

Big Shipper

Troubleshooting Manual

BMC



Rev 0 TME 090513



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NOTE

The following information is to troubleshoot the system. This should be done by qualified personnel or with the assistance of qualified personnel to avoid damage to the system.

If you require assistance please contact service at 913-888-0606 or 815-871-4193

Display

No power on the display

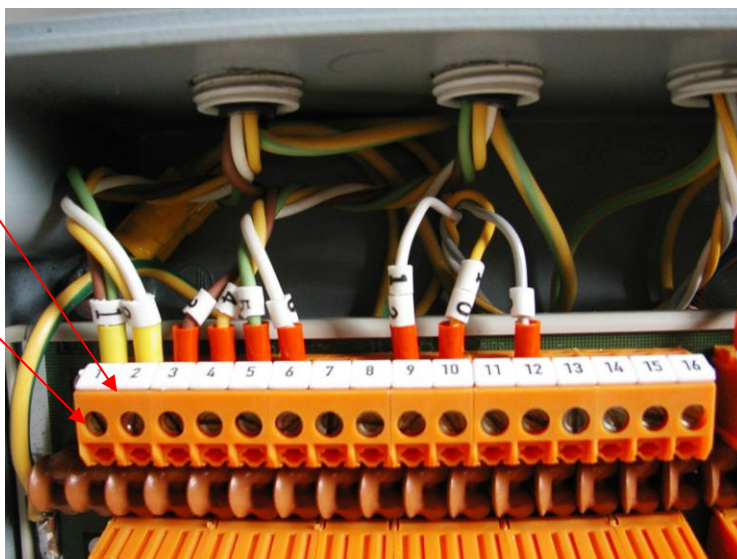
1. Check Big Shipper cable is connected on the back of the display.



2. Open the J-Box and check power between terminal number 1 (10-30vdc) and terminal number 2 (Ground) from the power cable coming from the machine. System input power must be a minimum of approximately 10vdc to function properly. No power on terminals check wiring from machine supply.

Terminal 2
Ground

Terminal 1
Plus 10 to
30vdc

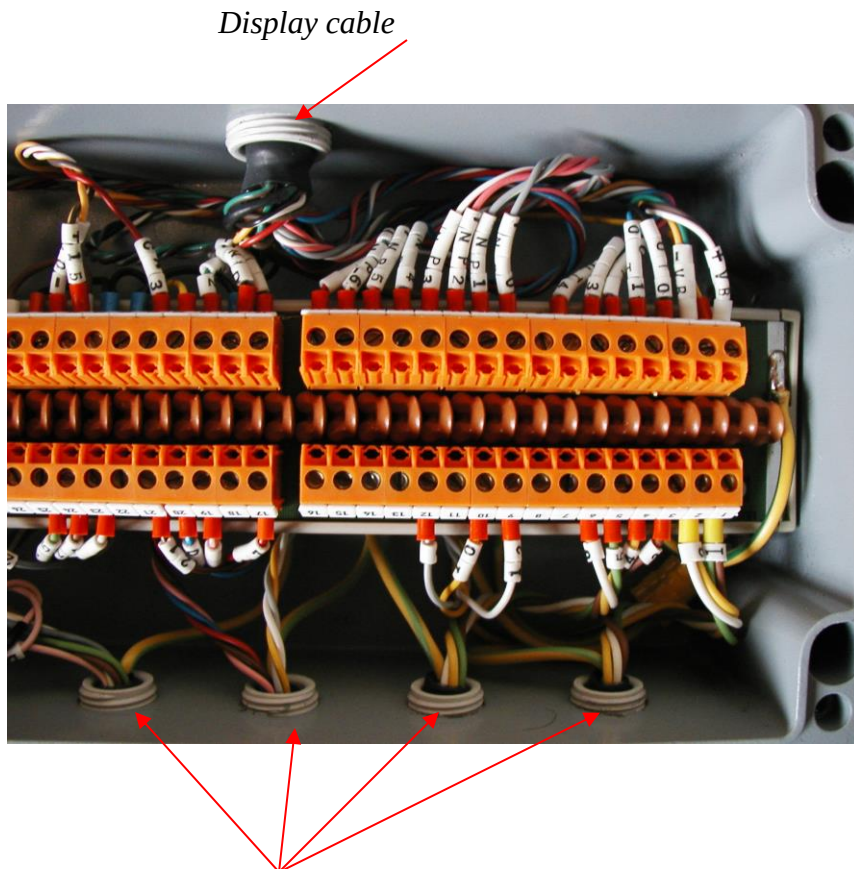


Display

2. *If power is on terminal 1 and ground on terminal 2, check that the same power is on the same terminals across from them which supply power to the display cable.*
3. *If power is on the terminals from the machine cable and not on the display cable, replace the EMC filter.*
4. *If power is on both sides of the terminals from the machine to the display. Check the display cable is plugged inside the display, check the wiring is correct or replace the display.*

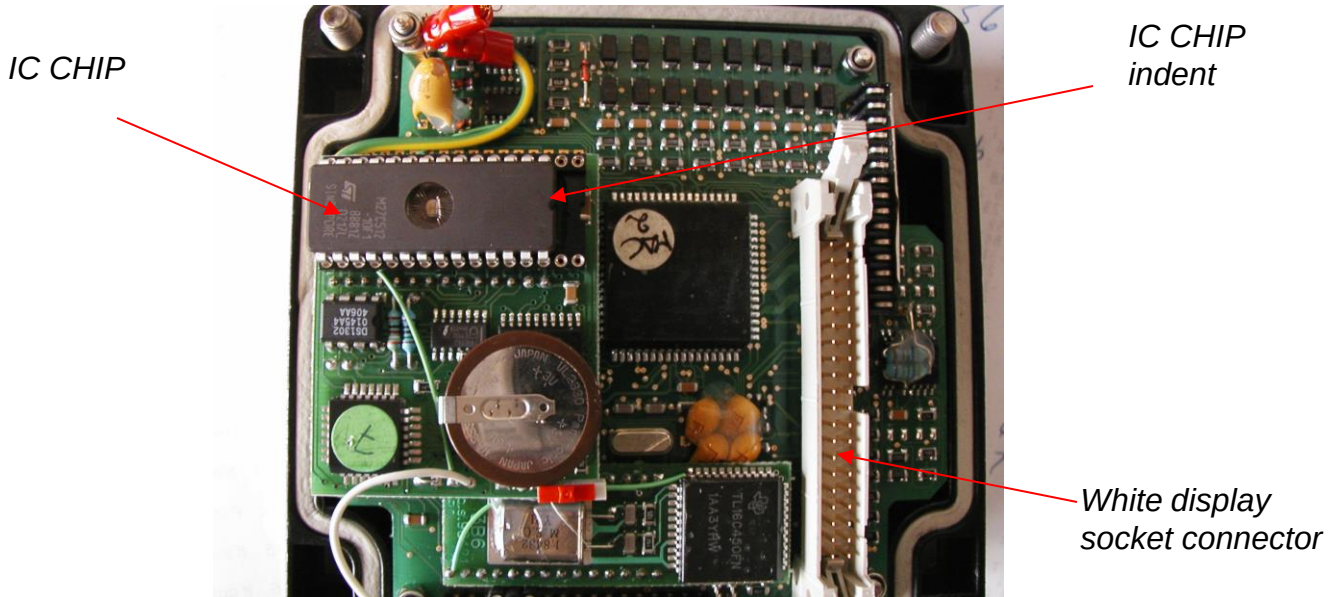
The terminals on the EMC filter are the same on both sides. One side of the terminal is from the machine and the other is from the Big Shipper display.

Input power to the system will be the same as the machine supply.



Display

1. *If the display has power but does not indicate any data. Check the IC chip is inserted properly inside the display. You must open the display up to check this*



Two types of IC's can be used on the Big Shipper, one is a 28 pin chip and one is a 32 pin chip.

If the 28 pin chips is used there should be 4 pin sockets left open if the chips is inserted properly and the indent in the chip should point towards the white display socket connector.

If the 32 pin chip is used all sockets should be used and the indent should also face towards the white display socket connector.

E2PROM CODE1

1. Defective EEprom- Call Service

TRASD1 CODE2

1. Check all wiring and connectors on the 8 pin connector between the junction box and Cable reel. Check the slip-ring collector terminals. Terminal 6 (output), terminal 5 (+5vdc), and terminal 9 (ground).
2. Check voltages in the junction box, terminal 23 is (Ground), Terminal 17 (+5vdc), and terminal 19 (output) from the angle sensor. **With the boom at zero degrees the output should be approximately 2.50vdc.**
3. Make certain the voltages are the same on each side of the EMC filter inside the junction box. If not the junction box or display could be defective.
4. If the +5vdc and ground are proper, but the output is incorrect, check the connector, or replace the sensor.

TRASD1 CODE3

1. Check all wiring and connectors on the 8 pin connector between the junction box and Cable reel. Check the slip-ring collector terminals. Terminal 6 (output), terminal 5 (+5vdc), and terminal 9 (ground).
2. Check voltages in the junction box, terminal 23 is (Ground), Terminal 17 (+5vdc), and terminal 19 (output) from the angle sensor. **With the boom at zero degrees the output should be approximately 2.50vdc.**
3. Make certain the voltages are the same on each side of the EMC filter inside the junction box. If not the junction box or display could be defective.
4. If the +5vdc and ground are proper, but the output is incorrect, check the connector, or replace the sensor.

TRASD2 CODE 4

1. Check all wiring and connectors on the 8 pin connector between the junction box and Cable reel. Check the slip-ring collector terminals. Terminal 7 (output), terminal 5 (+5vdc), and terminal 9 (ground).
2. Check voltages in the junction box, terminal 23 is (Ground), Terminal 17 (+5vdc), and terminal 21 (output) from the length sensor. **With the boom fully retracted the output should be approximately 0.250vdc.**
3. Make certain the voltages are the same on each side of the EMC filter inside the junction box. If not the junction box or display could be defective.
4. If the +5vdc and ground are proper, but the output is incorrect, check the connector, or replace the sensor.

TRASD2 CODE 5

1. Check all wiring and connectors on the 8 pin connector between the junction box and Cable reel. Check the slip-ring collector terminals. Terminal 7 (output), terminal 5 (+5vdc), and terminal 9 (ground).
2. Check voltages in the junction box, terminal 23 is (Ground), Terminal 17 (+5vdc), and terminal 21 (output) from the length sensor. **With the boom fully retracted the output should be approximately 0.250vdc.**
3. Make certain the voltages are the same on each side of the EMC filter inside the junction box. If not the junction box or display could be defective.
4. If the +5vdc and ground are proper, but the output is incorrect, check the connector, or replace the sensor.

PRESSL CODE8

1. Check all wiring and connectors on the 6 pin connector between the junction box and PISTON side pressure sensor. Check that sensor cables are not crossed with ROD side pressure sensor. Check the Slip-ring collector terminals, Terminal 12 (output), terminal 11 (+15vdc) and terminal 9 (Ground).
2. Check voltages in the junction box, terminal 23 is (Ground), Terminal 24 (+15vdc supply), and terminal 25 is the output from the pressure sensor. With no load on the boom the output should be around 0.5vdc. **The range of the sensor is 0.5 to 5.5 vdc.**
3. Make certain the voltages are the same on each side of the EMC filter inside the junction box. If not the junction box or display could be defective.
4. If the +15vdc and ground are proper, but the output is incorrect, check the connector or replace the sensor.

PRESSL CODE9

1. Check all wiring and connectors on the 6 pin connector between the junction box and PISTON side pressure sensor. Check that sensor cables are not crossed with ROD side pressure sensor. Check the Slip-ring collector terminals, Terminal 12 (output), terminal 11 (+15vdc) and terminal 9 (Ground).
2. Check voltages in the junction box, terminal 23 is (Ground), Terminal 24 (+15vdc supply), and terminal 25 is the output from the pressure sensor. With no load on the boom the output should be around 0.5vdc. **The range of the sensor is 0.5 to 5.5 vdc.**
2. Make certain the voltages are the same on each side of the EMC filter inside the junction box. If not the junction box or display could be defective.
4. If the +15vdc and ground are proper, but the output is incorrect, check the connector or replace the sensor.

PRESSH CODE10

1. *Check all wiring and connectors on the 6 pin connector between the junction box and ROD side pressure sensor. Check that sensor cables are not crossed with PISTON side pressure sensor. Check the Slip-ring collector terminals, Terminal 13 (output), terminal 11 (+15vdc) and terminal 9 (Ground).*
2. *Check voltages in the junction box, terminal 23 is (Ground), Terminal 24 (+15vdc supply), and terminal 28 is the output from the pressure sensor. With no load on the boom the output should be around 0.5vdc. **The range of the sensor is 0.5 to 5.5 vdc.***
3. *Make certain the voltages are the same on each side of the EMC filter inside the junction box. If not the junction box or display could be defective.*
4. *If the +15vdc and ground are proper, but the output is incorrect, check the connector or replace the sensor.*

PRESSH CODE11

1. *Check all wiring and connectors on the 6 pin connector between the junction box and ROD side pressure sensor. Check that sensor cables are not crossed with PISTON side pressure sensor. Check the Slip-ring collector terminals, Terminal 13 (output), terminal 11 (+15vdc) and terminal 9 (Ground).*
2. *Check voltages in the junction box, terminal 23 is (Ground), Terminal 24 (+15vdc supply), and terminal 28 is the output from the pressure sensor. With no load on the boom the output should be around 0.5vdc. **The range of the sensor is 0.5 to 5.5 vdc.***
3. *Make certain the voltages are the same on each side of the EMC filter inside the junction box. If not the junction box or display could be defective.*
4. *If the +15vdc and ground are proper, but the output is incorrect, check the connector or replace the sensor.*

CFG CODE12 or CFG CODE13

1. *Configuration error- Call for Service*

SELECT MODE

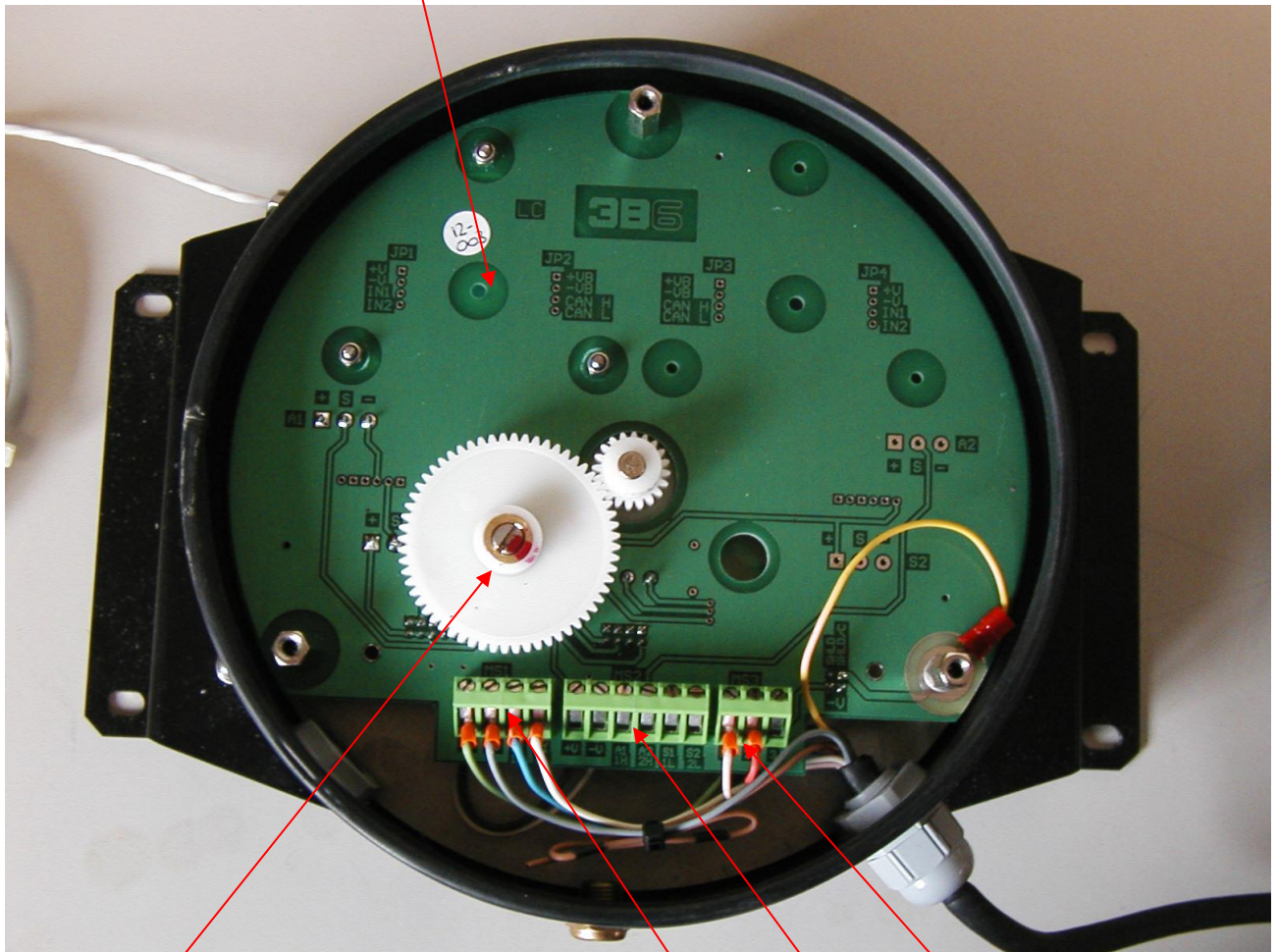
1. *No configuration is selected, select a configuration or Data has been erased from unit.- Call for Service*

CABLE REEL ACT-1PAE/00

Layout

1. The reel is equipped with three separate terminal strips MS1, MS2, and MS3. MS1 and MS3 are used.

Angle Pot is located on back side of electronic



MS1

MS2

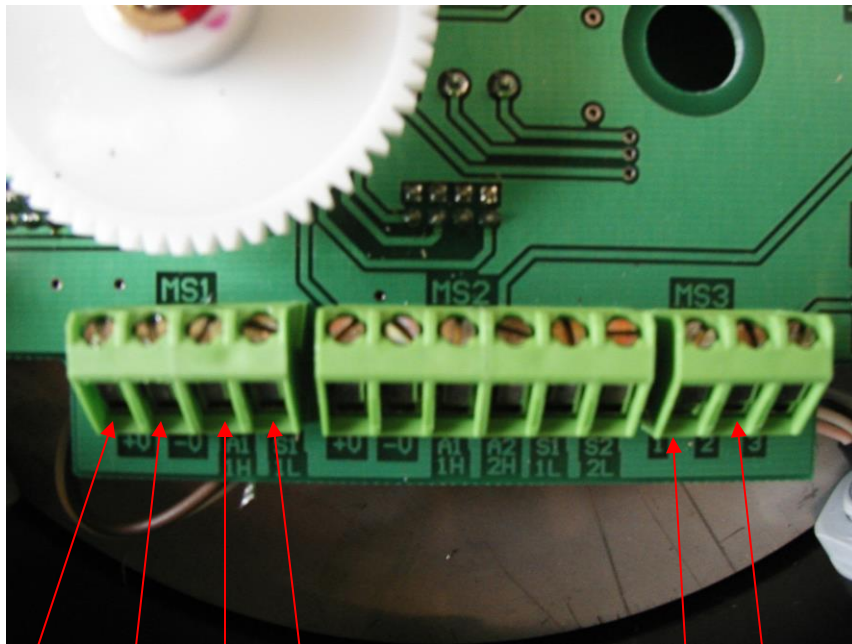
MS3

Length Pot Assembly

CABLE REEL ACT-1PAE/00

Layout/Wiring

1. MS1
2. +V = +5vdc supply voltage for angle/length/ Green wire
3. -V = Ground/Gray wire
4. A1 = Angle output/Blue wire Zero degrees output should be +2.50vdc
5. L1 = Length output/White wire Fully retracted boom output should be +0.250vdc



+5vdc Ground Angle Length A-2-B return A-2-B +12vdc

1. MS2 Not used

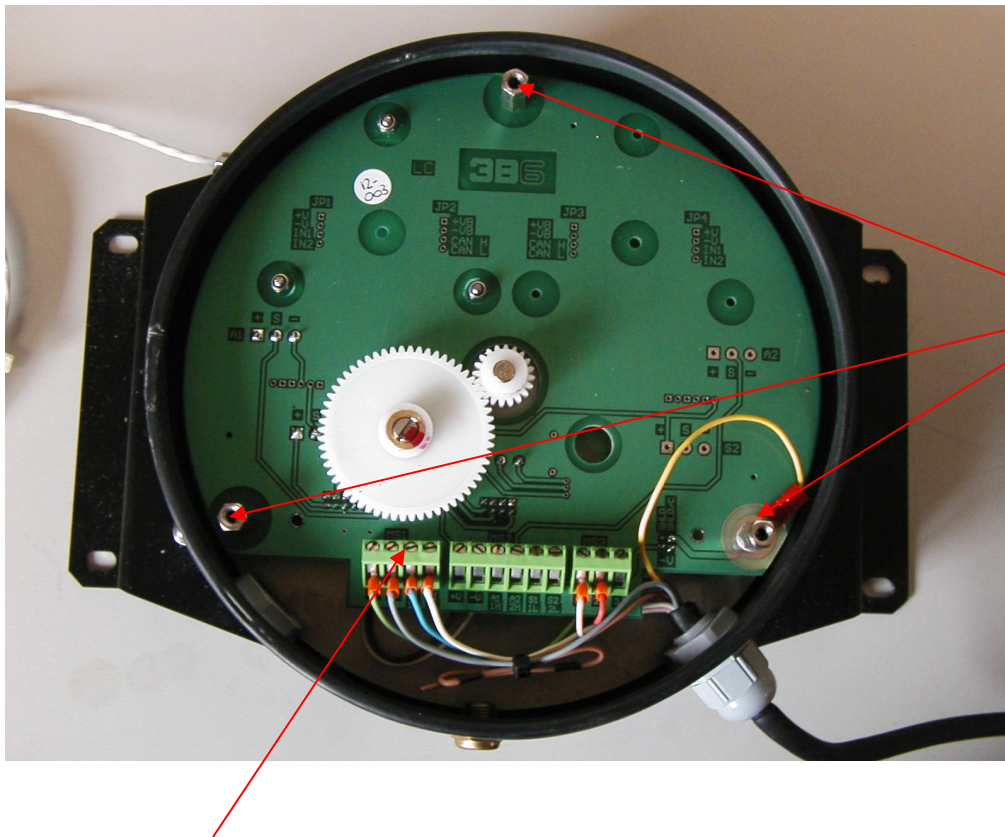
1. MS3
2. #1 A-2-B return/pink wire
3. #2 A-2-B +12vdc supply/red wire
4. Yellow wire is shield to be connected to the pc board mounting lug

CABLE REEL ACT-1PAE/00

Setting Angle on calibrated units

To set the angle;

Fully retract the boom, and boom the machine down to zero degrees using a level or angle finder to determine zero degrees.. Look at the display to see what the angle indication is. Remove the three mounting lugs on the pc board. See next page, Tip the pc board out and loosen the three angle pot mounting screws. Holding the pc board as close to vertical as possible turn the angle pot until the display indicates zero degrees. Tighten the three angle pot screws and replace the mounting lugs on the pc board. Do not forget to connect the shield. Check the angle indication again on the display. Adjust as needed until it indicates zero degrees. Tighten all screws and close reel. At zero degrees the angle output on MS1/A1 should be approximately +2.50vdc.



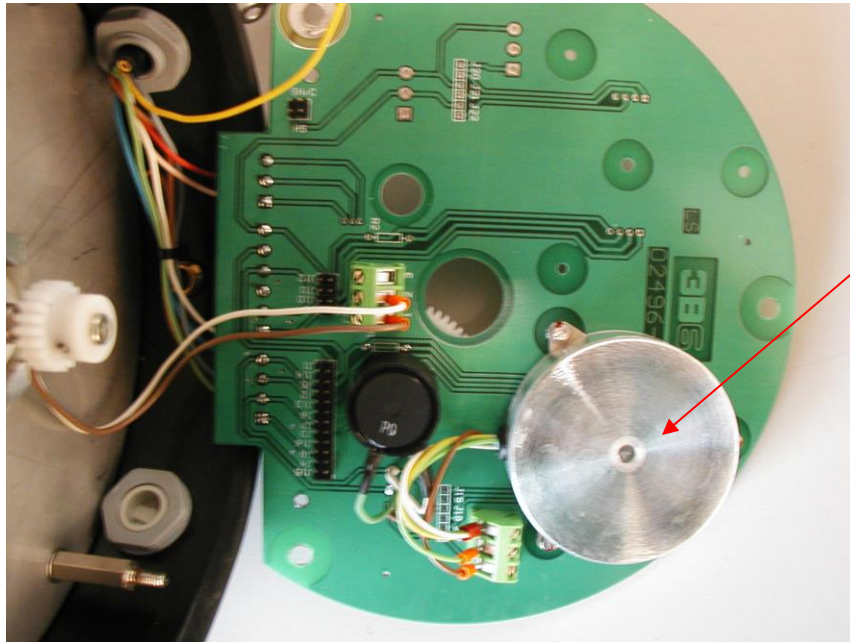
PC board mounting lugs

MS1/A1 Angle output

NOTE: newer style pots have two posts for mounting. Adjustment is made by moving the PCB after installed and then tighten hardware

CABLE REEL ACT-1PAE/00

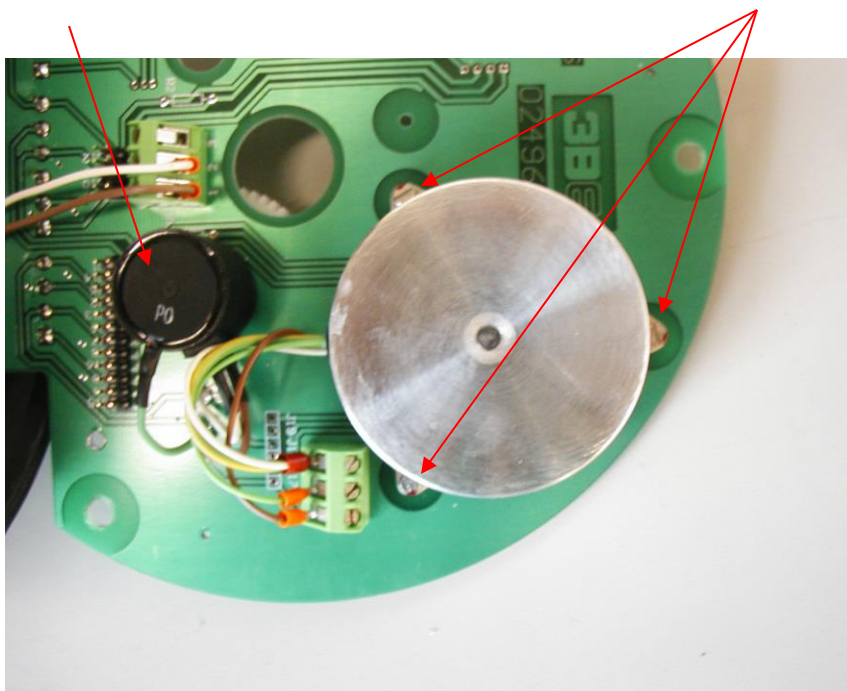
Setting Angle on calibrated units



Angle Pot

Length Pot

Angle Pot screws



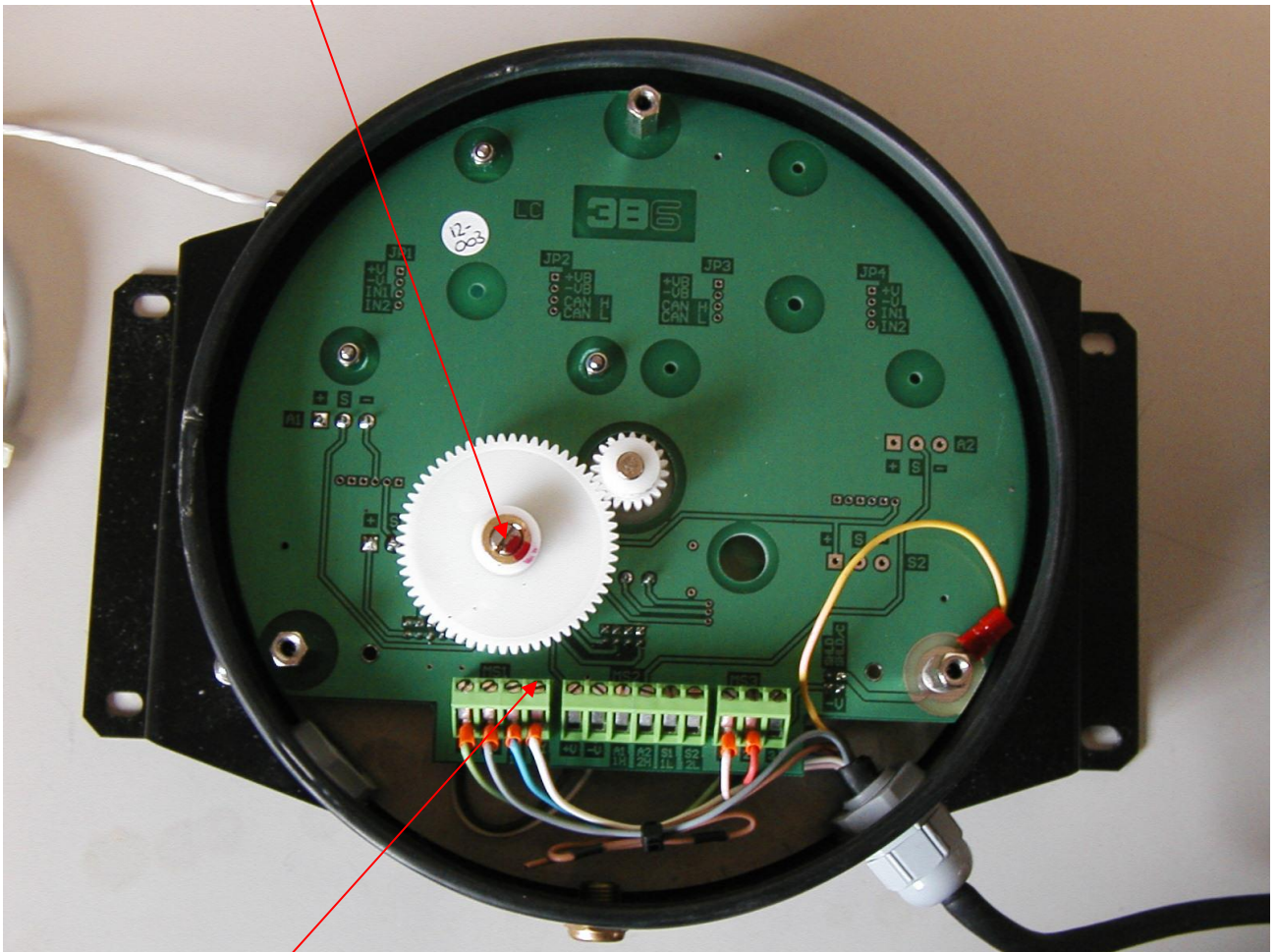
CABLE REEL ACT-1PAE/00

Setting Length on calibrated units

To set the length;

Fully retract the boom, look at the display to see what the length indication is. Using a flat tip screw driver turn the screw on the length pot assembly until the length indication on the display is correct. Now extend the boom fully and check it, then retract it again to see if it is ok. Continue this procedure until the length indication is correct. MS1/L1 should be approximately +0.250vdc

Length pot adjustment screw



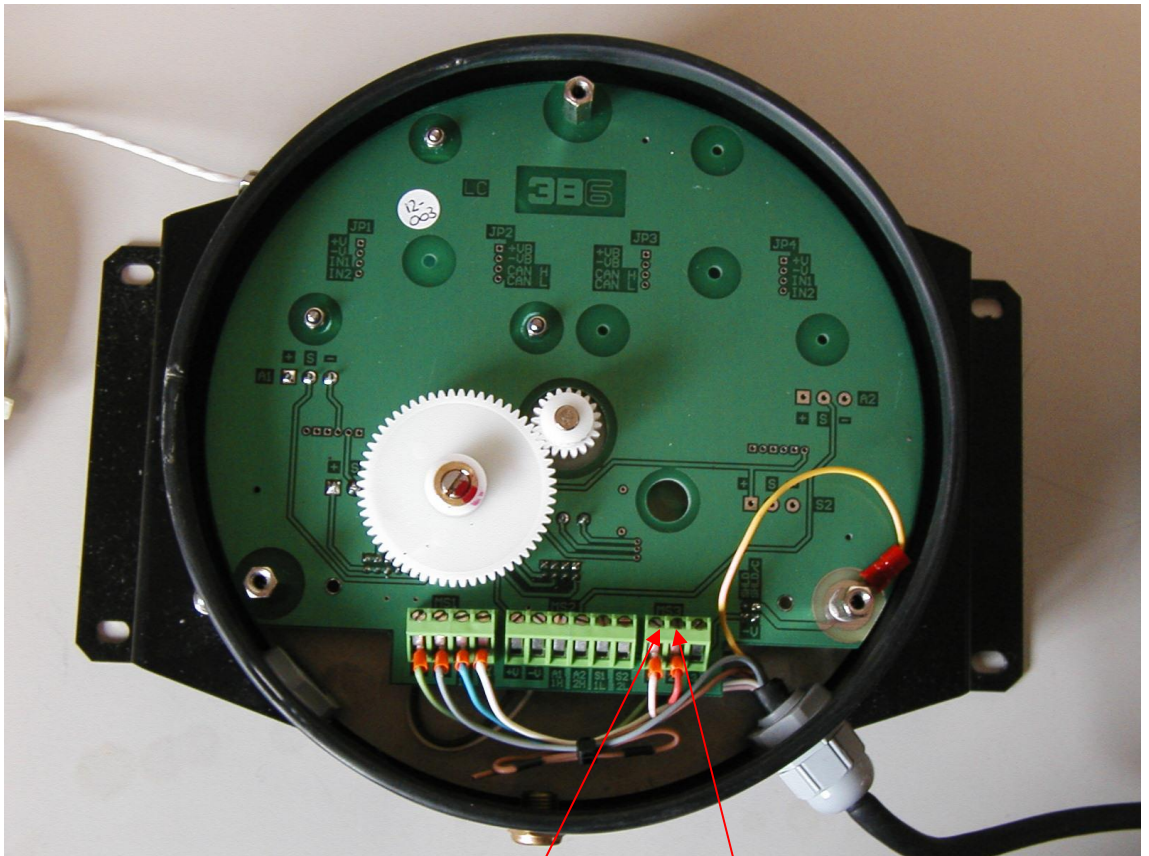
MS1/L1 Length output

CABLE REEL ACT-1PAE/00

Checking A-2-B circuit

To check the A-2-B circuit,

Using a voltmeter, put one lead on MS3/#1 and the other on MS3/#2, with the A-2-B switch in the closed position the voltmeter should indicate +12vdc. With the A-2_b switch in the open position the voltmeter should indicate zero volt. If these voltages are not present check the wiring and slip-ring collector terminal # 3 and # 4 or junction box terminal # 10 and #20.



A-2-B return/pink wire

A-2-B +12vdc supply/red wire

Pressure Sensors

To system is equipped with two 350 bar pressure sensors. One in the PISTON side of the lift cylinder and one in the ROD side . To check the output voltage of the sensors boom down to zero degrees and fully retract the boom with no load;

Using a voltmeter, in the junction box,

Terminal # 23 = Ground

Terminal # 24 = +15vdc

Terminal # 25 = Output PISTON should be around +0.5vdc

Terminal # 28 = Output ROD should be around +0.5vdc

Slip ring collector,

Terminal # 9 = Ground

Terminal # 10 = Shield

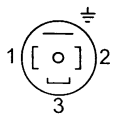
Terminal # 11 = +15vdc supply

Terminal # 12 = Output PISTON should be around +0.5vdc

Terminal # 13 = Output ROD should be around +0.5vdc

TECHNICAL SPECIFICATIONS

PIN CONNECTIONS



PIN 3 Wires

1 +VB

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

3 GND



Area Definition Switches

To system is equipped with two limit switches inside of the slip ring collector, one for over the front on rubber and one for over the front on outriggers. To check the function of the switches;

Using a voltmeter, in the junction box,

Terminal # 20 = +12vdc supply

Terminal # 9 = Output area 2/ Rubber

Terminal # 12 = Output area 1/ Outriggers

Slip ring collector,

Terminal # 1 = Output area 1/Outriggers

Terminal # 2 = Output area 2/Rubber

Terminal # 3 = +12vdc supply

With the switches closed the voltage should be +12vdc on terminal # 1 or # 2 and # 9 or # 12.