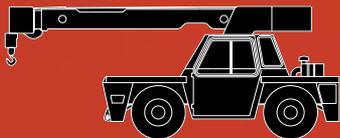


# MicroGuard® 586

Rated Capacity Indicator System  
For Industrial Cranes



Setup  
Maintenance



Consider Yourself Warned.™



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## Introduction

Congratulations on choosing the MicroGuard® 586 Rated Capacity Indicator/Limiter System.

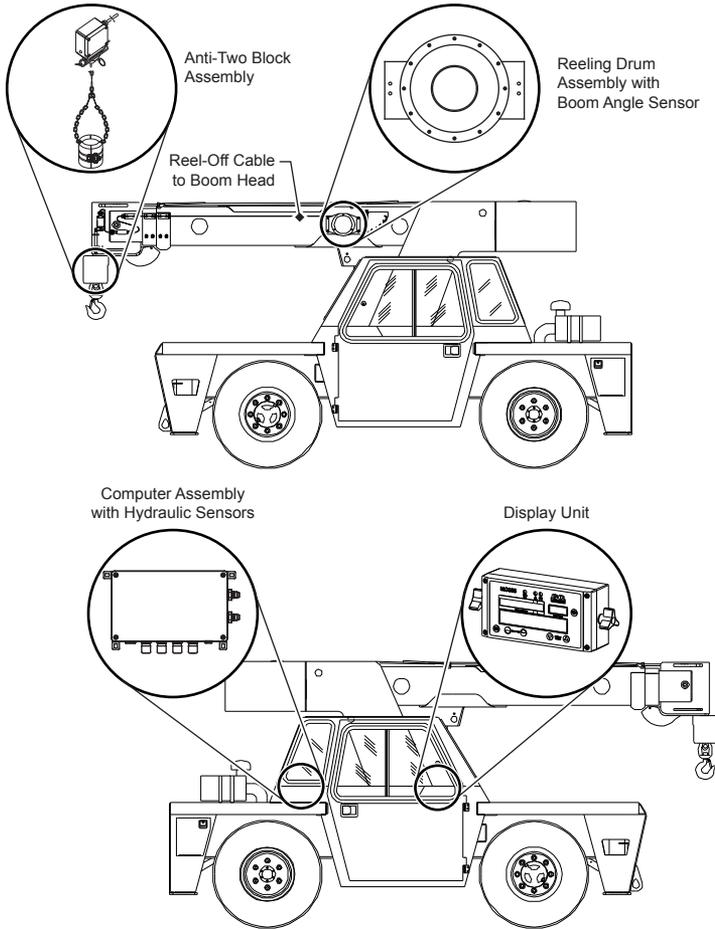
The MicroGuard® 586 System is designed for use as an aid to crane operation. Do not use this system in place of an operator who is knowledgeable in safety guidelines, crane capacity information, and the crane manufacturer's specifications.

This manual describes the setup, operation, and maintenance of the MicroGuard® 586 Rated Capacity Indicator/Limiter System (hereinafter referred to as "the system"). Please make sure to read, understand, and follow the contents and instructions contained within this manual. The operator will then have a clear indication of rated capacity, approach to overload, and two-block conditions.

**IMPORTANT!**  
**IMPROPER INSTALLATION OF THIS SYSTEM CAN RESULT IN SYSTEM MALFUNCTION!**

# System Description

The system includes a computer, an operator's display console, an extension reel, and various cables and sensors; and is designed to measure and display load weight, calculate and display maximum capacity and percent of rated capacity, display code configuration numbers, and warn of an approaching overload or two-block condition for each crane configuration.



The **computer assembly** provides all of the functions necessary to read the system sensors, work out computations, and control the disconnect functions. In order to reliably calculate crane parameters, such as load and rated capacity, and interpret the crane capacity chart and code configuration numbers, information defining the physical characteristics of the crane has been loaded during factory setup.

Two **hydraulic pressure sensors**, housed in the computer assembly, measure the pressure in both sides of the boom hoist cylinder. Other system sensors, mounted elsewhere on the crane, are connected to the computer via electrical cables.

The **reeling drum assembly** measures the extended length of the telescoping sections of the boom and enables calculation of crane radius, load weight, and percent rated capacity.

The **anti two-block switch** is used to signal a possible two-block condition.

The **reel-off cable** provides a path, from the boom head to the computer via the extension reel cable. This path is used to send a two-block signal to the computer.

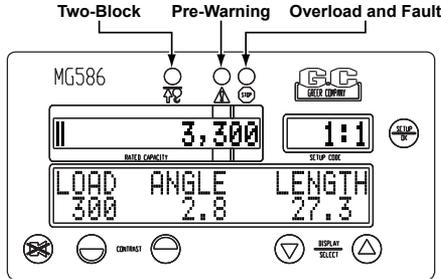
The **extension reel cable** provides a path to the computer for the two-block signal, the angle sensor, and the extension sensor.

The **boom angle sensor** is housed within the reeling drum assembly and measures the angle of the boom.

The operator's **display unit** translates data received from the computer and displays the actual load and percent of rated capacity in the display console windows. Visual and audible warnings and alarms activate when capacity limits are approached or exceeded, or when a two-block condition is encountered.

# Operator's Display Console

## Warning/Alarm Indicators

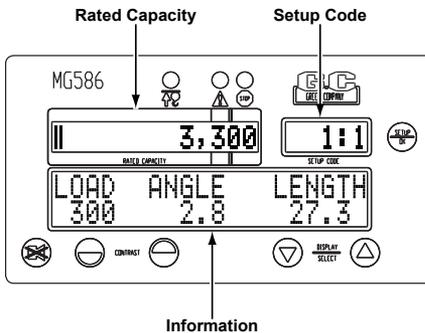


The red two-block lamp will illuminate when a two-block condition occurs (see "Two-Block Warning" on page 10).

The yellow pre-warning lamp will illuminate at 90% of rated capacity (see "Approaching Overload" on page 9).

When the load reaches or exceeds 100% of rated capacity, the red overload warning lamp will illuminate along with the yellow pre-warning lamp (see "Maximum Capacity and Overload" on page 10).

## Display Windows

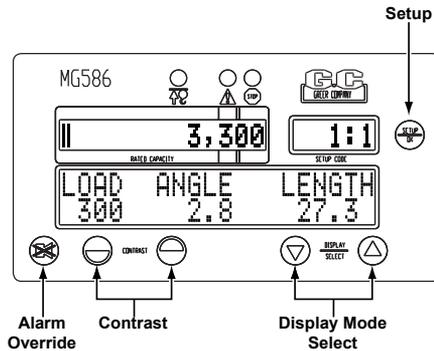


The current rated capacity for the crane in the current configuration will be displayed in the rated capacity window as well as the percent of rated capacity shown as a meter which progresses to the right as the load increases (see "Normal Operation" on page 8).

The setup codes are shown in the setup code window, as well as the parts-of-line, and the stowed jib option if available (see "Configuration Selection" on page 7).

The information window shows crane specific information regarding boom length, boom angle, and working radius, along with the load on hook. In addition, information regarding any warnings or alarms will be displayed in this window. If the system has any internal faults, it will display “!WARNING! SYSTEM FAULT” in the information window. The specific fault messages can be viewed by pressing the **UP ARROW** or **DOWN ARROW** key [see “System Fault Messages” on page A-1].

## Push Buttons



The **SETUP** key enables the operator to configure the system to match the actual setup of the crane. Codes are present for:

- stowed jib attachments; if no stowed options are available, this code will not appear
- crane configuration
- number of parts-of-line

The **ALARM OVERRIDE** key is used to disable the audible warning and to override the function kick-out for the current alarm condition.

The **CONTRAST** keys are used to adjust the lightness or darkness of the display area.

The **DISPLAY MODE/SELECT** keys are used to switch to different display formats showing various combinations of boom angle, boom length, and radius. They can also be used as an **UP ARROW** or **DOWN ARROW** key to scroll through menu selections.

# System Calibration

## Why Calibrate the System?

The system is pre-calibrated at the factory to set the extension and angle sensors at zero. However, the settings for length and angle are left blank because these must be entered on the crane to ensure accuracy.

In order for the computer to accurately measure the length and angle of the boom, we must enter accurate start and stop points for it to measure from and to. To accomplish this, the system is equipped with a calibration routine that operates through the system display console. The calibration procedure provides a means of ensuring that the sensors, cables, and hydraulic connection are correctly installed, positioned, and adjusted following system installation or parts replacement.

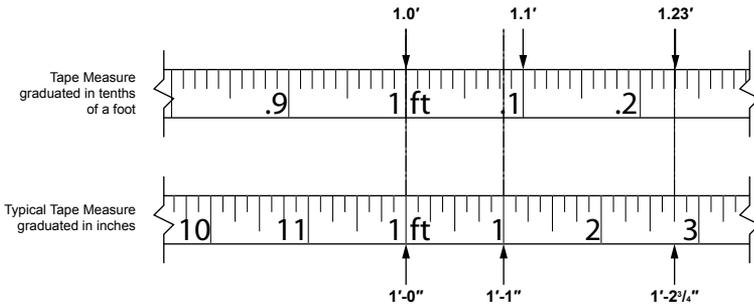
It is important that each step of this procedure is properly followed for the system to accurately provide load, rated capacity, warnings, and kick-out functions.

### **⚠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

- 1/4" nut driver or T15 Torx driver
- Digital or bubble level calibrated and accurate to 0.1° at level
- 100" measuring tape - fiber type graduated in tenths of feet



Note: The computer calculates measurements in feet and tenths of a foot, so having the correct measure will facilitate entering measurements.

- Digital volt/Ohm Meter capable of measurements to three decimal places

Note: When the installation is complete and all wiring is in place a voltage check should be performed to ensure the system is in proper working order. Refer to “Extension Reel Voltage Check” on page A-5.

### Adjusting the Sensors

1. Position the crane on firm and level ground with the outriggers properly extended and set.
2. Fully retract the boom.
3. Position the level on the boom and adjust the boom until the level reads 0°.
4. Remove the cover from the extension reel to expose the extension and angle sensors.

### Extension Cable Guides

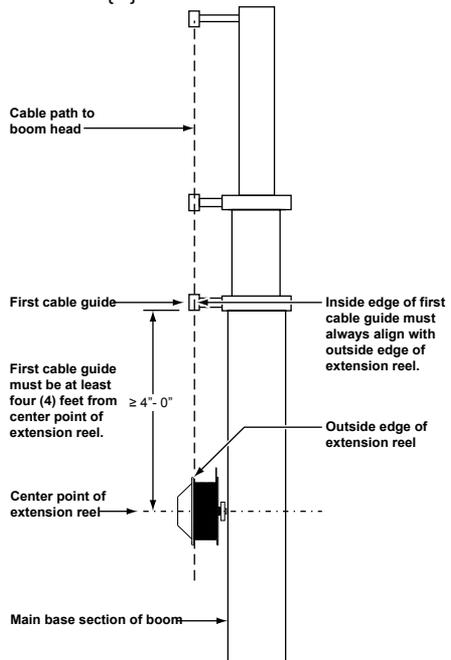
Cable guides must be used to achieve proper placement of the first roller guide.

Cable guides maintain the position of the cable, ensuring a controlled path to the boom head.

The distance between the first cable guide and the center point of the extension reel must be a minimum of four (4) feet.

The inside edge of the first cable guide must always align with the outside edge of the extension reel.

Passage of the cable from the extension reel through the cable guides to the tie-off post on the boom head may form a straight line parallel to the boom, as shown, or may curve toward the boom depending on the placement of the cable guides in the latter segments of the crane.



## Installing the Reel-Off Cable

### IMPORTANT!

**THE REEL-OFF CABLE MUST BE PROPERLY PRE-TENSIONED. THIS PROCEDURE KEEPS THE CABLE TAUT AT ALL TIMES, WITH CONTROLLED, STEADY EXIT FROM THE EXTENSION REEL.**

Follow the steps below:

#### Pre-Tension Steps

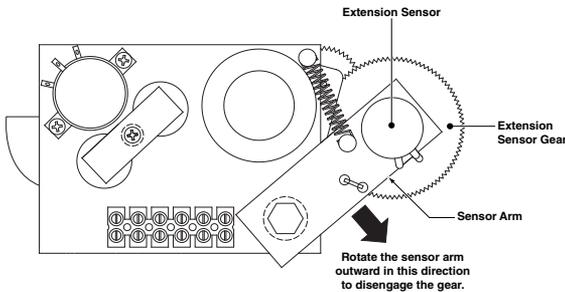
1. Fully retract the boom.
2. Slowly rotate the Extension Reel clockwise until a “click” is heard, indicating that the clutch inside the Reel is engaged.
3. Turn the Extension Reel counterclockwise for five (5) complete rotations.

Note: A temporary marker placed on the Extension Reel can facilitate the rotation count.

Pre-Tension is complete.

## Adjusting the Extension Sensor

1. With the level on the boom reading  $0^\circ$ , rotate the extension sensor arm outward to disengage the gear.



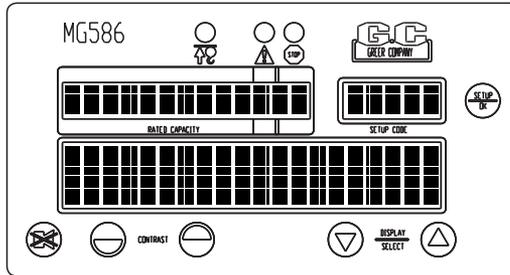
2. Rotate the extension sensor clockwise until the end of the pot is reached. Then, continue to rotate (applying more force) to cause the clutch to slip (this is usually identified by a click).
3. Rotate the sensor exactly  $1/2$  turn counter-clockwise to establish a proper voltage signal. Refer to “Extension Reel Voltage Check” on page 4.
4. With the boom still level, measure the voltage of the angle sensor, refer to “Extension Reel Voltage Check” on page 4.

Note: This check should be performed on older model cranes in the event the sensor has been removed and reinstalled, or repositioned incorrectly.

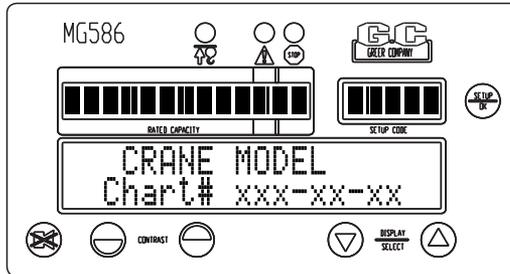
## System Self-Test

When the system is turned on, it goes through a brief self-testing process.

All three alarm indicators will light up, all display windows will appear black, and the audible alarm will sound.



The information display will then show the crane model and capacity chart number for the system configured.

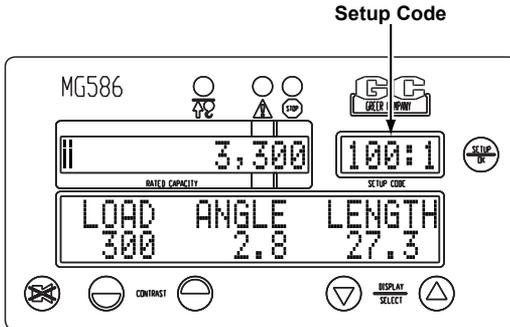


## Crane Setup

Once the system has completed the self-testing process, you must use the system setup to properly configure the system for operation. The system setup must match the configuration of the crane in order to indicate the correct hook load and lifting capacity of the crane.

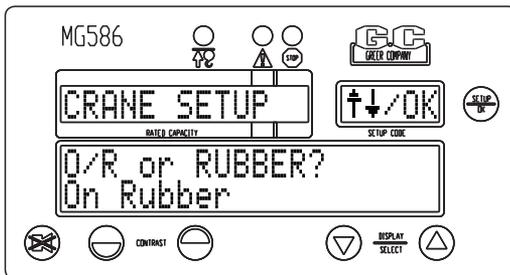
Press the **SETUP/OK** key to enter setup mode.

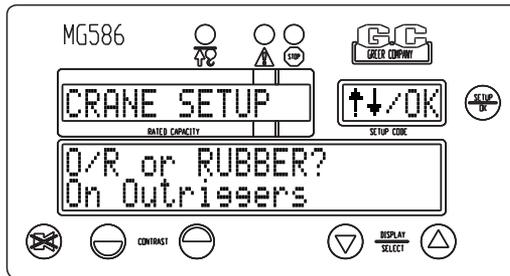
Note: Setup mode can be exited at any time by pressing the **CANCEL** key.



## Chassis Option

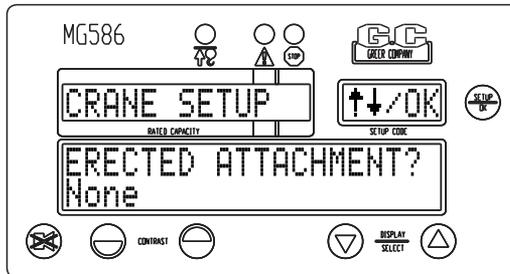
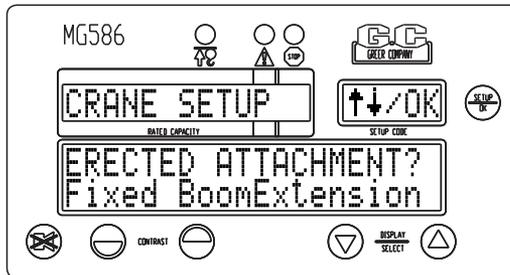
Upon entering setup mode, you will first choose if the crane is on tires or outriggers. The system will prompt you to select the proper configuration. Press either the **UP ARROW** or **DOWN ARROW** key to change the display to "On Rubber" (for tires) or "On Outriggers". Once the proper configuration is displayed, press the **SETUP/OK** key.





## Erected Attachments

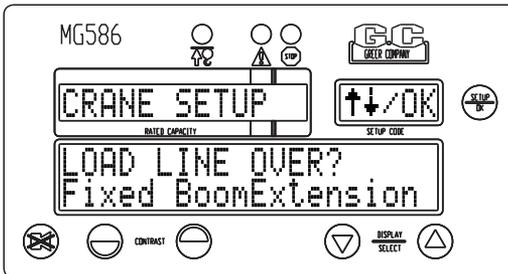
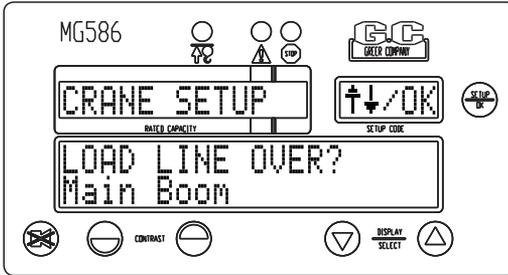
Next you will choose if any attachments are erected on the main boom. There are up to six options to select from. The system will prompt you to select the proper configuration. Press either the **UP ARROW** or **DOWN ARROW** key to change the display to show the desired attachment, or if no attachment is used select "None". Once the proper configuration is displayed, press the **SETUP/OK** key.



## Load Line Over

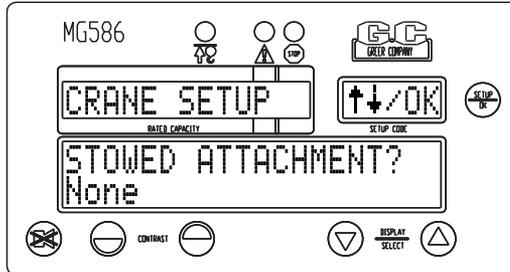
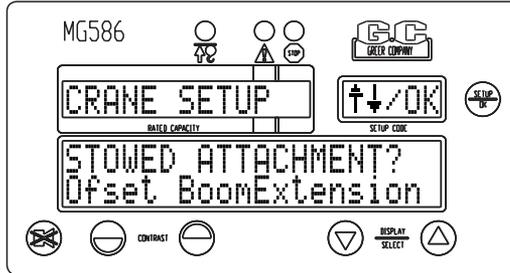
Next you will choose where the line will be loaded over. The system will prompt you to select the proper configuration. Press either the **UP ARROW** or **DOWN ARROW** key to change the display to show the desired option. Once the proper configuration is displayed, press the **SETUP/OK** key.

Note: If no erected attachment has been selected ("None" in the previous step), only the main boom can be selected. However, if an attachment has been selected, you may still select the main boom.



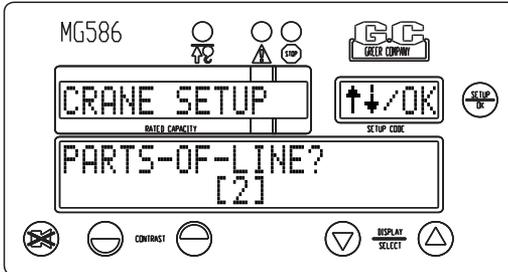
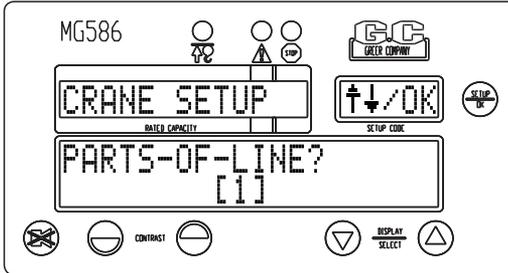
## Stowed Attachments

Next you will choose if there are any attachments stowed on the main boom. The system will prompt you to select the proper configuration. Press either the **UP ARROW** or **DOWN ARROW** key to change the display to show the desired attachment, or if no attachment is stowed select "None". Once the proper configuration is displayed, press the **SETUP/OK** key.



## Parts-of-Line

Next you will select the number of part-of-line to be used. Some configuration allow only a single part-of-line to be used, in this case, this option will be skipped and the number of parts-of-line will be automatically set to one (1). Press either the **UP ARROW** or **DOWN ARROW** key to change the number of parts-of-line. Once the proper number is displayed, press the **SETUP/OK** key.



Once the parts-of-line has been entered, the system will enter normal operation mode. A code will be displayed in the Setup Code window. The first number is the crane configuration [see separate Code Sheet]. The next number is the parts-of-line being used.

To change the parts-of-line or any other configuration option, press the **SETUP/OK** key to enter setup mode at any time.

## System Maintenance

It is recommended that the following checks be performed on the system prior to each shift or crane operation to help prevent errors or malfunctions:

### Crane configuration and system setup

The crane configuration defines the physical setup of the crane. The system setup defines the load parameters for each configuration. The data for these calculations are loaded in the capacity chart and installed in the crane's computer prior to factory shipment.

#### IMPORTANT!

**ENSURE THAT THE CONFIGURATION CODE NUMBER IN THE DISPLAY CONSOLE WINDOW IDENTIFIES THE CRANE'S CONFIGURATION FOR THE CURRENT OPERATION. IF IN DOUBT, SELECT THE CODE NUMBER AGAIN FOLLOWING THE STEPS OUTLINED IN THE SECTION ON CRANE OPTIONS AND SETUP CODES.**

### Extension reel, Reel-off cable to boom tip, extension reel cable to computer

The extension reel houses the reel-off cable to the boom tip, a cable from the extension reel to the computer, and the boom angle sensor. The extension reel provides the following signals that are sent directly to the computer via the extension reel computer cable:

- The **boom extension signal** is generated within the extension reel, and controlled by the reel-off cable, as the boom is extended or retracted. The extension reel measures the boom extension and provides a signal, which enables the computer to calculate the operating radius of the crane, the weight of the actual load, and the percent of rated capacity.
- The **two-block signal** is transmitted from the boom head, through the reel-off cable, to the extension reel and the extension reel cable to the computer. This signal becomes active when the anti-two-block switch opens, indicating a two-block condition. When this signal reaches the computer, it causes an immediate display of a flashing light and an audible alarm on the operator's display console, and the motion cutouts are activated.
- The **boom angle signal** is generated within the extension reel, and designed to measure the angle of the boom relative to the horizon.
- The **reel-off cable** (extension cable) extends from the extension reel to the boom tip. The reel-off cable provides an electrical path for passage of the two-block warning signal from the boom tip to the computer cable in the extension reel. Check the following:
  - Carefully examine the reel-off cable for damage.

- Fully telescope the boom in and out. As you extend or retract the boom, ensure that the reel-off cable is smoothly fed on and off the extension reel without drooping along the boom or jumping, especially as the boom is retracted.

### **⚠WARNING**

**THE EXTENSION REEL EXTENSION SETTING IS FACTORY PRESET. IF THE REEL-OFF CABLE HAS BEEN BROKEN, CALL YOUR SERVICE REPRESENTATIVE. DO NOT ATTEMPT TO REPAIR A BREAK IN THE REEL-OFF CABLE WITHOUT CONSULTING WITH YOUR SERVICE REPRESENTATIVE.**

## **Hydraulic connections**

The two hydraulic pressure sensors, mounted in the computer, measure the pressure within each side of the boom hoist cylinder. The pressure sensors are connected to the boom hoist cylinder valve block by two flexible hoses. Both hoses are subject to the full hydraulic pressure contained within the upper and lower sides of the boom hoist cylinder.

- Ensure that there are no hydraulic leaks at either connection end of both hoses. Check for signs of wear or damage along the length of each hose.

## **Anti-two-block weight**

- Ensure that the anti-two-block weight and its parts are undamaged, in proper position, and correctly connected.
- Check the chain on the anti-two-block weight for damage and stress, ensuring that there are no open links in the chain.
- Ensure that the chain is securely attached with screw pin and shackle to the narrow vertical connector projecting from the base of the anti-two-block switch.
- Ensure that the anti-two-block weight has been installed around one part of the load line.

## **Anti-two-block switch**

- Ensure that the anti-two-block switch is secure on its mounting post with safety pin inserted through the end of the mounting post and locked into position.
- Ensure that the switch cable is secured to the strain relief thimble and that the thimble is on the mounting post behind the switch.
- Ensure that all electrical cables and connectors are free from damage and correctly connected. See anti-two-block switch installation.

## Checking the two-block warning signals and cutout of machine motions

The following test activates the anti-two-block warning signals and the valve controlling cut out of crane motions to ensure proper operation. No other pre-existing alarm conditions may be active when performing this test.

### **⚠WARNING**

**BEFORE PERFORMING THIS TEST, TURN THE CRANE POWER OFF AND THEN ON AGAIN TO ENSURE THAT AN EXISTING TWO-BLOCK WARNING AND/OR MOTION CUT HAS NOT BEEN OVERRIDDEN. DURING THIS TEST, DO NOT PRESS THE ALARM OVERRIDE KEY TO DISABLE THE AUDIBLE ALARM. DURING THIS TEST, DO NOT WINCH THE HOOK BLOCK INTO THE BOOM TIP, IN CASE THE SYSTEM DOES NOT CUT THE CRANE MOTIONS.**

1. Slowly raise the hook block until it lifts the anti-two-block weight and deactivates the anti-two-block switch.

NOTE: This action should cut out the winch up motion as well as the boom down, and boom extend motions. Audible and visual alarms on the operator's display console should become active.

2. Lower the hook block by winching down.

NOTE: This action should disable the audible and visual alarms on the operator's display console and activate the boom motions.

## Computer Cable

The extension reel cable to the computer acts as a channel for passage of signals to the system computer.

- Ensure that the cable exiting from the extension reel and running down the boom and around its pivot to the computer is free from damage. If this cable has been damaged in any way, it should be carefully tested and may need to be replaced to ensure accurate transmission of signals.

## Load Test

The best way to identify a possible problem in the system is to do a load test. The accuracy of the load test is dependent upon accurate operation of all of the sensors in the system and the correct code number setting for the configuration of the crane. If no stowed deduct configuration is provided by the system, perform this test with stowed attachments removed.

It is recommended that a load test be performed monthly.

### **⚠WARNING**

**ENSURE THAT THE CONFIGURATION CODE NUMBER IN THE DISPLAY CONSOLE WINDOW IDENTIFIES THE CRANE CONFIGURATION FOR THE CURRENT OPERATION. IF IN DOUBT, SELECT THE CODE NUMBER AGAIN FOLLOWING THE STEPS OUTLINED IN THE CRANE OPTIONS AND SETUP CODES.**

### Load Test Steps

3. Select a known weight of at least 20% of maximum rated capacity.
4. Calculate the weight of the total load, including the slings and hook block.
5. Lift the weight, and record the load weight displayed on the display console. The load weight on the console should be between 0 to 10% higher than the load that was lifted. EXAMPLE: When lifting 5000 lbs., the display console window should read between 5000 and 5500 lbs.

### **⚠WARNING**

**A LOAD READING ON THE DISPLAY CONSOLE THAT FALLS OUTSIDE OF A 10% RANGE MAY INDICATE A SENSOR PROBLEM. CALL YOUR SERVICE REPRESENTATIVE.**

# Appendix A - Troubleshooting

## System Fault Messages

When the system detects a fault, the red warning lamp will illuminate and the message, "WARNING: SYSTEM FAULT" will flash on the display. When a more serious fault is detected, the message, "WARNING: SYSTEM OUT OF SERVICE" will flash.

To determine the fault, press the **UP ARROW** or **DOWN ARROW** key once or twice. The information window will display the related fault message. This message will appear for up to 20 seconds before the display returns to its normal display mode. If the **UP ARROW** or **DOWN ARROW** key is pressed before the 20 seconds have elapsed, the display will automatically return to its normal display mode.

Fault messages that can appear on the display and the required corrective action follow:

Fault Message	Corrective Action
Reselect Crane Setup	This message indicates that there is an error in the crane setup selection, or there is an internal computer fault. Reselect the correct crane setup code; the error should correct itself. If not, replace the computer. Refer to "Computer Replacement" on page A-3.
Check Extension	This message indicates a problem with the boom extension sensor. <ol style="list-style-type: none"><li>1. Inspect/check cabling and connections from computer to extension reel on the side of the boom.</li><li>2. Inspect/check the extension reel-off cable for damage.</li><li>3. Remove the extension reel cover to verify operation of the extension reel. Refer to "Extension Reel Voltage Checks" on page A-4.</li></ol>
Check Angle	This message indicates a problem with the boom angle sensor. <ol style="list-style-type: none"><li>1. Inspect/check cabling and connections from computer to extension reel on the side of the boom.</li><li>2. Remove the extension reel cover to verify operation of the extension reel. Refer to "Extension Reel Voltage Checks" on page A-4.</li></ol>

<b>Fault Message</b>	<b>Corrective Action</b>
Check ATB Wiring	<p>This message indicates an anti two-block wiring problem usually due to an electrical short to the boom or a damaged cable.</p> <ol style="list-style-type: none"> <li>1. Inspect/check cabling and connections from computer to extension reel on the side of the boom.</li> <li>2. Inspect/check reel-off cable from extension reel to boom tip and Anti Two-Block switch connections.</li> <li>3. Verify electrical signals for the two-block drive and signal within the extension reel. Refer to "Extension Reel Voltage Checks" on page A-4.</li> </ol>
Check FKO	<p>This message indicates a Function Kick-Out wiring problem that is usually caused by a fuse or crane circuit breaker failure. Remove the computer unit lid and check the 10A fuse.</p>
Replace System Chip	<p>This message indicates a problem with the system chip fitted inside the computer.</p> <p>Remove the computer lid and replace the system chip.</p> <p>Note: Use only proper chip insertion and removal tools to perform this operation. Never use a screwdriver.</p>
Replace the Computer	<p>This message indicates an internal fault in the computer. In some cases, it may not be necessary to replace the computer unit.</p> <ol style="list-style-type: none"> <li>1. Remove the computer unit lid and check the Internal LED status indicators located on the computer circuit board.</li> <li>2. Refer to "Computer Internal Status Indicators" on page B-1.</li> </ol>

## Computer Replacement

To remove the computer unit:

1. Place the boom in its rest.
2. Turn off electrical power.
3. Disconnect all electrical connectors from/to the computer.
4. Disconnect hydraulic hose connections from/to the computer.
5. Remove computer from mounting.

### **⚠WARNING**

**THE HYDRAULIC HOSES CONNECT DIRECTLY TO THE BOOM HOIST CYLINDER. DO NOT OPERATE THE CRANE UNLESS THE COMPUTER HAS BEEN PROPERLY REPLACED OR THE HYDRAULIC CONNECTIONS ARE PROPERLY CAPPED.**

To install a new computer unit:

1. Mount the computer unit.
2. Ensure that a new system chip has been supplied with the computer.  
  
Note: Do not use the system chip from the original computer unit.
3. Ensure that all electrical power is turned off.
4. Connect all electrical connectors to the computer unit.
5. Connect hydraulic hoses to the computer pressure ports. (Green is base-side and red is rod-side of the boom hoist cylinder.)
6. Follow the system setup instructions in this manual.

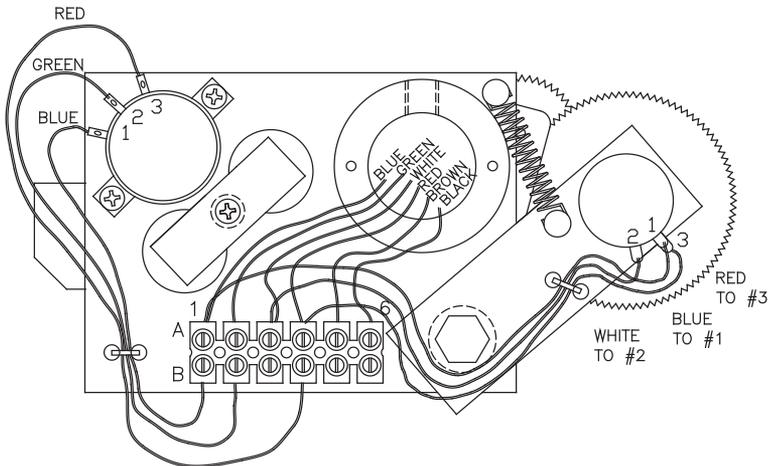
Note: If more than one fault is present, the most serious fault will appear first and must be resolved first. When the first fault is corrected, other existing faults will be displayed and must be resolved one at a time until no further fault codes are listed.

Fault messages should be reported to the Service Representative along with any noticeable damage done during System installation or routine checks. Please refer to Routine Checks and Maintenance in this manual.

## Extension Reel Voltage Checks

If 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. Measure all voltages with a digital voltmeter set to DC volts range.

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
EXTENSION SENSOR OUTPUT	0 ft. (0m) FULL 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
TWI-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% [1/10th] of sensor drive voltage with boom at zero degrees.

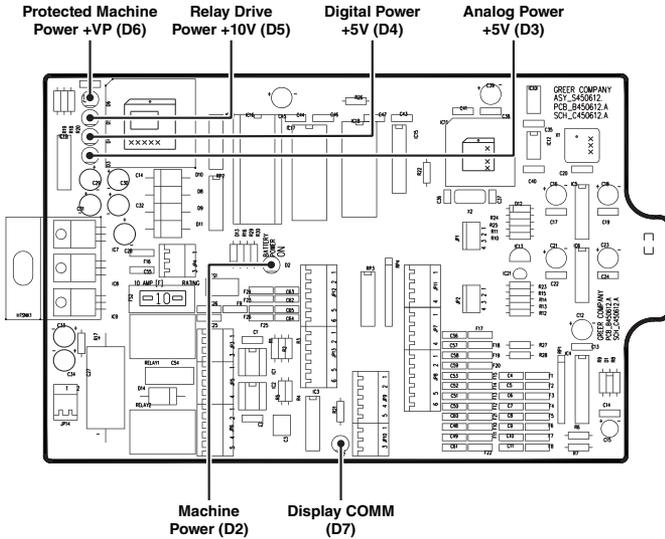
Extension sensor is set to 5% [1/20th] of sensor drive voltage with boom fully retracted.

# Appendix B - Computer Troubleshooting

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

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

Power Indicator State	Corrective Action
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, and then use the following chart to help decide the course of action.

Communication Indicator Indications At Power On	ACTION
From the moment the system 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 and IC2.
From the moment the system power is applied, the COMM indicator does not illuminate. The display console, which never goes to normal, continually reads: "No Communication with MicroGuard."	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.

## Start-up Problems

Condition	Corrective Action
Display unit lights and alarms are flashing; the computer unit sounds as if it is buzzing.	<ul style="list-style-type: none"> <li>• Make sure the PTO is fully engaged.</li> </ul>
During system setup, it is not possible to adjust the angle sensor. The display shows "---".	<ul style="list-style-type: none"> <li>• Make sure the extension reel is installed the correct way up.</li> <li>• Make sure the extension reel signal cable is correctly connected to the computer unit.</li> <li>• Check the extension reel voltages. Refer to "Extension Reel Voltage Checks" on page A-4.</li> </ul>
A few seconds after power up, the display shows "No communications with MicroGuard®" in the load display window.	<ul style="list-style-type: none"> <li>• Computer is possibly not running.</li> <li>• Check that the system program chip is correctly inserted.</li> <li>• Check that all LEDs within the computer are lit and that the communications LED (D6) is flashing; if not replace system chip.</li> <li>• Check the display cable for damage.</li> </ul>



**COMMENTS?**  
**SUGGESTIONS?**  
**CORRECTIONS?**

Send your feedback to:

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Please include your name, company, and crane type.



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