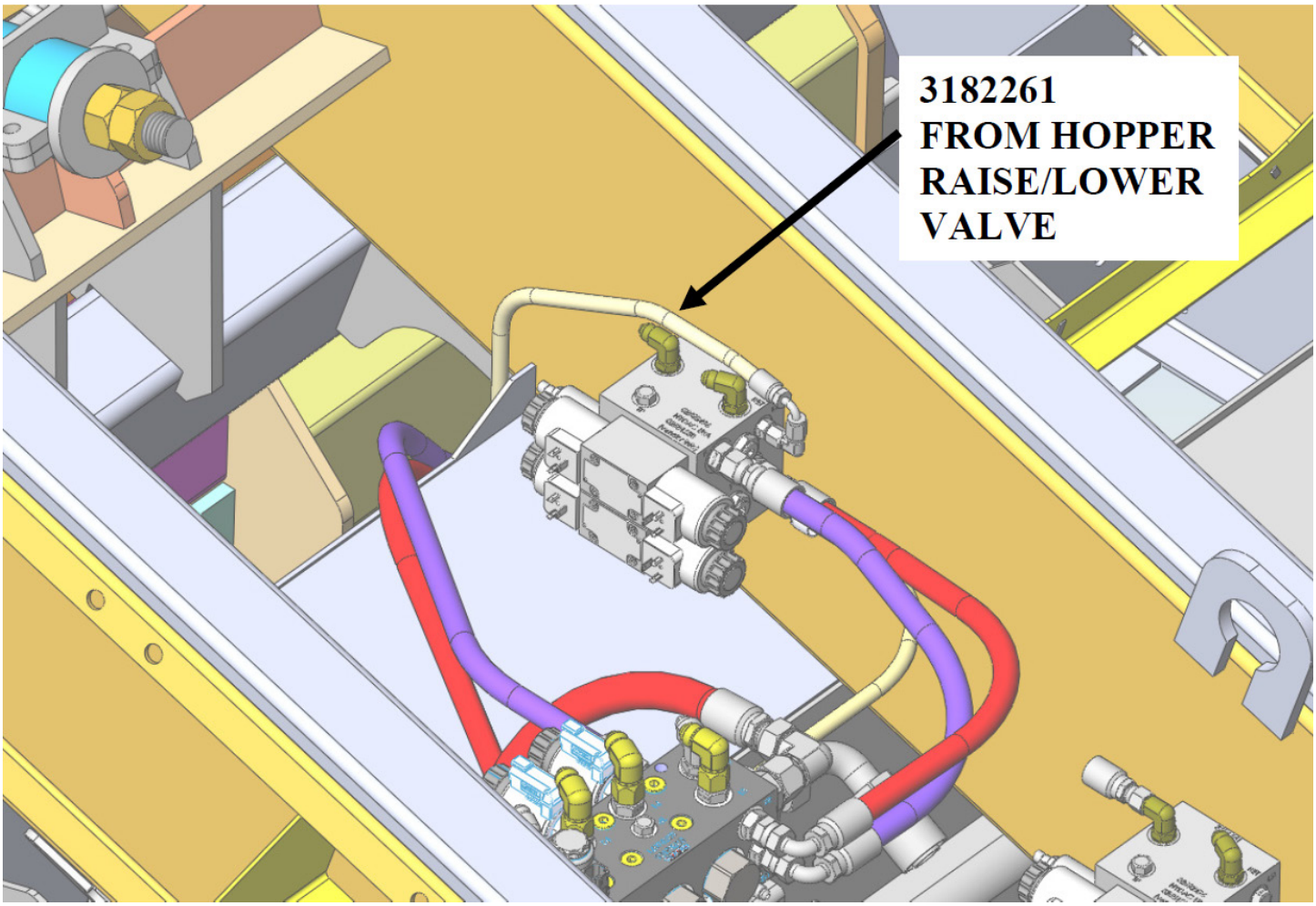


Continue ⟶

8. Install load sense hose to hopper raise/lower valve.

Attach the straight end of hose 3182261 to port 1 of the hopper raise/lower hydraulic valve using adapter 6602363.

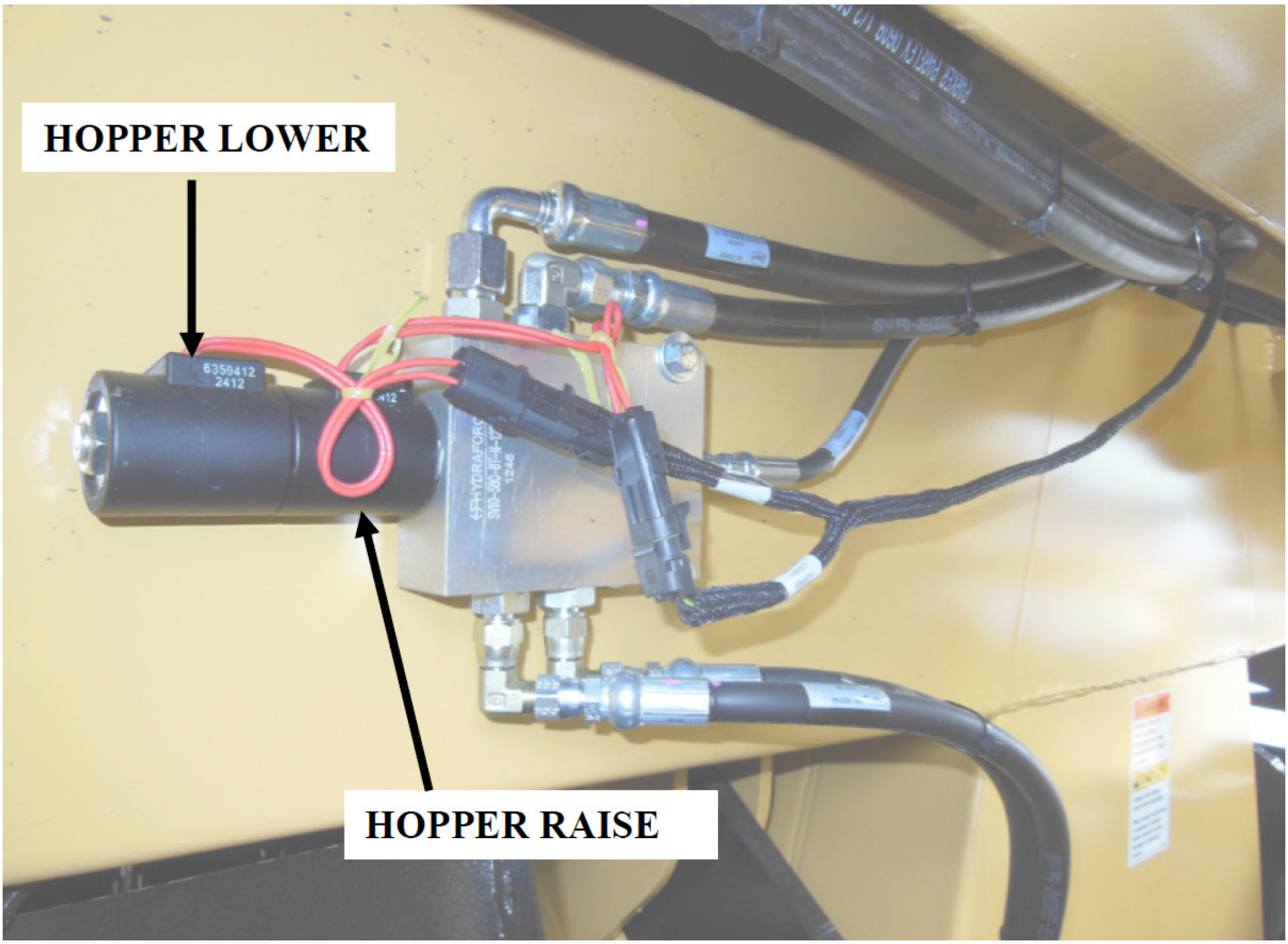
Attach the other end of hose 3182261 to the LS1 port of the front cylinder block located on the inner wall of the right hand conveyor using elbow 9410278 and adapter 9410200.



Continue ⟶

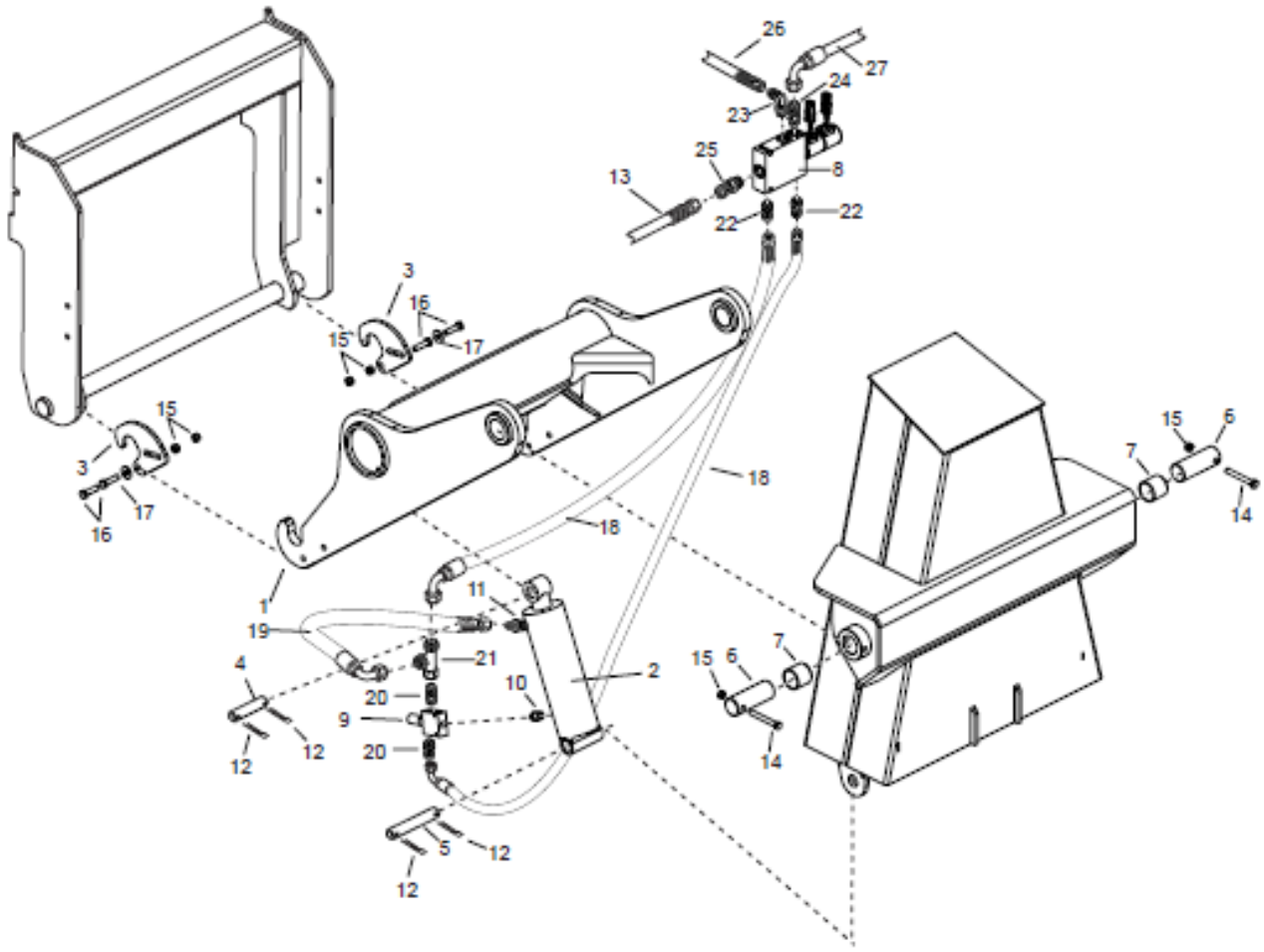
9. Install electrical connectors to hopper raise/lower valve.

Locate the electrical harness going to the front motor and cylinder manifolds. There are two currently unused connectors that are used for hopper raise/lower valve. Plug the connector labeled “Hopper Lower” into the top coil of the valve. Plug the connector labeled “Hopper Raise” into the bottom coil of the valve.



Continue ⟶

Hopper Lift Mechanism



REF	PART NO.	QTY	DESCRIPTION
1	3143593	1	Lift Arm Weldment-Frt Hopper
2	6602660	1	Cylinder-Hyd., 4.0 x 8.0
3	3143285	2	Plate-Latch, Carry Shaft
4	3144282	1	Pin-1.25 Dia x 7.125 Long
5	3144281	1	Pin-1.25 Dia x 9.5 Long
6	3143288	2	Pin-2.0 x 5.5
7	6420077	2	Bushing-Brz., 2.0 x 2.25 x 2.0 LG
8	6604010	1	Valve-Sol., 3 Pos / 4 Way, LS, Check
9	6604029	1	Valve-Counterbalance, 5GPM
10	6604055	1	Adapter-Hyd., ST, 06MB-08MP
11	6601491	1	Adapter-Hyd., ST, 06MJ-08MP
12	0103411	4	Pin-Cotter, 0.19 x 2.00
13	3182261	1	Hose-Hopper Raise/Lower LS
14	6100339	2	Screw-Hex, 0.50NC x 4.0, GR5, PD
15	9411727	6	Nut-Hex, Lock, 0.50NC, EA, PD
16	0180181	4	Screw-Hex, 0.50NC x 2.0, GR5, PD
17	0120390	2	Washer-Flat, 0.50A, W, PD
18	3181991	2	Hose-Hopper Raise / Lower
19	3181992	1	Hose-Hopper R/L Retract to C/B Valve
20	9410202	2	Adapter-Hyd., ST, 06MP-06MJ
21	9410332	1	Tee-Hyd., 06MJ-06FJX-06MJ
22	6602133	2	Adapter-Hyd., ST, 08MB-06MJ
23	9410977	1	Elbow-Hyd., 90, 08MB-08MJ
24	3182159	1	Adapter-08MB-08MJ, 0.07” Orifice
25	6602363	1	Adapter-Hyd., ST, 04FJX-08MB
26	3182244	1	Hose-Hopper Raise/Lower Return
27	3182262	1	Hose-Hopper Raise/Lower Pressure

MDC to RC Computer Controller Updates

Any Questions/Concerns with installing MDC-RC Computer Controller Updates on 1999 through 2011 Etnyre Chipspreaders

Please contact Etnyre Service Department at 888-586-1899 or Customerservice@etnyre.com to get up to date wiring schematics or any other needed information to install this update.

NOTE: Unfortunately, the original MDC computer controllers used and installed in Etnyre Chipspreaders from 1999 to 2011 are no longer available, supported, or repairable by the original manufacturer. Our search in the aftermarket has been unable to come up with a viable and safe alternative to repair old and broken controllers; and exhausted resources to engineer a plug and play replacement alternative to control and operate the machine. As a result, the computer controller is required to be updated to a Modified Current Production Chipspreader Computer Controller, and electronics to achieve the Safety Standards required today. This does require a significant amount of wiring which is significantly reduced by ordering the kit listed for the serial number needed, and can be achieved by a Technician/Mechanic with assistance as needed by Etnyre Tech Support.

Thank you for your understanding and continued business going forward.

The Etnyre Aftermarket Team.

A-158-20

Applies to
K5573-K5576,
K5652-K6198,
K6200-K6209,
K6211

Extend the Life of Your Legacy Etnyre ChipSpreader!

MDC Replacement Kit w/ Spicer Axle - 7051366

This plug and play kit will update your Legacy Etnyre ChipSpreader to the current computer drive system.

- *Better Replacement Parts Accessibility*
- *Enhanced Safety Features*

*Original controllers are no longer supported by the manufacturer and are no longer repairable because of that fact.

A-159-20

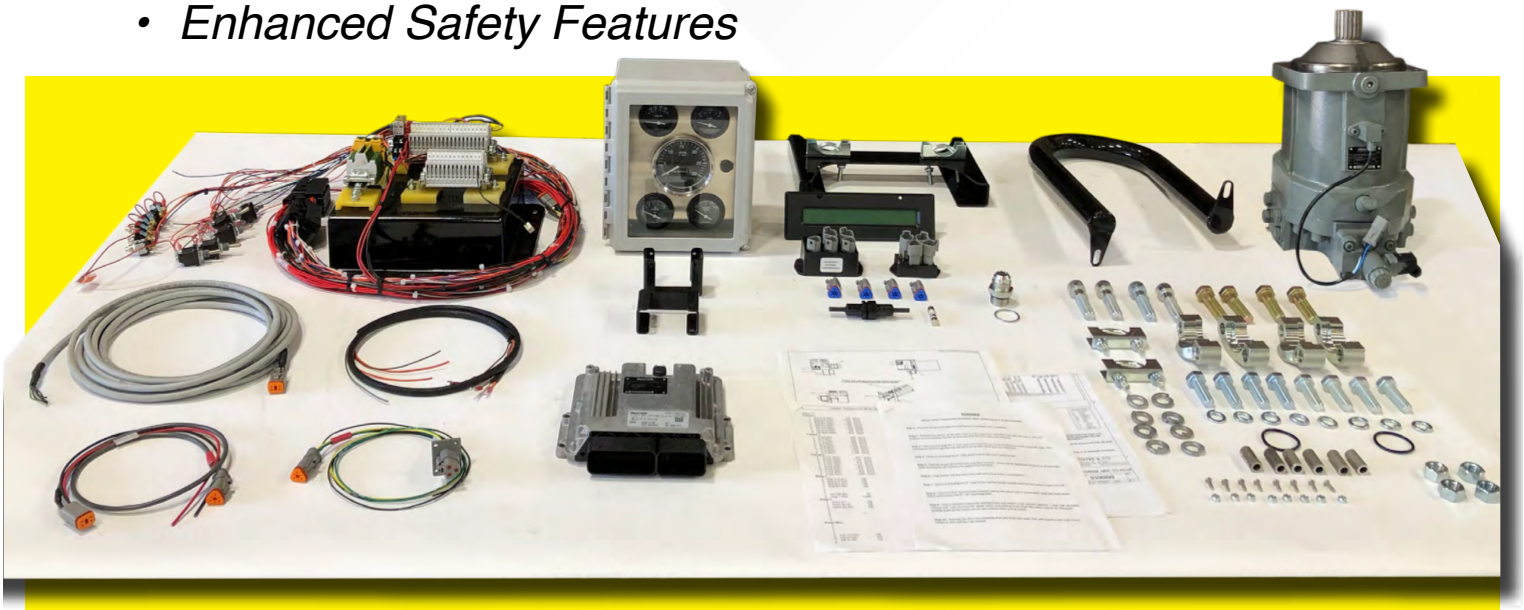
Applies to
K6210, K6212+

Extend the Life of Your Legacy Etnyre ChipSpreader!

MDC Replacement Kit w/ Kessler Axle - 7051540

This plug and play kit will update your Legacy Etnyre ChipSpreader to the current computer system.

- *Better Replacement Parts Accessibility*
- *Enhanced Safety Features*



*Original controllers are no longer supported by the manufacturer and are no longer repairable because of that fact.

A-215-20

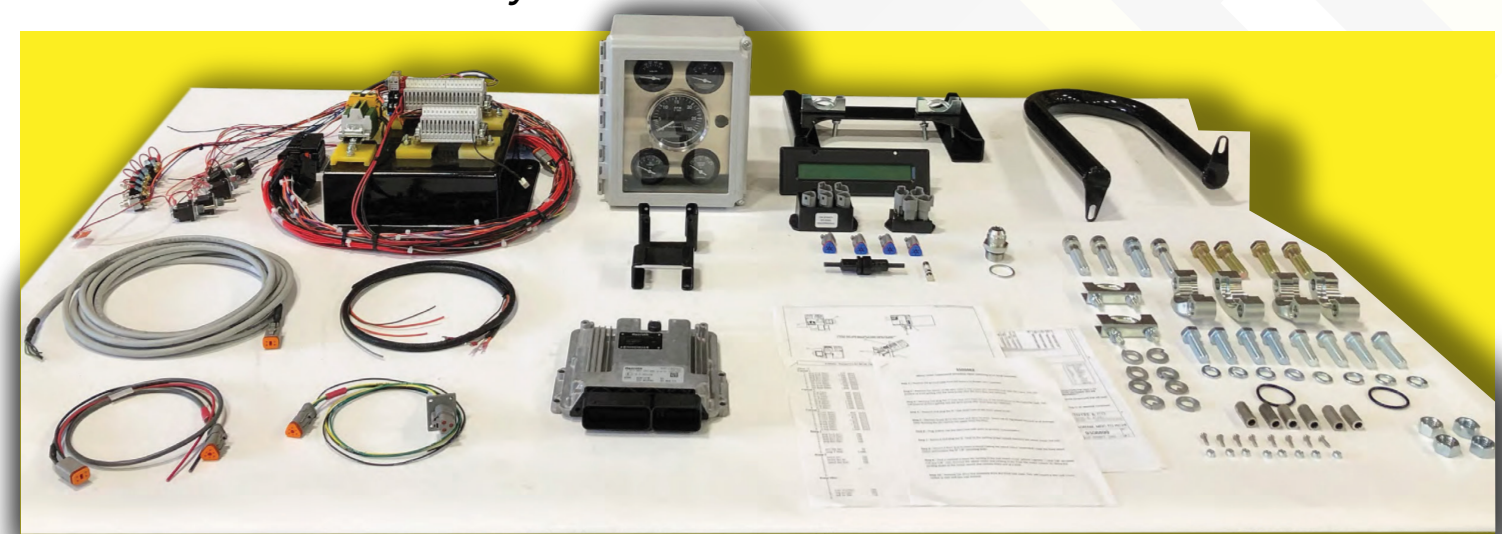
Applies to:
Units w/ speed sensor
attached to hydraulic motor

Extend the Life of Your Legacy Etnyre ChipSpreader!

MDC Replacement Kit w/ Kessler Axle - 7051693

This plug and play kit will update your Legacy Etnyre ChipSpreader to the current computer system.

- *Better Replacement Parts Accessibility*
- *Enhanced Safety Features*



*Original controllers are no longer supported by the manufacturer and are no longer repairable because of that fact.

9100462
Front Hydraulic Wheel Motor and Parking Brake Replacement Procedure for Installing a 7051366 MDC to RC28 Conversion Kit on Chipspreaders with Spicer Axles

It is recommended to thoroughly clean hydraulic connections prior to beginning disasembly to prevent contamination of sensitive hydraulic components.

Step 1 - If possible, park the Chipspreader with the yoke at the front axle parallel with the ground/shop floor. This will make disassembly/reassembly much easier. Be sure to chock the Chipspreader wheels.

Step 2 - Remove the ground cable from the battery to disable engine start capability.

Step 3 - Disconnect the Hirschmann connector at the front hydraulic motor coil and temporarily secure it out of the way with zip-ties. This harness will be modified toward the end of this procedure.

Disconnect the Delphi Weather Pack connector that is connected to the speed sensor. This hanress will no longer be used and can be removed completely or zip-tied securely out of the way.

Step 4 - Remove the spacer on the gate valve in the suction line assembly and close the valve. This will prevent hydraulic fluid from getting into the drive pump after the hydraulic hose drive lines are removed.

n the top of the drive pump to the hydraulic tank. This may not be equipped on all units. This will prevent hydraulic fluid from getting into the drive pump after the hydraulic hose drive lines are removed.

Step 6 - Remove and quickly plug 3/4” case drain hose located on the front hydraulic wheel motor. There may be a significant amount of hydraulic fluid drainage if not plugged quickly.

Step 7 - Remove the lower/left hand drive line hose on the front hydraulic wheel motor and allow to drain. There may be a significant amount of hydraulic fluid drainage. After draining the hydraulic fluid, remove the upper/right hand drive line hose.

Step 8 - Remove and plug/cap the 1/4” hose on the parking brake located between the hydraulic wheel motor and wheel motor mount.

Step 9 - Plug and/or cap any open hydraulic ports or lines to prevent contamination and hydraulic fluid loss.

Step 10 - CAUTION - HEAVY PARTS! - Secure a floor jack/transmission jack under the front hydraulic wheel motor and remove the 3/4” x 8” mounting bolts.

Continue

Step 11 - CAUTION - HEAVY PARTS! - Find a method to keep the parking brake and wheel motor splined together. For best results use 5/8” threaded rod/bolts and 5/8” nuts. Remove the hydraulic wheel motor and parking brake from the motor mount. If working alone, it is possible to secure the parking brake to the motor mount and then remove the front hydraulic motor and parking brake one at a time. Lower components slowly with floor/transmission jack.

Step 12 - Remove the drive line assembly from the front axle yoke. This will require a thin wall 11/16” or 17mm socket, or a thin wall box end wrench. A 30/60º degree angle wrench also works well, as well as some “homemade” wrenches. Your chipspreader may use a bearing strap. A new U bolt kit and a new bearing strap kit is included with the kit, only one of these will be used for your specific chipspreader.

Continue ⟶

Step 13 - Remove the two hose clamps that are on top of the motor mount. These hold down a brake hose that does need to be removed from the existing motor mount, and reinstalled on the new motor mount.

Step 14 - Using a 13/16” socket or wrench, loosen, but do not remove, the lower bolts on the motor mount at the axle. Remove the upper bolts and remove the motor mount. Retighten the lower bolts until you are ready to install the new motor mount. You will lose a significant amount of gear oil out of the axle if these lower bolts are removed or left loose. You will also need to remove the two bolts in the middle as they will interfere with the installation of the new motor mount. Set aside hardware to reuse. If new hardware is needed, the bolts are grade 9/16” 12 TPI.

Step 15 - Quickly remove the two lower bolts that were left on the axle and install the new motor mount over the yoke. Quickly reinstall the lower bolts to prevent gear oil loss. Reinstall the two upper and two middle bolts.

Continue →

Step 16 - CAUTION! HEAVY PARTS - Using a floor jack/transmission jack, assemble the remaining components as removed in reverse order. Two technicians may be needed to help install new components. I recommend using anti-seize lubricant on the spline connections. ***Tip*** - be aware of the yoke position on the axle and try to align the drive line assembly on the parking brake accordingly. Installing the new preassembled drive line assembly on the parking brake before you attempt to install the parking brake will make installation much easier. There is some motion in the yoke to make up for misalignment.

After securely installing the parking brake and drive line assembly, it is best to use some threaded rod/bolts to temporarily secure the hydraulic motor. This will allow easier alignment of the hydraulic motor male spline to the parking brake female spline. Once the hydraulic motor is properly fitted to the parking brake, install the new hardware provided and tighten securely.

Step 17 - Install the new fitting included with the kit on the new parking brake. Install the 1/4” park brake hose on the new parking brake. “Bleeding” instructions should have been included with the parking brake.

Continue ⟶

Step 18 - Install the new case drain fittings that were included with the kit on to the front hydraulic drive motor. The straight and elbow fittings will provide clearance for the case drain hose. Install the hydraulic case drain hose.

Step 19 - Remove the old O-rings from the hydraulic drive hose flange couplers and install the new O-rings provided with the kit. Install the hydraulic hoses on the front hydraulic motor using the new hardware provided with the kit.

Step 20 - Open the gate valve in the suction line assembly and reinstall the spacer. Check for leaks.

Step 21 - Using the existing harness for the front hydraulic motor coil, remove the Hirschmann connector from the harness and crimp on the new Deutsch sockets. Insert the red positive wire into number 1 on the Deutsch plug and the black ground wire into number 2. Insert the wedgelock and plug the harness into the front hydraulic motor coil. Secure the harness in place with zip-ties.

Step 22 - Route the new speed sensor harness provided with the kit through the E-chain. Plug the harness into the speed sensor located on the new front hydraulic motor. Secure the harness in place with zip-ties.

Step 23 - Double check all hydraulic fittings/connections, ensuring there are no leaks. Double check tightness of all bolts/hardware, ensuring there are no loose components.

Continue ⟶

Step 24 - Check hydraulic fluid level and add new AW46 hydraulic fluid if needed. Check front axle gear oil level and add new 80/90 gear oil if needed.

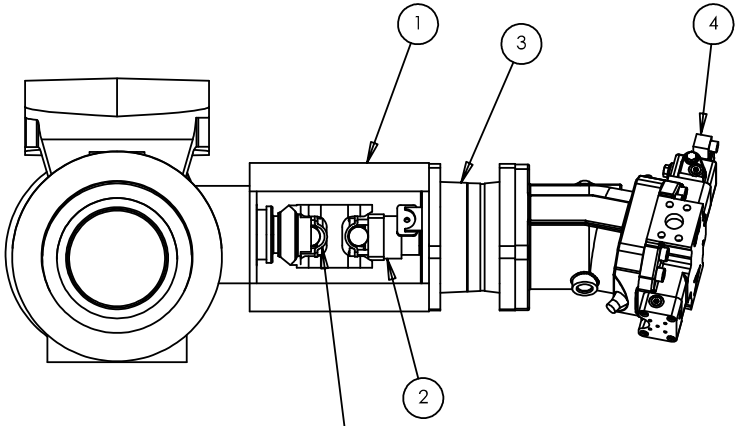
Step 25 - Install the ground cable on the battery that was removed. Do not start the chipspreader. The wiring portion the 7051366 kit must be completed before proceeding.

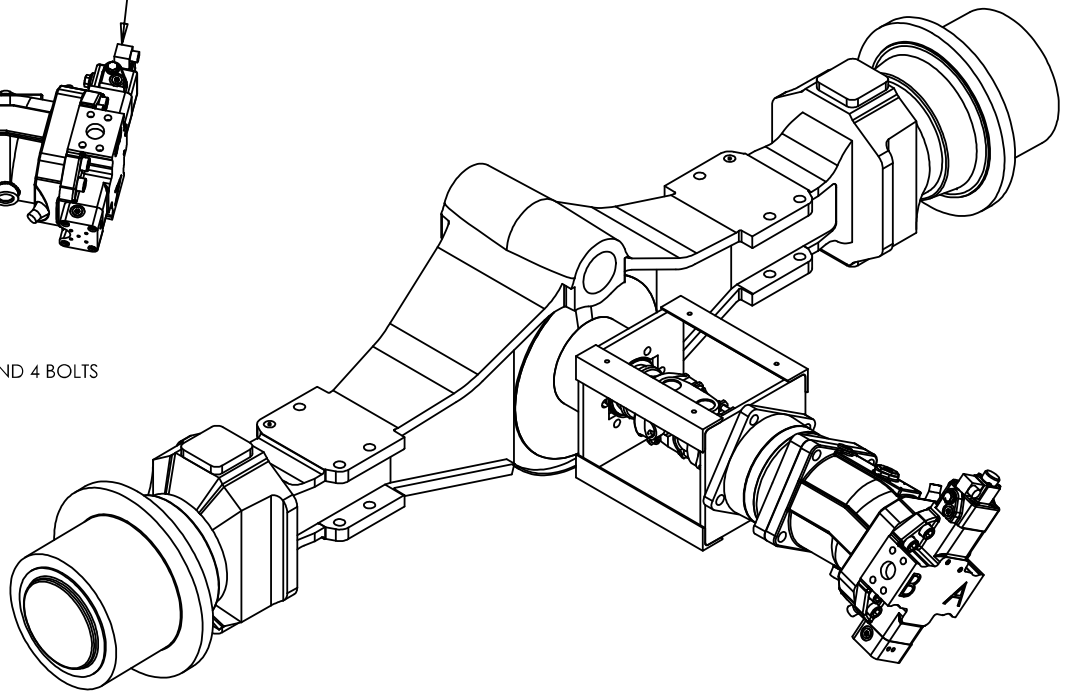
Step 26 - The wiring portion of the 7051366 kit must be completed before proceeding. The Chipspreader joystick must be properly calibrated before proceeding. Before starting the Chipspreader, you must ensure that all air has been purged from the hydraulic system - *Refer to the section titled "Hydrostatic System Startup" within your Chipspreader operation manual (M-215-99R, M-215-02R, M-215-04, M-215-06, depends on your specific Chipspreader).* Manuals can be found on the Etnyre website. If you are unsure about which manual you need for your specific Chipspreader, contact technical service at Etnyre.

Step 27 - After completing all previous steps in this procedure and after completing the wiring portion of the kit, the front hydraulic motor may need to be adjusted for your Chipspreader to achieve full travel speed (1,750 FPM). The Chipspreader joystick must be properly calibrated before proceeding. Be sure that you have plenty of room to achieve full travel speed, as well as plenty of room to be able to bring the Chipspreader to a complete stop. Use caution when attempting to stop the Chipspreader. You may notice that the joystick needs to be moved towards neutral more than 50% before the Chipspreader begins to slow down. (This problem will be resolved after adjustments are made). Before making an adjustment, operate the Chipspreader to see if full travel speed is reached or exceeded. There is an adjustment screw on the front hydraulic motor that can be turned in (clockwise) or turned out (counterclockwise). If an adjustment is needed, remove the plastic cap covering the adjustment screw. Using a 6mm allen hex key wrench turn the adjustment screw in to decrease speed, or out to increase speed. I recommend making quarter turn adjustments at a time. Make adjustments as needed until 1,750 FPM is achieved but not exceeded. Double check that the jam nut is secure when finished.

Continue →

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	ADDED 3110073,3111286,6400521 (RM)	3/16/2020	
B	DELETE 3111286,6400521,7050656; ADD 7051578 (NVF)	7/23/2020	





REF.	QTY.	PART NO.	DESCRIPTION
5	1	6400521	BEARING STRAP KIT-1480 SERIES
4	1	6604026	MOTOR-HYD,160CC VAR DISP(2WD)
3	1	6603525	PARKING BRAKE-MICO,DIN MOUNT
2	1	7051578	DRIVE LINE ASM-FRT MOTOR
1	1	3104015	MOUNT-HYDRAULIC MOTOR

GENERAL NOTES:
REMOVE ALL BURRS
BREAK SHARP EDGES
MINIMUM BEND RAD.
UNLESS SPECIFIED
BEND RELIEF SHOP
OPTION

SER.NO: NONE
SIM.TO: 7050897
WEIGHT:
BURN TIME:
DRW FILE: 7051500

DFTR
CHKR
ENGR RM
APPD

TOLERANCE
UNLESS SPECIFIED
FRACTIONAL ± 1/32
DECIMAL
.X± .1
.XX± .03
.XXX± .015
ANGLES± 2°

E.D.ETNYRE&CO.
OREGON,IL. 61061

ALL DIMENSIONS IN INCHES DO NOT SCALE DWG

DRAWING TITLE

DWG SIZE B | DRAWING NO. 7051500 | REV B

SCALE 1:8 | DATE 8/26/2019 | SHEET 1 OF 1

9100479
Front Hydraulic Wheel Motor and Parking Brake Replacement Procedure for Installing a 7051540 MDC to RC28 Conversion Kit on Chipspreaders with Kessler Axles.

It is recommended to thoroughly clean hydraulic connections prior to beginning disasembly to prevent contamination of sensitive hydraulic components.

Step 1 - Chock the Chipspreader wheels.

Step 2 - Remove the ground cable from the battery to disable engine start capability.

Step 3 - Disconnect the Hirschmann connector at the front hydraulic motor coil and temporarily secure out of the way with zip-ties. This harness will be modified toward the end of this procedure.

Disconnect the Delphi Weather Pack connector that is connected to the speed sensor. This harness will no longer be used and can be removed completely or zip-tied securely out of the way.

Step 4 - Remove the spacer on the gate valve in the suction line assembly and close the valve. This will prevent hydraulic fluid from getting into the drive pump after the hydraulic hose drive lines are removed.

Step 5 - Remove and plug the 1” hose that runs from the top of the drive pump to the hydraulic tank. This may not be equipped on all units. This will prevent hydraulic fluid from getting into the drive pump after the hydraulic hose drive lines are removed.

Step 6 - Remove and quickly plug the 3/4” case drain hose located on the front hydraulic wheel motor. There may be a significant amount of hydraulic fluid drainage if not plugged correctly.

Step 7 - Remove the left hand drive line hose on the front hydraulic wheel motor and allow to drain. There may be a significant amount of hydraulic fluid drainage. After draining the hydraulic fluid, remove the right hand drive line hose.

Step 8 - Plug and/or cap any open hydraulic ports or lines to prevent contamination and hydraulic fluid loss.

Continue ⟶

Step 9 - CAUTION! HEAVY PARTS - Secure a floor jack/transmission jack under the front hydraulic wheel motor and remove the mounting bolts.

Step 10 - CAUTION! HEAVY PARTS - Remove the front hydraulic wheel motor from the parking brake. Lower the front hydraulic motor slowly with floor jack/transmission jack.

Step 11 - Before installing the new front hydraulic wheel motor, the front engine support/cross member will need to be modified. On the support, there is a preexisting cutout that needs to be copied to the front side (closest to the radiator) of the support. Using a grinder/cutoff tool, cut a section out of the support to allow for adequate clearance for the case drain and hydraulic fittings. This may need to be equal in size to the preexisting cutout, approximately ten inches wide. Be aware of all engine and Chipspreader components where you are cutting.

Continue ⟶

Step 12 - Using a welder, weld in the new engine/cross member support reinforcement that was supplied with the kit. Paint the components to avoid rusting.

Step 13 - CAUTION! HEAVY PARTS - Using a floor jack/transmission jack, install the new front hydraulic wheel motor. Two technicians may be needed for installation. It is recommended to use anti-seize lubricant on the spline connections. ***Tip*** - It is easiest to use some threaded rod/bolts to temporarily secure the hydraulic motor. This will allow easier alignment of the hydraulic motor male spline to the parking brake female spline. Once the hydraulic motor is properly fitted to the parking brake, install the new hardware provided and tighten securely.

Continue ⟶

Step 14 - Install the new case drain fittings that were included with the kit on to the front hydraulic drive motor. The engine support/cross member modification, along with the straight and elbow fittings, will provide adequate clearance for the case drain hose. Install the hydraulic case drain hose.

Step 15 - Remove the old O-rings from the hydraulic drive hose flange couplers and install the new O-rings provided with the kit. Install the hydraulic hoses on the front hydraulic motor using the new hardware provided with the kit.

Step 16 - Open the gate valve in the suction line assembly and reinstall the spacer. Check for leaks.

Step 17 - Using the existing harness for the front hydraulic motor coil, remove the Hirschmann connector from the harness and crimp on the new Deutsch sockets. Insert the red positive wire into number 1 on the Deutsch plug and the black ground wire into number 2. Insert the wedgelock and plug the harness into the front hydraulic motor coil. Secure the harness in place with zip-ties.

Step 18 - Route the new speed sensor harness provided with the kit through the E-chain. Plug the harness into the speed sensor located on the new front hydraulic motor. Secure the harness in place with zip-ties.

Step 19 -Double check all hydraulic fittings/connections, ensuring there are no leaks. Double check tightness of all bolts/hardware, ensuring there are no loose components.

Continue ⟶

Step 20 - Check hydraulic fluid level and add new AW46 hydraulic fluid if needed.

Step 21 - Install the ground cable on the battery that was removed. Do not start the Chipspreader. The wiring portion of the 7051540 kit must be completed before proceeding.

Step 22 - The wiring portion of the 7051540 kit must be completed before proceeding. The Chipspreader joystick must also be properly calibrated before proceeding. Before starting the Chipspreader you must ensure that all air has been purged from the hydraulic system. *Refer to the section titled "Hydrostatic System Startup" in your operation manual (M-215-99R, M-215-02R, M-215-04R, M-215-06) for your specific Chipspreader.* Manuals can be found on the Etnyre website. If you are unsure about which manual you may need for your specific Chipspreader, contact technical service & Etnyre.

Step 23 - After completing all previous steps in this procedure, and after completing the wiring portion of the 7051540 kit, the front hydraulic motor may need to be adjusted for the Chipspreader to achieve full travel speed (1,750 FPM). The Chipspreader josystick must be properly calibrated before proceeding. Be sure that you have plenty of room to achieve full travel speed, as well as plenty of room to be able to bring the Chipspreader to a complete stop. Use caution when attempting to stop the Chipspreader. You may also notice that the joystuck needs to be moved towards neutral more than 50% before the Chipspreader begins to slow down. Before making an adjustment, operate the Chipspreader to see if full travel speed is reached or exceeded. There is an adjustment screw on the front hydraulic motor that can be turned in (clockwise) and turned out (counterclockwise). If an adjustment is needed, remove the plastic cap covering the adjustment screw. Using a 19mm wrench, loosen the jam nut. Using a 6mm allen hex key wrench, turn the adjustment screw in to decrease speed, or turn out to increase speed. It is recommended that you make adjustments one 1/4 turn at a time. Make adjustments as needed until 1,750 FPM is achieved but not exceeded. Double check the jam nut is secure when finished.

9100480
MDC to RC28 7051366, 7051540, 7051693
Conversion Kits

Kit Overview.

The MDC to RC computer/controller conversion kits have been engineered to convert your existing Etnyre Chipspreader with the obsolete Rexroth MDC computer/controller to the Rexroth RC28 computer/controller that Etnyre uses in current production Chipspreaders. It is important to note that your existing harness, joystick, cannon plugs, or din rails will be used with these kits. With the exception of a new speed sensor harness and a new joystick harness, the new harnesses are not included with the kit and the original existing Chipspreader harnesses will be reused except where noted. If you are experiencing issues with any of these compenents, it is recommended that you repair/repace the item before or during the installation of your new conversion kit.

PLEASE CONTACT THE ETNYRE PARTS AND SERVICE DEPARTMENT BEFORE ORDERING YOUR KIT. THE CHIPSPREADER SERIAL NUMBER (KXXXX) WILL BE NEEDED TO VERIFY WHICH CONVERSION KIT IS COMPATIBLE WITH YOUR SPECIFIC CHIPSPREADER.

Upon receiving your conversion kit, it is recommended that you verify that all parts have been included with the kit you received before beginning installation. If you do not have all of the parts that are included in the kit, please contact your local dealer immediately. If you do not have the bill of materials for your conversion kit, the Etnyre Parts and Service Department can provide you with one. When installing your MDC to RC28 conversion kit, you will need to reference the original wiring schematic for the Chipspreader you're installing the kit into, along with using the new wiring schematic. If you do not have a wiring

Installation Instructions.

To speed up the conversion kit installation process, it is suggested to have two technicians working on the kit. One technician can be removing and installing the new front hydraulic motor portion of the kit while one technician can be working on the wiring portion of the kit.

Front Hydraulic Wheel Motor Installation.

Please read instructions prior to beginning.

If installing a 7051366 conversion kit, use the 9100462 instructions.

If installing a 7051540 conversion kit, use the 9100479 instructions.

If installing a 7051693 conversion kit, the front hydraulic wheel motor does not need to be replaced.
Please note: if installing a 7051693 kit, the front hydraulic motor coil harness and the speed sensor harness will not need to be modified and will be reused.

Controller/Wiring Installation.

Please read instructions prior to beginning.

Installation steps continued on next page.

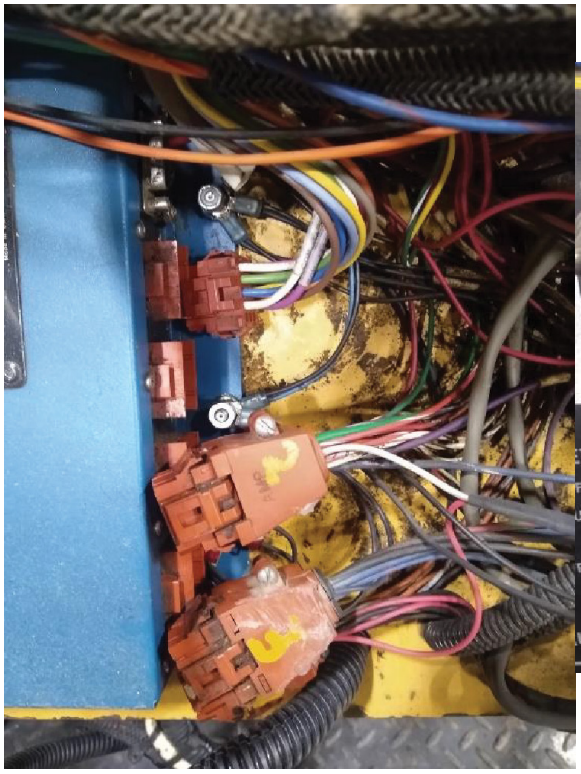
Initial Installation.

Step 1 - If the Chipspreader is operable, check all functions of the Chipspreader prior to beginning the kit to verify that everything works correctly. This will help with any troubleshooting that may be necessary when installing the kit.

Step 2 - Remove the upper control panel assembly hood from the lower control panel assembly.

Step 3 - It is suggested to verify/mark the harness part numbers as well as the individual wire labels/tags that are plugged in/grounded to the blue MDC controller. Do not use brake parts cleaner or other cleaners to clean the harness identification labels/tags as this will erase/smudge the ink on the labels. It is also been found that gently scraping off any grease & debris from the label using your fingernail. Using your thumb or finger may also smudge the link. If needed, reference the original wiring schematic to help determine wire function. With the exception of a new speed sensor harness and a new joystick harness, the existing Chipspreader harnesses will be reused.

Step 4 - Unplug the wiring harnesses from the MDC controller and unbolt the ground wires. Unbolt the MDC controller from the console and remove it from the console. Remove the existing five memory and save momentary push button switches along with the calibration, rate, scroll, size, and spped toggle switches from the operator's console. These will be replaced with new, prewired switches.

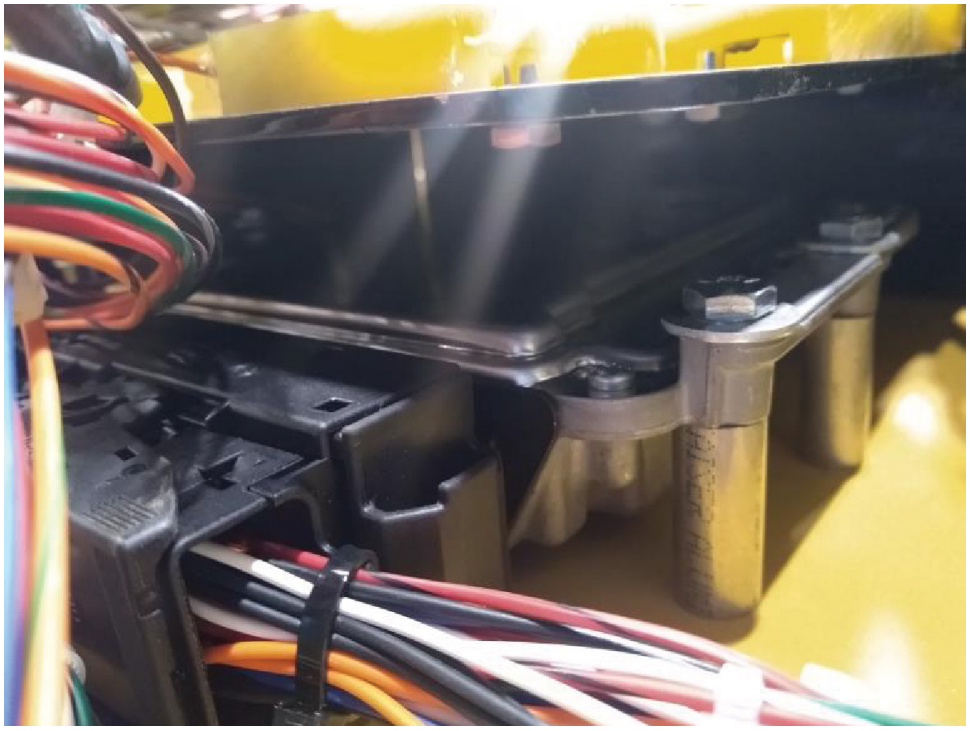


Step 5 - After identifying the harness and wiring, cut the four plugs P1 - P4 off the ends of the wiring harnesses that were plugged into the MDC controller. These plugs will no longer be used. Cut the ring terminals off of the ground wires.

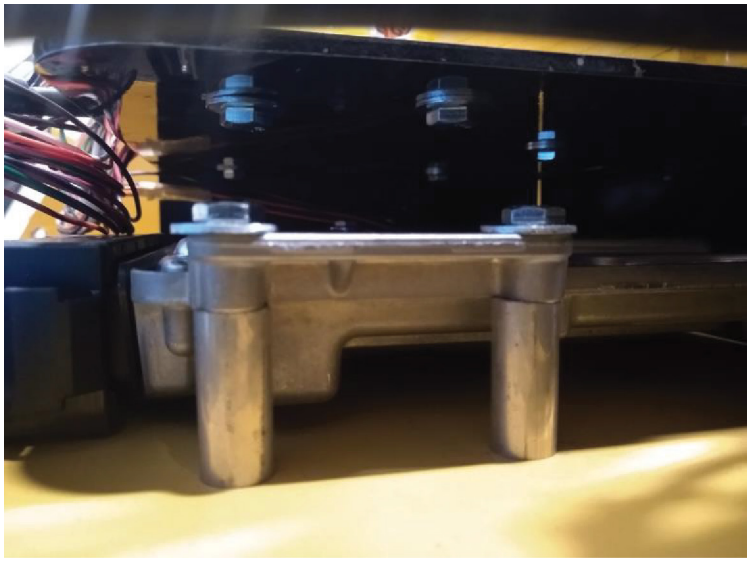
Installation steps continue on next page.

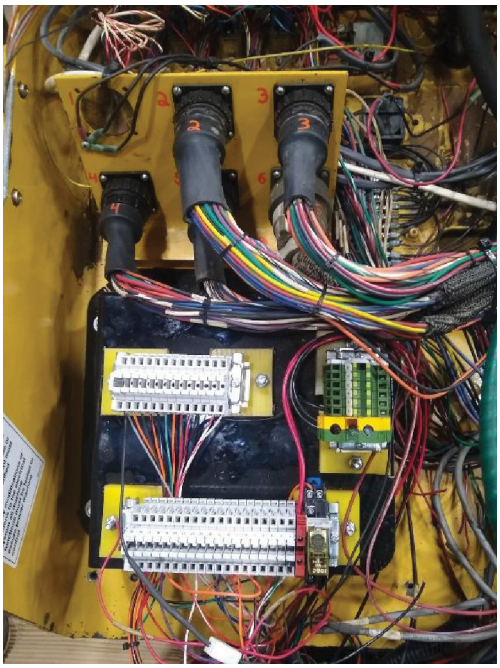
Step 6 - Remove the existing display on the operator's panel assembly and install the new CAN dislay with the included brackets. If desired, you can use a cutoff wheel tool and make the existing hole large enough to mount the new display flush with the operator's panel assembly.

Step 7 - Mark and drill the mounting holes for the new RC28 controller and the new din rail assembly bracket/mount. Install the new RC28 controller "upside down" with the plugs facing opposite of the operator's console using ¼" hardware and the aluminum pipe standoffs. Mount the new din rail assembly over the top of the new RC28 controller. Be sure to provide plenty of room for the controller wires/plugs to be installed as well as plenty of room for theconsole hood to be reinstalled without damaging any wiring.

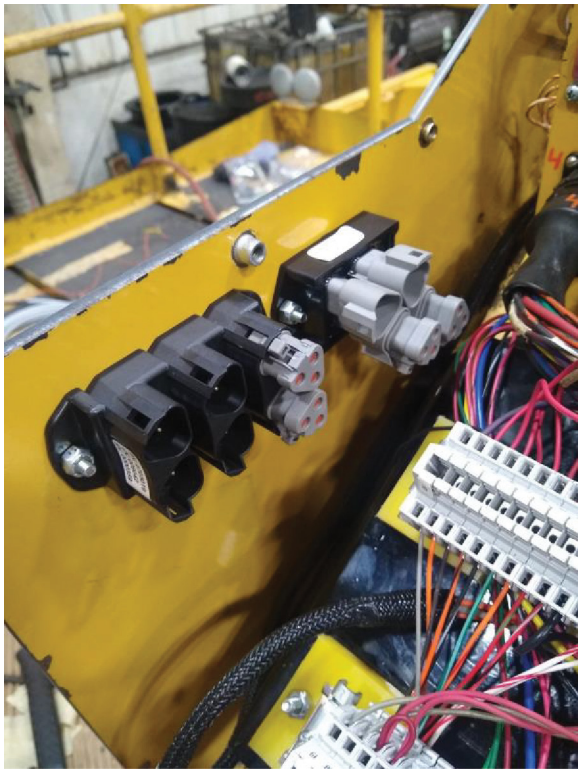


Installation steps continued on next page.





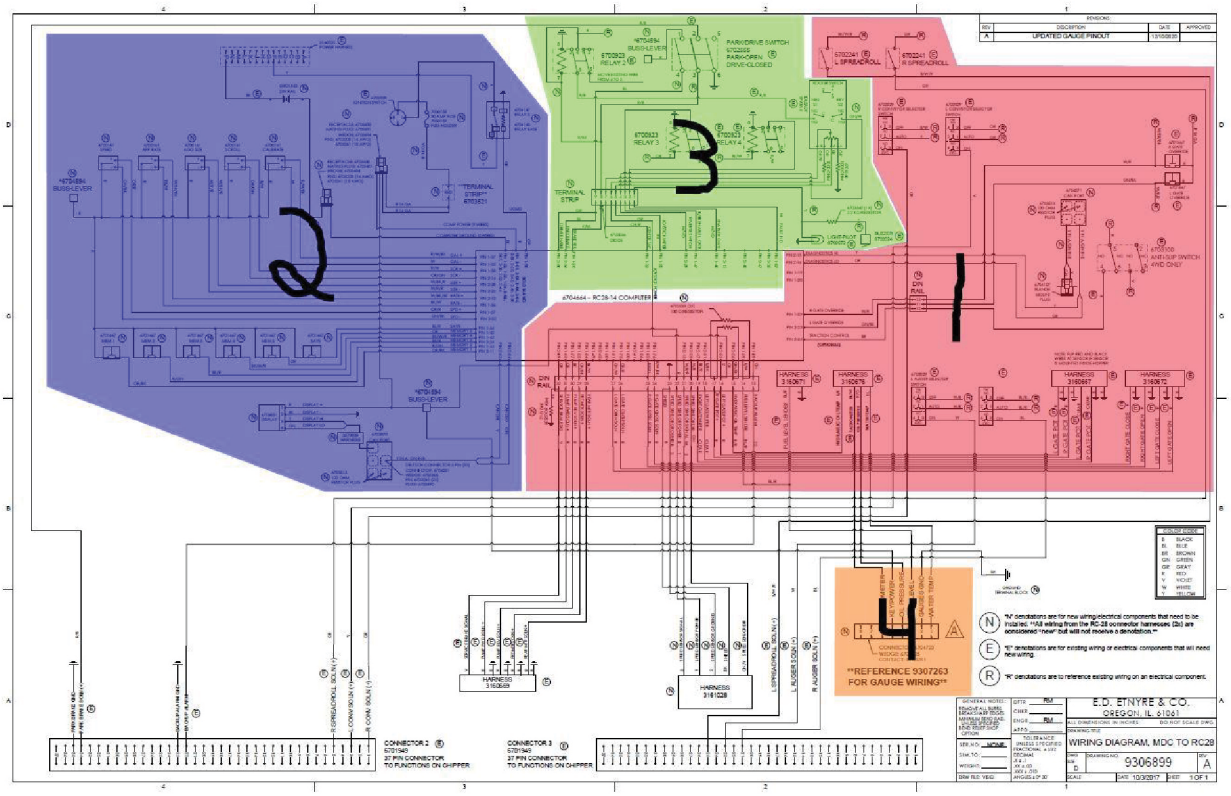
Step 8 - Install the two new CAN hubs. It is suggested to mount these on the side of the console (as shown).



Installation steps continued on next page.

Wiring Installation Sections 1 - 4.

With the above steps being completed, you will now begin wiring the Chipspreader operator's panel assembly. Wiring will be done by following the new wiring schematic provided with the conversion kit, as well as referencing the original wiring schematic when needed. It is easiest to separate the new wiring schematic into four seperate sections. ***Do not remove any wiring unless instructed to.***



Section 1.

Din rail terminals 32 through 10.

Using the new wiring schematic, begin inserting wires from the existing wiring harnesses in to the appropriate din rail terminals with the insertion tool provided in the kit. ***Do not strip the insulation off the wires, as this will not provide a good connection.*** It is easiest to start with din rail terminal 32 and work backwards to terminal 10.

Plug in the new computer/controller diagnostics Hi/Low CAN plug, the new computer diagnostic CAN plug, and the 2 new resistor plugs in the 4 port CAN hub.

Check the wiring of the other components in this section before moving onto the next section.

Section 2.

Install the new prewired switches using the new wiring schematic to determine switch function.

Install the new CAN display wiring harness. Also, plug in the CAN Hi/Lo wires, and 2 new resistor plugs into the 5 port CAN hub.

Crimp the new 30 amp fue holder to the new 10 gauge wire as shown on the wiring schemati. If in good condition, the exisitng portion of the fuse holder from the ignition switch can be used.

As shown in the schematic, wire in the new UCMD (**U**n-**C**ommanded **M**otion **D**etection) relay location on the new din rail assembly. This new relay will stop the motion and shut down the engine of the Chipspreader if it sees any motion that was not commanded by the operator.

Check the wiring of the other components in this section before moving on to the next section.

Wiring sections continue on next page.

Section 3.

Din rail terminals 9 through 1.

Using the new wiring schematic, begin inserting wires from the existing wiring harnesses in to the appropriate din rail terminals with the insertion tool provided in the kit. ***Do not strip the insulation off the wires as this will not provide a good connection.***

When wiring relays 2, 3, and 4, clean the top of the relay to be able to see the numbers/terminals. Follow the drawing according to the numbers. You will need to reference the original and new schematics.

You may have a different style park/drive switch than what is shown on the schematic. The park/drive switch shown on the new schematic is simply showing that the two posts/terminals directly above/below on another are being connected/disconnected when the switch is activated/deactivated.

Remove the joystick from the operator's panel assembly. Remove the existing wires from the negative B, A, and positive terminals located on the bottom of the joystick. Install the new joystick wiring harness according to the new wiring schematic. Wire the neutral and reverse joystick micro switches according to the new wiring schematic. ***Before operating the machine, the Chipspreader joystick must be properly calibrated.***

Wire the existing warning light and buzzer according to the schematic.

Check the wiring of the other compenents in this section before moving onto the next section.

Section 4.

Install the new gauge box on the new handrail using the 9307264 drawing. Crimp the new Deutsch sockets onto the existing engine harness wires. Insert the wires in the Deutsch plug referencing the 9307263 wiring schematic. Route the wiring harness into the operator's panel and connect the male and female connectors. A manual for the gauges is included in the kit which includes the tachometer calibration procedure. This is typically located in the gauge box.

Please note that there will be extra wires that will not be used from the new computer/controller. These wires should be taped/capped off and securely zip tied before moving onto the next part of the kit. There may also be wires within the console that are no longer needed than can be removed or taped/capped off and securely zip tied.

Computer Set Up Screens, Joystick Calibration, Gate Transducer Adjustment.

After the above steps have been completed, the computer needs to set up correctly for the Chipspreader, the joystick needs calibrated, and the gate transducer(s) need set correctly as well.

Without starting the machine, turnthe key to "On". The display should read "v1.12-MDC". If your display does not show this specific firmware, it will need to be programmed further. Turn your key back to "Off" and while the "CAL" switch up or down, turn your key to the "On" position without starting up the machine. Release the "CAL" switch after the screen shows "SETUP: FIRMWARE". Scroll through the setup screens by pushing the "Scroll" switch negative/down.

While scrolling through the computer setup screens, you will want to make the correct selection for what is equipped on your machine. You will also want to "Phase", or cycle, through each selection.

For example, the screen labeled "SETUP: DRIVE" will have a selection of 4 WHEEL, 2 WHEEL, and 4 WHEEL again. Phase/cycle through using your "CAL" switch until only two options are available - (4 WHEEL, 2 WHEEL) instead of (4 WHEEL, 2 WHEEL, 4 WHEEL).

This will need to be done for the following screens: SETUP: WORK MODE, SETUP: DRIVE, SETUP: HOPPER, SETUP: UNITS, SETUP: GATE OPENING

Joystick Calibration

SETUP: JOYSTICK

Actual 0.0%

This screen is the entry screen for calibrating the joystick. It should say 0.0% with the stick in neutral. If the stick is pushed fully forward, the reading should change to 100%; and if it is pulled fully back into reverse, the reading should change to –100%. If it does not at any of these positions, place the stick neutral. Be sure it is in neutral and then push the "CAL" switch. ***Once you have pushed the "CAL" switch, you must complete the sequence or you will have lost the existing calibration of the joystick.*** When you push the "CAL" switch, the screen will then change to:

SETUP: JOYSTICK

Neutral 2.4 volts

Push the "CAL" switch to calibrate the neutral position. The display will change to:

SETUP: JOYSTICK

Forward 4.4 volts

Push the stick full forward. The reading should change to approx. 4.4 volts. When you have the stick fully forward, push the "CAL" switch to calibrate the full forward position of the control stick. The display will change to:

SETUP: JOYSTICK

Reverse 0.7 volts

Pull the stick to the full reverse position. The reading should change to approx. 0.7 volts. When you have the stick fully rearward, push the "CAL" switch to calibrate the full reverse position of the control stick. The display will change to –100% and will scale down to 0.0% as you return joystick to neutral.

SETUP: JOYSTICK

Actual 0.0%

When you have finished calibrating the joystick, push the "SCROLL" switch to change to the next screen. (Go to the save screen and (SAVE) if this concludes what you wish to complete).

Setup screens continue on next page.

SETUP: GATE OPENING

Maximum: 4.00 inches

This screen is used to set the maximum gate opening for the front hopper. Standard machines have a 4 inch gate opening and “Big Boy” Chipspreaders have a 5 inch gate opening. If the maximum gate opening is set incorrectly for the machine, the application rate will be off. Use the “CAL” switch to toggle between 4 inch and 5 inch gate openings. When this is set for the machine, push the “SCROLL” switch down to move to the next screen.

WARNING! Never put hands between gate and spread roll or gate and rear of hopper. The gate could move at any time and cause severe injury.

SETUP: RIGHT NULL

Actual: 0.00 inches

This screen is used to set the actual closed position of the right gate. Be sure that the gate is actually closed. This number should read 0.00 inches, if this number is not 0.00, set it to 0.00 usign the “CAL” switch. When it is set to this value, push the “SCROLL” switch to move to the next screen.

SETUP: RIGHT SCALE

Actual: 0.00 inches

This screen is used to set the actual open position of the right gate. The number will read 0.00 inches until the right gate override is actuated. While holding the right gate override, the number should read 4.00 inches. If it does not read 4.00, visually verify that the gate is actually fully open. After visual erification, while holding the right gate override, press the “CAL” switch to set the value to 4.00 inches. When the right gate override is release, the number on the screen should go back to 0.00. Push the “SCROLL” switch to move to the next screen.

SETUP: LEFT NULL

Actual: 0.00 inches

This screen is used to set the actual closed position of the left gate. Be sure that the gate is actually closed. This number should read 0.00 inches. If this number is not 0.00, set it to 0.00 using the “CAL” switch. When it is set to this value, push the “SCROLL” switch to move to the next screen.

SETUP: LEFT SCALE

Actual 0.00 inches

This screen is used to set the actual open position of the left gate. The number will read 0.00 inches until the left gate override is actuated. While holding the left gate override, the number should read 4.00 inches. If it does not read 4.00, visually verify that the gate is actually fully open. After visual verification, while holding the left gate override, press the “CAL” switch to set the value to 4.00 inches. When the left gate override is release, the number on the screen should go back to 0.00. Push the “SCROLL” switch to move to the next screen.

SETUP: RIGHT OPEN

0.920 amps

Use the “CAL” switch to adjust the current up or down to increase or decrease the speed at which the right gate opens. Adjusting this valve too high will cause the gates to hunt around the desired gate opening. Adjusting this value to low will cause a delay of the gate opening. Push the “SCROLL” switch to move to the next screen.

SETUP: RIGHT CLOSE

0.980 amps

Use the “CAL” switch to adjust the current up or down to increase or decrease the speed at which the right gate opens. Adjusting this valve too high will cause the gates to hunt around the desired gate opening. Adjusting this value to low will cause a delay of the gate opening. Push the “SCROLL” switch to move to the next screen.

SETUP: LEFT OPEN

0.920 amps

Use the “CAL” switch to adjust the current up or down to increase or decrease the speed at which the right gate opens. Adjusting this valve too high will cause the gates to hunt around the desired gate opening. Adjusting this value to low will cause a delay of the gate opening. Push the “SCROLL” switch to move to the next screen.

SETUP: LEFT CLOSE

0.980 amps

Use the “CAL” switch to adjust the current up or down to increase or decrease the speed at which the right gate opens. Adjusting this valve too high will cause the gates to hunt around the desired gate opening. Adjusting this value to low will cause a delay of the gate opening. Push the “SCROLL” switch to move to the next screen.

SETUP: SAVE AND EXIT

Press Save to Exit

Press the “SAVE” button to save any changes that were made or press the “SCROLL” switch to exit without saving.

Front Motor Coil & Speed Sensor Harness instructions on next page.

Front Motor Coil Harness and Speed Sensor Harness.

If not already completed, the front hydraulic motor coil harness will need to be modified and the new speed sensor harness will need to be installed as well. Please note: ***If installing a 7051693 kit, the front hydraulic motor coil harness and the speed sensor harness will not need to be modified and will be reused***.

Disconnect the Hirschmann connector at the front hydraulic motor coil and temporarily secure it out of the way with zip ties. This harness will be modified toward the end of this procedure.

Disconnect the Delphi Weather Pack connector that is conneted to the speed sensor. This harness will no longer be used and can be removed completely or zip tied securely out of the way.

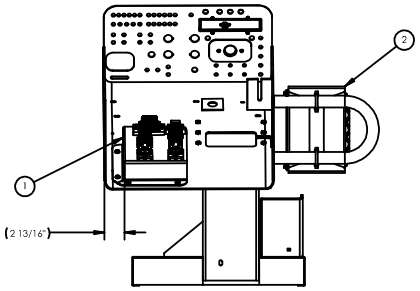
Using the existing harness for the front hydraulic motor coil, remove the Hirschmann connector from the harness and crimp on the new Deutsch sockets. Insert the red positive wire into number 1 on the Deutsch plug and the black ground wire in number 2. Insert the wedgelock and plug the harness into the front hydraulic motor coil. Secure the harness in place with zip ties.

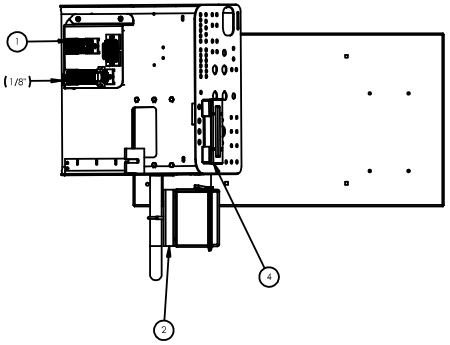
Route the new speed sensor harness provided with the kit through the E chain. Plug the harness into the speed sensor located on the new front hydraulic motor. Secure the harness in place with zip ties.

Please note that there will be extra wires that will not be used from the new computer/controller. These wires should be taped/capped off and securely zip tied before moving onto the next part of the kit installation. There may also be wires within the console that are no longer needed that can also be removed, or taped/capped off and securely zip tied.

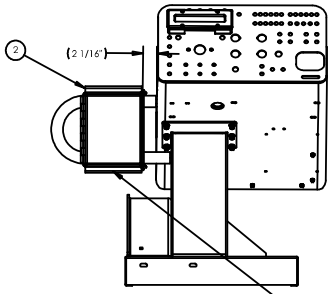
WITH THE WIRING PORTION OF THE KIT COMPLETED, THE FRONT HYDRAULIC WHEEL MOTOR REPLACEMENT PROCEDURE CAN NOW BE COMPLETED.

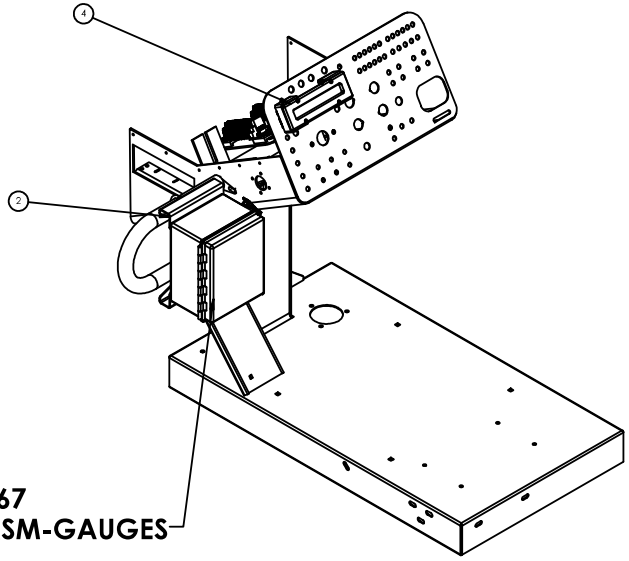
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED





****NOTE** MAY NEED BRACKETS IF USING OLDER LCD DISPLAY**
IF SAUER DISPLAY IS PRESENT, BRACKETS ARE NOT NEEDED





3104567
CONTROL BOX ASM-GAUGES

REF	QTY	PART NO.	DESCRIPTION
4	1	3104573	DPLAY MOUNT ASM
3	1	3120748	LOWER CONTROL PANEL ASM
2	1	3104570	MOUNT ASM-GAUGE BOX
1	1	3104568	MOUNT ASM-DIN RAILS

GENERAL NOTES:
REMOVE ALL BURRS
BREAK SHARP EDGES
MINIMUM BEND RAD. UNLESS SPECIFIED
BEND RELIEF SHOP OPTION

SER NO: NONE
SIM.TO:
WEIGHT: 222.437

DRW FILE: 9307264

DRFR: RM
CHKR:
ENGR: RM
APPD:

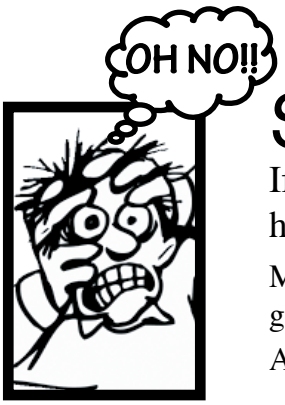
TOLERANCE UNLESS SPECIFIED
FRACTIONAL ± 1/32
DECIMAL
XX ± .1
.XXX ± .03
XXXX ± .015
ANGULAR ± 2°

E.D.ETNYRE&CO.
OREGON,IL. 61061
ALL DIMENSIONS IN INCHES DO NOT SCALE DWG

DRAWING TITLE
MDC TO RC28 CONV INSTALLATION

DWG SIZE: D
DRAWING NO. 9307264
REV

SCALE 1:8 | DATE 8/8/2019 | SHEET 1 OF 1



Something Wrong with this manual?

If you find inaccurate or confusing information in this manual, or just have a suggestion for improvement, please let us know.

Mail or FAX this form to us at: E. D. ETNYRE & CO. 1333 S. Daysville Rd. Oregon, Illinois 61061 • Fax: 800-521-1107 • www.etnyre.com

Attn: Service Manager

Recommended changes from: _____

Address _____

City, State, Zip _____

Phone _____

Date Sent _____

Manual Number (upper right corner of front cover) _____

Manual Title _____

_____

Explain the problem in the space below.

Page Number	Reference Number	Paragraph Number	Figure Number	Problem (please be specific)


Etnyre