

## MG585 Boom Trucks



**Set-up and Service Manual**



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**SkyAzúl, Inc.**  
16 Walnut Street  
Middletown, MD 21769  
Fax 301-371-0029  
[info@skyazul.com](mailto:info@skyazul.com)



### System Setup Instructions

Following installation and cabling of the complete system, a few setup steps are required before the system can correctly compute and display accurate information. This procedure assumes that installation of system components, cabling, and hydraulic connections have been successfully completed and checked.

Before continuing, check that the computer unit has been correctly configured for the crane it is fitted to by reading the label fitted to the end of the computer unit. It should identify its type number and crane model. Use of the system computer on crane models not identified by the system computer type number/crane model number indicated on the computer unit label is prohibited.

The MicroGuard®-585 System is configured at the factory for a specific crane model. The system computer unit has been pre-fitted with the correct crane calibration and capacity data and will require no adjustment. Access to the computer by removal of its lid is not required. The setup procedure involves only the sensors mounted within the extension reel on the side of the boom. It is important that each step of this procedure is properly followed in order for the system to accurately provide load, rated capacity, warnings, and kickout functions.

#### Warning

**At all times, observe safe practices.  
Make sure that crane capacity limitations are understood, and that the crane capacity plate is followed. Do not exceed manufacturer's specified lifting limitations.**

#### Required Tools

For setup steps:

- Phillips Screwdrivers
- Bubble Level – Accurate to 0.1° at level

For testing:

- Inclinometer – accurate to 0.2°
- Measuring tape (100 ft) – fiber type with tenths of feet

#### Crane Configuration

Before starting the system setup, position the crane on firm and level ground with the outriggers properly extended and set.

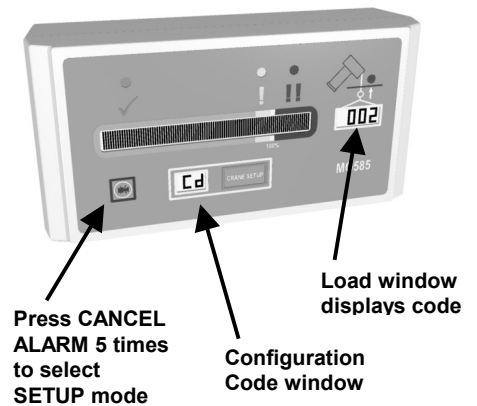
Configure the crane with no stowed or erected jib (bare boom) and reeve with a single part of line.

#### Accessing the Extension Reel Sensors

Remove the cover from the extension reel by loosening and removing the 12 screws around the perimeter of the cover.

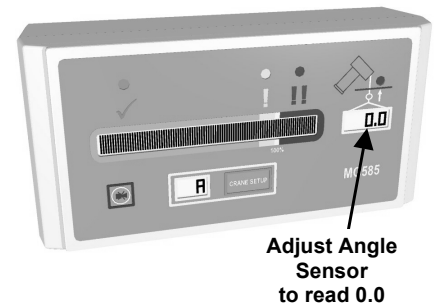
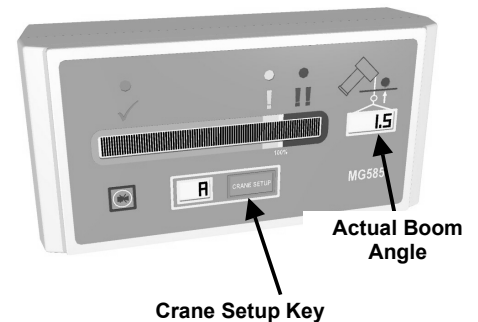
## Configuration Option Code Check

1. With the crane powered and running, enter the setup procedure by pressing the Cancel Alarm key 5 times consecutively.  
**NOTE:** The configuration option is not included on all crane models. In these cases, the angle will be displayed first when the Setup mode is accessed; the operator should then skip to Step 3 below.
2. When the Setup mode is activated, "Cd" should be displayed in the Configuration Code window. A code is used to verify that the correct software version has been installed and that the correct crane configuration options have been selected. A three-digit code in the Load window indicates the crane model and configuration option. This number must match the three-digit LMI Code located on the manufacturer's Load Chart.



## Boom Angle Sensor Setup

3. Fully retract the main boom and use an inclinometer or bubble level to set the boom perfectly level. Make sure that the inclinometer reading is made on the top flat surface of the boom. Take several readings in different places to verify true zero degrees.
4. Once the Configuration Code has been verified, press the crane Setup key to continue. The configuration display will change to "A" for boom angle.
5. The Load display will now display the boom angle sensed by the angle sensor inside the extension reel.
  - If the display reads "0.0°," the angle sensor is correctly adjusted. Go to step 7.
  - If the display does not read 0.0°, angle sensor adjustment is necessary.

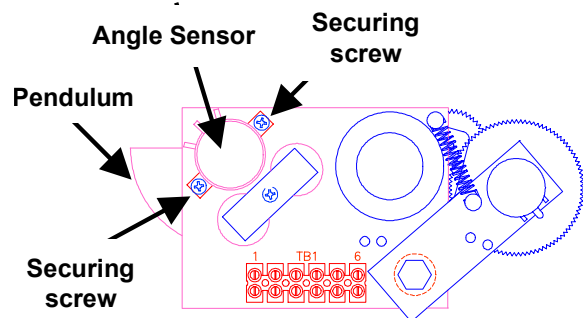


6. To adjust the angle sensor, loosen the two securing screws on either side of the sensor just enough to allow the sensor to be turned by hand. **Do not remove the screws and do not put pressure on the terminals exiting the sensor.**

**NOTE:** Rotating the sensor counterclockwise will increase the angle displayed. Rotating clockwise will reduce the angle displayed. Only fine adjustments are required. **Do not touch the pendulum hanging behind the sensor assembly, since this will affect the reading.**

When 0.0° is showing on the display, carefully tighten the two screws and check that the display still reads 0.0°.

7. Before continuing, it is recommended that the angle be checked against an accurate inclinometer. Boom up to a high angle, and using an inclinometer, check that the displayed angle matches the inclinometer reading within 0.2°.

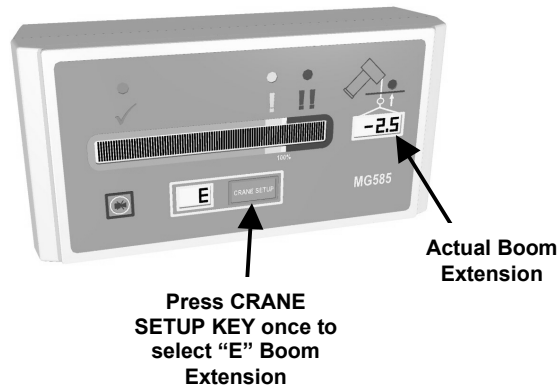


### Boom Extension Sensor Setup

8. When satisfied with the angle sensor setup, press the **“CRANE SETUP”** key to continue. The configuration display will change to “E” for extension setup.

Make sure the boom is fully retracted. Then, boom down so that the boom is level and the extension reel can be easily reached.

The load display will show the extension. This is the amount of boom telescoped – not the overall boom length.

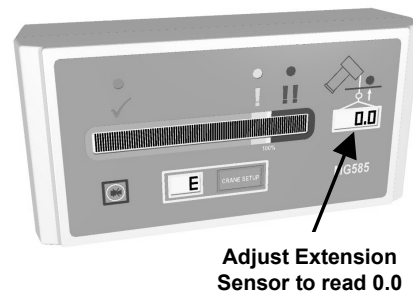


9. When the extension sensor is correctly adjusted, the display should read “0.0” for a retracted boom.

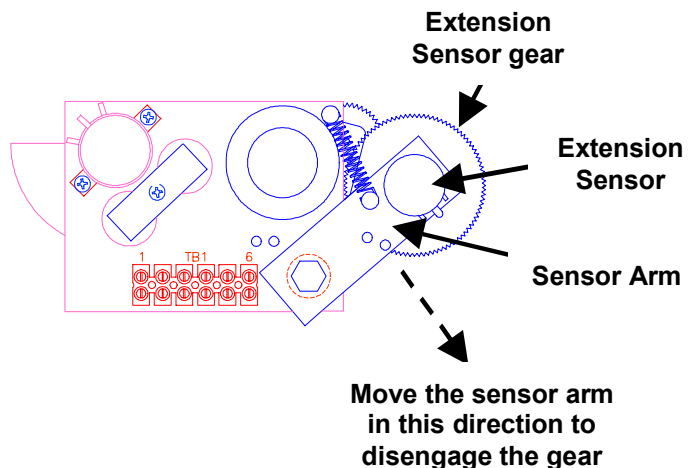
Mechanically adjust the extension sensor clutch until the display reads zero (0.0). To do this, disengage the main gear wheel connected to the extension sensor by pulling the sensor arm in the direction shown.

Rotate the gear clockwise until the sensors clutch detent starts to click. At the next click stop rotating the gear.

Rotate the gear back (counterclockwise) about half a turn to set the display to exactly 0.0, then carefully release the sensor arm ensuring the display stays at 0.0 as the gears re-engage.



10. Before continuing, it is recommended that the extension value is checked by first booming up to approximately 60°, then fully extending the boom. Calculate the correct extension by subtracting the retracted boom length from the fully extended boom length,  $(\text{MAX EXTENSION} = \text{MAX BOOM LENGTH} - \text{MIN BOOM LENGTH})$  then compare it with the displayed value. The displayed value should be within 0.2 ft of the extension value.
11. If the extension value is not correct (+/- 0.2 ft), first make very sure that the boom is fully extended, then press and hold the cancel alarm key for five seconds. The system will automatically reset and display the correct maximum extension value.
12. Fully retract the boom and check that the extension value displayed is 0.0.



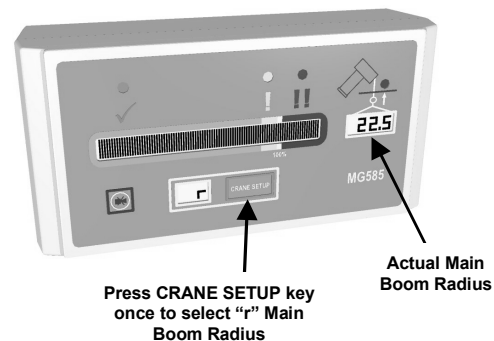
### Radius Check

13. Following setup of the angle and extension sensors, the system allows the main boom operating radius to be checked.

Press the “**CRANE SETUP**” key to continue. The configuration display will change to “r” for radius.

Leaving the boom at approximately 60°, and fully extended, tape the distance between the crane swing center and the hook centerline.

If all the preceding adjustments have been correctly made, the radius value displayed will be within 0.5 ft of the radius value measured.



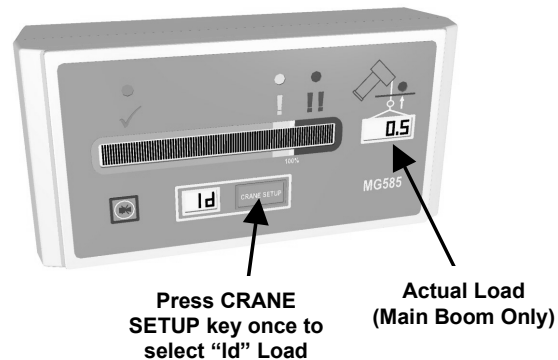
### Load Check and Adjustment

14. The system allows the load to be checked and, if necessary, trimmed for accuracy.

Press the “**CRANE SETUP**” key to continue. The configuration display will change to “ld” for load.

**To display an accurate load, it is crucial that the crane is being operated with a bare boom.**

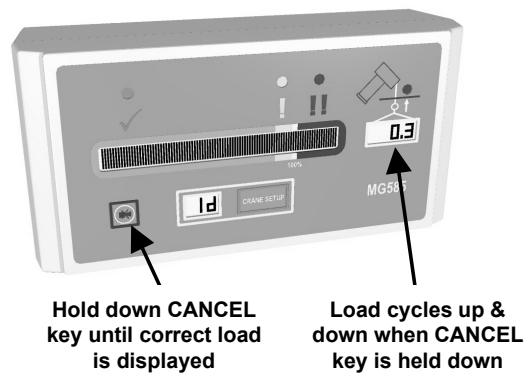
Retract the boom so that it is half extended and move the boom to approximately 50°.



15. When the load is correctly adjusted, the display should read the weight of the main hook plus 100 lbs. (0.1).

To adjust the load display, press and hold the cancel alarm key and watch the displayed load cycle up and down. Release the key when the load is equal to the weight of the hook ball plus 0.1 (100 lbs.).

For example, if the hook ball weighs 200 lbs., set the load display to read 0.3 (300 lbs.).





### Load/Kickout Check

16. Press the **“CRANE SETUP”** key to continue and exit back to optional mode. The system can then be configured to the correct crane setup and the accuracy of the load display verified against a test load or a known weight. Check that the system cuts out when a load is moved close to a lifting limit by carefully booming down with the load until cutout occurs, and that this meets the limitation requirement specified on the crane's capacity plate.

### Warning

**At all times, observe safe practices.  
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### Anti-Two-Block Kickout Check

17. Test the ATB circuit: activate the switch by hand, and check that the red ATB warning lamp illuminates and the audible alarm sounds. While the switch is activated, test the kickout function by making sure that the winch up, boom down, and telescope out functions do not operate.

### Completion

18. When all steps are completed, replace the boom extension reel cover, ensuring all 12 screws are tightened.

## Troubleshooting

### Start-up Problems

- Display unit lights and alarms are flashing; Computer unit sounds as if it is buzzing.
  - Make sure the PTO is fully engaged.
- During system setup, it is not possible to adjust the angle sensor. The display shows “---”.
  - Make sure the extension reel is installed the correct way up.
  - Make sure the extension reel signal cable is correctly connected to the computer unit.
  - Check the extension reel voltages according to the chart on the following page.
- A few seconds after power up, the display shows “tSt” in the load display window.
  - Computer is possibly not running.
  - Check that the computer unit has a system program chip fitted.
  - Check that the system program chip is correctly inserted.
  - Check that all LEDs within the computer are lit and that the communications LED (D6) is flashing – If not replace system chip.
  - Check the display cable for damage.

### System Error Codes

The following chart outlines fault codes detected and displayed by the system and actions to be taken when they occur.

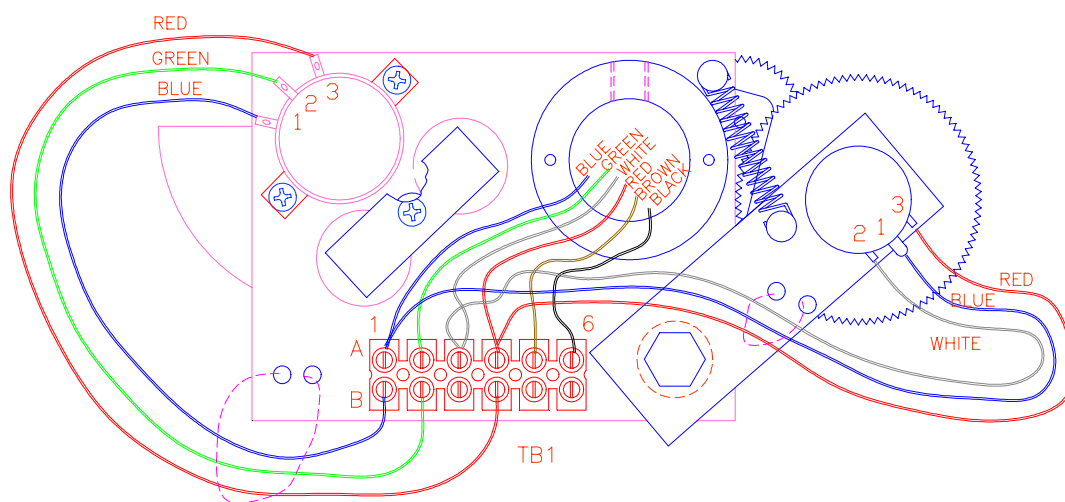
Fault codes flash up on the screen in sequence during normal system operation.

FAULT CODE	DESCRIPTION	ACTION
E10, E11 or E12	Crane Capacity Data Error	Replace System Chip
E15 & E16	No Capacity Chart Selected Extension Sensor Out of Range	Check Extension Reel (Should be accompanied by E52)
E21	System Program Error	Replace System Chip
E22	Data Memory Error	Replace Computer Unit
E24	Factory Calibration Error	Replace Computer Unit
E30, E31, E40, E41, E50 & E51	Pressure Sensor Errors	Replace Computer Unit
E52	Extension Sensor Error	Check Extension Reel Voltages Make sure setup is correct
E53	Angle Sensor Error	Check Angle Sensor Make sure setup is correct

## Extension Reel Voltage Checks

In the event that problems occur with the Two-Block alarm operation, Angle or Extension sensor, the following chart details voltage checks that may be made within the extension reel. Follow the action column before measuring voltages at the specified points in the voltmeter connection columns.

SIGNAL	BOOM POSITION / ACTION	VOLTAGE		VOLTMETER CONNECTION	
		MIN	MAX	RED (+)	BLACK (-)
SENSOR DRIVE	-	+4.7V	+5.3V	TB1/4 - RED	TB1/1 - BLUE
ANGLE SENSOR OUTPUT	0 Degrees	0.4V	0.6V	TB1/2 - GREEN	TB1/1 - BLUE
EXT'N SENSOR OUTPUT	0ft (0m) FULLY RETRACTED	0.15V	0.35V	TB1/3 - WHITE	TB1/1 - BLUE
TWO-BLOCK DRIVE	A2B WEIGHT DOWN	5.5V	7.5V	TB1/6 - BLACK	TB1/1 - BLUE
	A2B WEIGHT UP	9.5V	10.5V	TB1/6 - BLACK	TB1/1 - BLUE
TWO-BLOCK SIGNAL	A2B WEIGHT DOWN	5.5V	7.5V	TB1/5 - BROWN	TB1/1 - BLUE
	A2B WEIGHT UP	0V	2V	TB1/5 - BROWN	TB1/1 - BLUE



### NOTES:

ANGLE SENSOR OUTPUT IS SET TO 10% (1/10<sup>th</sup>) OF SENSOR DRIVE VOLTAGE WITH BOOM AT ZERO DEGREES.

EXTENSION SENSOR IS SET TO 5% (1/20<sup>th</sup>) OF SENSOR DRIVE VOLTAGE WITH BOOM FULLY RETRACTED.

MEASURE ALL VOLTAGES WITH A DIGITAL VOLTMETER SET TO DC VOLTS RANGE.

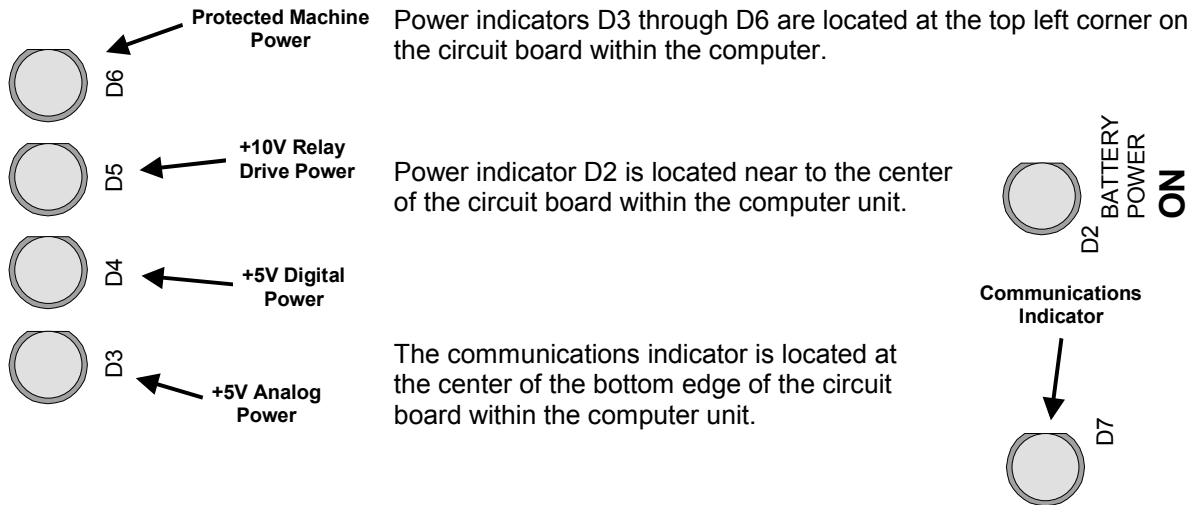
### Computer Internal Status Indicators

The computer unit contains six LED indicators that provide an aid to checking presence of power supply voltages and communications between the computer and display console.

All Indicators are bright green light emitting diodes. There are five power indicators (D2 through D6) and one communications indicator (D7).

With the exception of the communications indicator, all indicators should be illuminated at the same brightness level with the system power on.

A missing or dimly lit indicator indicates a power supply problem.



### Power Indicator States and Actions

#### All indicators OFF

Check power and ensure that PTO switch is properly engaged.

#### D2 ON but all other indicators OFF

Check display console cable and connection.

#### D5 OFF but all other indicators ON

Replace computer

#### D3, D4 and D7 OFF but all other indicators ON

Replace computer

#### D3 OFF but all other indicators ON

Check extension reel signal cable and internal voltages within extension reel.

### Communication Indicator

The Communication indicator provides an indication of the success or otherwise of communication with the display console, and of the running state of the computer program.

Carefully observe the Communication indicator and the display console at power on and through self-test, then use the following chart to help decide the course of action.

COMMUNICATION INDICATOR indications at power ON	ACTION
From the moment the power is applied, the COMM indicator does not illuminate. During and after the self-test period of eight seconds, the COMM indicator remains off.	The computer is not running. Check status indicators (D2 through D6). Try to reset the system by powering off and on again. Listen to the computer for the relays to click. If they do not click, replace the System Chip - If not successful, replace the computer. If the relays do click, replace Communication chips IC1, 2.
From the moment system power is applied, the COMM indicator flashes at a fast rate and never stops. The display console never goes to normal display and displays "tSt" in the number display windows.	Communication with the display has not been made. Is the display console connected? Check connector and cabling to the display console.
At the moment power is applied, the COMM indicator flashes briefly, then switches off. After a few seconds, the COMM indicator starts to flash at a fast rate and never stops.	This is the normal operation of the communication between the computer and display console.







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**SkyAzúl, Inc.**  
16 Walnut Street  
Middletown, MD 21769  
Phone 301-371-6126  
Fax 301-371-0029  
[info@skyazul.com](mailto:info@skyazul.com)