



View Tech
Load Moment Indicator
Troubleshooting-Repair Manual



Software TXW001TME
Rev 1 1-29-10

3B6 Technologies

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IMPORTANT TROUBLESHOOTING NOTE !

Prior to troubleshooting the View system, a simple check of the unit is necessary to avoid extended time. When the system is powered up it performs a self test of all components. During this self test if any components are disconnected or faulty it will indicate alarms in the message alarm code.

This indicates that components did not pass the self test for communication, which creates the 190 communication code. A simple check is required to see the true faults if any by confirming the system by program, then once the unit has cleared and alarm codes are present press and release the Tare/ESC pushbutton on the display. The system will clear all non-faulted alarm codes and display the faulted components codes only.

Once the alarm codes clear using the Tare/ESC pushbutton keep power on the system for 30 seconds to clear the alarm memory of stored faults.

View

The View system will store and indicate the alarm code on the display. First we should press and release the TARE/ESC pushbutton to clear any stored alarms. If more than one alarm is stored it will clear the first, then display the next one. To clear this press and release the TARE/ESC pushbutton, prior to troubleshooting the system.

OK (GREEN)
No Alarms

STOP (RED)
Shutoff condition
Alarm, Overload,
Or A-2-B



Engine faults

**Prox switch fault
RT130 only**

Clear alarm code

**Program/Operating Mode
Alarm/Warning message**

When the **ICONS** on the display are visible, it indicates the condition is present.

Hook Block Icon

When the color is red an approaching A2B condition. System is in A-2-B condition.

**M1 or M2 Icon
ERR**

Boom Mode selected (RT130 only)
Boom Mode Error

Engine Icons

Engine check or Stop when fault detected

Green LEDS

Normal operation of system

Yellow LED

Pre-warning of SWL (90-100%)

RED LED

When illuminated RED the system is in a condition or alarm is present. Lock out system is disabled.

Alarm/Fault codes

| MESSAGE | CAUSE | SOLUTION |
|--|--|---|
| <ul style="list-style-type: none"> • <i>ALARM 1</i> | <ul style="list-style-type: none"> • <i>E2Prom fault</i> | <ul style="list-style-type: none"> • <i>Call Service</i> |
| <ul style="list-style-type: none"> • <i>Alarm 6 or 8</i> <i>Length output or signal to Low</i> | <ul style="list-style-type: none"> • <i>Potentiometer inside Reel is faulty .</i> • <i>Possible lack of continuity in wires carrying the signals</i> • <i>Fault in Head unit connector</i> • <i>Length min out of adjustment</i> | <ul style="list-style-type: none"> • <i>Check Wiring from cable reel to Head Unit</i> • <i>Check 12vdc supply to length pot</i> <i>in cable reel</i> • <i>Replace pot if damaged</i> • <i>Check spooling on cable reel</i> • <i>Call service</i> |
| <ul style="list-style-type: none"> • <i>ALARM 7 or 9</i> <i>Length output or signal to High</i> | <ul style="list-style-type: none"> • <i>Potentiometer inside Reel is faulty.</i> • <i>Possible lack of continuity in wires carrying the signals</i> • <i>Fault in Head unit connector</i> • <i>Length out of adjustment</i> | <ul style="list-style-type: none"> • <i>Check Wiring from cable reel to Head Unit</i> • <i>Check 12vdc supply to length pot in cable reel</i> • <i>Replace pot if damaged</i> • <i>Call service</i> |
| <ul style="list-style-type: none"> • <i>ALARM 12 or 30</i> <i>Piston side</i> <i>pressure sensor</i> <i>output or signal to low</i> | <ul style="list-style-type: none"> • <i>Piston Pressure sensor faulty.</i> • <i>Lack of continuity in wiring</i> • <i>Moisture in connector.</i> • <i>Sensor broken or disconnected</i> | <ul style="list-style-type: none"> • <i>Check Wiring from pressure sensor to display</i> • <i>Check 15vdc supply to pressure sensor</i> • <i>Check output on pressure sensor</i> • <i>Check connector for moisture or hydraulic fluid</i> • <i>Check CAN BUS lines</i> |
| <ul style="list-style-type: none"> • <i>ALARM 13 or 32</i> <i>Rod side Pressure</i> <i>Sensor output or signal to Low</i> | <ul style="list-style-type: none"> • <i>Rod pressure sensor faulty</i> • <i>Lack of continuity in wiring</i> • <i>Moisture in connector.</i> • <i>Sensor broken or disconnected</i> | <ul style="list-style-type: none"> • <i>Check for 15vdc supply</i> • <i>Check for output 0.5 vdc min</i> • <i>Check for moisture or fluid.</i> • <i>Check insertion of connector on transducer and wiring</i> • <i>Replace Transducer if faulty</i> • <i>Check CAN BUS lines</i> |
| <ul style="list-style-type: none"> • <i>ALARM 15 or 26</i> <i>Angle sensor</i> <i>output or signal to Low</i> | <ul style="list-style-type: none"> • <i>Angle sensor faulty</i> • <i>Lack of continuity in wiring</i> • <i>Moisture in connector.</i> • <i>Angle out of adjustment</i> | <ul style="list-style-type: none"> • <i>Check for 15vdc supply</i> • <i>Check for output 0.5 vdc min</i> • <i>Check for moisture or fluid.</i> • <i>Check insertion of connector on transducer and wiring</i> • <i>Replace Transducer if faulty</i> • <i>Check CAN BUS lines.</i> |

Alarm/Fault codes

| MESSAGE | CAUSE | SOLUTION |
|---|---|---|
| <ul style="list-style-type: none"> • <i>ALARM 22 or 31</i> <i>Piston side</i> <i>pressure sensor</i> <i>output or signal to</i> <i>high</i> | <ul style="list-style-type: none"> • <i>Piston Pressure sensor faulty.</i> • <i>Lack of continuity in wiring</i> • <i>Moisture in connector.</i> • <i>Sensor broken or disconnected</i> | <ul style="list-style-type: none"> • <i>Check Wiring from pressure sensor to display</i> • <i>Check 15vdc supply to pressure sensor</i> • <i>Check output on pressure sensor</i> • <i>Check connector for moisture or hydraulic fluid</i> • <i>Check CAN BUS lines</i> |
| <ul style="list-style-type: none"> • <i>ALARM 23 or 33</i> <i>Rod Pressure</i> <i>Sensor output or</i> <i>signal to High</i> | <ul style="list-style-type: none"> • <i>Rod pressure sensor faulty</i> • <i>Lack of continuity in wiring</i> • <i>Moisture in connector</i> • <i>Sensor broken or disconnected</i> | <ul style="list-style-type: none"> • <i>Check for 15vdc supply</i> • <i>Check for output</i> • <i>Check connection wires.</i> • <i>Check insertion of connector on transducer and wiring</i> • <i>Replace Transducer if faulty</i> • <i>Lower boom angle</i> |
| <ul style="list-style-type: none"> • <i>ALARM 25 or 27</i> <i>Angle sensor</i> <i>output or signal to</i> <i>High</i> | <ul style="list-style-type: none"> • <i>Angle sensor faulty</i> • <i>Lack of continuity in wiring</i> • <i>Moisture in connector.</i> • <i>Angle out of adjustment</i> | <ul style="list-style-type: none"> • <i>Check for 15vdc supply</i> • <i>Check for output 0.5 vdc min</i> • <i>Check for moisture or fluid.</i> • <i>Check insertion of connector on transducer and wiring</i> • <i>Replace Transducer if faulty</i> • <i>Check CAN BUS lines.</i> |
| <ul style="list-style-type: none"> • <i>ALARM 40</i> • <i>ALARM 41</i> • <i>ALARM 42</i> • <i>ALARM 120</i> • <i>ALARM 121</i> • <i>ALARM 130</i> • <i>ALARM 201</i> | <ul style="list-style-type: none"> • <i>CRC fault Run</i> • <i>CRC fault TAB</i> • <i>CRC fault Program</i> • <i>Fault in CAN BUS cable reel</i> • <i>Fault in cable reel Comm</i> • <i>CAN BUS timeout OEM</i> • <i>WDO fault</i> | <ul style="list-style-type: none"> • <i>Check Wiring from cable reel to View display</i> • <i>View display</i> • <i>Call service</i> |
| <ul style="list-style-type: none"> • <i>ALARM 202</i> <i>Lockout</i> | <ul style="list-style-type: none"> • <i>Wiring faulty or Shutoff alarm</i> | <ul style="list-style-type: none"> • <i>Check wiring from lockout circuit</i> |
| <ul style="list-style-type: none"> • <i>ALARM 220</i> <i>Bypass key enabled</i> | <ul style="list-style-type: none"> • <i>Faulty wiring to bypass key switch</i> • <i>Bypass key switch enabled</i> | <ul style="list-style-type: none"> • <i>Check wiring from key switch to View</i> • <i>Disable bypass key switch</i> • <i>Call service</i> |
| <ul style="list-style-type: none"> • <i>ALARM 225</i> <i>Overload</i> <i>condition</i> | <ul style="list-style-type: none"> • <i>Rated capacity exceeded</i> • <i>Boom cylinder topped</i> | <ul style="list-style-type: none"> • <i>Reduce capacity or radius</i> • <i>Reduce Boom angle</i> • <i>Call service</i> |

System Alarm Codes

RT130 Model Only

The boom proximity switches are connected internal to the ACMCP cable reel on the side of the boom. The switch connections are located on page 27 of this manual for troubleshooting. If the LED is present on the Proximity switch its means the switch is active or 12vdc is present. No led means it is inactive or 0vdc is present

Alarm 1 E2PROM fault (View Display)

- 1. Cycle power on the display and check, press and release the TARE/ESC pushbutton to clear.*
- 2. CALL SERVICE*

NOTE

Do not check wiring for output from any can bus component when power is applied to the system. Damage to the system will be the result

System Alarm Codes

Alarm Code 6, 7, 8 or 9 (Length Sensor)

This code is caused by the output voltage of the length sensor is lower (code 6 or 8) than the minimum, higher (code 7 or 8) than the maximum voltage or higher than the actual value.

Actions to take; Level the machine, Fully retract the boom and lower the angle to zero degrees.

1. Check the cable is spooling properly on the drum. If cable is built up on one side of drum correct it and adjust the roller guide on the cable reel to correct.
2. Remove the cover of the cable reel using a m3 allen wrench and check the +12.00vdc (Typically the voltage is about 11.94vdc) supply voltage (Brown wire) and the ground wire (white wire). See Fig 5. If the voltage is ok continue to step 2, if not check the wiring from the cable reel to the display and the connector located by the slipping collector for damage.
3. Check the output of the length sensor. The output of the length sensor when the boom is fully retracted should be approximately .250vdc.(wire), (tolerance .246 to .254vdc is OK). If it is higher or lower check the wiring first for damage. If the wiring is ok, press down on the length pot swing arm(Fig 6) and adjust the gear until the display indicates what the minimum boom length for that model of machine. Check the voltage and record this for later use.
4. If adjusting the length gear assembly and the length does not change on the display, remove the output () wire and check if the voltage changes, if not change the length pot and adjust the length.

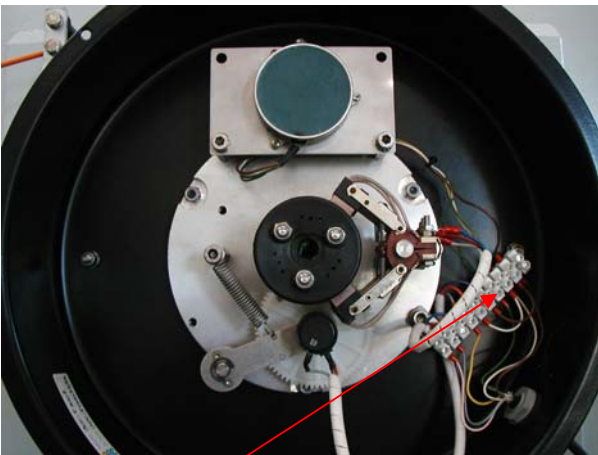


Fig 5

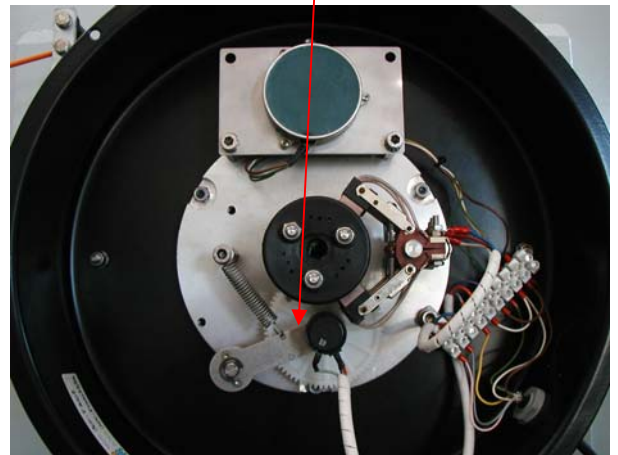


Fig 6

System Alarm Codes

Alarm Code 15,25,26 or 27 (Angle Sensor)

This code is caused by the output voltage of the angle sensor is lower (code 15 or 26) than the minimum or higher (code 25 or 27) than the maximum voltage.

Actions to take; Level the machine, Fully retract the boom and lower the angle to zero degrees using a angle finder to determine zero degrees. All wire color is the connection cable coming from the cab. See figure 3.

1. *Remove the cover of the cable reel using a m3 allen wrench and check the +12.00vdc (Typically the voltage is about 11.95vdc) supply voltage (Brown wire) and the ground wire (white wire). See Fig 3. If the voltage is ok continue to step 2, if not check the wiring from the cable reel to the display and connector located by the Slipping collector for damage.*
2. *Check the output of the angle sensor. The output of the angle when the boom is at zero degrees should be approximately 2.50vdc.(wire), (tolerance 2.46 to 2.54vdc is OK). If it is higher or lower check the wiring first for damage. If the wiring is ok, loosen the three screws (Fig 4) on the angle pot and adjust the pot until the display indicates what the angle finder indicates. Check the voltage and record this for later use.*
3. *If adjusting the angle pot and the angle does not change on the display, remove the output () wire and check if the voltage changes, if not change the angle pot and adjust the angle in step 2.*
4. *Call for service if angle is still incorrect..*

Fig 3

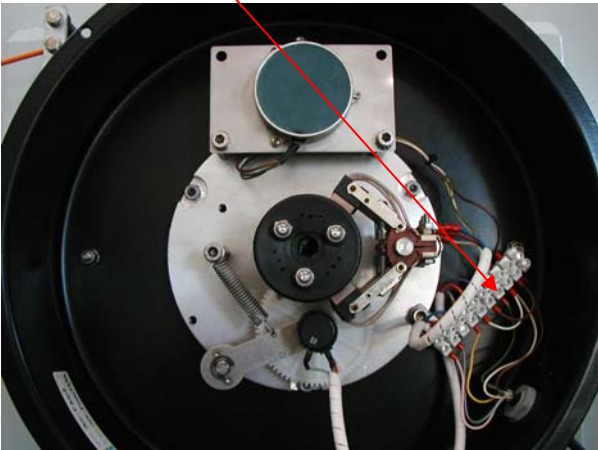
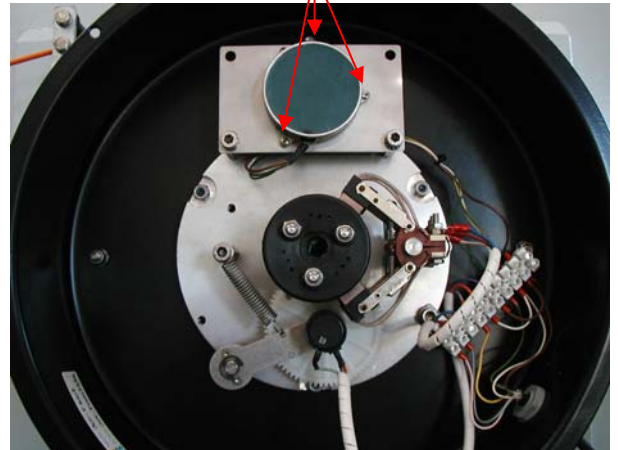


Fig 4



System Alarm Codes

Alarm Code 12, 22, 30 or 31 (Piston Pressure Sensor)

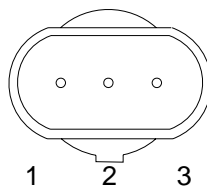
This code is caused by the output voltage of the piston pressure sensor is lower (code 12 or 30) than the minimum or higher (code 22 or 31) than the maximum voltage.

Actions to take; Fully retract the boom and lower the angle to zero degrees. Pressure Sensors are located on the holding valves of the lift cylinders. See figure 7.

1. Using your finger lift the lock tab on the sensor connector and switch the connector and see if the code changes to the opposite sensor, if it does check the wiring from the display to the sensor and check that air is not creating the code by bleeding the sensor or hydraulic fluid is in the connector.
2. Check the supply voltage and ground at the connector end. See figure 7. If the code does not change and wiring is ok bleed pressure sensor or replace it.
3. Supply voltage for pressure sensors is 15vdc, Output with no load should be around .70 to .90vdc
4. Call for service if code is still present.



Fig 7



PIN 3 Wires

1 +15vdc

2 output signal 0,5 .. 5,5 V

3 GND

System Alarm Codes

Alarm Code 13, 23, 32 or 33 (Rod Pressure Sensor)

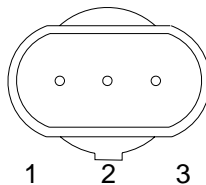
This code is caused by the output voltage of the rod pressure sensor is lower (code 13 or 32) than the minimum or higher (code 23 or 33) than the maximum voltage.

Actions to take; Fully retract the boom and lower the angle to zero degrees. Pressure Sensors are located on the holding valves of the lift cylinders. See figure 8.

1. Using your finger lift the lock tab on the connector and switch the connector and see if the code changes to the opposite sensor, if it does check the wiring from the display to the sensor and check that air is not creating the code by bleeding the sensor or hydraulic fluid is in the connector.
2. Check the supply voltage and ground at the connector end. See figure 8. If the code does not change and wiring is ok bleed pressure sensor or replace it.
3. Supply voltage for pressure sensors is 15vdc, Output with no load should be around .50 to .70vdc
4. Call for service if code is still present.



Fig 8



PIN 3 Wires

- | | |
|---|----------------------------|
| 1 | +15vdc |
| 2 | output signal 0,5 .. 5,5 V |
| 3 | GND |

System Alarm Codes

Alarm Code 40,41 or 42 (CRC faults View display)

These codes are caused either by a defective display or CAN BUS circuit.

Cycle the power on the display or check the wiring circuit.

Call Service

Alarm Code 120 or 121 (CAN BUS fault)

These codes are caused either by a defective display or CAN BUS circuit

Cycle power on the system or check the wiring circuit.

Call Service

Alarm 130 (CANBUS Timeout OEM)

Can bus communication issue between View display and OEM control for boom control

Check OEM control box errors inside supply box next to seat

Call service

Alarm Code 201 (Watch dog fault)

These codes are caused either by a defective display or CAN BUS circuit

Cycle power on the system or check the wiring circuit.

Call Service

Alarm Code 202 (Lockout)

These codes are caused either by a defective display or CAN BUS circuit

Cycle power on the system or check the wiring circuit.

Call Service

Alarm Code 220 (Bypass key switch)

These codes are caused either by a fault in the bypass circuit.

Cycle power on the system or check the wiring circuit.

Check to see if the key switch is in over ride position.

Call Service

Alarm Code 225 (Overload condition)

These codes are caused either by exceeding the rated capacity, topping the cylinder or faulty pressure sensor.

Check for other pressure sensor related alarm codes.

Reduce the capacity or radius.

Lower the boom out of the cylinder topping position.

Call Service

System Fault Conditions

Engine faults Icons;Outputs from the Cummins ECM module to enable these functions.

Functions from the Cummins ECM are Oil pressure, Water temperature, RPM and F. Code.

1. Check wiring harness from Display under the dash panel to J1939/ECM. See wiring diagram.
2. Call Service



NOTE:

**Oil temperature is not used on all current models
Fuel gauge is not used on all current models**

System Fault Conditions



A-2-B alarm (A-2-B Switch) The display hook block icon is red on the display

This code is caused by an open circuit in the A-2-B switch.

Actions to take; Fully retract the boom and lower the angle to zero degrees.

1. Check if the machine is in a A-2-B condition, lower hook block.
2. Check if the cable or connectors are damaged between the switch to the display in the cab.
3. Remove the four screws in the switch cover and check the micro-switch for continuity. or +12vdc supply voltage.
4. Check for moisture, dry and seal connector.
5. Replace the switch or cable.
6. Call for service if code is still present.

Fig 9



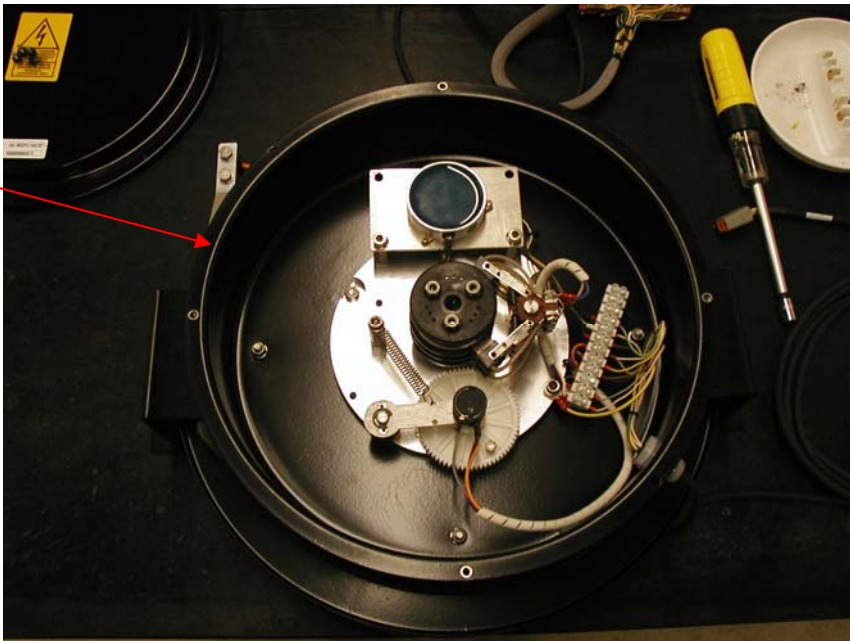
Cable replacement

Remove the four mounting bolts and remove the reel from the boom. Remove the cable reel cover by removing the four screws on the cover with a m3 Allen wrench (Fig 12). Then remove the cover (Fig 13).

Fig 12



Fig 13



Cable replacement

Remove all tension from the cable reel to avoid injury or damage to the spring package of the cable reel.

First step to replace the three conductor cable is to remove the black connector from the end of the cable to reuse it later (Fig 14). Then we will need to remove the cable reel from the boom of the machine in order to replace the cable. Remove the four bolts from the bracket and set the reel on a surface that will not damage it (Fig 15).

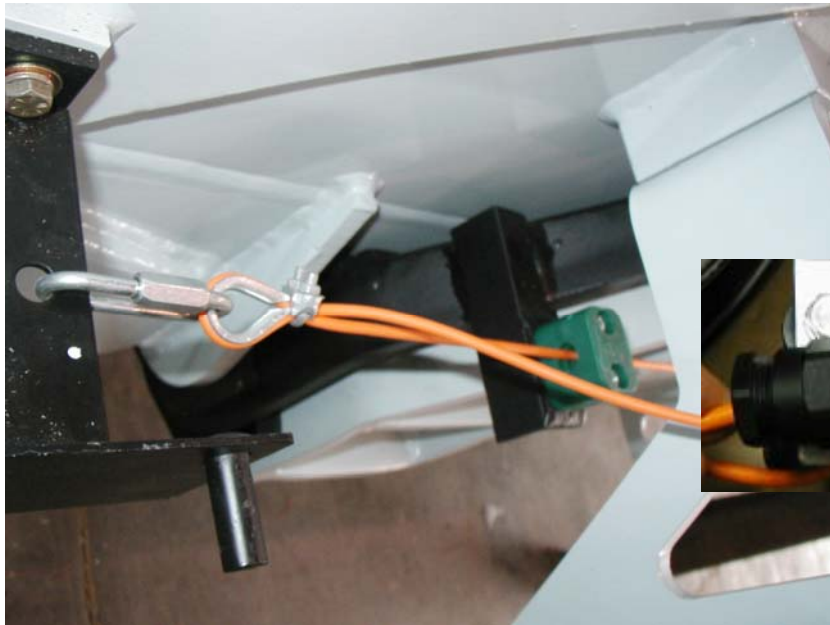


Fig 14

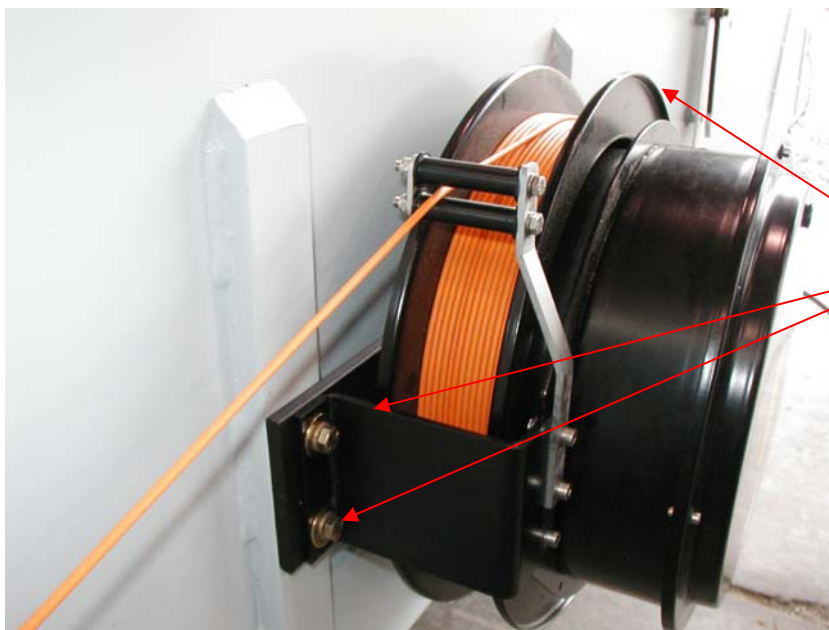


Fig 15

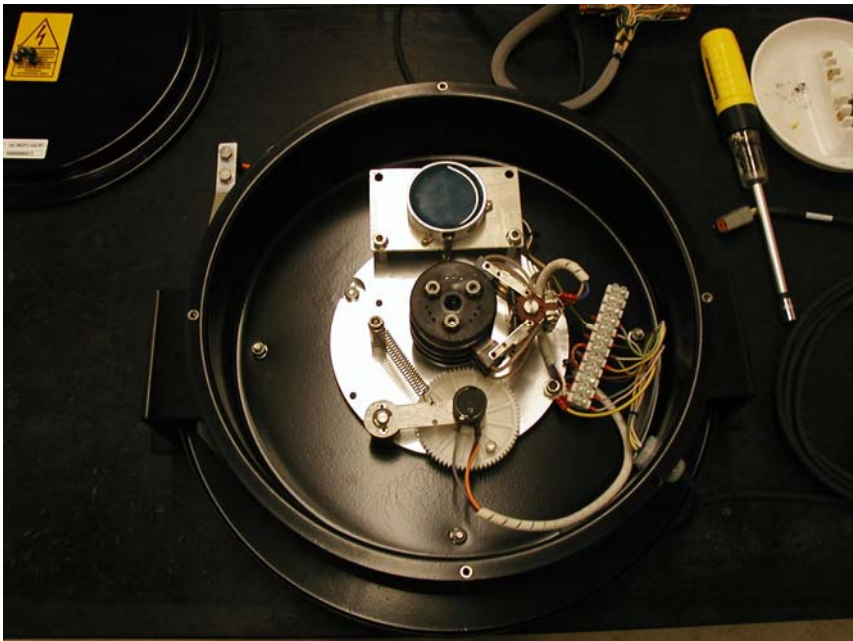
Cable replacement

Remove all the cable from the cable reel drum and push up the cable protective loom and cut it off at the back side of the cable reel (Fig 16). Lay the cable reel on its mounting bracket to access the front area (Fig 17).

Fig 16



Fig 17



Cable replacement

Remove three self locking nuts using a 10mm wrench (Fig 18). Carefully remove the plastic slip ring cover cap (Fig 19). You may require using a flat tip screwdriver to pry it . Insert the tip of the screwdriver just enough to catch the side of the cap. **DO NOT INSERT IT TO DEEP OR YOU CAN DAMAGE THE SLIPRING!**

Fig 18

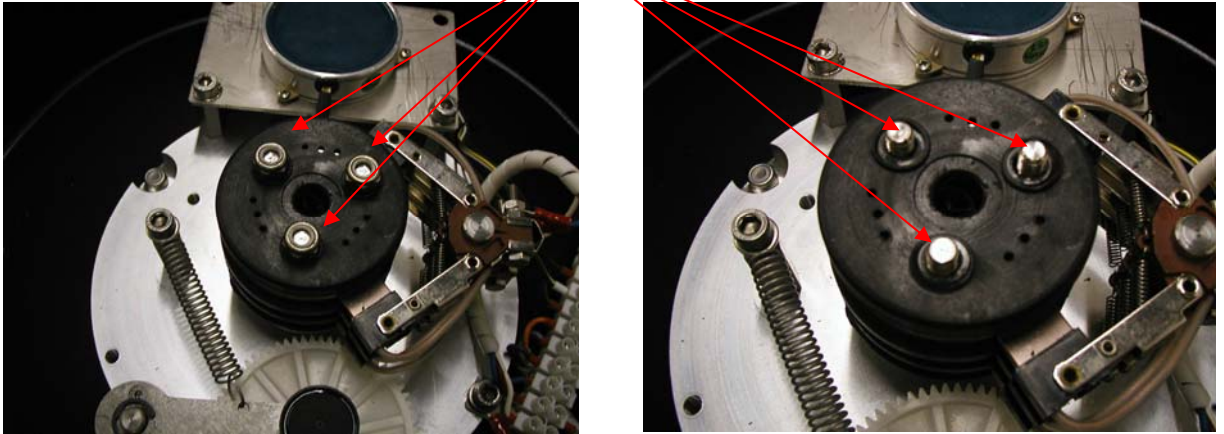
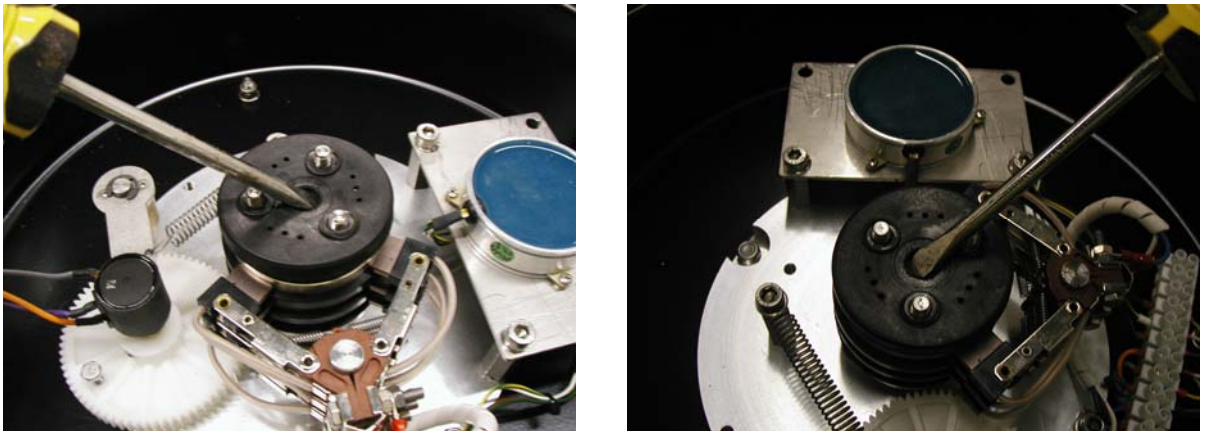


Fig 19

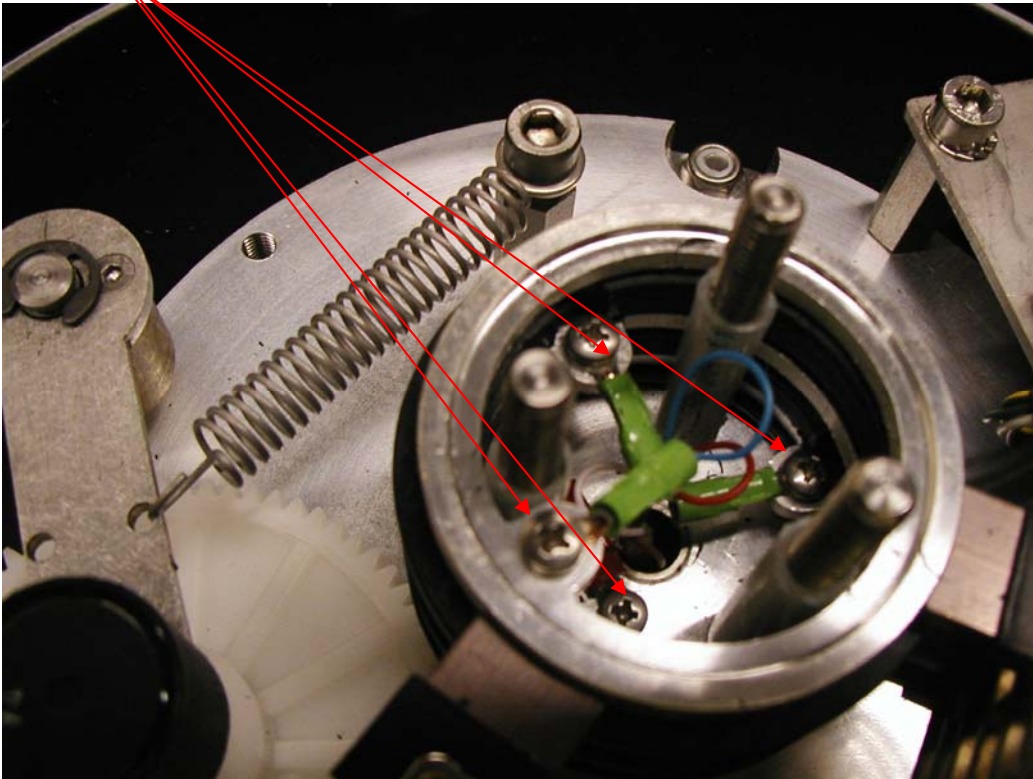
Using the screwdriver tip to carefully pry up the cap to access the wiring. Use the hardware as a lever for the screwdriver.



Cable replacement

Now that the cap is removed we can remove the existing cable. Remove the four Phillips head screws, noting the color code and location on the slip ring. Cut the ring terminals off. (Fig 20).

Fig 20

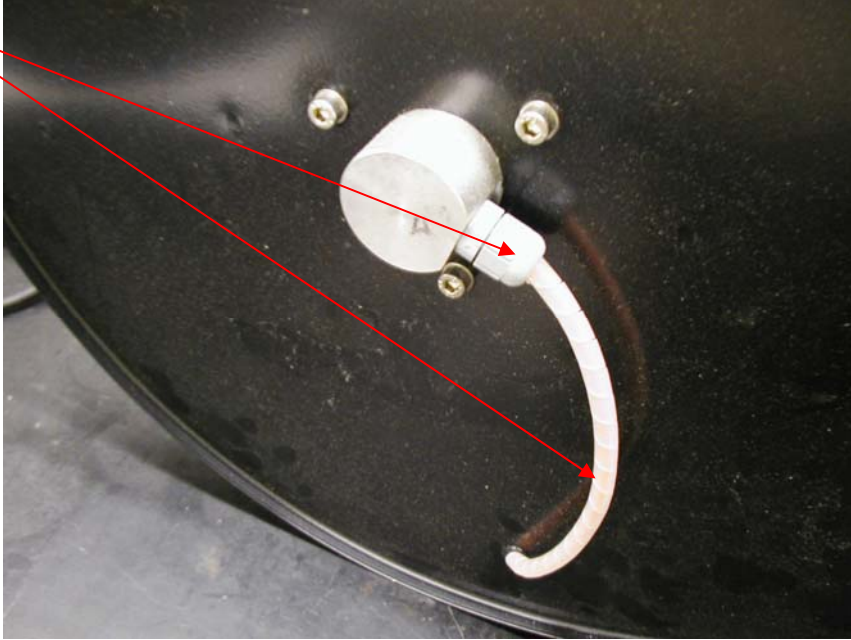


Wiring code
Collector

Bottom = White
Middle = Red
Top = Blue
Shield = base

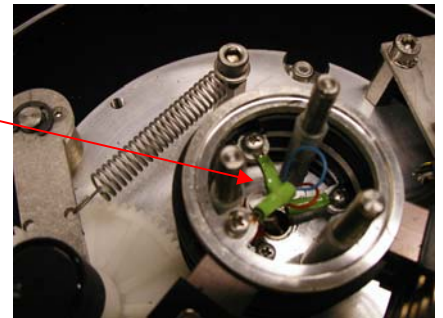
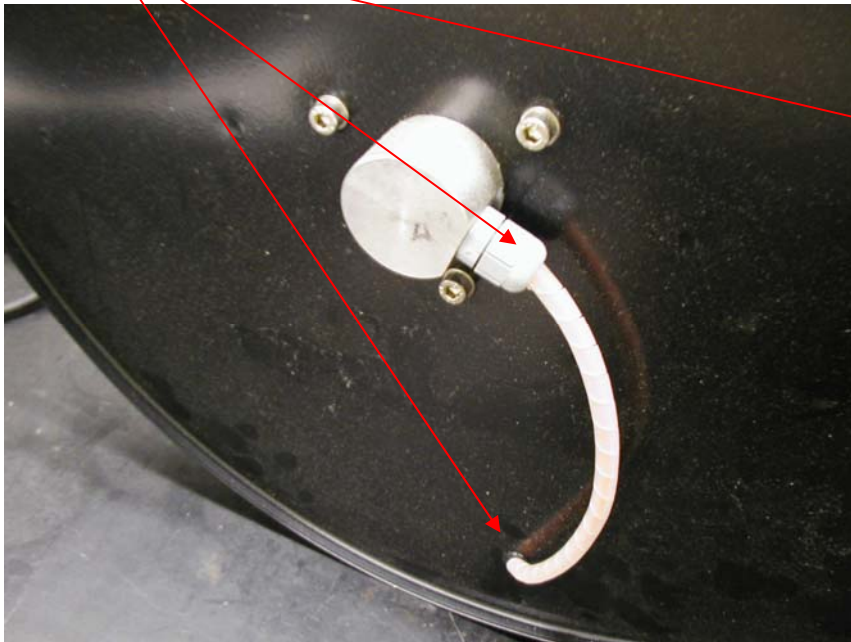
Cable replacement

Set the cable reel on its side, loosen the pg strain relief connector and remove the cable (Fig 21).



Strip back one end of the replacement cable the same length as the old cable or approximately 12 inches and feed it through the cable reel drum access hole from the inside of the drum area and then into the base connector and up into the slip ring collector (Fig 22).

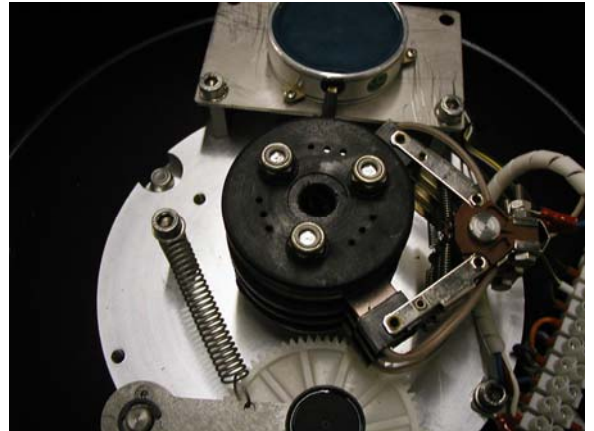
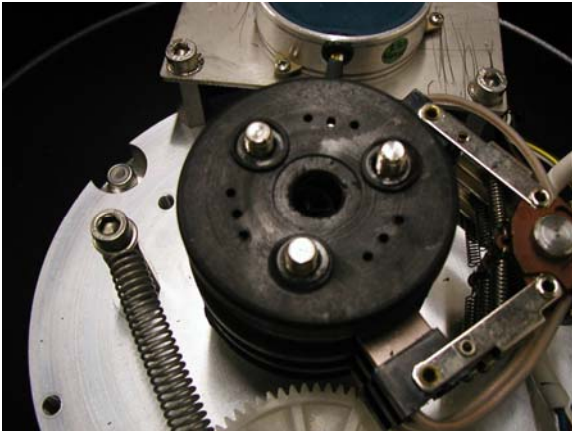
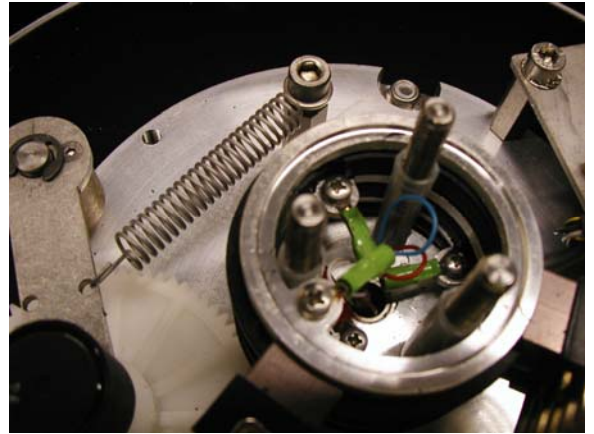
Fig 22



Cable replacement

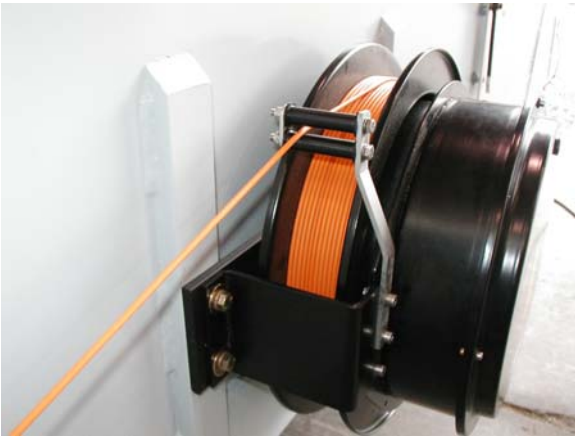
The cable inserted into the pg strain relief must have the outer jacket on in order for the strain relief to work. Tighten the pg connector strain relief nut. Cut off any access wire inside the slip ring and install the ring terminal and connect the wire to the proper terminal of the slip ring collector. See page 27 for wiring.

Tighten the phillips screws and replace the cap and self locking nuts.



Cable replacement

Install the replacement cable back onto the drum and install it back on the boom. Feed the cable through the guides to the boom tip and connect the strain relief and the black connector. The tension on the reel will be automatic when you pull out the cable. If not tension the reel 3 to 5 wraps and then route it to the boom tip.



See page 27 for wiring



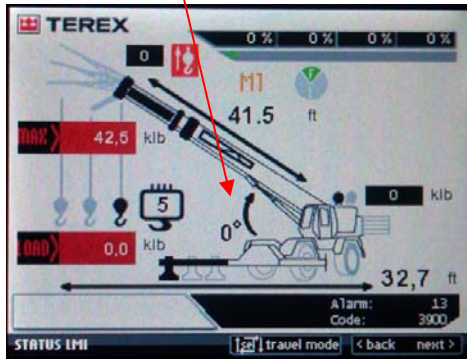
The length will require adjustment see page 23 & 24 for angle or length adjustment.

Angle adjustment

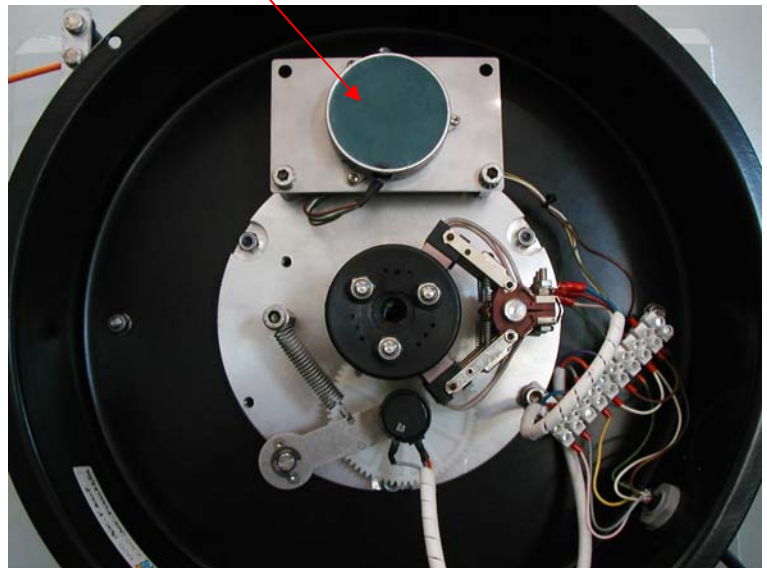
Fully retract the boom and lower the angle to zero degrees using a angle finder to determine zero degrees. Remove the cover of the cable reel and check the +12.00vdc (Typically the voltage is about 11.9- 13.5vdc) supply voltage (Brown wire) and the ground wire (white wire). The output of the angle when at zero degrees should be approximately 2.50vdc. (wire), (tolerance 2.46 to 2.54vdc is OK). Check the angle indication on the display (18) for accuracy at zero degrees.

If it is not correct loosen the three mounting screws with a flat tip screwdriver and adjust the pot until the angle indicates zero degrees on the display. Tighten the screws and check it at other angles for accuracy.

18



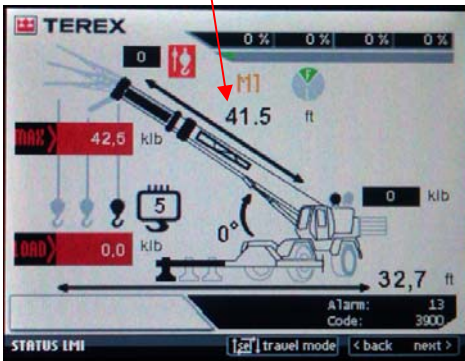
Angle sensor (ASA)



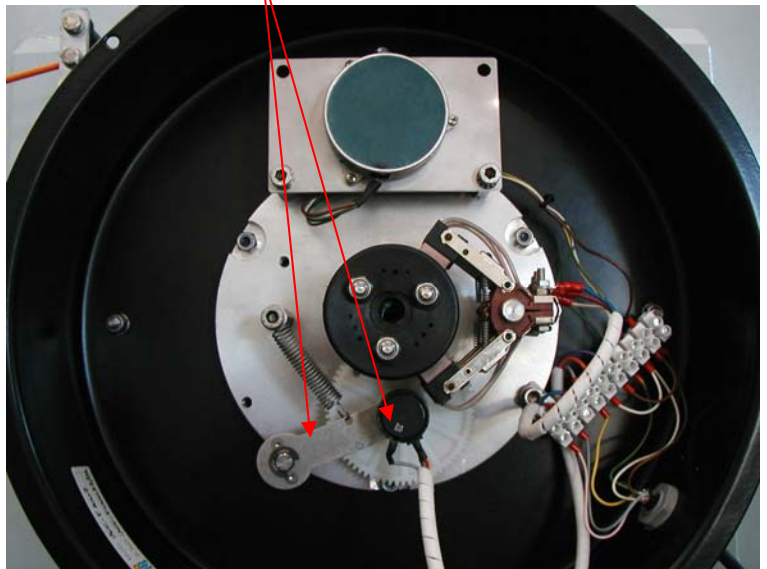
Length adjustment

Check the voltage output of the length pot is approximately .250vdc (wire), (tolerance of .246 to .254)with fully retracted boom, if not adjust the length gear assembly until it is. Check the length indication on the display (19). If it is correct , extend the boom and check the fully extended length. The Brown wire (+12vdc supply voltage) and White wire (Ground) used for the angle is the same supply voltage and ground for the length.

19



Length sensor and gear assembly



A-2-B wiring

The circuit is supplied at 10-30 vdc.

A-2-B wire terminal

Connector terminal

Yellow wire 22

N

4.7k resistor inline

White wire 21

L

Cable reel end.

Cable reel wires

Connector wire terminals

Red wire

N

White wire

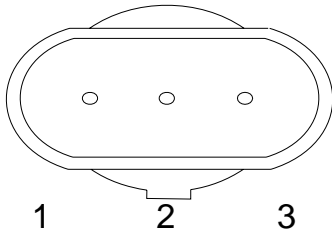
L



Pressure sensors

Troubleshooting the pressure sensors is used in the auto diagnostics in the operators manual.

Threads on pressure sensors are $\frac{1}{4}$ "BSPP



PIN 3 Wires

- 1 +15vdc
- 2 output signal 0,5 .. 5,5 V
- 3 GND

OEM Boom Control Modes Auto, 1 and 2

The Proximity 1 and 2 run from the boom to the ACMCP cable and supplied power and ground from the View system internal of the cable reel. The two inputs are also ran and terminated within the cable reel then signals transferred via the cable to the View display. An 8 pin connector is located under the boom around the center swivel of the crane.

The OEM unit values have been set to operate with the 3B6 system in the auto mode at

Mode 1 7520 count to enable

Mode 2 2390 count to enable

These count values are viewable on the OEM control box inside the cab of the crane.

This software has been changed to function properly with a 3B6 system and will not function properly using a OEM box with software for a Greer system. The boom will not transition in the auto mode properly and a fault light will appear on the machine dash and an ERR error will appear on the View display.

Proximity switch inputs can be viewed in the Auto diagnostics D inputs area. An asterisk under the input represents it is active or high.

0 is proximity 1

1 is proximity 2

