

## 2.3 FAULT REPORTING AND FAULT CODES

SYSTEM FAULT CODES provide one of the most important ways to quickly locate and assess problems in the MicroGuard® System. Please review this section carefully.

Each time the system is turned on, it goes through a self-testing process lasting six seconds that automatically detects most faults in the system. During normal operation, a self-test can be initiated at any time by pressing the TEST button on the display console.

Many fault conditions are detected without a system self-test.

Faults detected in the system during the self-test, are indicated on the display console in the following ways:

- The RED OVERLOAD LAMP will illuminate.
- The AUDIBLE ALARM will sound.
- "WARNING SYSTEM FAULT!" will be displayed at the bottom of the text window.

Fault codes may be displayed on the display console. To view the codes, press and hold the TEST button and wait for the system to complete the self-test. Do not release the TEST button. Fault codes will now be displayed at the bottom of the text window for as long as the TEST button is held down.



**FAULTS A000 B0 C00 D00**

**FIGURE 2.2 FAULT CODE DISPLAY SHOWN IN LOWER PORTION OF TEXT DISPLAY WINDOW**

There are four groups of FAULT CODES: A,B,C & D. The function of these groups and a complete listing of each code is provided on the following pages.

**NOTE**

**ALWAYS INVESTIGATE FAULTS IN THE "B" AND "C" GROUPS BEFORE CONTINUING WITH "A" AND FINALLY "D" GROUP FAULTS.**

**2.3.1 GROUP “A” FAULT CODES**

GROUP “A” FAULT CODES REPRESENT FAULTS DETECTED FOR ANALOG SENSORS.

**NOTE:** CHECK AND REPAIR “B” AND “C” GROUP FAULTS **BEFORE** PROCEEDING WITH GROUP “A” FAULT FINDING SENSORS,

The following chart details all the available codes in the left column and the actions to take in the right column.

FAULT CODE	Swing Sensor	Boom Angle Sensor	Extension Sensor	Tdx 1 Rod Pressure	Tdx 0 Piston Pressure	ACTION
000	No Fault Found					NONE
001					X	Replace computer
002				X		
003				X	X	
004			X			Follow SECTION 6.4
005			X		X	Replace computer
006			X	X		
007			X	X	X	
008		X				Follow SECTIONS 6.6 through 6.8
009		X			X	Replace computer
010		X		X		
011		X		X	X	
012		X	X			Follow SECTION 6.3
013		X	X		X	Replace computer
014		X	X	X		
015		X	X	X	X	

**2.3.1 GROUP “A” FAULT CODES continued**

<b>FAULT CODE</b>	<b>Swing Sensor</b>	<b>Boom Angle Sensor</b>	<b>Extension Sensor</b>	<b>Tdx 1 Rod Pressure</b>	<b>Tdx 0 Piston Pressure</b>	<b>ACTION</b>
016	X					Follow SECTION 9
017	X				X	Replace computer
018	X			X		
019	X			X	X	
020	X		X			Follow SECTIONS 6.3, 6.4 & 9
021	X		X		X	Replace computer
022	X		X	X		
023	X		X	X	X	
024	X	X				Follow SECTIONS 6.7, 6.8 & 9
025	X	X			X	Replace computer
026	X	X		X		
027	X	X		X	X	
028	X	X	X			Follow SECTIONS 6.3, 6.4, 6.7, 6.8 & 9
029	X	X	X		X	Replace computer
030	X	X	X	X		
031	X	X	X	X	X	Follow SECTIONS 6.3, 6.4, 6.7, 6.8 & 9
032 & Higher	<p style="text-align: center;"><b>Internal Temperature Sensor Fault</b></p> <p style="text-align: center;"><b>Replace Computer Unit</b></p>					

**2.3.2 GROUP “B” FAULT CODES**

GROUP “B” FAULT CODES REPRESENT FAULTS DETECTED FOR INTERNAL ANALOG FUNCTIONS AND POWER FEEDS TO THE FUNCTION KICKOUT AND ANTI-TWO BLOCK SWITCHES.

The following chart details all of the available codes in the left column and the actions to take in the right column.

FAULT CODE	FKO POWER FEED	A2B POWER FEED	DISPLAY CONSOLE	ADC 2 INTERNAL FAULT	ADC 1 INTERNAL FAULT	ACTION
000	No Fault Found					NONE
001					X	Replace computer
002				X		
003				X	X	
004			X			
005			X		X	
006			X	X		
007			X	X	X	
008		X				See SECTION 7
009		X			X	Replace computer
010		X		X		
011		X		X	X	
012		X	X			
013		X	X		X	
014		X	X	X		
015		X	X	X	X	
016	X					Check crane circuit breakers, then See SECTION 3.5.1
017	X				X	Replace computer
018	X			X		
019	X			X	X	
020	X		X			
021	X		X		X	
022	X		X	X		
023	X		X	X	X	
024	X	X				Check crane circuit breakers, then See SECTION 3.5.1
025	X	X			X	Replace computer
026	X	X		X		
027	X	X		X	X	
028	X	X	X			
029	X	X	X		X	
030	X	X	X	X		
031	X	X	X	X	X	



**2.3.3 GROUP “C” FAULT CODES**

GROUP “C” FAULT CODES REPRESENT FAULTS DETECTED FOR INTERNAL COMPUTER MEMORIES.

The following chart details all the available codes in the left column and the actions to take in the right column.

FAULT CODE	SERIAL EEPROM	CRANE DATA	RAM	DUTY DATA	PROGRAM	ACTION
000	<b>No Fault Found</b>					<b>NONE</b>
001					<b>X</b>	<b>Replace system chip Follow SECTION 3.5.2</b>
002				<b>X</b>		
003				<b>X</b>	<b>X</b>	
004			<b>X</b>			<b>Replace computer</b>
005			<b>X</b>		<b>X</b>	<b>Replace system chip Follow SECTION 3.5.2</b>
006			<b>X</b>	<b>X</b>		
007			<b>X</b>	<b>X</b>	<b>X</b>	
008		<b>X</b>				<b>Reset crane data</b>
009		<b>X</b>			<b>X</b>	<b>Replace system chip Follow SECTION 3.5.2</b>
010		<b>X</b>		<b>X</b>		
011		<b>X</b>		<b>X</b>	<b>X</b>	
012		<b>X</b>	<b>X</b>			<b>Replace computer</b>
013		<b>X</b>	<b>X</b>		<b>X</b>	<b>Replace system chip Follow SECTION 3.5.2</b>
014		<b>X</b>	<b>X</b>	<b>X</b>		
015		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	
016	<b>X</b>					<b>Reselect crane setup/ configuration</b>
017	<b>X</b>				<b>X</b>	<b>Replace system chip Follow SECTION 3.5.2</b>
018	<b>X</b>			<b>X</b>		
019	<b>X</b>			<b>X</b>	<b>X</b>	
020	<b>X</b>		<b>X</b>			<b>Replace computer</b>
021	<b>X</b>		<b>X</b>		<b>X</b>	<b>Replace system chip Follow SECTION 3.5.2</b>
022	<b>X</b>		<b>X</b>	<b>X</b>		
023	<b>X</b>		<b>X</b>	<b>X</b>	<b>X</b>	
024	<b>X</b>	<b>X</b>				<b>Reselect crane setup/ configuration  Reset crane data</b>
025	<b>X</b>	<b>X</b>			<b>X</b>	<b>Replace system chip Follow SECTION 3.5.2</b>
026	<b>X</b>	<b>X</b>		<b>X</b>		
027	<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>	
028	<b>X</b>	<b>X</b>	<b>X</b>			<b>Replace computer</b>
029	<b>X</b>	<b>X</b>	<b>X</b>		<b>X</b>	
030	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		
031	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	

**2.3.4 GROUP “D” FAULT CODES**

GROUP “D” FAULT CODES REPRESENT FAULTS DETECTED FOR CAPACITY CHART SELECTION.

The following chart details all the available codes in the left column and the actions to take in the right column.

FAULT CODE	WRONG SWING AREA	WRONG BOOM LENGTH	CHART NOT FOUND	ACTION
000	No Fault Found			NONE
001			X	Re-select CRANE SETUP. Check other sensor faults first.
002		X		Boom length is out of range for selected chart. Check crane setup, boom length and extension
003		X	X	Re-select CRANE SETUP. Check other sensor faults first.
004	X			Swing to correct working area to select chart. Check swing sensor zero position. Follow SECTION 9.5
005	X		X	Swing to correct working area to select chart. Check swing sensor zero position. Follow SECTION 9.5
006	X	X		Re-select CRANE SETUP. Check other sensor faults first.
007	X	X	X	Re-select CRANE SETUP. Check other sensor faults first.

## 2.4 “NO FAULT CODE” PROBLEMS

THIS SECTION ADDRESSES THOSE PROBLEMS THAT MAY OCCUR AND ARE NOT REPORTED BY THE COMPUTER FAULT CODE SYSTEM.

### 2.4.1 ANTI TWO-BLOCK ALARM (A2B)

This section gives direction to fault diagnosis of A2B alarm problems. For detailed information, schematic, and voltages, refer to SECTION 7 - ANTI TWO-BLOCK FUNCTION.

#### PROBLEM:

- The Anti Two-Block alarm is continuously **ON**. Operating the switch at the boom head does not deactivate the alarm.

This problem suggests an open circuit between the computer A2B input and the A2B switch(es), or an open circuit between the computer A2B feed and the A2B switch(es)

1. Check extension reel-off cable for damage.
2. Make sure that the Two-Block switches are correctly connected.
3. Check the slip-ring and wiring inside the extension reel.
4. Check the signal cable from the extension reel to the computer. Check connectors.

#### PROBLEM:

- The Anti Two-Block alarm is continuously OFF (safe). De-operating the switch at the boom head, by lifting the A2B weight does not activate the alarm.

This problem suggests a short circuit between the computer A2B input and the computer A2B feed somewhere between the computer and the A2B switch(es).

1. Check extension reel-off cable for damage.
2. Make sure that the Two-Block switches are correctly connected.
3. Check the slip-ring and wiring inside the extension reel.
4. Check the signal cable from the reel to the computer. Check connectors.