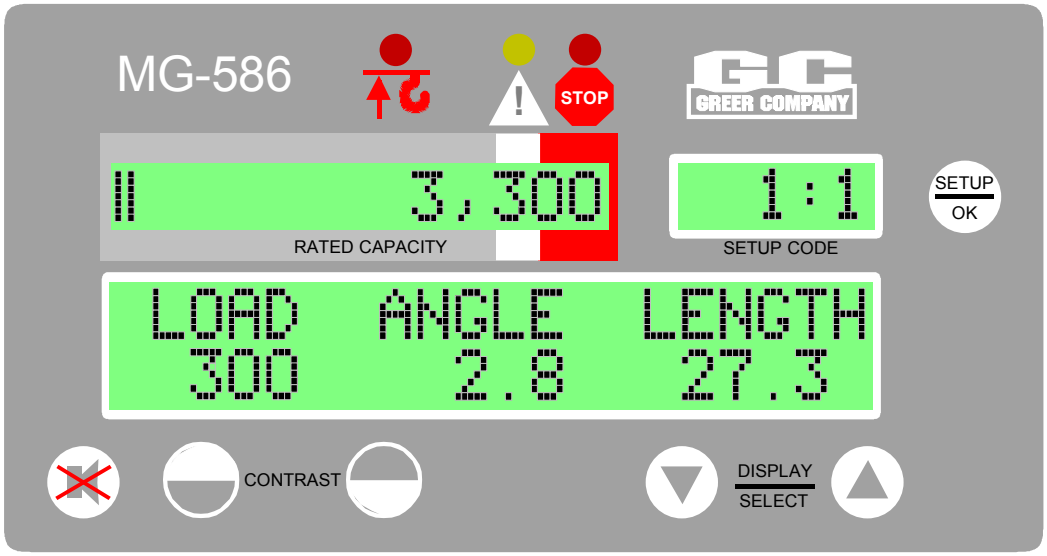
# MicroGuard® 586

***Rated Capacity Indicator/Limiter System***

***Industrial carrydeck cranes***




# System Setup

# MicroGuard® 586

***Rated Capacity Indicator/Limiter System***
***Industrial carrydeck cranes***

## System Setup

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# System Description

The MicroGuard® 586 Rated Capacity Indicator/Limiter System for carrydeck cranes is a visual and audible alert system used to assist the crane operator in safe crane operation. This system, which is designed for use with small cranes and boom trucks, measures and displays essential data, identifies load weight, calculates and displays maximum capacity and percent rated capacity, displays code configuration numbers, and warns of an approaching overload or two-block condition for each crane configuration.

The MicroGuard® 586 System is simple to set up and operate.This manual describes the System Setup. Please refer to the MicroGuard® 586 Operations manual for carrydeck cranes, which details the System Operation.

Providing the contents and instructions contained within this manual are carefully read, understood, and followed, the operator will have a clear indication of the correct Setup of this system. Improper setup can result in system malfunction.


The MicroGuard® 586 System is designed for use as an aid to safe crane operation. Do not use this system as a substitute for the experienced crane operator who has been trained in crane operation and related safety guidelines, or for crane capacity information and guidelines supplied by the crane manufacturer.

# System Setup

The MG®-586 System uses a setup mode that operates through the system display console. The setup mode provides a means of ensuring that the system sensors are correctly positioned and adjusted following system installation or parts replacement.

The Setup procedure assumes that the installation of system components, cabling, and hydraulic connections have been successfully installed and checked. 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 for the system to accurately provide load, rated capacity, warnings, and kickout functions.


**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:**

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. It is recommended that the crane be configured **without** a stowed or erected jib (bare boom) and reeved with a single part-of-line.

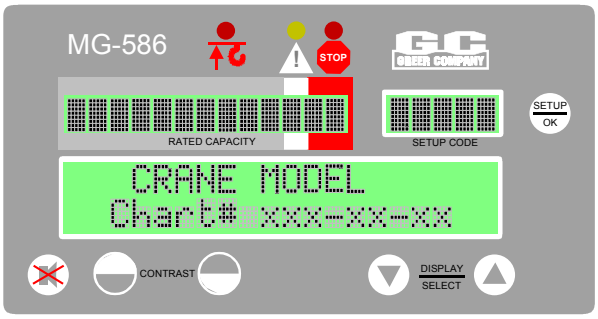
## Accessing the Extension Reel Sensors

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

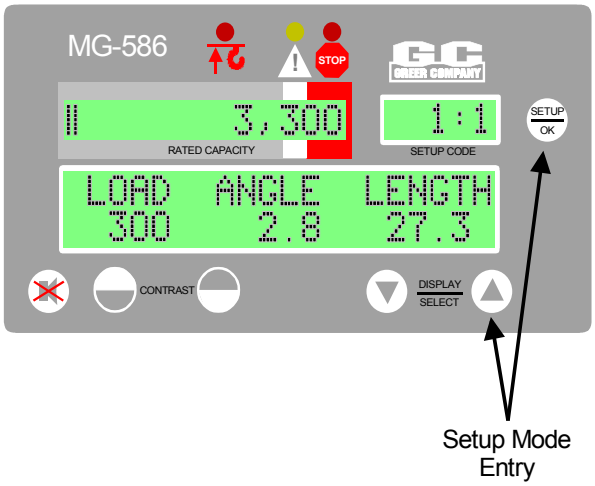
## Entering the Setup Mode

The display will identify the steps for each setup operation, as required by the user. During the setup procedure, the display console should be placed in a position that allows easy viewing while adjustments are being made within the boom extension reel, and allows for operation of the display buttons.

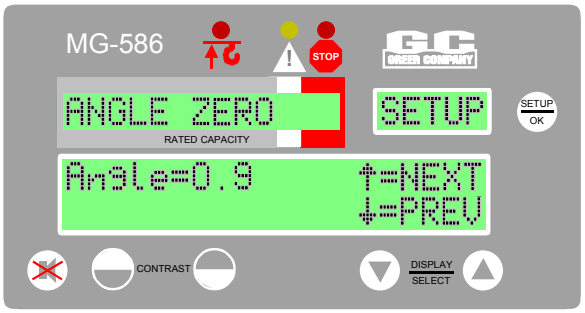
The setup mode is activated by the following procedure:




1. *Make sure machine power is "OFF."*
2. *Turn "ON" machine power.*
3. *During self-test, check that the correct machine model and capacity chart number is displayed on the console.*




4. *Hold down "Setup" and the "UP" arrow buttons on the display for 5 seconds at any time to start the self-test.*




5. *Release the buttons.*
6. *If the display does not indicate, "SETUP" in the SETUP CODE window, check that the System is in the NORMAL working mode (NOT the configuration mode) with no error codes.*

## Extension Cable Guides

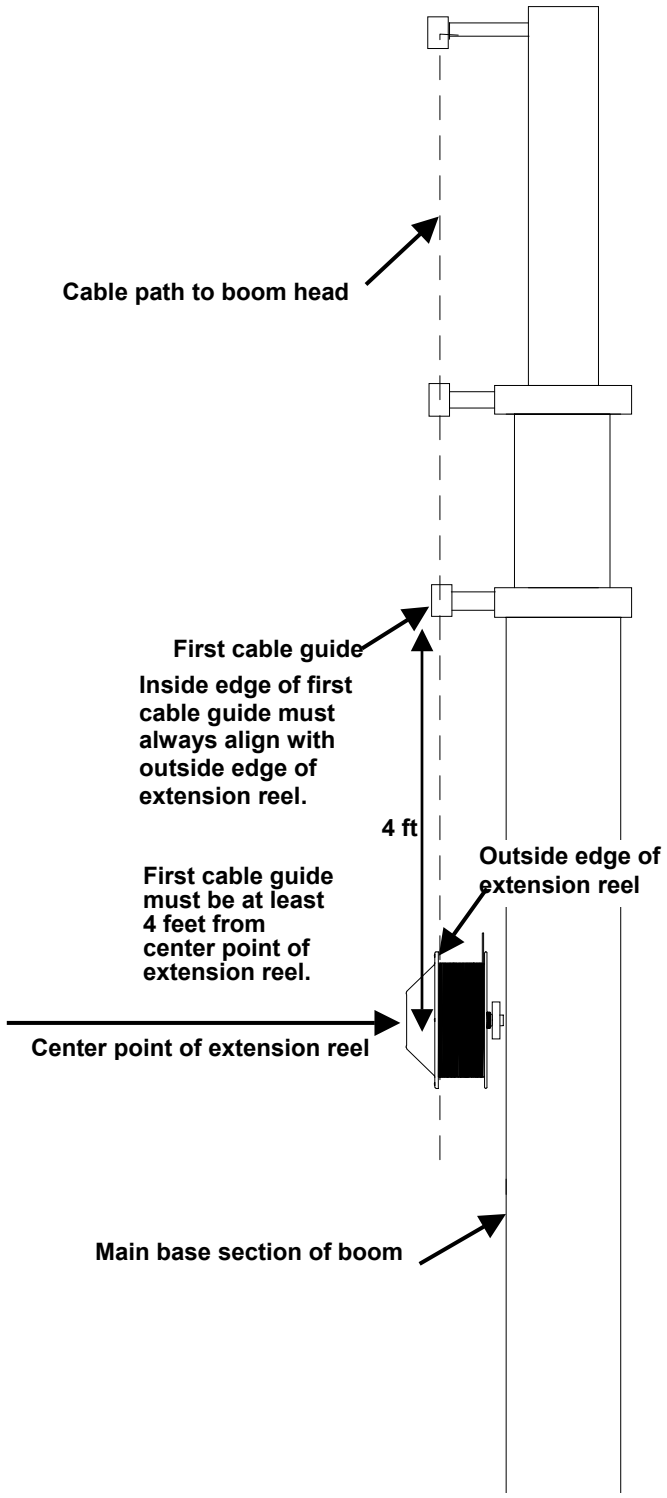
*Cable Guides* must be used to achieve proper placement of the first roller guide.

*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 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

**Warning:** 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

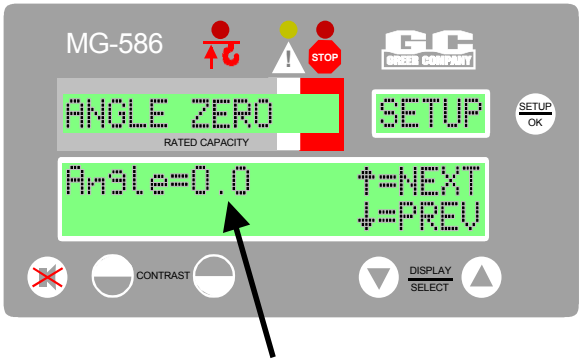
1. Fully retract the boom.
2. Slowly rotate the Extension Reel **clockwise** until a "**click**" is heard, indicating that the clutch inside the Reel is engaged.
3. Turn the Extension Reel counterclockwise for **five (5)** complete rotations.
4. A temporary marker placed on the Extension Reel can facilitate the rotation count.

Pre-Tension is complete.

## Boom Angle Sensor Zero

The Boom Angle Sensor is located within the Extension Reel. Remove the extension reel cover by removing all twelve screws in the lid.

The Angle Sensor is factory pre-calibrated and requires no adjustment other than setting the **mechanical zero.**

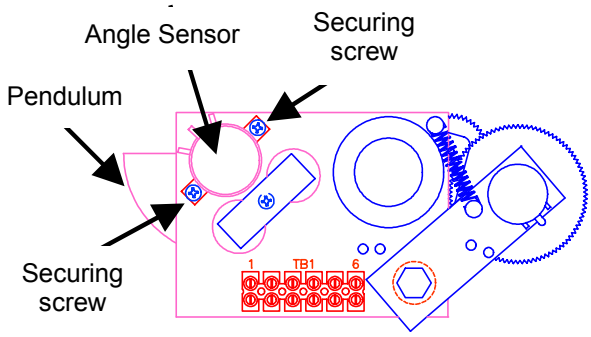



Make sure the boom is perfectly level, then adjust the Angle Sensor inside the Extension Reel to set this reading to "0.0".

### Setting the Mechanical Zero

1. *Fully retract the main boom and use an inclinometer or accurate 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 0 °.*

2. *The console displays the boom angle sensed by the angle sensor inside the extension reel. If the display reads "0.0 °," the angle sensor is correctly adjusted. If the display does not read 0.0 °, angle sensor adjustment is necessary.*




3. *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 during adjustment.**

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

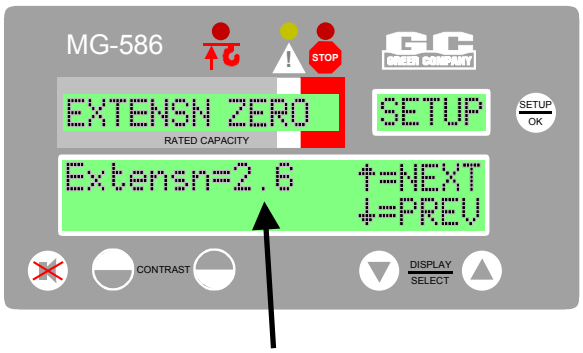
5. *Before continuing, it is recommended that the angle be checked against an accurate inclinometer. Boom up to a high angle, and using an inclinometer, check that the displayed angle matches the inclinometer reading within 0.2 °.*

6. *When finished, press ▲ to continue to the next setup step.*

## Boom Extension Sensor Zero

**Warning:** The EXTENSION SENSOR CLUTCH MUST BE ENGAGED PRIOR TO EXTENSION ZERO ADJUSTMENT (See page 8, Pre-Tension steps).

*The Extension Sensor must be mechanically adjusted for zero setting. The Boom Extension Sensor is located within the Extension Reel.*

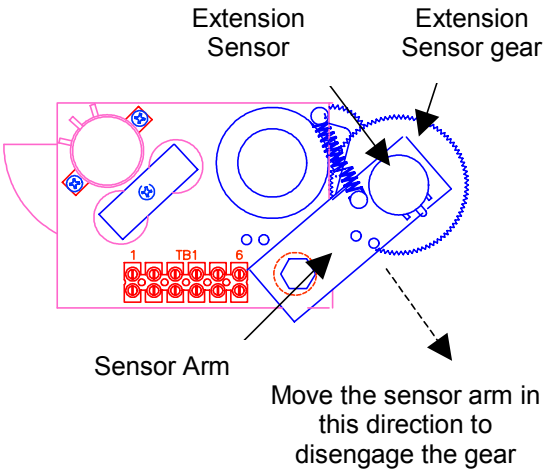



Make sure the boom is fully retracted, then adjust the Extension Sensor inside the Extension Reel to set this reading to "0.0".

1. *Fully retract the main boom and check that all boom sections are properly retracted.*

2. *The console displays the boom extension sensed by the extension sensor inside the extension reel. If the display reads "0.0 °," the extension sensor is correctly adjusted. If the display does not read 0.0 °, extension sensor adjustment is necessary.*

3. *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.*



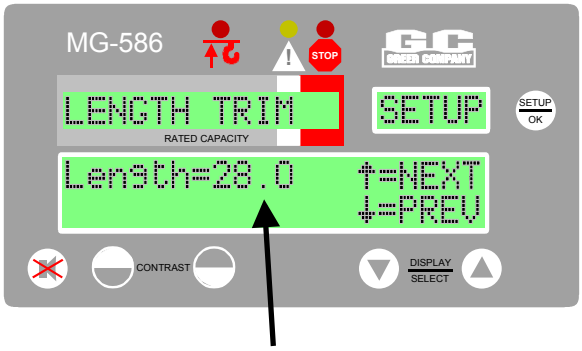

4. *Rotate the gear clockwise until the sensors clutch detent starts to click. At the next click, stop rotating the gear.*

5. *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.*

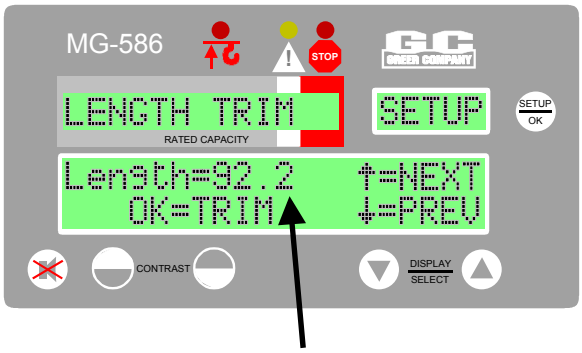
6. *Press ▲ to continue to next setup step.*

## Boom Length Trim

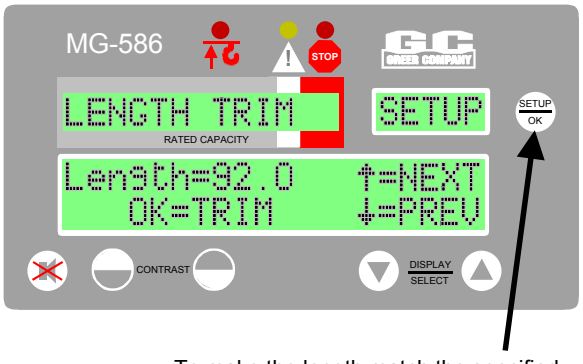
*The system is factory pre-calibrated for Extension and Length. A trim function is provided to allow for mechanical tolerances of the Extension Reel (drum).*




With the boom fully retracted, the displayed length should be the same as the specified retracted length for the crane.




With the boom fully extended, the displayed length should be the same as the specified fully extended length for the crane.




To make the length match the specified maximum length of the crane, press OK.

*With the boom still fully retracted, check that the displayed length is the same as the specified retracted length for the crane.*

1. *Boom up to 60 ° and then telescope the boom out to fully extended. Make sure that the boom goes out all of the way to fully extended.*

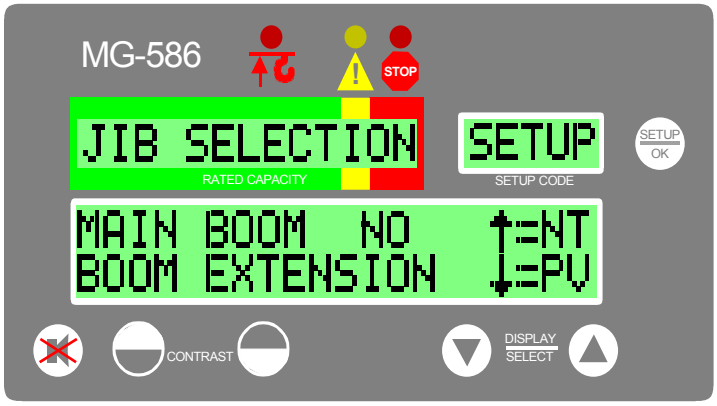
2. *Check that the displayed length is the same as the specified maximum boom length for the crane.*

3. *If the displayed length does not match the maximum boom length specified for the crane, press the SETUP/OK button. The system will automatically correct the length.*

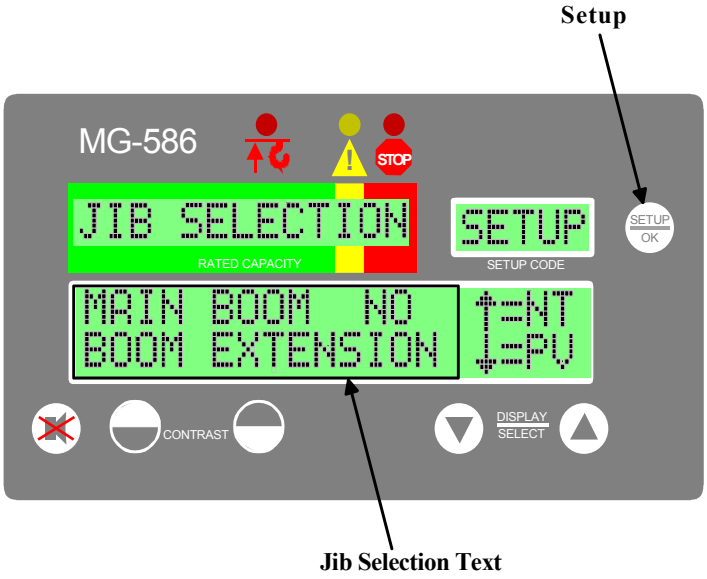
4. *If the displayed length does not match the maximum boom length specified for the crane, press the SETUP/OK button. The system will automatically correct the length.*

## Jib Selection Setup (Interlock)

*The displayed selection text differs for each model of crane; therefore, the displayed text may not exactly match the text in the images below. For clarification or for more details, please contact the Greer Company.*

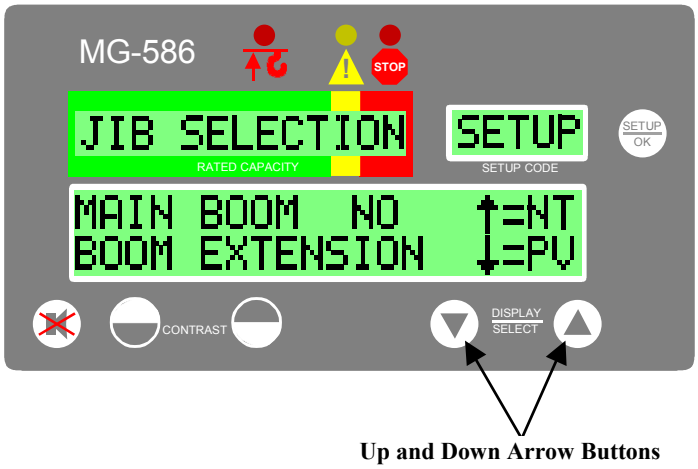



1. *Go to the JIB SELECTION screen.*

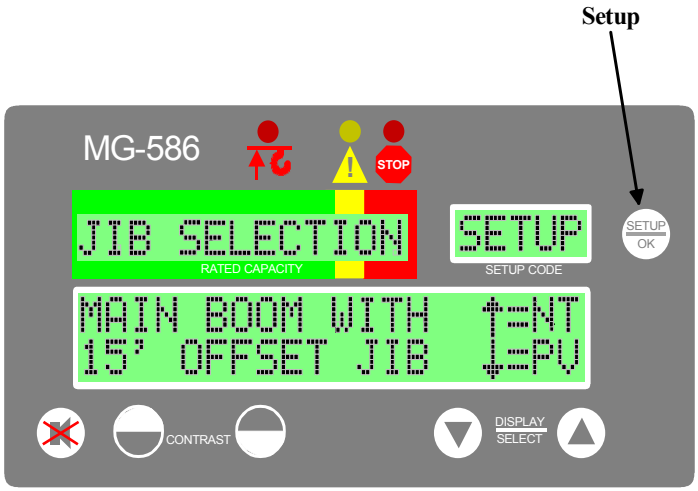



2. *Press the SETUP button to activate the Jib Selection Mode. Current jib selection text will flash or blink on the display.*

## Jib Selection Setup (Interlock) continued




3. *Use the UP and DOWN ARROW buttons to scroll through the available jib selections. Stop at the desired jib selection.*




4. *Press the SETUP button to select and lock-in the new jib selection. As soon as the selection is locked in, the selection text will stop flashing.*

## Completion

1. *When Setup is complete, press the UP ARROW button to exit the Setup Mode.*
2. *Replace the boom extension reel cover, ensuring that all 12 screws are fitted and evenly tightened.*

# System Care

We recommend that the System checks (1 -9) be carried out when using the MicroGuard® 586 Rated Capacity Indicator/Limiter System.

## 1 Routine Checks and Maintenance

**Items to Check before Each Shift or Crane Operation**

- Crane configuration and System setup
- Extension reel – reel-off cable to boom tip – Extension reel cable to computer
- Hydraulic connections
- The anti-two-block weight
- The anti-two-block switch
- Checking the two-block warning signals and cutout of machine motions

**MINIMUM MONTHLY CHECKS**

- Load test

## 2 Routine Checks and Maintenance

**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.

**WARNING**

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**.

**CHECK THE ABOVE OPERATIONS BEFORE EACH SHIFT OR CRANE OPERATION**

# 3 Routine Checks and Maintenance

**Extension Reel**

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.

- **Boom Extension Signal –** 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.
- **Two-Block Signal** – 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.
- **Boom Angle Signal –** is generated within the extension reel, and designed to measure the angle of the boom relative to the horizon.

**CHECK THE ABOVE OPERATIONS BEFORE EACH SHIFT OR CRANE OPERATION**

# 4 Routine Checks and Maintenance

## Reel-Off Cable

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 Points:**

- 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 telescoped in.

**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.

**Computer Cable**

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

**Check Points:**

- 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.

**CHECK THE ABOVE OPERATIONS BEFORE EACH SHIFT OR CRANE OPERATION**

## 5 Routine Checks and Maintenance

**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.

**Check Point:**

- 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.

## 6 Routine Checks and Maintenance

**The Anti-Two-Block Weight**

**Check Points:**

- 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.

## 7 Routine Checks and Maintenance

**The Anti-Two-Block Switch**

**Checkpoints:**

- 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.

**CHECK THE ABOVE OPERATIONS BEFORE EACH SHIFT OR CRANE OPERATION**

# 8 Routine Checks and Maintenance

**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** use the cancel alarm button to clear audible warnings or motion cuts.
- During this test, **do not** winch the hook block into the boom tip, in case the System does not cut the crane motions.

**TEST FOR OPERATION OF TWO-BLOCK WARNINGS**
**AND**
**CUTOUT OF CRANE MOTIONS**

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

Lower the hook block by winching down.

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

**CAUTION**

**CHECK THE ABOVE OPERATIONS BEFORE EACH SHIFT OR CRANE OPERATION.**

# 9 Routine Checks and Maintenance

**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**

1. Select a known weight of at least 20% of maximum rated capacity.
2. Calculate the weight of the total load, including the slings and hook block.
3. Lift the weight, and record the load weight displayed on the MicroGuard® 586 operator's 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 MicroGuard® 586 Operator's Display Console that falls outside of a 10% range may indicate a sensor problem. Call your Service Representative.

**MINIMUM SIX MONTHLY CHECK**

# Faults

## System Fault Messages

When the MicroGuard® 586 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" may flash.

To determine the nature of the problem, press the **UP** or **DOWN** arrow key once or twice, which will change the display mode and exhibit the related fault message. This message will appear for up to 20 seconds before the display returns to the normal display mode. If the **UP** or **DOWN** arrow key is pressed before the 20 seconds have elapsed, the display will also automatically return to the normal display mode.

### Possible Display Fault Messages with Required Corrective Action:

### 1. 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, as described in *Replace the Computer* on the next page.

### 2. Check Extension

This message indicates a problem with the boom extension sensor.

a. Inspect/check cabling and connections from computer to extension reel on the side of the boom.

b. Inspect/check the extension reel-off cable for damage.

c. Follow *Boom Extension Sensor Zero* and *Boom Length Trim* sections (pages 10 and 11 respectively) of this manual.

d. Remove the extension reel cover and use the *Extension Reel Voltage Checks* (page 24) in this manual to verify operation of the extension reel.

### 3. Check Angle

This message indicates a problem with the boom angle sensor.

a. Inspect/check cabling and connections from computer to extension reel on the side of the boom.

b. Follow the *Boom Angle Sensor Zero* section (page 9) in this manual.

c. Remove the extension reel cover and use the *Extension Reel Voltage Checks* section (page 24) in this manual to verify operation of the extension reel.

## 4. Check ATB Wiring

This message indicates an Anti Two-Block wiring problem usually due to an electrical short to the boom or a damaged cable.

a. Inspect/check cabling and connections from computer to extension reel on the side of the boom.

b. Inspect/check reel-off cable from extension reel to boom tip and Anti Two-Block switch connections.

c. Refer to the section, *Extension Reel Voltage Checks* (page 24) to verify electrical signals for the Two-Block drive and signal within the extension reel.

## 5. Check FKO

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.

## 6. Replace System Chip

This message indicates a problem with the System chip fitted inside the computer.

Remove the computer lid and replace the System chip.

Use only proper chip insertion and removal tools to perform this operation.
**Never** use a screwdriver.

## 7. Replace the Computer

This message indicates an internal fault in the computer. In some cases, it may not be necessary to replace the computer unit.

a. Remove the computer unit lid and check the Internal LED status indicators located on the computer circuit board.

b. Review the *Computer Internal Status Indicators* section (page 25) in this manual.

***To replace the computer unit:***

- *Place the boom in its rest.*
- *Turn off electrical power.*
- *Disconnect all electrical connectors from/to the computer.*
- *Disconnect hydraulic hose connections from/to the computer.*
- *Remove computer from mounting.*

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 fit a new computer unit:***

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

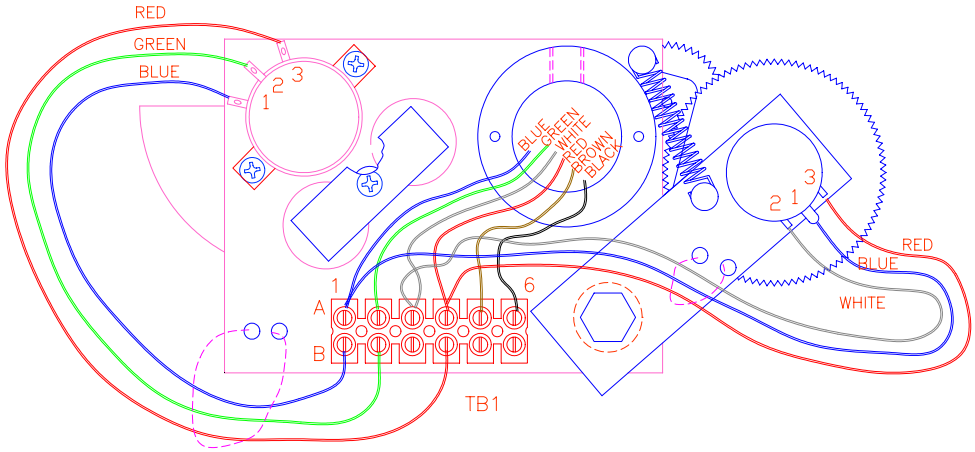
If more than one fault is present, the most serious fault will appear first and must be resolved first. When the first fault is corrected, other existing faults will be displayed and must be resolved one at a time until no further fault codes are listed.

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.

| 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$^{th}$) OF SENSOR DRIVE VOLTAGE WITH BOOM AT ZERO DEGREES.
- EXTENSION SENSOR IS SET TO 5% (1/20$^{th}$) OF SENSOR DRIVE VOLTAGE WITH BOOM FULLY RETRACTED.
- MEASURE ALL VOLTAGES WITH A DIGITAL VOLTMETER SET TO DC VOLTS RANGE.

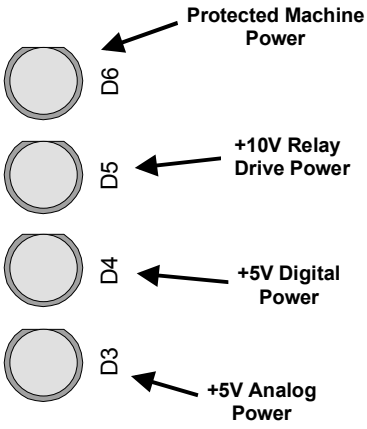
## Computer Internal Status Indicators

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).

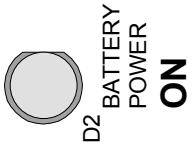
With the exception of the communications indicator, all indicators should be illuminated at the same brightness level with the system power on.

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

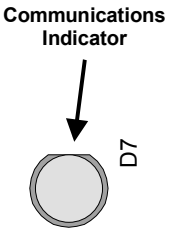



Power indicators D3 through D6 are located at the top left corner on the circuit board within the computer.

Power indicator D2 is located near to the center of the circuit board within the computer unit.




The communications indicator is located at the center of the bottom edge of the circuit board within the computer unit.




## 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, 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.<br>Check status indicators (D2 through D6).<br>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.<br>If the relays do click, replace Communication chips IC1, 2. |
| 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.<br>Is the display console connected?<br>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. |

# Troubleshooting

## Start-up Problems

- Display unit lights and alarms are flashing; the 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 "No communications with MicroGuard®" 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.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