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About the IMC Pocket Guide

The identifying features for IMC products are important to consider when using this pocket guide because the guide addresses more than one controller. When asked to verify that the correct EPROM is installed at a specific location in one of the troubleshooting tables in this guide, refer to the version table below.

IMC-SCR Software Identification			
System	Identifying Features	Sftwr Ver.	Manual
Standard	MC-CPA Communications Processor Board MC-MRS Communications Board	<V 4.52	42-02-7200
Release 2	MC-CPA Communications Processor Board MC-MRS Communications Board	>V 4.53	42-02-7200D
Release 3 Tulare	MC-CGP Communications Processor Board	V 2.xx V 3.xx	42-02-7200E 42-02-7201
Release 4	MC-CGP-4(8) & MC-RS	V 9.xx	42-02-7201
IMC-AC Software Identification			
Standard	MC-CPA Communications Processor Board	V 1.xx	42-02-2207
Release 3 Tulare	MC-CGP Communications Processor Board with Baldor Drive with Magnetek Drive	V 2.xx V 3.xx	42-02-2207B 42-02-2207M 42-02-2204
Release 4	MC-CGP-4(8) & MC-RS	V 9.xx	42-02-2204

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Pocket Guide

IMC Pocket Reference

Section 1. CRT Setup



CRT Setup

Setting up a CRT (terminal) to work with a controller includes:

- Setting the controller communications board to talk to the CRT
- Setting the CRT to communicate with the controller and to display information properly

This section provides setup information for:

- [Wyse 60 monochrome terminal](#)
- [Wyse 325 ES terminal](#)
- [Wyse 350 terminal](#)
- [Wyse 370 terminal](#)
- [Esprit 250C terminal emulator](#)
- [ADDS 260LF terminal emulator](#)



Controller Setup and Terminal Connection



Note: For Esprit 250 or ADDS 260LF terminal emulators, see specific setup and terminal connection instructions later in this section.

If the controller uses the **MC-RS** Communications Interface board, set the MC-RS board switch as listed in Table 1.1. Set MC-RS board jumpers as listed in Table 1.2. Connect the terminal as shown in Figure 1.1.

Table 1.1 MC-RS Communications Board Settings

Port Switch Setting	Cable and Peripheral
DCE	Serial Cable to Terminal, PC or Printer
DTE	Line Driver / Modem to Terminal or PC



Note: Switch on line driver must be set to DCE.

Figure 1.1 MC-RS Connection

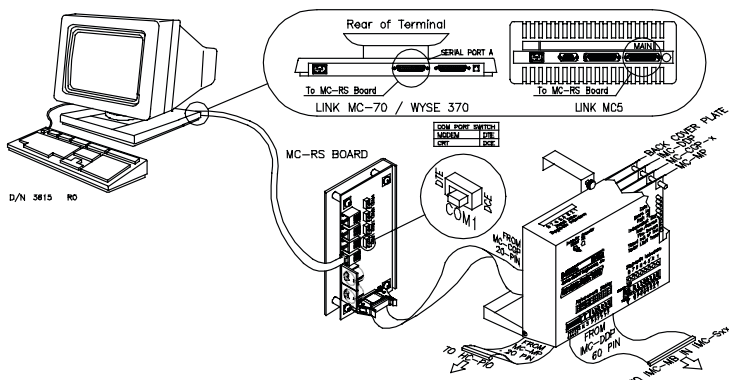


Table 1.2 MC-RS Jumper Settings

Jumper	Setting	Description
JP3	Car	Setting for car controllers (Simplex or Local).
	Group	Setting for Group controller. Only the Group MC-RS board should be set to Group.
JP4	B	Set to B on all car controller MC-RS boards
	B	Set to B on Group controller MC-RS board.

Controller Setup and Terminal Connection

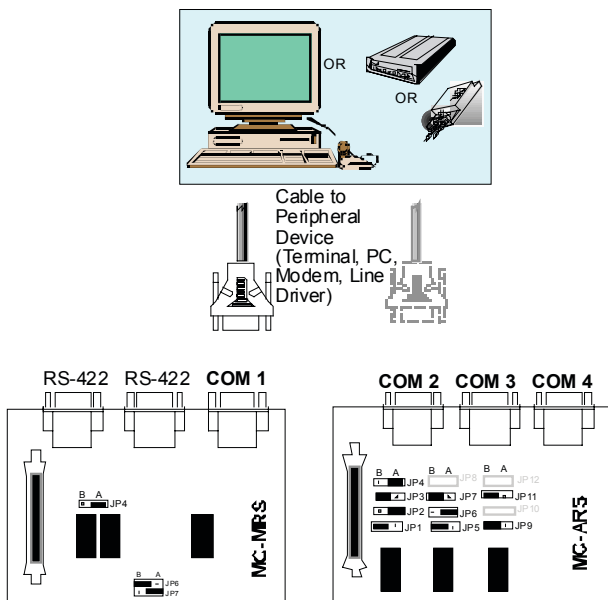


If the controller uses the **MC-MRS** or (optional) MC-ARS Communications Interface board, set jumpers according to Table 1.3. Connect as shown in Figure 1.2.

Table 1.3 MC-MRS Jumper Settings

PORT	Com 1 (MC-MRS)		Com 2 (MC-ARS)			Com 3 (MC-ARS)			Com 4 (MC-ARS)		
JUMPER	JP6	JP7	JP1	JP2	JP7	JP3	JP4	JP9	JP5	JP6	JP11
CRT	A	B	A	B	x	A	B	x	A	B	x
PC	A	B	A	B	x	A	B	x	A	B	x
Line Driver	B	A	B	A	B	B	A	B	B	A	B
Modem	B	A	B	A	x	B	A	x	B	A	x

Figure 1.2 MC-MRS and Optional MC-ARS Connection





Wyse 60 Monochrome CRT Setup

1. Disconnect the CRT from the Controller.
2. Hold the **Shift** key and press **Select** to enter setup mode.
3. Press **D** to default the terminal parameters. You should see the message "Setup Defaulted."
4. Use the *arrow keys* to set General Setup parameters:

General Setup Screen

Link MC 5	General Setup	Ver. X.XX
Emulation = Wyse 60		Auto Page = Off
Enhancements = Off		Warning Bell = Off
Virtual Terminal = Off		Margin Bell = Off
Scroll Style = Jump		Bell Sound = 1
Auto Scroll = On		Block Terminator = US/CR
Auto Wrap = On		Send ACK = On
Received CR = CR		Monitor Mode = Off
Setup Defaulted		

5. Press the **F2** key to go to the Communications Setup screen.
6. Use the *arrow keys* to set the following **highlighted** Communications Setup parameters.



Note: Set Main baud rate to 19200 for everything *except Line Drivers*. Line Driver baud rate should be set to 9600. If a printer is to be utilized, set the Aux and Printer settings indicated also.

Communications Setup Screen

Link MC 5	Communications Setup	Ver. X.XX
Main Baud = 19200		Aux Baud = 9600
Main Data/Parity = 8/None		Aux Data/Parity = 8/None
Main Stop Bits = 1		Aux Stop Bits = 1
Main Rcv Hndsk = XON/XOFF		Aux Rcv Hndsk = None
Main Xmt Hndsk = None		Aux Xmt Hndsk = XON/XOFF
Main Rcv Level = 50%		Aux Rcv Level = 50%
Ignore 8th Bit = Off		Aux Port = RS232
Comm Mode = Full Duplex		Aux Interface = RS232
Disconnect = 2 Sec		Printer = Parallel

7. Press the **F3** key to go to the Display Setup screen. Use the *arrow keys* to set the following parameters:

Display Setup Screen

Link MC 5 Communications Setup Ver. X.XX	
Columns = 80	Background = Dark
80/132 Clear = On	Attributes = Char
Lines = 42	Wprt Intensity = Normal
Pages = 1xLines	Wprt Reverse = Off
Status Line = Ext	Wprt Underline = Off
Cursor Style = Blink Line	Refresh Rate = 60Hz
Cursor = Off	Pound Char = US
Screen Saver = 15 Min	Auto Font Load = On

8. Press the **S** key to save the changes.
9. If installing a printer. Press **F6** to go to the Function Keys Setup screen to make the print screen key operational.
- Press both the **Ctrl** and **Print screen** keys simultaneously to change "sF1=" and "F1=", to "sPRINT=" and "PRINT="
 - Use the *numeric keypad* **Enter** key to toggle "Remote" to "Local."
 - Press **F9** to exit setup mode.



WYSE 325ES Color CRT Setup

Disconnect the CRT from the controller before modifying CRT setup parameters. To examine or modify parameters, enter the CRT terminal setup mode by pressing and holding the **Shift** key while pressing the **Select** key.



Note: If the CRT terminal will not enter Setup mode, try powering the terminal ON while holding down the **Select** key until the screen is displayed (about 5 seconds).

Swing Panel Controller — See “Programming Communication Ports” in Section 5 of the car controller manual for Controller Communication Port settings. For the 325ES, the COM port **Device** option must be set to CRTMK.

Navigation Keys

- Use the numeric keypad “arrow” keys to select menu items.
 - Use the Space Bar to change a highlighted setting.
1. With the CRT **disconnected** from the controller, press the **Enter** key to Default all parameters.
 2. Press **F2** to enter the General Menu. Use the **arrow keys** to highlight Personality and press the **Spacebar** to change the option to “Wyse 60.”

F2 General Menu

Change: Use ARROWS and SPACE											
Personality = Wyse 60				Enhance = On				Status Line = On			
Scrl = Jump				Autoscr1 = Off				Wrap EOL = On			
Rcv CR = CR				Monitor = Off				Recognize DEL = Off			
F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Attr	F6 Misc	F7 ANSI1	F8 ANSI2	F9 Tabs	F10 AnsBk	F11 Fkeys	F12 Exit

3. Use the **arrow keys** to highlight Autoscr1 and press the **Spacebar** to change the option to “Off”.

4. Press **F1** to enter the Display Menu. Use the **arrow keys** to highlight Lines and press the **Spacebar** to change the option to "42." Use the **arrow keys** and **Spacebar** to change Scrn Saver to "Off" and 80/132 Clr to "On."

F1 Display Menu

Change: Use ARROWS and SPACE											
Columns = 80				Cursor = Blink Line				Scrn Saver = Off			
Lines = 42				Display = Dark				Char Cell = 10 x 16			
Page = 1 x Lines				Autopage = Off				80/132 Clr = On			
F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Attr	F6 Misc	F7 ANSI1	F8 ANSI2	F9 Tabs	F10 AnsBk	F11 Fkeys	F12 Exit

5. Press **F4** to enter the COMM Menu. Use the **arrow keys** and **Spacebar** to change Baud Rate to "19200" and Rcv Hndshk to "XON-XOFF/XPC."

F4 Comm Menu

Change: Use ARROWS and SPACE											
Baud Rate = 19200				Data/Parity = 8/None				Stop Bits = 1			
Rcv Hndshk = XON-XOFF/XPC				Rcv Hndshk Level = 192				Xmt Hndshk = None			
Comm = FDX				Xmt Lim = None				Host Port = Serial 1			
F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Attr	F6 Misc	F7 ANSI1	F8 ANSI2	F9 Tabs	F10 AnsBk	F11 Fkeys	F12 Exit

6. Press **F5** to enter the Attribute Menu. Use the **arrow keys** and **Spacebar** to change WPRT Intensity to "Normal" and Intensity Attribute to "Off."

F5 Attribute Menu

Change: Use ARROWS and SPACE											
Color Map = Reverse				Intensity Attribute = Off				Attribute = Char			
WPRT Intensity = Normal				WPRT Rev = Off				WPRT Undrln = Off			
F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Attr	F6 Misc	F7 ANSI1	F8 ANSI2	F9 Tabs	F10 AnsBk	F11 Fkeys	F12 Exit



7. Press **F6** to enter the Miscellaneous Menu. Use the **arrow keys** and **Spacebar** to change Multiple Page to “Off.”

F6 Miscellaneous Menu

Change: Use ARROWS and SPACE											
Ptr Baud Rate = 9600				Ptr Data/Parity = 8/None				Ptr Stop Bits = 1			
Printer = Parallel				Nulls Suppress = On				Blk End = US/CR			
Border Color = (BLACK)				Color Mode = Palette				Multiple Page = Off			
F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Attr	F6 Misc	F7 ANSI1	F8 ANSI2	F9 Tabs	F10 AnsBk	F11 Fkeys	F12 Exit

8. Press **F7** to enter the ANSI 1 Menu. Use the **arrow keys** and **Spacebar** to change DEL to “BS/DEL.”

F7 ANSI 1 Menu

Change: Use ARROWS and SPACE											
Char Set = Multinational				Char Mode = Multinational				ANSI ID = VT 100			
Cursor Keys = Normal				Keypad = Numeric				DEL = BS/DEL			
Feature Lock = Off				Fkey Lock = Off				Newline = Off			
F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Attr	F6 Misc	F7 ANSI1	F8 ANSI2	F9 Tabs	F10 AnsBk	F11 Fkeys	F12 Exit

9. Press **F8** to enter the ANSI 2 Menu. Use the **arrow keys** and **Spacebar** to change Print to “ALL.”

F8 ANSI 2 Menu

Change: Use ARROWS and SPACE											
Print = All				Print Area = Screen				Print Term = None			
Send = All				Send Area = Screen				Send Term = None			
Xfer Term = EOS				Auto Answerback = Off				Keys = Typewriter			
F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Attr	F6 Misc	F7 ANSI1	F8 ANSI2	F9 Tabs	F10 AnsBk	F11 Fkeys	F12 Exit

10. Press **F12** to return to the Setup menu and press **Spacebar** to change the save option to “Yes.” Press **F12** to save the parameters and exit the Setup Menu.

The Wyse WY-325ES CRT has 10 color palettes (0 to 9). To change screen colors hold down **CTRL** and press **(number)** on the numeric keypad. We recommend palette 9. 1, 2, 3 and 8 also work well.

Wyse 350 Setup

1. Press **Select** to put the terminal into setup mode. (The **Select** key is in the upper right corner of the keyboard.) If the terminal does not enter setup mode, turn it off. Then, power the terminal on with the **Select** key held down until the screen comes up (about five seconds).
 - Use the left and right arrow keys to select items on the menu bar.
 - Use the up and down arrow keys to select items from a menu.
 - Use the space bar to change item settings.
2. From the **Exit** menu, select **Default all**. Press **Enter**. Press **Y** to confirm your choice.

Exit	Screen	Modes	Display
Exit setup			
Exit setup and cancel			
Exit setup and save			
Restore last saved			
Default all			
Default user defined keys			

3. From the Screen menu, set the highlighted parameters as shown.

Screen	Modes	Display
Width change clear	On	
Screen Columns	80	
Screen data lines	50	
Page columns	132	
Page lines	50/51	
Page line multiplier		



4. From the **Modes** menu, select **Personality**. From the Personality submenu, select **Wyse 350**.

Modes	Display	Attribute
Feature lock	Off	Personality Link Mc70 VT320/VT221 VT100 VT52 Intecolor 220 Wyse 350 TVI950 Esprit III
Controls mode	Interprt	
Received CR	CR	
Received LF	LF	
Block end	US/CR	
Terminal mode	8 bit	
Enhance	On	
Null OK	Off	
Del OK	Off	
Send ACK	On	
Bell Settings		
Personality		

5. If you plan to use a printer, set **Enhance** and **Terminal mode** to the values shown (use the space bar to toggle).

Modes	Display	Attribute	Port
Feature lock	Off		
Controls mode	Interprt		
Received CR	CR		
Received LF	LF		
Block end	US/CR		
Terminal mode	8 bit		
Enhance	On		
Null OK	Off		

6. From the **Port** menu, select **Port A Settings**. Press **Enter**.
Set the **Transmit baud rate** as follows:
 - Controller: 19,200
 - Line Driver: 9,600
 - Modem: 19,200
7. Press **Shift-Up arrow** when done.
8. If you plan to attach a printer to the terminal, set Port B Settings as shown below:
 - Baud rate: 9600
 - Receive handshake: Xon/Xoff
 - Transmit handshake: Xon/Xoff
 - Press **Shift-Up arrow** when done.
9. Return to the **Exit** menu. Select **Exit setup and save**. Press **Enter**, then **Y** to confirm your choice.

Wyse 370 Setup

For the Wyse 370, use the Wyse 350 settings except set the terminal personality to the native Wyse 370 selection.



Esprit 250C Connection and Setup



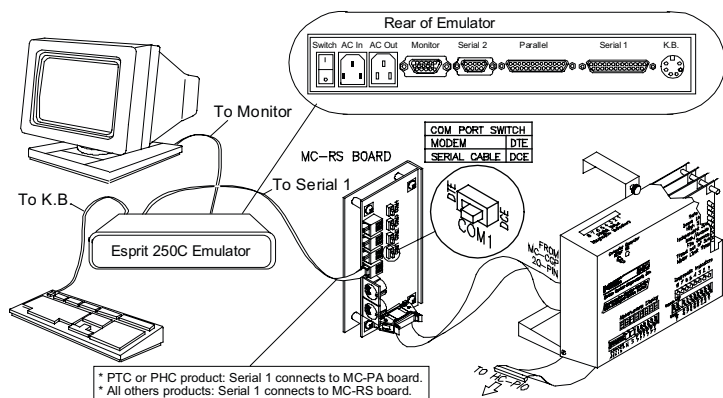
Note: Swing Panel Controller — If necessary, refer to Section 5 of the controller installation manual or Section 4 of the group supervisor manual for instructions on changing the Communication Port settings. For the Esprit 250C, the COM port **Device** option must be set to **CRTMK**.



Note: PTC/PHC Controller — For the Esprit 250C, the **Color CRT** option must be set to **No**.

Connection

Refer to the following illustration.



- Connect the monitor cable to **Monitor** on the emulator.
- Connect the keyboard cable to **KB** on the emulator.
- Connect the controller interface board (MC-RS or MC-PA) to emulator **Serial 1** using a C-CRT/MD/PA-x cable (x=length).
- If using a printer, connect it to the emulator **Parallel** port.
- Connect AC power.

Emulator Setup

Disconnect the emulator from the controller before changing emulator setup parameters as described here.

- Arrow Keys: Used to select an item from a menu.
 - Space Bar: Used to toggle the selected setting.
1. Press and hold the **Alt** key while pressing the **Esc** key to enter setup mode.
 2. From the Setup menu, press **Shift+Esc** to default all parameters.
 3. From the Setup menu, press **F2** to enter the **General Menu**.

F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Misc	F6 Tabs	F7 Fkeys	F8 Ansbk	F10 Colr1	F11 Colr2	F12 Exit
Parameters										
Personality = WY120/WY60 Scri = Jump Rcv CR = CR				Enhance = Off Autoscri = Off Monitor = Off				Status Line = Standard End of Line Wrap = On Attribute = Char		

4. Use the arrow keys to highlight **Enhance**. Press the space bar to toggle it to **Off**.
5. Set **Autoscri** to **Off**.
6. Set **End of Line Wrap** to **On**.
7. Press **F1** to enter the **Display** menu.

F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Misc	F6 Tabs	F7 Fkeys	F8 Ansbk	F10 Colr1	F11 Colr2	F12 Exit
Parameters										
Columns = 80 Lines = 42 Auto Page = Off Display = CRT				Cursor = Blink Line Display = Dark Width Change Clear = On				Scrn Saver = Off Page Length = 1 * Lines ANSI Reverse = Off		

8. Set:
 - Lines = 42
 - Cursor = Blink Line
 - Scrn Saver = Off
 - Width Change Clear = On



9. Press **F3** to enter the **Keybd** menu.

F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Misc	F6 Tabs	F7 Fkeys	F8 Ansbk	F10 Colr1	F11 Colr2	F12 Exit
Parameters										
Keyclick = Off Margin Bell = Off NRC = Off DEL Keypad = Dot/Del			Key Repeat = 5 Language = US Bell Volume = 1 Keyboard Installed = EPC			Xmt Limit = None Keycode = ACSII NUM Start = Off				

10. Press **F4** to enter the **Comm** menu.

F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Misc	F6 Tabs	F7 Fkeys	F8 Ansbk	F10 Colr1	F11 Colr2	F12 Exit
Parameters										
Baud Rate = 19,200 Rcv Hndshk = Xon/ Xoff XPC Hndshake = Off			Data/Stop Bits = 8/1 Xmt Hndshake = Xon/Xoff Printer = Off			Parity = None Comm Mode = FDX				

11. Set:

- Baud Rate = 19,200
- Printer = Off



Note: If using a line driver between the controller and the emulator, set the Baud Rate to 9600.

12. Press **F10** to enter the **Colr1** Menu. Set the colors for best viewing. We recommend:

- Normal = Light Blue
- Blink = Light Green
- Rev. = Yellow
- Dim = White

F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Misc	F6 Tabs	F7 Fkeys	F8 Ansbk	F10 Colr1	F11 Colr2	F12 Exit
Parameters										
Normal Normal = Light Blue Blank = White Blink = Light Green			Dim Dim = White Blank = White Blink = White							

13. Press **F11** to enter the **Colr2** menu.

F1 Disp	F2 Genrl	F3 Keybd	F4 Comm	F5 Misc	F6 Tabs	F7 Fkeys	F8 Ansbk	F10 Colr1	F11 Colr2	F12 Exit
Parameters										
Background = Black Normal F.G. = Green Normal B.G. = Black Border Color = Black			Cursor = Black Intensity F.G. = Gray Intensity B.G. = Black Attribute = Bold				Color Mode = Normal Color Map = Reverse Color Association = On			

14. Set:

- Cursor = Black
- Color Association = On

15. Press **F12** to return to the **Setup** menu. Use the space bar to change **Save** to **Yes**.

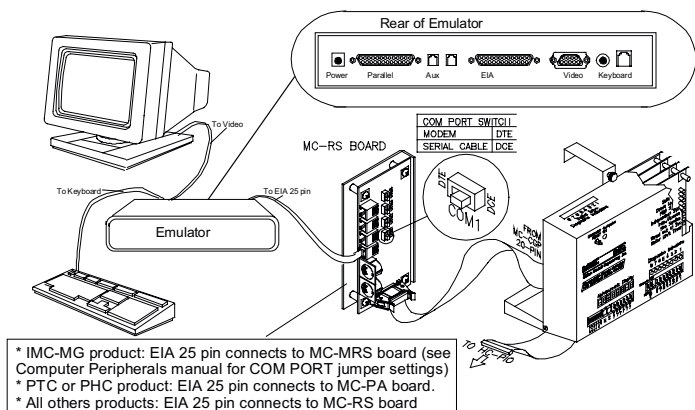
16. Press **F12** to save the parameters and exit the **Setup** menu.



ADDS 260LF Connection and Setup

This section provides brief instructions for installing and using the CRT terminal/emulator. If more information is needed, refer to the MCE Computer Peripherals Manual. Set up the terminal before connecting it to the Controller (MC-RS board).

Figure 1.3 Connecting the Terminal



With the Controller (MC-RS board) **disconnected** from the emulator, hold down the **Ctrl key** and press **Scroll Lock** to enter setup mode. The F1 Screen comes up automatically. Press the **Print Screen** key to access the Print Exec screen. Using the right arrow key, move the cursor to highlight Default Terminal. Press **Enter**.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Save Terminal Save Session Reset Terminal Clear Screen			Recall Terminal Recall Session Reset Session Default Session UDKs				Default Terminal Default Session Reset Ports					
Choices												
Use Enter Key To Execute Action												
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												

The terminal will default with all required settings for a serial connection to MCE controllers. After the unit has been defaulted, cursor position is highlighted, default choices are in bold. Verify the following parameters, press the **Pause/Break** key to save the settings.

1. Press the F1 key. On the F1 Quick Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Emulation = Wyse-60 Enhanced = Off Comm Mode = Full Duplex Host/Printer = EIA/Para			EIA Baud Rate = 19200 Aux Baud Rate = 9600 Language = U.S.				EIA Data Format = 8/1/N Aux Data Format = 8/1/N Sessions = One					
Choices												
ADDS-VP VT-300-7 AT386	Wyse-60 VT-300-8	Wyse-325 intecolor	Wyse-50+ VT-200-7	Wyse-350 VT-200-8	PC-Term VT-100	TVI-925 SCO Console						
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												



Note: If you have no printer connected, set Host/Printer: EIA/None.



2. On the F2 Genrl Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Emulation = Wyse-60 Auto Font Load=On Auto Scroll = On Bell Volume = 03 Sessions = One			Enhanced = Off Auto Page = Off Monitor Mode = Off Warning Bell = On			Auto Wrap = On Curs Dir = Left to Right Screen Saver = Off Bell Length = 140ms						
Choices												
ADDS-VP VT-300-7 AT386	Wyse-60 VT-300-8	Wyse-325 intecolor	Wyse-50+ VT-200-7	Wyse-350 VT-200-8	PC-Term VT-100	TVI-925 SCO Console						
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												



Note: The Screen Saver function will only blank the screen after the specified time set if the emulator loses communication with the controller. Therefore, turn off the VGA monitor (and only the VGA monitor) when not in use. Screen Saver settings are Off, 2, 5, 15, and 30 minutes respectively.

3. On the F3 Displ Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Display Cursor = Off Page Length = 42 Columns = 80 Speed = Fast			Cursor = Blink Block Screen Length = 44 Lines Scroll = Jump Pattern Number = Soft 1			Auto Adjust Cursor = Off Screen Video = Normal Width Change Clear = On						
Choices												
Off	ON											
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												

4. On the F4 Kybd Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Language = U.S. Key Mode = ASCII Key Rate = 20 cps Caps Lock = Toggle				Char Set = Multina- tional Keyclick = On Margin Bell = Off Num Lock = Toggle				Code Page = CP 437 Key Repeat = On Key Lock = Caps				
Choices												
U.S. Portuguese Latin American		U.K. Spanish Swiss-Ger- man		Danish Swedish Swiss-French		Finnish Dutch		French Belgian- Flemish		German Fr-Canadian		Norwegian Italian
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												

5. On the F5 Keys Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Enter Key = <CR> Alt Key = Funct Pound Key = U.S.				Return Key = <CR> Disconnect = Pause Return Key Repeat = Off				Backspace = <BS>/< Del> Desk Acc = Ctrl< UDKs = User Dependent				
Choices												
<CR>		<CR><LF>		<TAB>								
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												

**IMC Pocket Reference**

6. On the F6 Ports Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
EIA Baud Rate = 19200 Aux Baud Rate = 9600 EIA Xmt = No Protocol Aux Xmt = Xon - Xoff			EIA Data Format = 8/1/ N Aux Data Format = 8/1/ N EIA Recv = Xany - Xoff (XPC) Aux Recv = No Protocol			EIA Parity Check = Off Aux Parity Check = Off EIA Xmt Pace = Baud Aux Xmt Pace = Baud						
Choices												
110	150	300	600	1200	1800	2000	2400	4800	9600			
19200	38400	57600	76800	115200								
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												

7. On the F7 Host Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Comm Mode = Full Duplex Break = 250ms Recv <CR> = <CR> Alt Input Data = Off			Local = Off Modem Control = Off Recv = Ignore Send Line Term = <US>			Null Suppress = On Disconnect = 2 sec Send ACK = On Send Block Term = <CR>						
Choices												
Full Duplex		Half Duplex	Full Block	Half Block								
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												

8. On the F8 Print Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Prnt Line Term = <CR> <LF>			Prnt Block Term = <CR>			Secondary Recv = Off						
Choices												
<US>		<CR> <LF>										
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												

9. On the F9 Emul Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Attribute = Character WPRT Reverse = Off Display NV Labels = Off Status Lines = Extended				Page Edit = Off WPRT Underline = Off Save Labels = On Fkey Speed = Normal				WPRT Intensity = Normal WPRT Blink = Off Char Set = Multinational WP-Graphics = On				
Choices												
Character	Line	Page										
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												

10. On the F10 Tabs Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Auto Init Tabs = Off				Default Tabs								
Choices												
Off	On											
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												

11. On the F11 AnsBk Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Answerback Mode = Off				Answerback Conceal								
Choices												
Off	On											
Select												
← ↑ ↓ → : Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key												



12. On the F12 Prog Menu verify the following Parameters.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec			
Parameters															
Key = F1				Program = F Key				Key Dir = Host							
Choices															
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16
Select															
←	↑	↓	→	: Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key											

13. If you are not setting up a modem, but are setting up a parallel printer, go to step **17**. If setting up a modem, continue to step **14**. Otherwise, press **Esc** key then **Y** key to save.

14. If setting up a modem, change the following highlighted settings when connecting with a modem.

F6 Ports *EIA Xmt = Xon - Xoff*
EIA Recv = No Protocol

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
EIA Baud Rate = 19200 Aux Baud Rate = 9600 EIA Xmt = Xon - Xoff Aux Xmt = Xon - Xoff				EIA Data Format = 8/1/ N Aux Data Format = 8/1/ N EIA Recv = No Protocol Aux Recv = No Protocol				EIA Parity Check = Off Aux Parity Check = Off EIA Xmt Pace = Baud Aux Xmt Pace = Baud				

15. Change the following parameters when using line drivers, set EIA Baud Rate to 9600.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
EIA Baud Rate = 19200 Aux Baud Rate = 9600 EIA Xmt = Xon - Xoff Aux Xmt = Xon - Xoff				EIA Data Format = 8/1/N Aux Data Format = 8/1/N EIA Recv = No Protocol Aux Recv = No Protocol				EIA Parity Check = Off Aux Parity Check = Off EIA Xmt Pace = Baud Aux Xmt Pace = Baud				

16.If you are connecting a parallel printer go to Step 17. If you are not connecting a parallel printer, press the **Esc** Key, then press **Y** to save.

17.Follow these instructions to connect a parallel printer. Go to the F12 Screen.

F1 Quick	F2 Genrl	F3 Displ	F4 Kybd	F5 Keys	F6 Ports	F7 Host	F8 Print	F9 Emul	F10 Tabs	F11 AnsBk	F12 Prog	Print Exec
Parameters												
Key = F1				Program = F Key				Key Dir = Host				
Choices												
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13 F14 F15 F16
Select												
←	↑	↓	→	: Parameter Enter/S-Enter: Next/Prev Choice Exit: Esc Key								

On the **F12 Screen**, you can assign special programming to different keys. All data sent to the printer using the Print Screen function will format in a basic 80-column mode. Print screen features will not print screens wider than 80 columns without offsetting the format, making the page difficult to read. Basic formatting does not print the last 3 to 4 lines of information on the screen. To improve printing the following steps can be taken.

- Cursor right one position until the **Program = F Key** is highlighted.
- Press the **Spacebar** four times to change to **=Edit Key**.
- Cursor **Left** one position until **Key = TAB** is highlighted.
- Hold the **Shift** key and press the **Spacebar** twice change to **=Print**.
- Cursor down to the **Text** edit area. Press the **Shift +Back-space** key to delete any text or characters before entering the following:

Type the following keys in the exact order as shown. Keys indicated with a "+" require holding the first key listed then pressing the second one.

Ctrl+[Shift+P Ctrl+M Ctrl+J

The text entered will look similar to this: \$P **Ctrl+R** **Ctrl+L**

- Cursor up once. Cursor Right twice to highlight **Key Dir**, if not set to **=All**, hold down the **Shift** key and press the **Spacebar** to change to **=All**.
- Press the **Esc** key and then the letter **Y** to save your changes.

**Color Settings**

While viewing any of the MCE screens, press and hold the **Ctrl** key, then press the **left arrow**. This brings up a menu for the desktop accessories. Press **F6** to change the palette colors. This makes it easier to differentiate ON and OFF flags when viewing diagnostics. Use the **right** and **left arrow** keys to adjust the foreground and background colors. Use the **up** and **down arrow** keys to select the option you want to change colors on. The color table chart below shows the default and the MCE recommended colors. When finished, press **Esc** to exit the desk accessories.

Changes to colors must be saved or they will be lost when the unit is powered off. With the Emulator **disconnected** from the controller, go into Setup mode by pressing **Ctrl** and **Scroll Lock**. Press the **Pause/Break** key to save settings.

Attributes	Default Setting Fore/Back	MCE Recommended Fore/Back
Normal	Green / Black	Light Gray / Black
Rev	Black / Green	Light Green / Blue
Int	Yellow / Black	Green / Black
Rev, Int	Black / Yellow	Black / Yellow
Und	Light Red / Black	Light Red / Black
Und, Rev	Black / Light Red	Black / Light Red
Und, Int	Light Blue / Black	Light Blue / Black
Und, Rev, Int	Black / Light Blue	Black / Light Blue

Troubleshooting

Symptom	Cause	Solution
Keyboard not responding to keys pressed.	Possible locked keyboard	If LOCK is displayed in the upper left screen corner, unlock the keyboard by pressing: Shift+Scroll Lock
Screen displays message: "Transmit condition EIA port XOFF To cancel type (Shift + CTRL + Tab)"	Emulator is connected to controller when attempting to save changes to setup.	Turn off the emulator and wait 5 seconds. Do not attempt to make changes to the emulator setup while the emulator is connected to the controller. Turn the emulator back on.

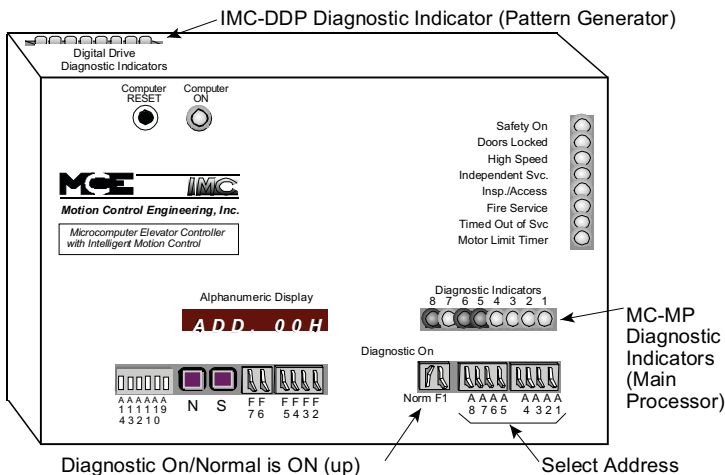
Section 2. Diagnostic Mode



Enhanced On Board Diagnostics

In the Diagnostic Mode, the A1 through A8 switches allow access to the MC-MP (MP2) and IMC-DDP computer memory locations. The Diagnostic Indicators and Digital Drive Diagnostic Indicators show the status (ON or OFF) of the flags at those locations.

Figure 2.1 Diagnostic Mode (EOD)



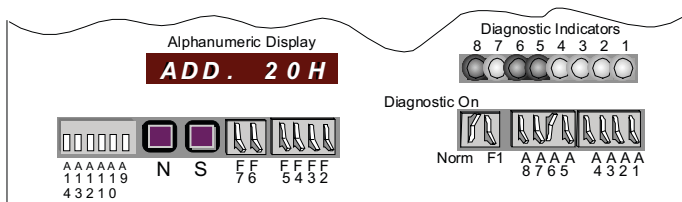
Note: The Diagnostic Indicators have two functions. In Normal mode, they display current status or an error message. In Diagnostic mode, they indicate the contents of computer memory.



Viewing the MC-MP Computer Flags

1. Set *Diagnostic On* switch up (**ON**).
2. Find the flag abbreviation in [Table 2.1](#).
3. Find address/switch position for flag in [Table 2.1](#). Set switch position (verify address on alphanumeric display). Check corresponding LED (diagnostic indicator) for flag condition (on or off).

Figure 2.2 Viewing the Flags at Address 20H



MC-MP-1ES BOARD DIAGNOSTIC MODE ADDRESSES AND VARIABLE FLAGS													
Computer Memory Address (Hex)	Toggle Switches					Diagnostic Indicators							
						LED On = variable flag is On or Active							
	Diagnostic On F1 A8.....A5 A4.....A1	8	7	6	5	4	3	2	1				
20						DOLM	PHE	DZ	DOL	DBC	SE	GEU	GED

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In this example, address 20 has been selected from Table 2.2. The Diagnostic On/ Norm switch and the A6 switch are UP. All other A switches are down. The display reads ADD.20H. The flags viewed from this address are listed on the right. A list of all flags can be found in Table 2.1. Check the Diagnostic Indicators on the front of the Swing Panel. If an LED is ON, that flag is ON. So if Diagnostic Indicator #6 is ON, Door Zone Input (DZ) is ON.

DOLM	Door open limit memory flag
PHE	Photo eye input
DZ	Door zone input
DOL	Door open limit input
DBC	Door close button input
SE	Safety edge input
GEU	Gong enable up output
GED	Gong enable down output

Table 2.4 lists MC-MP (MP2) flags and the abbreviation assigned to each. Tables 2.1 and 2.2 show memory address locations for the flags.

Alternate Address Selection Method

There is an alternate way to select a computer memory address regardless of the position of switches A1-A8:

- Press the **N** button. The display automatically reads **ADD. 20H** (the first diagnostic address for the MC-MP flags). The Diagnostic Indicators display the contents of the address.
- Constant pressure on the **N** button automatically increments the address shown on the alphanumeric display. Once the address reaches 33H, it cycles back to 20H.
- Releasing the **N** button holds the last address displayed for 3 seconds (before the display reflects the address selected by the A1-A8 switches).

**Table 2.1 Flag Address on MC-MP Board**

MC-MP-1ES BOARD DIAGNOSTIC MODE ADDRESSES AND VARIABLE FLAGS												
Computer Memory Address (Hex)	Toggle Switches Diagnostic On ↓ F1 A8.....A5 A4.....A1				Diagnostic Indicators LED On = variable flag is On or Active							
					8	7	6	5	4	3	2	1
20					DOLM	PHE	DZ	DOL	DBC	SE	GEU	GED
21						DC	UC	CC			DHO	DOI
22					DCF	DCP	DOF	LOT		HCT	CCT	SDT
23							HSEL	CSB	DCC	NUDG		DSHT
24					INT/ DCLC	FRA	FCS	FRS	DNS	UPS	STD	STU
25							HLW	HLI			FWI	
26					LFP	UFP						
27							EQI	IND	IN		DEL SIM	YSIM
28					LLW	DLK		DZO RDZ			PK	LLI
29					DNDO	LD		DDP	UPDO	LU		UDP
2A					DMD	DCB	UCB	CCB	DMU	DCA	UCA	CCA
2B					TOS	MLT	PSTX	MGR	H	REL	DSH	RUN
2C						STC	SAF	HCR	HCDX	CCD	ISV	ISRT
2D									FRM			FRC
2E					SD	SDA	DSD	BFD	SU	SUA	USD	TFD
2F					HLD		EQA	ATSF		ECRN	CD	EPR
2F**					HLD	EPI	EPR	SLV	ISR	YRQ	PTR	PTS
30									EPS	EPI	HML	ALT
31												
32					CAC	CBC	CWI		EDS	ESTE	EQN	PUSD
32**					CAC	CBC	CWI	EQA	EDS	ESTE	EQN	PUSD
33						CWIL						

** Use these flags for a car that is part of a multi-car group.

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Table 2.2 Rear Door Flag Address on MC-MP Board

MC-MP-1ES DIAGNOSTIC MODE REAR DOOR ADDRESSES AND VARIABLE FLAGS											
Computer Memory Address (Hex)	Toggle Switches			Diagnostic Indicators							
				LED On = variable flag is On or Active							
	Diagnostic On √ F1 A8.....A5 A4.....A1	8	7	6	5	4	3	2	1		
10				DOLMR	PHER	DZR	DOLR	DBCR	SER	GEUR	GEDR
11					DCR	UCR	CCR			DHOR	DOIR
12				DCFR	DCPR	DOFR	LOTR		HCTR	CCTR	SDTR
13								DCCR	NUDGR		DSHTR

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Viewing the IMC-DDP Computer Flags

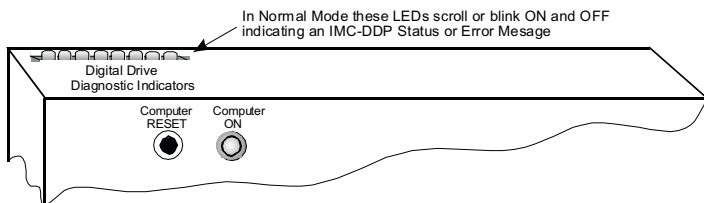
The status of DDP computer memory addresses is shown on the Digital Drive Diagnostic Indicators on top of the Computer Swing Panel (see Figure 2-3).

1. *Diagnostic On* switch is up (**ON**).
2. Find flag abbreviation on [Table 2.5](#).
3. Find address/switch position for abbreviation on [Table 2.3](#).
4. Set switch position (verify address on alphanumeric display).
Check corresponding LED (diagnostic indicators on top of Swing Panel) for flag condition (on or off).



Note: The alternate method of selecting the address, using the **N** push button does not apply to the IMC-DDP board addresses.

Figure 2.3 Drive Diagnostic Indicators



**Table 2.3 IMC-DDP Board Flags**

IMC-DDP-x BOARD DIAGNOSTIC MODE ADDRESSES AND VARIABLE FLAGS*											
Computer Memory Address (Hex)	Toggle Switches			DDP Diagnostic Indicators							
				Top of Swing Pannel				LEDn = variable flag is On or Active			
	Diagnostic On F1 A8.....A5 A4.....A1			8	7	6	5	4	3	2	1
10				RD	PR	R5	R4	R3	R2	R1	R0
11				STP	LI	INT	OLM	LEV	H	UP	DN
12				ORR	ORG	PGU	SPR	PGR	DSR	PGO	DSO
13								LRN	EQ	INS	DZP
14				UET			UT5	UT4	UT3	UT2	UT1
15				DET			DT5	DT4	DT3	DT2	DT1
16				SPR	SPT	TPL			COS	ILO	NTS
20											SR
21				QPR	TVS	IBJ	RST	PPS	IDM	PRS	RDS
22				OLD	RBK	LOD	LOP	TPS		OLP	LLT
23						FHL	VS	VC	TFH	OFH	SSO
24				ILO	COS	SPT	SPC	SPP	CPI	CPP	CPL
25											
80					DRO	SMF	BRE	PGE	DRE	RNE	DSR
81						DRST	FLT				DFO
82				FLTB	FBLT	BCI		MR	CNPM	CNPB	SAF
83					DEF	UEF		TS		TF	TE
84								LOC		BF	MFF
85											
86											
88											

* for IMC-SCR controllers

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Table 2.4 MC-MP Board Flags

MAIN PROCESSOR			
ALT	Alternate Service	GED	Gong Enable Down Output
ATS	Attendant Service Input	GEU	Gong Enable Up Output
ATSF	Attendant Service Function	H	High Speed Output
BFD	Bottom Floor Demand	HCDX	Hall Call Disconnect
CAC	Car Above Counterweight	HCR	Hall Call Reject
CBC	Car Below Counterweight	HCT	Hall Call Door Time
CC	Car Call	HLD	Hold Input Fire Phase II
CCA	Car Call Above	HLI	Heavy Load Input
CCB	Car Call Below	HLW	Heavy Load Weigher
CCD	Car Call Disconnect	HML	Home Landing Select Input
CCT	Car Call Door Time	HSEL	Hospital Emergency Select
CD	Car Done	IN	Inspection or Access Input
CODE 3	Third Bit in Absolute PI Code	IND	Independent Service Input
CSAF	Computer safe	INT	Intermediate Speed Input
CSB	Car Stop Switch Bypass Output	ISR	In Service and Ready
CTL	Car to Lobby Input	ISRT	In Service Truly
CTLF	Car to Lobby Function Flag	ISV	In Service
CWI	Counterweight Input	LD	Level Down Input
CWIL	Counterweight Input Latch	LFP	Lower Floor Parking
DBC	Door Button Close Input	LLI	Light Load Input
DC	Down Call	LLW	Light Load Weigher
DCA	Down Call Above	LOT	Lobby Door Time
DCB	Down Call Below	LU	Level Up Input
DCC	Door Close Complete	MGR	Motor Generator Run Output
DCF	Door Close Function Output	MLT	Motor Limit Timer
DCLC	Door Closed Contact Input	NSI	Non-Stop Input
DCP	Door Closed Power Output	NUDG	Nudging Output
DDP	Down Direction Preference	PFG	Passing Floor Gong
DELSIM	Delta Simulation	PHE	Photo Eye Input
DHO	Door Hold Open	PK	Parking
DLK	Door Lock Input	PSTX	Preliminary Stepping Function Complete
DMD	Demand Down	PTR	Permission To Run (<i>from Supervisor</i>)
DMU	Demand Up	PTS	Permission To Start (<i>from Supervisor</i>)
DNDO	Down Direction Output	PUSD	Earthquake Power Up Shut Down
DNI	Down Direction Input	REL	Releveling Output

**Table 2.4 MC-MP Board Flags**

DNS	Down Direction Sense Input	RUN	Run
DOF	Door Open Function Output	SAF	Safety String Input
DOI	Door Open Intent	SD	Supervisory Down
DOL	Door Open Limit Input	SDA	Down Direction Arrow Output
DOLM	Door Open Limit Memory	SDT	Short Door Time
DSD	Down Slow Down Input	SE	Safety Edge Input
DSH	Door Shortening (Car Call Button Pushed)	SLV	Slaved
DSHT	Door Shortening (Final)	STC	Stepping Complete
DZ	Door Zone Input	STD	Step Down Input
DZORD Z	Door Zone or Rear Door Zone	STU	Step Up Input
ECRN	Emergency Power Running Car	SU	Supervisory Up
EDS	Earthquake Direction Switch	SUA	Up Direction Arrow Output
EPI	Emergency Power Input	TFD	Top Floor Demand
EPR	Emergency Power Return Function	TOS	Timed Out of Service
EPS	Emergency Power Select Input	UC	Up Call
EQA	Earthquake Function Active	UCA	Up Call Above
EQI	Earthquake Input	UCB	Up Call Below
EQIND	Earthquake Indicator Output	UDP	Up Direction Preference
EQN	Earthquake Normal	UFP	Upper Floor Parking
ESTE	Earthquake Stop Time Elapsed	UPDO	Up Direction Output
FCS	Fire Phase II Input	UPI	Up Direction Input
FRA	Alternate Fire Phase I Input	UPS	Up Direction Sense Input
FRC	Fire Phase II	USD	Up Slow Down Input
FRM	Fire Service Phase I	YRQ	Wye Request
FRS	Fire Phase I Input	YSIM	Wye Simulation
FWI	Fire Warning Indicator Output		

Table 2.5 IMC-DDP Board Flags

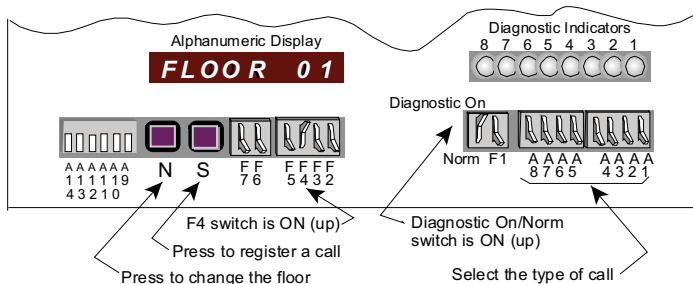
PATTERN GENERATOR			
CPI	Communication Processor ID Mismatch	PGR	Pattern Generator Ready
CPL	Communication Processor Looping	PGU	Pattern Generator Updated
CPP	Commun. Proc. Communication	PPS	Pattern Profile Setup
DN	Debounced Down Direction	PR	Parity Input
DSO	Drive Enable	PRS	Parity Signal Error
DSR	Drive Ready	QPR	Quadrature Pulse Relation
DZP	Car is at the floor	R0	Floor Code Input 0
EQ	Earthquake	R1	Floor Code Input 1
FHL	Floor Height Learned Error	R2	Floor Code Input 2
H	High Speed	R3	Floor Code Input 3
IBJ	INT Jumper Error	R4	Floor Code Input 4
IDM	ID Mismatch	R5	Floor Code Input 5
INS	Inspection Operation	RBK	Rollback
INT	Level Inhibit - INT Relay	RD	Read Input
LEV	Leveling	RDS	Read Signal Error
LI	Level Inhibit - Distance	SPC	Safety Processor Communication
LLT	Leveling Limit Timer	SPP	Safety Processor Protocol
LOD	Loss of Direction	SPR	Safety Processor Ready
LOP	Loss of Position	SR	Short Run Profile
LRN	Learning Hoistway	SSO	Step Signal Overlap
OFH	One Floor Height Error	STP	Stepping
OLD	Outer Leveling Distance Error	TFH	Two Floor Height Error
OLM	Outer Leveling Marker	TPS	Terminal Position Switch Error
OLP	Outer Leveling Pattern Error	TVS	Terminal Velocity Switch
ORG	Pattern Generator Slave	UP	Up Direction
ORR	Main Processor Run Request	VC	Contract Velocity Error
PGE	Pattern Generator Enable	VS	Short Velocity Error
PGO	Pattern Generator On		
DRIVE			
ACP	AC Phase Error	FLT	Fault Relay Tripped
BCI	Brake Contact Input (not used)	FLTB	Fault Bypass
BF	Brake Failure	LOC	DC Loop Overload current
BRE	Brake Enable	MFF	Motor Field Failure
CNPB	Contactor Proof Brake	MR	Status of M Contactor
CNPM	Contactor Proof M Contactor	RNE	Run Enable
DEF	Down Emergency Terminal Switch	RST	IMC-DDP Board Reset

**Table 2.5 IMC-DDP Board Flags**

DFO	Drive Fault Output	SAF	Safety String Input
DRC	Drive Checksum Error	SMF	Sufficient Motor Field
DRO	System 12 Drive On	TE	Tach Error
DRST	Drive Reset	TF	Tach Failure
DSR	Drive Ready	TS	Tach Voltage Saturation
FBLT	Fault Bypass Limit Timer Error	UEF	Up Emergency Terminal Switch
SAFETY PROCESSOR			
COS	Contract Overspeed	SPR	Safety Processor Ready
DT1	Down Normal Terminal Switch 1	SPT	Safety Processor Tripped
DT2	Down Normal Terminal Switch 2	TPL	Terminal Processor Learn
DT3	Down Normal Terminal Switch 3	UT1	Up Normal Terminal Switch 1
DT4	Down Normal Terminal Switch 4	UT2	Up Normal Terminal Switch 2
DT5	Down Normal Terminal Switch 5	UT3	Up Normal Terminal Switch 3
DET	Down Emergency Terminal Switch	UT4	Up Normal Terminal Switch 4
ILO	Inspection/Leveling Overspeed	UT5	Up Normal Terminal Switch 5
NTS	Normal Terminal Switch Tripped	UET	Up Emergency Terminal Switch

Viewing and Entering Calls

This function allows the user to view all calls registered per floor and enter calls as desired without using the terminal F3 screen.

Figure 2.4 Viewing & Entering Calls via the EOD

Diagnostic Indicators show current calls	Diagnostic Indicators							
	8	7	6	5	4	3	2	1
Call type _	Hall Call UP Rear	Hall Call UP Front	Hall Call DOWN Rear	Hall Call DOWN Front			Car Call Rear	Car Call Front
To register calls, turn address switch ON and press "S"	A8	A7	A6	A5	A4	A3	A2	A1
	Address Switches							

Viewing Calls

1. *Diagnostic On* and *F4* switch are up (ON)
 - Alphanumeric display: **FLOOR 01**
 - Diagnostic Indicators light up with the calls that have been registered.
2. Press the **N** push-button to display the next floor.

Entering Calls

1. Select the desired floor with the **N** push-button
2. Set the A1-A8 switches to select call type (see Figure 2-4).
3. Press the **S** push button to register the call.



Note:

- A call type which does not exist in the system cannot be entered.
- If this car is part of a group, only car calls can be entered.
- Duplex car B calls are only displayed in a single computer duplex application.

Normal Mode MP Diagnostics

In Normal Mode, these indicators scan from right to left (indicating that the MP (or MP-2) program is looping properly) or flash ON and OFF to indicate an error or status condition. When troubleshooting, pay special attention to these indicators. They will often point to the source of the problem.

Figure 2.5 Diagnostic Indicator Normal

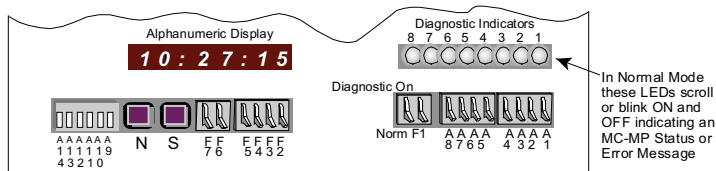




Table 2.6 provides a complete listing of the MC-MP and MP-2 Status and Error Messages. Use the information provided in the Flowcharts and Troubleshooting Tables in either the IMC-SCR or the IMC-AC section for error corrective action.

Table 2.6 MC-MP Status and Error Messages

○ = LED off ● = LED blinking

Hex	LEDs	MEANING
	Single LED scanning	Normal Operation, no errors or messages
01	○○○○○○●●	Earthquake normal reduced speed mode (EQI=high, CWI=low)
02	○○○○○○●○	Power-up shut down due to earthquake (CWI and/or EQI high at power up)
03	○○○○○○●●	Attendant Service Operation (ATS input activated)
07	○○○○○○●●	The Hall Call Bus is disconnected (check fuse)
09	○○○○●○○●	Passcode requested
0F	○○○○●●●●	The Car Call Bus is disconnected (check fuse)
11	○○○●○○○●	The speed governor switch is open
12	○○○●○○○●	Drive temperature sensor fault (DTS input is activated)
13	○○○●○○○●	Car not at bottom landing (setup error)
14	○○○●○○○●	Car not on Level Up (setup error)
15	○○○●○○○●	Car not on Inspection (setup error)
16	○○○●○○○●	Car not below Door Zone (setup error)
17	○○○●○○○●	Car not on Level Down (setup error)
18	○○○●○○○●	Photo Eye Failure
1F	○○○●●●●●	Timed out of service
20	○○●○○○○○	Loss of IN during Learn (setup error)
22	○○●○○○○○	No response from Pattern Generator (setup error)
22	○○●○○○○○	Hoistway safety device activated (open)
23	○○●○○○○○	PG error, loss of UP direction (setup error)
24	○○●○○○○○	Overload condition
29	○○●○○○○○	Both leveling switches are ON (setup error)
32	○○●○○○○○	Drive fault 1: Excessive heat in SMB Unit or System 12 or Torqmax drive not ready
33	○○●○○○○○	Brake Pick Failure (BPS input activated)
3C	○○●●●●○○	The Level Down computer input is ON.
3F	○○●●●●●●	Door Open Limit and Door Lock inputs are both ON.
42	○●○○○○○●	PG not ready
44	○●○○○○○●	Car safety device activated (open)
71	○●●●○○○●	Test Mode of Operation

Table 2.6 MC-MP Status and Error Messages

72	○●●●○●○	Drive Forced Shut Down (Drive fault 2)
73	○●●●○●●	Pre-test mode
7E	○●●●●●○	The car expects a Security code to be entered
7F	○●●●●●●	The car is on Independent Service.
80	●○●○●○●○	The car is on Inspection.
82	●○●○●○●○	Door lock contact failure
83	●○●○●○●●	Door open limit failure
84	●○●○●○●○	Gate switch failure
85	●○●○●○●●	Gate switch relay redundancy failure
86	●○●○●○●○	Door lock relay redundancy failure
88	●○●○●○●○	In-car stop switch activated
C0	●●○●○●○●	The elevator is in Phase 2 of Fire Service.
C1	●●○●○●○●	Retiring Cam protection timer elapsed
C2	●●○●○●○●	Door close failure
C3	●●○●○●○●	The Level Up computer input is ON
C4	●●○●○●○●	Doors locked but not fully closed - Front
C5	●●○●○●○●	Doors locked but not fully closed - Rear
C9	●●○●○●○●	Leveling sensor failure
CA	●●○●○●○●	Landing system redundancy failure
CB	●●○●○●○●	Contacting proofing redundancy failure
CC	●●○●○●○●	Direction relay redundancy failure
CD	●●○●○●○●	Inspection/leveling overspeed failure
CF	●●○●○●○●	Elevator shutdown switch or power transfer input active
DB	●●○●○●○●	Bottom Floor Demand or Top Floor Demand.
E0	●●●○●○●○	The elevator is in Fire Service Phase 1 - (main)
E1	●●●○●○●○	Emergency Power Operation
E2	●●●○●○●○	Shutdown Operation (MGS input is high) - the car is recalled and shut down
E3	●●●○●○●○	Car to Lobby function is active
E4	●●●○●○●○	Priority/Special/VIP Service Phase 1
E5	●●●○●○●○	Priority/Special/VIP Service Phase 2
E7	●●●○●○●○	Heavy Load condition
E8	●●●○●○●○	Light Load condition
E9	●●●○●○●○	Aux. Inspection Access Fault
EA	●●●○●○●○	Second Landing Aux. Access Fault
EB	●●●○●○●○	Bottom Landing Aux. Access Fail
EC	●●●○●○●○	DPM Redundancy Fault
ED	●●●○●○●○	DPMR Redundancy Fault
F0	●●●○●○●○	The elevator is in Fire Service Phase 1 - (alternate)
F1	●●●○●○●○	Hospital Emergency Operation Phase 1.

**Table 2.6 MC-MP Status and Error Messages**

F2	●●●●○●●○	Hospital Emergency Operation Phase 2.
F3	●●●●○●●●	Door zone sensor failure (active state)
F4	●●●●○●○	Leveling sensor failure (active state)
F5	●●●●○●●	Leveling sensor failure (inactive state)
F7	●●●●○●●●	Emergency Power Shutdown
F8	●●●●○●○	Motor Limit Timer (anti-stall timer) elapsed
F9	●●●●○●●	Drive forced MLT
FA	●●●●○●○	Insufficient Motor Field
FC	●●●●●○	Earthquake Operation
FD	●●●●●●●	Failure to leave the floor
FE	●●●●●●○	Both the USD and the DSD inputs are active (open)
FF	●●●●●●●	The Safety Circuit is open.

Normal Mode DDP Diagnostics

The Drive Indicators are located on top of the Computer Swing Panel. Table 2.7 provides status and error messages for the IMC-DDP board. Use the information provided in the Flowcharts and Troubleshooting Tables in either the IMC-SCR or the IMC-AC section for error corrective action.

Figure 2.6 Drive Diagnostic Indicators

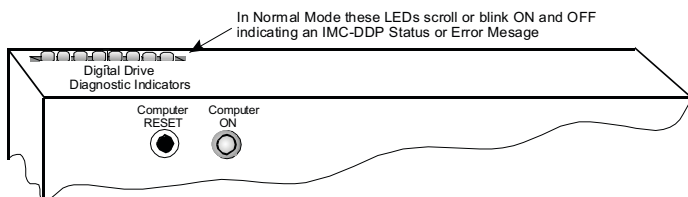


Table 2.7 IMC-DDP Status and Error Messages

○ = LED off ● = LED blinking		
Hex	LEDs	MEANING
	Single LED scanning	Normal Operation, no errors or status messages
01	○ ○ ○ ○ ○ ○ ●	Loss of Position
03	○ ○ ○ ○ ○ ○ ● ●	Terminal Position Switch
0E	○ ○ ○ ○ ● ● ● ○	CP not responding
1F	○ ○ ○ ● ● ● ● ●	Learn Run
24	○ ○ ● ○ ○ ● ○ ○	Drive not ready
3F	○ ○ ● ● ● ● ● ●	Inspection Run
42	○ ● ○ ○ ○ ○ ● ○	PG not ready
7E	○ ● ● ● ● ● ● ○	Identification mismatch
80	● ○ ○ ○ ○ ○ ○ ○	Read sensor error from the landing system
99	● ○ ○ ● ○ ○ ● ●	Fault Relay
C0	● ● ○ ○ ○ ○ ○ ○	Invalid Pattern/Profile parameters
C1	● ● ○ ○ ○ ○ ○ ●	Parity sensor error from the landing system
C2	● ● ○ ○ ○ ○ ● ○	Safety Processor not responding
EF	● ● ● ○ ● ● ● ●	Correction Run
F0	● ● ● ● ○ ○ ○ ○	Parameter checksum error
F8	● ● ● ● ● ○ ○ ○	Floor Height checksum error
F9	● ● ● ● ● ○ ○ ●	Floors learned error
FA	● ● ● ● ● ○ ● ○	Profile Parameter checksum error

**Figure 2.7 HC-PI/O Board**

Notice the IC pin-outs on the HC-PI/O Board. Flag conditions are: ON = 5VDC, OFF = 0VDC.

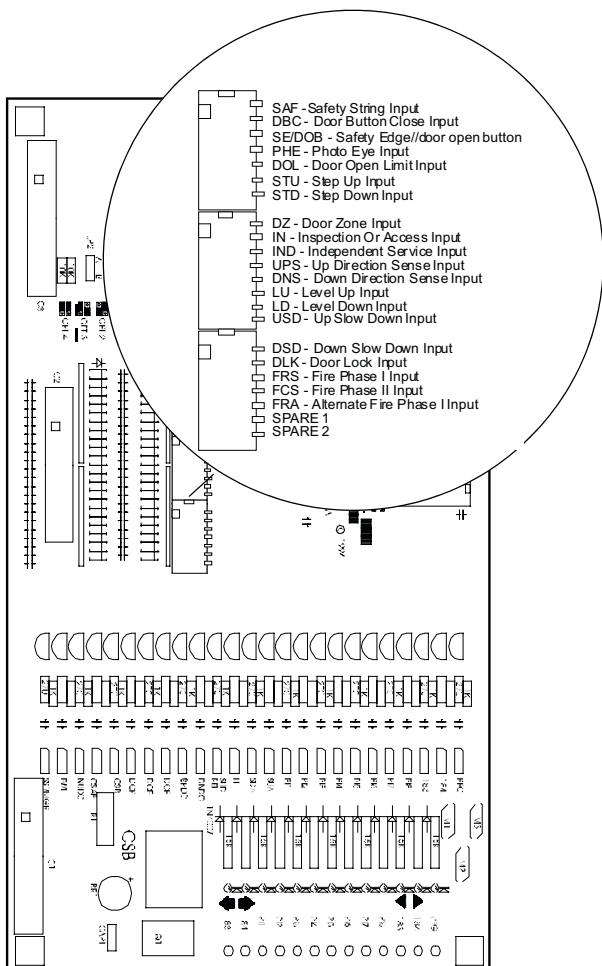


Table 2.8 Accessing the Software Options

Switch	Position	Purpose/Alphanumeric Display
Diagnostic On	Down	Time is displayed
F1-F6	Down	Time is displayed
F7	Up	PASSWORD is displayed
A1-A8	Down	If no password is needed
	Various	Set switches to password value
S push-button	Press 1/2 second	*SYSTEM* is displayed
F6	Up	First Software Option is displayed

Table 2.9 Software Options

VARIABLE	NAME	DEFINITION
AFR	Alternate Fire Floor Recall	Determine the designated recall floor for alternate Fire Service Operation.
AFR2	Second Alternate Fire Floor Recall	Determine the designated recall floor for the second alternate Fire Service operation (Detroit Fire code).
AGNG	Alternate Gong Option	Causes an arrival lantern to illuminate when car doors are open at a non-lobby landing. In the absence of actual call demand, the direction selected is a reflection of the last direction of travel. If the car is at a terminal landing, the appropriate lantern will illuminate.
APP1	Alternate Primary (lower) Parking Floor	When on, the car no longer parks at the original parking floor (PPF). Instead the car parks at the first alternate parking floor specified by the landing stored in this variable.
APP2	Alternate Primary (lower) Parking Floor #2	When ON, the car no longer parks at the original parking floor (PPF). Instead the car parks at the second alternate parking floor specified by the landing stored in this variable.
ASP1	Alternate Secondary (upper) Parking Floor	When ON, the car will no longer park at the original secondary parking floor (SPF). Instead the car will park at the secondary parking floor specified by the landing stored in this variable. This variable is only available on a duplex system.
ASP2	Alternate Secondary (upper) Parking Floor #2	When ON, the car will no longer park at the original secondary parking floor (SPF). Instead the car will park at the secondary parking floor specified by the landing stored in this variable. This variable is only available on a duplex system.
CCBC	Cancel Car Call Behind Car Option	If ON, and if the car has a direction arrow (SUA/SDA), no car calls can be registered behind the current car position. For example, if a car is at the fifth floor moving down, no car calls can be registered for any floors above the fifth floor.
CNID	Car Network ID	(A through L) The Car Network ID identifies this controller to the Group Supervisor.

**Table 2.9 Software Options**

CPPB	Constant/Momentary Pressure Photo Eye/Safety Edge Bypass	This option, when turned OFF, will disable photo eye/safety edge bypass logic for cars that are on Independent Service, Attendant Service, Hospital Service Phase 2, and any other non-automatic door closing conditions (CPCLOSE, MPCLOSE, etc.).
CSAR	CSA Redundancy Check Option	When ON, CSA redundancy checking logic is invoked. When OFF, the LSR, CNP and UDF inputs are ignored, and CSA redundancy checking logic is not performed.
DDOP	Double Ding on Down Option	When ON, the gong output dings twice for down direction travel and once for up direction travel. If OFF, the gong output will only ding once for both up and down direction of travel.
DDPO	Door Lock Direction Preference Option	When ON, the car holds its direction preference until the doors are closed. When OFF, the car may change direction preference with the doors open (when the hall call door time elapses).
DGNG	Door Lock Gong Option	When ON the arrival gong outputs are activated after the doors begin to open. When OFF, the arrival gong outputs are activated when the car steps into the floor. This option should be OFF when hall mounted arrival fixtures are used and ON when car-riding arrival fixtures are used.
FTLF	Failure to Leave the Floor	The value set in this option determines the maximum number of times H (High speed) may <i>pick</i> consecutively at the same landing before the car is shutdown with an MLT fault. Set this option to OFF to disable the shutdown due to this fault.
HNDZ	Initiate high speed run while releveing (high speed while not in "dead zone")	This option is only available on those controllers designed with a "rope stretch releve" relay (RSR), which actively manipulates the "dead zone" perceived by the controller. Enabling this option will allow the controller to initiate a run while the car is still in the "releveing zone" (it will not have to releve to "dead zone" before initiating a high speed run). The run is initiated only if the doors are locked and a car call has been registered.
HREO	Reopen doors with hall button	If enabled, this option allows the activation of a hall call button to reopen car doors (if in the process of closing). When OFF, the doors will not reopen if the doors are closing and a car call has been registered for that car.
KCE	Keyboard Control of Elevators	MCE Central Monitoring System software, CMS for Windows, allows monitoring of elevators and control of certain elevator functions using a PC. The CMS option, KCE can be enabled or disabled at local car or group level by setting the controller Adjustable Control Variable, KCE, ON or OFF. Changing the KCE setting in an individual car controller affects only that car. Changing the KCE setting in the Group controller affects all cars in the group.
LBYY	Lobby Floor	Determines the location of the lobby floor in the building.
LGNG	Lobby Alternate Gong Option	Causes an arrival lantern to illuminate when the car doors are open at the lobby landing. In the absence of actual call demand, the up direction lantern illuminates.

Table 2.9 Software Options

LLCC	Light Load Call Cancel	When the light load input (LLI) is ON, this variable sets the threshold above which an additional car call will cause all previous calls to be canceled with the exception of the last call entered in the system.
MFR	Main Fire Floor Recall	Determine the designated recall floor for main Fire Service operation.
MSAF	Mechanical Safety Edge	Determine if the car has Mechanical Safety Edge. This option must be turned ON if the car has Mechanical Safety Edge, otherwise it should be OFF when an infrared detector is used.
NPPE	No Pre-opening Option	When ON, prevents pre-opening of the doors on an approach to any landing. When OFF, the doors will start to open as soon as the car is 3" (76 mm) from level at the target floor.
PECC	Anti- nuisance Call Cancel	Sets the threshold for the number of car call stops without an interruption of the photo eye. If no photo eye interruption is detected when the car answers the fourth car call, the controller will cancel any additional car calls registered in the system.
PHEP	Photo Eye Protection	When ON, prevents bypass of the photo eye except on Fire Service. When OFF, enables the stuck photo eye protection logic which bypasses the photo eye after the car times out of service. This option must be ON for all jobs that use the PHE input for the door hold key switch.
PPF	Primary (lower) Parking Floor	Determines where the car will park in the absence of call demand. In a duplex system, this variable must be programmed as one of the landings in the building, and is set at the factory before shipment. In group systems, this variable only takes effect when the car is operating independently of the group supervisor or if there is a loss of communication with the group supervisor.
RCCD	Reversal CCD Option	When ON, all registered car calls are canceled when the car reverses direction.

**IMC Pocket Reference****Table 2.10 IMC Jumper Settings (N/C = No Connection)**

MC-MP BOARD			
J3	A	J7	A
J4	A	J8	A
J5	N/C		

MC-CGP-4 (8) BOARD			
JP1	A	JP7	A
JP2	ON	JP8	B
JP3	N/C	JP9	B
JP4	B	JP10	B
JP5	B	JP11	A
JP6	B		

IMC-DDP BOARD			
JP1	N/C	JP11	A
JP2	N/C	JP12	A
JP3	A	JP13	B
JP4	N/C	JP14	—
JP5	B	JP15	A
JP6	B	JP16	A
JP7	N/C	JP17	N/C
JP8	B	JP18	N/C
JP9	N/C	JP19	N/C
JP10	A		
JP14 = A if U15 is a 24-pin chip (2K RAM)		JP14 = B if U15 is a 28 pin chip (8K RAM)	

MC-RS BOARD			
JP1	**	JP3	CAR
JP2	**	JP4	B
** These are usually ON the terminal ends of the daisy chain of car and Group controllers, see Group Manual Balancing the High Speed Communication.			
COM1 - COM4 Switches = DCE for a Serial Cable or DTE for a Line Driver or Modem			

IMC-MB BOARD			
JP1	+15V	JP2	N/C

IMC-DIO BOARD			
JP1	N/A	JP2	N/C (off)

JUMPER SCHEDULE FOR IMC-DAS BOARD			
MG SYSTEM JUMPERS	JP1 Not Used	JP2 Not Used	JP3 B position
JP4 ON	JP5 ON	JP6 N/C	JP7 N/C
SCR SYSTEM JUMPERS	JP1 Not Used	JP2 Not Used	JP3 A position
JP4 N/C	JP5 N/C	JP6 ON	JP7 ON

IMC-GPA BOARD			
MF Current	JP2 Position	Brake Current	JP1 Position
Less than 2A	N/C	2 to 10A	B
2A - 14.99A	B	10A - 20A	A
15A - 30A	A	less than 2A	none

SCR-LGA			
JP1	Neutral (connect to only one pin)	JP4	A
JP2	Neutral (connect to only one pin)	JP5	B
JP3	B	JP6	N/C

SCR-PRI			
Input Voltage between BP01 & BP02	130 VAC or less	Jumper Eyelets E4 & E7	
	131 VAC or above	No Jumper	

SCR-RI			
Maximum Tach voltage between TS & TC	80 VDC or less	TVR = 20 - 80 VDC	
	81 VDC or more	TVR = 81 - 190 VDC	



Pocket Guide

IMC Pocket Reference

Section 3. IMC-SCR Flowcharts

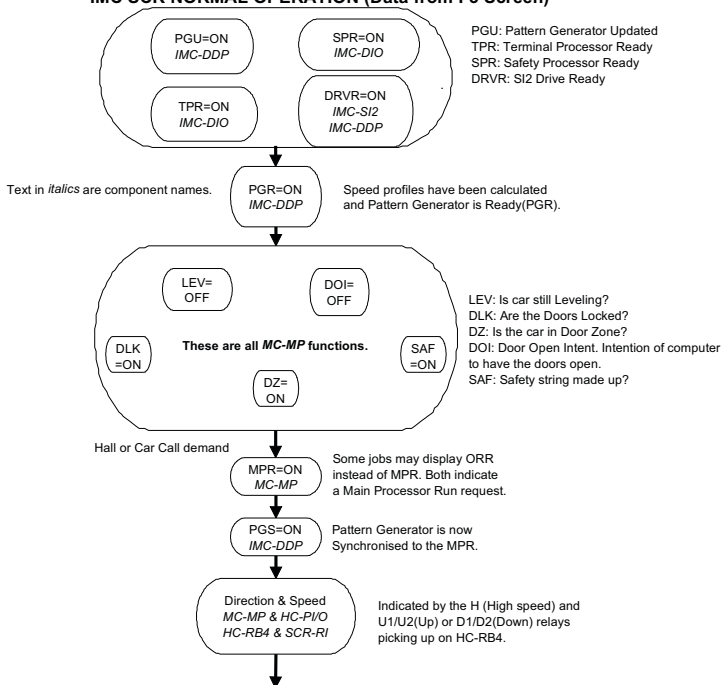


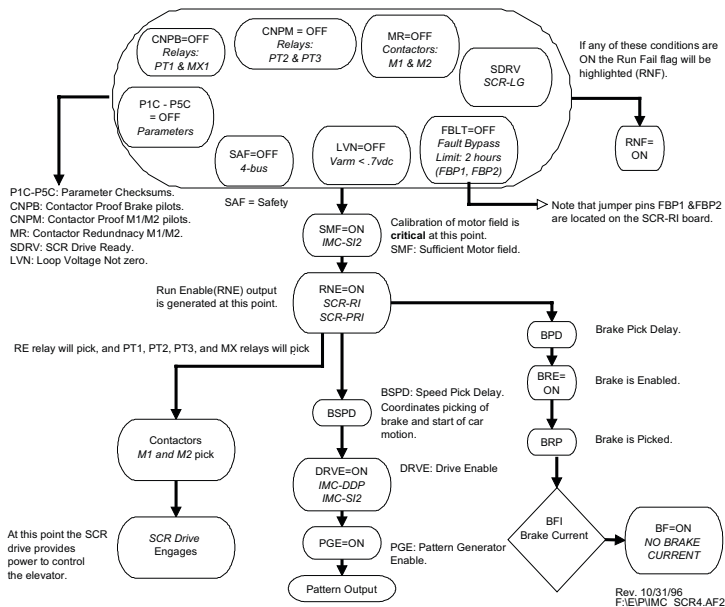
IMC-SCR Release 2 Software



Note: The following flow charts are distinguished by Software Version.

IMC SCR NORMAL OPERATION (Data from F3 Screen)



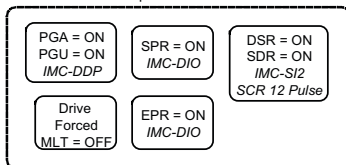
**Release 2 Software Continued**

IMC-SCR Tulare Software

MC-CGP Board Software version 2.13 to present

IMC-SCR NORMAL OPERATION

Text in *Italics* are component names



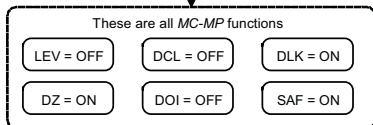
Flags on the Graphic Display of Elevator (F3) screen.

DSR: SI2 Drive Ready
 EPR: Emergency Terminal Processor
 PGA: Pattern Generator Ready
 PGU: Pattern Generator Updated
 SPR: Safety Processor Ready
 SDR: SCR Drive Ready

Drive Forced Shutdown = OFF

PGR = ON
IMC-DDP

Speed profiles have been calculated and
 Pattern Generator is Ready (PGR).



MC-MP Functions

LEV: Is the car still Leveling?
 DCL: Door Close Limit
 DLK: Are the Doors Locked?
 DZ: Is the car in Door Zone?
 DOI: Door Open Intent - intention of the
 computer to have the doors open.
 SAF: Safety string made up?

Hall or Car Call demand

ORR = ON
MC-MP

ORR: Operational Run Request - the MC-MP is requesting
 permission, from the IMC-DDP, to run the car.

ORG = ON
IMC-DDP

ORG: Operational Run Granted - Permission to run the car
 has been granted by the IMC-DDP.

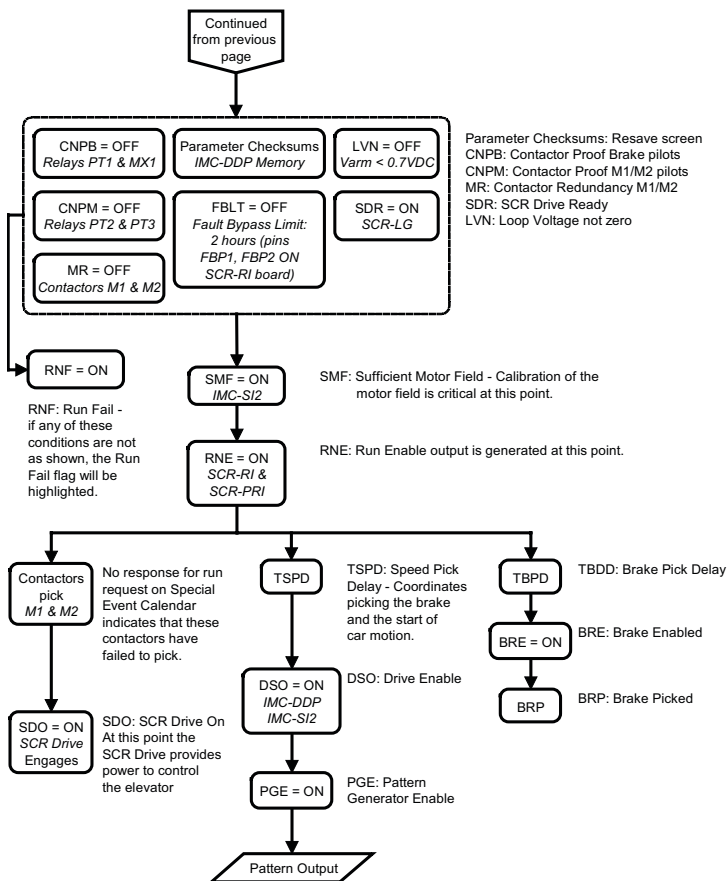
Direction & Speed
MC-MP & HC-PI/O
HC-RB4 & SCR-RI
IMC-DIO & ribbon cables

Relays H (High Speed) and U1/U2 (Up) or
 D1/D2 (Down) on the HC-RB4 board pick.

Continued
 on next page

**Tulare Release 2.13 Continued**

MC-CGP Board Software version 3 to present.



Section 4. IMC-SCR Troubleshooting



IMC-SCR Troubleshooting

Power Supply Troubleshooting

If the system is showing indications of power-related problems (no power, erratic operation, improper voltage indicators), refer to the following table for assistance.

Table 4.1 IMC-SCR Power Supply Troubleshooting

(Logic, SI2 / S25 Digital Drive, & SCR 12 Pulse Drive)		
SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No voltage at secondary side of T1 or T2 transformers at bottom of controller.	No line voltage to the primary side of the T1 and T2 transformers.	1. Check the fuses on the primary side of the T1 or T2 transformers. 2. Check the voltage on the primary side of the T1 and T2 transformers.
	Transformer configuration is wrong.	Disconnect the power and check the primary and the secondary side configuration of the T1 or T2 transformers.
	Open primary or secondary winding, defective transformer.	Verify primary and secondary windings of the T1 and T2 transformers are not open. Replace defective transformer.
Voltage too high or low at secondary side of T1 or T2 transformers at the bottom of controller.	Transformer configuration is wrong.	Check the primary and secondary side configuration of the T1 or T2 transformers.
Primary side fuse of T1 or T2 transformer blows immediately upon power up.	Transformer configuration is wrong.	Check the primary side configuration of the T1 or T2 transformer.
	External circuit is shorting the secondary side.	Disconnect the external circuit that is connected to the secondary side and check the voltage.
	The primary or the secondary windings are shorted.	Replace the defective part.*
No +5VDC from the DC power supply	No input voltage to the DC power supply.	1. Check fuse F2. 2. Check voltage between input terminals 1 and 4 of the DC power supply. 3. Verify +5VDC by disconnecting the +5VDC wiring from the IMC-MB board.
	Defective DC power supply.	Replace the defective part.*

**Table 4.1 IMC-SCR Power Supply Troubleshooting**

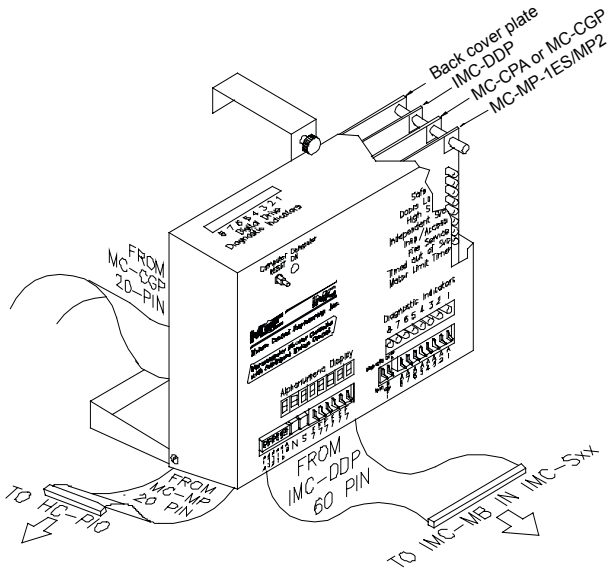
No -15VDC or +15VDC from the DC power supply.	No input voltage to the DC power supply.	1. Check the F2 fuse. 2. Check the voltage between input terminals 1 and 4 of the DC power supply. 3. Verify that there is +15VDC or -15VDC by disconnecting the +5VDC, -15VDC and the +15VDC wiring from the mother board (IMC-MB).
	Defective DC power supply.	Replace the defective part.*
No +5VDC, -15VDC and +15VDC on the SCR-LGA test points.	120VAC missing to mini block terminals 1 and 2D on the IMC-SCR Drive.	1. Check fuse F2D. 2. Verify 120 VAC at terminals 1 and 2D.
	SCR-LGA board loading the SCR-PS power supply board.	1. Disconnect ribbon cable connected to the SCR-LGA board and the SCR-PS board. 2. Verify that there is +5VDC, -15VDC and +15VDC directly on the SCR-PS board.
	Defective power transformer inside the IMC-SCR Drive or a defective SCR-PS board.	Replace the defective part.*
No voltage at terminals AC1 and AC2 of the IMC-S12/S25 Drive.	Main line voltage failure or a fuse has blown.	1. Check the voltage at the primary side of the T1 transformer. 2. Check the FC1 fuse. 3. Check the wiring.
The Computer 1 LED and Computer 2 LED on the IMC-DIO board do not light.	No +5VDC to the IMC-DIO board.	Verify that there is +5VDC present at Test Point TP5 on the IMC-DIO board.
	Defective IMC-DIO board.	Replace the defective part.*
PWR/COMP LED on the IMC-DAS board does not light.	No +5VDC to the IMC-DAS board.	1. Verify that there is +5VDC present at test point TP5 on the IMC-DIO board. 2. Check the +5VDC wire connection on the IMC-MB board.
	Defective IMC-DAS board.	Replace the defective part.*



Note: If replacing the part corrects the problem, call MCE for an RMA number. Recommended spare parts lists for many assemblies are available from MCE.

Swing Panel Troubleshooting

Figure 4.1 Computer Swing Panel



Note: When asked to verify correct EPROMs installed in the following tables, refer to the [Software Identification table](#) on “contents” page iii.

Table 4.2 IMC-SCR Computer Swing Panel Faults

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
MC-MP board does not loop (Computer ON LED on Swing Panel front blinks ON and OFF).	MC-MP board EPROM U9.	1. Verify correct MP EPROM installed at U9. 2. Verify MP EPROM properly plugged in. 3. Verify MC-MP board EPROM orientation (notches on socket and EPROM match).
	MC-MP board jumper setting.	Verify MC-MP board jumper settings (see Table 2.10).
	Defective MC-MP board.	Replace the defective part.*
	Defective EPROM.	Replace the defective part.*

**Table 4.2 IMC-SCR Computer Swing Panel Faults**

MC-CGP-x board does not loop (Computer ON LED on MC-CGP-x board blinks ON and OFF, CRT is not updating).	MC-CGP-x board EPROMs at locations U17 and U18.	1. Verify correct CGP software EPROMS installed at U17 and U18. 2. Verify CGP EPROM s (U17, U18) are plugged in properly. 3. Verify orientation of EPROMs (socket and EPROM notches match).
	MC-CGP-x board jumper setting.	Verify MC-CGP-x board jumper settings (see Table 2.10).
	Defective MC-CGP-x board.	Replace the defective part.*
	Defective EPROM.	Replace the defective part.*
IMC-DDP board does not loop (the DDP ON LED on the back side of the Swing Panel blinks ON and OFF)	IMC-DDP board EPROMs at locations U5 and U6.	1. Verify DDP EPROMS properly plugged in. 2. Verify orientation of IMC-DDP board EPROMs (socket and EPROM notches match).
	IMC-DDP board jumper setting.	Verify IMC-DDP board jumper settlings (see Table 2.10).
	Defective IMC-DDP board.	Replace the defective part.*
	Defective EPROM.	Replace the defective part.*

Computer/Terminal Troubleshooting**Table 4.3 IMC-SCR Computer Peripherals Faults**

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
CRT is not working.	Com Port 1 program is incorrect.	Verify Com Port 1 programmed for serial cable and CRT (monochrome or color) with keyboard.
	Incorrect CRT setting adjustment.	Default CRT setting parameter and reprogram. See Computer Peripherals Manual
	MC-CGP-x board is not looping.	1. Verify correct CGP EPROMs installed at MC-CGP-x board U17 and U18. 2. Verify CGP EPROMs properly plugged in. 3. Verify orientation of MC-CGP-x EPROMs (notches on sockets and EPROMs match). 4. Check MC-CGP-x board jumper settings (see Table 2.10).
	Defective or incorrect software.	Verify CGP software version. Replace the defective part.u
	Incorrect jumper or switch setting on the MC-RS board.	Verify MC-RS board jumper settings (see Table 2.10).
	CRT cable plugged into wrong Com port.	Verify CRT cable connected to Com Port 1 of MC-RS board.
	Defective CRT cable.	Replace the defective part.*
	Defective MC-RS board.	Replace the defective part.*
	Defective MC-CGP-x board.	Replace the defective part.*

Drive, Motor, and Brake Troubleshooting

Table 4.4 IMC-SCR Digital Drive Faults

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
IMC-DIO EEPROM test failed.	IMC-DIO board did not learn properly.	Relearn NTS and ETS switches.
	Defective or incorrect IMC-DIO EEPROM.	1. Verify correct IMC-DIO EEPROM. 2. Verify IMC-DIO EEPROM and socket notches match.
	Defective IMC-DIO board.	Replace the defective part.*
IMC-DIO board Computer 1 LED is flashing ON and OFF.	IMC-DIO software at location U19.	1. Verify IMC-DIO EEPROM plugged in. 2. Verify EEPROM and socket notches match.
	Defective EEPROM.	Replace the defective part.*
	Defective IMC-DIO board.	Replace the defective part.*
IMC-DIO board Computer 2 LED is flashing ON and OFF.	ETS software at location U3 on the IMC-DIO board.	1. Verify ETS EPROM at IMC-DIO board U3. 2. Verify EPROM properly plugged in. 3. Verify EPROM notch/socket notch match.
	Defective ETS software EPROM.	Replace ETS EPROM, IMC-DIO board U3.
	Defective IMC-DIO board.	Replace the defective part.*
	Bad connection between IMC-MB and IMC-DIO boards.	Replace the defective part.*
The PWR/COMP LED on the IMC-DAS board does not illuminate (turn ON solidly) or blinks ON and OFF.	IMC-DDP board does not loop.	1. Verify correct EPROMs at U5 and U6 2. Verify EPROMs properly plugged in. 3. Verify EPROM notch/socket notch match. 4. Verify jumper settings on IMC-DDP-C board (see Table 2.10).
	No +5VDC and -15VDC to the IMC-DAS board.	1. Verify +5VDC at test point TP5 on IMC-DIO board and -15VDC at test point TP17 on IMC-DAS board. 2. Check +5VDC and -15VDC connections on IMC-MB board. 3. Verify Drive Reset button is not stuck.
	Defective IMC-DAS board.	Replace the defective part.*
	Bad connection between the IMC-MB and IMC-DAS board.	Replace the defective part.*
Occasionally FLT relay will drop without any drive fault.	Slow DDP EPROMs. Should be under 70ns access time.	Replace the defective part.*
Digital Drive Parameters take too long to save.	IMC-DDP board loaded in Swing Panel.	Replace the IMC-DDP board with an IMC-DDP board.
	Defective IMC-DDP board.	Replace the defective part.*

**IMC Pocket Reference****Table 4.5 IMC-SCR Digital Drive Faults (Motor)**

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
F3 screen shows brake voltage, Tach (ft/min) and motor (rev/min) without selecting any direction.	BIP trimpot adjustment out of tolerance.	Adjust BIP trimpot R56 until D703 (1702 for Tulare) is 00. Also, adjust trimpot R55 until D702 (1703 for Tulare) is between FC and 04.
F3 screen does not show motor field voltage but Digital Volt Meter reads correct voltage on terminals MF1 and MF2.	Missing connection to terminals MF1, MF2 on SCR-RI board.	Verify connections to terminals MF1, MF2.
	Connections to IDC terminals MF1 and MF2 are swapped.	Verify terminal MF1 on SCR-RI board connected to panel mount terminal MF1. 2. Verify terminal MF2 on SCR-RI board connected to panel mount terminal MF2 on IMC-SI2/S25 Drive.
	Incorrect motor field voltage calibration.	Calibrate motor field voltage.
	Motor field polarity.	Verify motor field terminal MF2 positive with respect to terminal MF1.
	Old Rev SCR-RI bd.	Replace board.
Motor Field failure fault on the F3 screen of the CRT.	No input voltage at terminals MP01 and MP02 of IMC-SI2/S25 Drive.	1. Verify fuses FM1, FM2 OK. 2. Verify voltage at terminals MP01 and MP02 on IMC-SI2/S25 Drive. 3. Verify entered motor field AC Reference Voltage (DMFV) on Motor Field & Brake (F1 - 2) screen same as measured voltage between terminals MP01 and MP02.
	Incorrect motor field calibration. Motor field below 50% of requested standing motor field voltage MFSV.	Calibrate motor field voltage.
	Incorrect MFIG.	Set MFIG to 3.0 (F1 - 2 screen).
F3 screen of the CRT and meter reads maximum motor field voltage (90% of the motor field AC input voltage).	Motor field winding connections are open or missing.	1. Verify motor field leads MF1 and MF2 connected to panel mount terminals MF1 and MF2 in controller. 2. Disconnect motor field connection in controller. Verify correct motor field resistance with DVM.
	Motor field standing voltage programmed incorrectly.	Verify Motor Field Standing Voltage (MFSV) on Motor Field & Brake (F1 - 2) screen set to half Motor Field Forcing Voltage (MFFV).
	Incorrect motor field voltage calibration.	Verify motor field not saturated. Reset IMC-DAS board. Calibrate motor field voltage.
	Defective IMC-DAS board.	Replace the defective part.*

Table 4.5 IMC-SCR Digital Drive Faults (Motor)

Unable to calibrate motor field voltage.	Motor field AC supply voltage and motor field resistance are programmed incorrectly.	Verify that the AC Reference Voltage (DMFV) and the Motor Field Resistance (DMFR) settings on the Motor Field & Brake Parameters (F1 - 2) screen are the same as the measured motor field AC voltage and resistance.
	Motor field AC input voltage phasing problem.	Verify that the motor field AC input voltage (between terminals MP01 and MP02) is in phase with AC input voltage (between terminals AC1 and AC2) to the Drive.
	Incorrect jumper JP2 setting on the IMC-GPA board.	1. Verify that the jumper setting on the IMC-GPA board is correct (see Table 2.10). If JP2 is B, make certain that the voltage on Test Point MFI of the IMC-DAS board does not exceed 8.0 VDC when the motor field voltage is equal to the motor field forcing voltage. 2. If Jumper JP2 is set to A, then make certain that the voltage on test point MFI of the IMC-DAS board is not less than 2.0 VDC when the motor field voltage is equal to the motor field forcing voltage.
	Defective IMC-DAS board.	Replace the defective part.*
	Defective IMC-GPA board.	Replace the defective part.*
	Defective IMC-SI2/S25 Drive.	Replace the defective part.*
No Motor Field Triggering (MFT) or ACS signal on test points MFT and ACS on IMC-DAS board. (Oscilloscope measurement only) ACS=  MFT= 	Missing ribbon cable connection between IMC-GPA board and IMC-DAS board (only provide ACS).	Verify that the ribbon cable from the IMC-GPA board to the IMC-DAS board is connected.
	Motor Field and Brake Parameters (F1 - 2) screen was not programmed.	Check the programming on the Motor Field and Brake Parameters (F1 - 2) screen.
	No communication between IMC-DDP board and IMC-SI2/S25 Drive if only MFT signal is missing.	Check the ribbon cable connection between the IMC-DDP board and the IMC-MB board.
	Defective IMC-DAS board.	Replace the defective part.*
	Defective timer chip (U20, IMC-DAS board).	Replace the defective part.*

**Table 4.6 IMC-SCR Digital Drive Faults (Offset)**

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Too much speed offset (difference in speed).	BIP calibration OFF.	Verify BIP calibration.
	DCS zero balance calibration offset.	Adjust BAL trimpot for 0.00VDC ± 3 mVDC on test point DCS of IMC-DAS board.
	Gains Low	Increase GP/GI/GDEC
Too much dip or a bump on the tachometer signal during take off.	Offset on IMC-DAS board test point DCS (negative voltage OFFSET provides dip, positive OFFSET provides bump).	Adjust trimpot BAL on the IMC-DAS board to get 0.0 Volts ± 3 mV on test point DCS on the IMC-DAS board.
	Incorrect Pre-torque parameter adjust.	Verify Pre-Torque parameters are correct.
	Rollback	Adjust TSPD
	Test point TP3 offset too high.	Adjust Armature Current Sensor Offset parameter (SISO) on Drive Parameter (F1 - 4) screen until test point TP3 on SCR-LGA board is 0.00mV ± 1.0 mVDC.
Unequal leveling distance (up vs. down)	OFFSET on test point DCS.	Adjust trimpot BAL on IMC-DAS board to get 0.0 Volts ± 3 mV on testpoint TP8 DCS.
	BIP trimpot adjustment out of tolerance.	Adjust trimpots R56 so 1703 equal to 00 and R55 so 1702 is between FC and 04. See Note following.
UP versus DN speed difference.	BIP trimpot adjustment out of tolerance.	Adjust BIP trimpot (R56) until 1703 is 00. Adjust trimpot R55 until 1702 is between FC and 04. See Note following.



Note: Access the Controller Memory Diagnostic Display (Shift F11 or F11,3) screen. With the cursor on the *Bank* line, use the Space Bar to select CGP-C Offboard (DDP) Dual Port RAM. Move the cursor to the *Offset* line, type 00001700, then press Enter.

```

10/10/2000, 10:25:30, F4= Main Menu

Controller Memory Diagnostic Display (Shift F11)

Bank: CGP-C Offboard (DDP) Dual Port RAM
Format: Hexadecimal
Size: 8-bits
Lines: 1
Offset: 00001700

00001700: 00 00 fc ff f0 f0 f8 f0-f4 f2 e1 f0 b0 f0 f0.....
Address 1700
Address 1701
Address 1702
Address 1703
dnID263.ai

```

Table 4.7 IMC-SCR and IMC-AC Digital Drive Faults (Brake)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Meter reads correct brake voltage. F3 screen shows different voltage.	Incorrect brake field voltage calibration.	Calibrate brake field voltage (CBV).
	Brake coil resistance value (DBR) entered incorrectly.	Check motor brake coil resistance. Confirm same brake coil resistance values for DBR parameter on Motor Field & Brake Parameters (F1 - 2) screen.
	Defective brake current sensor.	Check brake current sensor resistance between wires BC1 and BC2. Current sensor wires BC1 and BC2 are connected to a 6-position phoenix terminal. Resistance will be between 89 and 100S.
	Bad IMC-DAS board.	Replace the defective part.*
	Defective IMC-GPA-SI board.	Replace the defective part.*
	Defective IMC-SI2/S25 Drive.	Replace the defective part.*
Meter and CRT screen F3 shows maximum brake voltage (85% of the AC input brake voltage) when the direction is picked.	Motor brake coil resistance is open or missing.	1. Verify motor brake coil leads connected to panel mount terminals B1 and B2. 2. Check brake coil resistance with DVM by disconnecting motor brake coil leads.
	Shorted brake IGBT.	Replace IGBT (Q5) on IMC-GPA board.
	Bad IMC-DAS board.	Replace the defective part.*
Incorrect brake output voltage.	Brake coil resistance (DBR) and brake AC supply voltage parameters are programmed incorrectly.	1. Check brake coil resistance. Confirm same brake field coil resistance entered for DBR parameter on Motor Field & Brake Parameters (F1 - 2) screen. 2. Check voltage on bottom side of fuses FB1 and FB2. Make certain same Brake AC supply input voltage programmed for DBV parameter on Motor Field & Brake Parameters (F1 - 2) screen.
	Brake AC input voltage phasing problem.	Verify brake field AC supply voltage (between terminals BP01 and BP02) in phase with AC input voltage (between terminals AC1 and AC2) to Drive.
	Defective Brake Current Sensor.	Check brake current resistance between wires BC1 and BC2. Should be between 89 and 100S.
	Bad IMC-DAS board.	Replace the defective part.*
	Bad IMC-GPA-SI board.	Replace the defective part.*
	Bad IMC-SI2/S25 Drive.	Replace the defective part.*

**Table 4.7 IMC-SCR and IMC-AC Digital Drive Faults (Brake)**

Brake Failure (BF) fault due to zero output voltage.	Brake circuit output wiring problem.	1. Verify voltage between terminals BP01 and BP02 of IMC-SI2 Drive. 2. Check brake output circuit wiring.
	Defective BD relay.	1. Verify that BD relay is picked before enabling either UP or DN direction. 2. Check continuity between BD 1MOV and BD 2MOV contacts.
	Bad IMC-DAS board.	Replace the defective part.*
	Bad IMC-GPA-SI bd.	Replace the defective part.*
Brake Failure (BF) fault due to IGBT failure.	Incorrect resistance between terminals BR1 and BR3 of IMC-SI2 / S25 Drive.	Verify resistance between terminals BR1 and BR3 5 to 7 times brake coil resistance.
	CB capacitor wired incorrectly.	Verify CB capacitor wired between terminals BR1 and BR3 of IMC-SI2 Drive.
	Defective brake IGBT.	Replace brake IGBT (Q5) on IMC-GPA board. Check RB1 first.
	Bad IMC-GPA-SI bd.	Replace defective part.*

Table 4.8 IMC-SCR and IMC-AC Digital Drive Faults (Tachometer)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Pattern speed correct on F3 screen, but safety speed incorrect.	Incorrect Tach/Velocity Encoder scaling (GTC).	1. Increase GTC on F1 - 4 screen if car running faster than inspection speed. 2. Decrease if car running slower than inspection speed.

Table 4.9 IMC-SCR and IMC-AC Digital Drive Faults (Learn Mode)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Does not learn limit switches UNT1, UNT2, etc., DNT1, DNT2, etc., UETS and DETS	Missing limit switch connection to terminal on SCR-RI board.	Verify hoistway normal limit switches connected to terminals UNT1, UNT2, DNT1 and DNT2 properly.
	Bad IMC-DIO board.	Replace the defective part.*
	Bad IMC-DIO EEPROM.	Replace the defective part.*
	Bad ribbon cable between SCR-RI and IMC-MB boards.	Replace the defective part.*
	Bad SCR-RI board.	Replace the defective part.*
	Timing issue	Simultaneously reset IMC-DIO and IMC-DDP. Re-learn limits.
Car starts learning the elevator hoistway at 50 F.P.M. instead of 35 F.P.M. It does not slow on each floor and it does not learn any floor height.	Learn speed set at 50 FPM.	Verify VLR = 35 F.P.M. on Auxiliary (F2 - 6) screen.
	No Leveling input to pattern generator.	1. Check connection between IDC terminal E14 on HC-RB4 board and IDC terminal E14 on SCR-RI board. 2. Check wire jumper between eyelets E13 and 8 on HC-RB4 board. 3. Check terminals 25 and 26 (or 25X and 26X if so wired).
	No DZ input to pattern generator.	Check connection between terminals 27 on SCR-RI and HC-RB4 boards.
	Incorrect floor codes.	Verify correct floor codes (verifying Absolute Floor Numbers).
	No OLM input to pattern generator.	1. Verify connection to terminals 93 and 94 on SCR-RI board. 2. Verify landing system generates UOLM and DOLM at correct time.
	Bad IMC-DDP board.	Replace the defective part.*
	Bad SCR-RI board	Replace the defective part.*
Car starts learning hoistway but F3 screen position does not change (stays on first landing).	MP computer does not see DSD input.	Verify 120 VAC at HC-RB4 board terminal 13 (DSD) when car not at bottom landing.
	Incorrect floor codes.	Verify correct floor codes. Verify absolute Floor Numbers.
Lost floor height data and MP diagnostic shows LRN ERR message when car reaches top landing.	USD and DSD inputs shorted together or miswired.	1. Verify only DSD input ON when car reaches top landing (Address 2E bit 6). 2. Verify only USD input ON when car is at bottom landing.

**Table 4.9 IMC-SCR and IMC-AC Digital Drive Faults (Learn Mode)**

Incorrect learning of floor heights.	MP computer sees the LD input while learning the hoistway (wiring problem).	Verify wire from terminal 25 (or 25X) on HC-RB4 board disconnected and INTB jumper moved to LRN position.
	No DZ input to the pattern generator.	Check connection between terminals 27 on SCR-RI and HC-RB4 boards.
	No LEV input to the pattern generator.	Check connection between IDC terminal E14 on HC-RB4 board and IDC terminal E14 on SCR-RI board.
	No OLM input to the pattern generator.	1. Verify connection to terminals 93 and 94 on SCR-RI board. 2. Verify landing system generates UOLM and DOLM at correct time.
While car is learning hoistway and hits leveling sensor, motor stops moving.	Did not adjust the gain parameters.	Verify following parameters on Gain Parameters (F2 - 7) screen: GP=3, GI=3.5 and GIP=3 (typically)
IMC-DIO board does not show LRNW, LRNR and LRNC after learning limit switches.	Missing or incorrect hoistway normal limit switch wiring to terminals UNT1 and DNT1 on the SCR-RI board.	1. Verify that the hoistway normal limit switches UNT1 and DNT1 are connected to terminals UNT1 and DNT1 respectively. 2. Verify that the hoistway normal limit switch wires are not swapped.

Table 4.10 IMC-SCR and IMC-AC Digital Drive Faults (Drive Fault)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Unable to run on Inspection mode or Normal mode due to CNPB fault.	Blown brake fuse.	Verify fuses FB1 and FB2 ok.
	Open SAFB relay contacts.	Verify SAFB relay picked and voltage across terminals BPI1 and BPI2 matches voltage on top of fuses FB1 and FB2.
	Open MX relay 1 closed contact, or open PT1 relay 1 closed contact.	Verify voltage across MX relay 1 closed contact and PT1 relay 1 closed contact same as voltage across terminals BPI1 and BPI2. Replace SCR-PRI.
	Brake input voltage less than 130VAC and there is no jumper between eye-lets E4 and E7 on SCR-RI board.	Verify that there is a jumper between eye-lets E4 and E7 on the SCR-PRI board if the brake AC input voltage is 130VAC or less.
	Missing/incorrect wiring.	Verify 120VAC on IDC terminal CNPB of SCR-RI board without picking any direction.
	Bad IMC-DIO board.	Replace the defective part. u.
	Bad SCR-PRI board.	Verify . 120VAC on SCR-PRI board IDC terminal CNPB when direction not enabled. Otherwise, replace SCR-PRI bd.
	Bad SCR-RI board.	Replace the defective part.*
Voltage on SCR-PRI board IDC terminal CNPB does not drop between 2-20 VAC when direction enabled.	Bad IMC-MB board.	Replace the defective part.*
	Bad SCR-PRI board.	Replace the defective part.*
Unable to run on Inspection mode or Automatic mode due to redundancy fault (CNPM).	Blown FMC fuse.	Replace FMC fuse.
	Incorrect wiring.	Verify wiring is connected to Safety relay (SAFM) and other related circuitry.
	Defective safety (SAFM) relay.	Verify SAFM relay picked and check 2 Bus voltage (. 120VAC) between IDC terminals MI1 and MI2 on SCR-PRI board.
	Missing connection IDC terminal CNPM.	Verify connection between IDC terminals CNPM on SCR-RI and SCR-PRI boards.
	Bad SCR-PRI board.	Verify . 120VAC on SCR-PRI board IDC terminal CNPM when direction not enabled. Otherwise, replace SCR-PRI bd.
	Bad IMC-DIO board.	Replace the defective part.*
	Bad SCR-RI board.	Replace the defective part.*
	Bad IMC-MB board.	Replace the defective part.*

**Table 4.10 IMC-SCR and IMC-AC Digital Drive Faults (Drive Fault)**

IDC terminal CNPM voltage does not drop to 2-20VAC when UP or DOWN direction selected.	Bad SCR-PRI board.	Replace the defective part.*
Unable to run the controller due to redundancy fault MR.	Blown F2D fuse.	Replace F2D fuse.
	Auxiliary closed contacts on M1 and M2 contactors staying open.	Verify . 120VAC at IDC terminal MR on SCR-RI board when direction is not enabled.
	Bad SCR-RI board.	Replace defective part.*
	Missing wire connection to Pattern Generator Door Zone input.	1. Check connection between IDC terminals 27 on HC-RB4 and SCR-RI boards. 2. Check F3 screen DZ flag for MP. 3. Check F3 screen DZP flag for DDP.
DZ flag does not come ON (F3 screen) when car is at landing.	Defective DZ sensor or a missing wire.	Check that DZ relay on HC-RB4 board picked. If not, correct Door Zone sensor or check connection (terminal 27).
	Pattern generator does not see DZ input.	Check connection between IDC terminals 27 on SCR-RI and HC-RB4 boards.
	Bad IMC-DDP board.	Replace the defective part.*
	Bad SCR-RI board.	Replace the defective part.*
Elevator runs fine for 2 hours, then stops running.	Fault Bypass Limit Time Out fault detected because fault bypass jumper connected for more than 2 hours while car in Normal operation.	Disconnect fault bypass jumper on SCR-RI board, toggle Inspection switch ON and OFF, then replace jumper and try again.
Controller is selected to Normal mode, but the INS flag stays ON.	Missing wire connection to INS input of pattern generator.	Check wire between IDC terminals E31 on SCR-RI board and HC-RB4 board.
	Bad IMC-DDP board.	Replace the defective part.*
	Bad IMC-DIO board.	Replace the defective part.*
	Bad SCR-RI board.	Replace the defective part.*
Safety processor does not detect COS, LOS and IOS faults.	Fault bypass jumper is connected.	Disconnect the fault bypass jumper on the SCR-RI board.
	Bad IMC-DIO board.	Replace the defective part.*
	Bad IMC-DDP board.	Replace the defective part.*

Table 4.10 IMC-SCR and IMC-AC Digital Drive Faults (Drive Fault)

LEV flag on the F3 screen does not highlight when the LU or LD relay picks on the HC-RB4 board.	Missing or incorrect wire connection to the LEV input of the pattern generator.	1. Check the wire connection between IDC terminals E14 on the HC-RB4 board and the SCR-RI board. 2. Check the wire jumper between eyelets 8 and E13 on the HC-RB4 board.
	Defective ribbon cable between the SCR-RI and the IMC-MB board.	Replace the defective part.*
	Defective IMC-DIO board.	Replace the defective part.*
	Defective SCR-RI board.	Replace the defective part.*
	Defective IMC-DDP board.	Replace the defective part.*
	Defective IMC-SI2/S25 Drive.	Replace the defective part.*
Motor tries to run away when any direction is enabled.	Tachometer signal is missing.	Verify that the tachometer wires are connected to terminals TS and TC on the SCR-RI board.
	Tachometer wires are swapped or the motor field wires are swapped.	Swap tachometer wires TS and TC on the SCR-RI board or swap the motor field wires.
	Defective SCR-RI board.	Replace the defective part.*
Computer does not turn on the FLT output to pick the FLT relay.	Drive fault.	Verify that there are not any active fault flags on the F3 screen.
	Non-bypassable faults - Motor Field (MF), Parameter Initialization error (PIE) and Brake IGBT failures (BF).	If the fault bypass jumper on the SCR-RI board is connected, then check any of the non-bypassable faults (Motor Field, Parameter Initialization error and Brake IGBT failure).
	Defective IMC-DAS board.	Replace the defective part.*
	Defective ribbon cable between the IMC-MB board and the SCR-RI board.	Replace the ribbon cable between the IMC-MB and the SCR-RI board.
	Defective ribbon cable between the IMC-DDP board and the IMC-MB board.	Replace the defective part.*
	Defective IMC-SI2/S25 drive.	Replace the defective part.*

**Table 4.10 IMC-SCR and IMC-AC Digital Drive Faults (Drive Fault)**

Run Enable output does not come on after receiving the direction input.	FLT relay drops.	Verify that the FLT relay is picked if there is no drive fault.
	DRO fault.	Verify that there is no DRO fault.
	MR input is low.	Verify that the MR input is high before enabling any direction.
Run Enable output does not come on after receiving the direction input.	CNPB input is low.	Verify that the CNPB input is high before enabling any direction.
	CNPM input is low.	Verify that the CNPM input is high before enabling any direction.
	LVN is active.	Verify that the armature voltage is less than 0.7VDC before enabling direction.
	SCR Drive.	Verify that the SCR Drive is ready before enabling direction.
	Parameter checksum error (PDC).	Verify that there is no checksum error on the F3 screen.
	FLTB jumper timer (2 hours) has expired (FBLT).	Disconnect the fault bypass jumper on the SCR-RI board.
	Insufficient motor field voltage (SMF = OFF).	Verify that the motor field voltage reaches 80% of the forcing motor field current.
By setting PG = 0 and enabling UP or DN direction, the motor starts drifting after 30 seconds.	OFFSET on test point DCS of the IMC-DAS board.	Adjust trimpot BAL on the IMC-DAS board to get 0.0 VDC $\pm$ 3 MVDC on test point DCS on the IMC-DAS board.
	Test point TP3 offset is too high.	Adjust Armature Current Sensor Offset parameter (SISO) on Drive Parameter (F1 - 4) screen until test point TP3 on SCR-LGA board is 0.00 MV $\pm$ 1.0 MVDC.
	Defective IMC-DAS board.	Replace the defective part.*
	Defective SCR-LGA board.	Replace the defective part.*
On Australian jobs, computer turns on RE output, but PT1, PT2 & PT3 relays do not pick on SCR-RI board.	No ground signal to PT1, PT2 and PT3 relay because PRE-LOCK relay does not pick.	Verify that the PRELOCK relay is picked before enabling direction.
Drive processor always detects a Tach Error (TE) fault.	The error between tachometer and pattern is greater than allowed value (STE).	Verify that the Maximum Tach Error parameter (STE) on the Drive Parameters (F1 - 4) screen is set per Section 4 of manual.
	Incorrect jumper setting on the IMC-DAS board.	Verify the jumper settings on the IMC-DAS board (see Table 2.10).
	Defective IMC-DAS board.	Replace the defective part.*

Table 4.10 IMC-SCR and IMC-AC Digital Drive Faults (Drive Fault)

Drive processor detects a Tach Failure (TF) fault.	Error between actual tachometer and synthesized tachometer is greater than 4 VDC.	Verify that the voltage at phoenix terminals TS and TC of the SCR-RI board is the same as the rated voltage at contract speed.
	Incorrect TVR jumper setting on the SCR-RI board.	Verify that the TVR jumper setting on the SCR-RI board (see Table 2.10).
	Defective IMC-DAS or SCR-RI board.	Replace the defective part.*
Drive processor detects the Tach Saturation (TSAT) fault.	Tachometer input signal to the computer has exceeded $\pm 9.9\text{VDC}$.	Check the tachometer input voltage to make sure that it is within the range of the TVR jumper. If not, move the TVR jumper.
	Incorrect TVR jumper setting on the SCR-RI board.	Verify that if the tachometer has a rated voltage of 81 to 190VDC at contract speed, the TVR jumper on the SCR-RI board is set to 81 - 90 VDC. If the TVR jumper is moved, re-calibrate GTC.
MP detects MLT fault. Fault cannot be cleared by toggling Relay Panel Inspection switch.	Probably a Drive fault (e.g., Tach Failure, TE, Instantaneous Overcurrent fault, etc.).	Check to see which fault is logged in Special Event Calendar. To clear MLT fault, reset main computer or place controller on Relay Panel Inspection and press Reset button on IMC-DAS board.

**Table 4.11 IMC-SCR Digital Drive Faults (Safety Faults)**

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Safety Processor does not detect the Inspection Over-speed fault.	Fault bypass jumper on the SCR-RI board is connected.	Disconnect the fault bypass jumper on the SCR-RI board.
	MILO parameter on the Safety Parameters (F2 - 4) screen is set the same as contract speed if the car speed is 150 F.P.M. or less.	Verify that the Inspection Leveling Over-speed parameter (MILO) on the Safety Parameters (F2 - 4) screen is set below contract speed.
	Defective IMC-DIO board.	Replace the defective part.*
	Defective IMC-DDP board.	Replace the defective part.*
	Defective SCR-RI board.	Replace the defective part.*
	Optical sensor problem on the LS-QUAD-X landing system.	1. Verify that the optical sensor is not dirty. 2. Verify that the reflective plate that is opposite of the sensor is not dirty. 3. Verify that the spacing between the sensor and the tape is not too large, ideally 0.05" (1.27mm). Also, make sure that the tape is not oily.
	Too much off state voltage at terminals 95 and 96 on the SCR-RI board.	Verify that the OFF state voltage at terminals 95 and 96 on the SCR-RI board is less than 1.0V.
	Loose roller guides may cause switch activation to vary.	Verify that the roller guides are tight.

Table 4.11 IMC-SCR Digital Drive Faults (Safety Faults)

Safety Processor does not detect the Contract Over-speed fault.	Car does not reach 107% of contract speed.	Verify that the car is running exactly at contract speed, then increase the Pattern Gain (PG) parameter on the F1 - 4 screen until contract speed is at 107%.
	Fault bypass jumper on the SCR-RI board.	Verify that the fault bypass jumper is disconnected on the SCR-RI board.
	Defective IMC-DIO board.	Replace the defective part.*
	Defective IMC-DDP-C board.	Replace the defective part.*
	Defective SCR-RI board.	Replace the defective part.*
	Optical sensor problem on the LS-QUAD-X landing system.	1. Verify that the optical sensor is not dirty. 2. Verify that the reflective tape opposite the sensor is not dirty. 3. Verify that the spacing between the sensor and the tape is not too large, ideally 0.05" (1.27mm). 4. Verify the tape is NOT oily. 5. Check the tape guides for wear.
	Too much off-state voltage at terminals 95 and 96 of the SCR-RI board.	Verify that the OFF state voltage at terminals 95 and 96 of the SCR-RI board is below 1 VDC.
	Loose roller guides may cause switch activation to vary.	Verify that the roller guides are tight.



Note: If replacing the part corrects the problem, call MCE for an RMA number. A recommended spare parts list is available upon request.

**Table 4.12 SCR 12 Pulse Drive Faults**

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Current Limit, Low Line - Wye Secondary, and Low Line - Delta Secondary LEDs on the SCR drive will stay on.	IMC-SCR Drive header.	1. Verify Drive header loaded on SCR-LGA board. 2. Check for correct voltage at terminals X1, X2 and X3 of M1 contactor and Y1, Y2, Y3 of M2 contactor.
Low Line - Wye Secondary and Low Line - Delta Secondary LEDs on the SCR drive will stay on.	IMC-SCR Drive header.	1. Verify correct Drive header loaded on SCR-LGA board. Call MCE Tech Support for IMC-SCR Drive header configuration. 2. Check for correct voltages at terminals X1, X2, X3 of M1 contactor and Y1, Y2, Y3 of M2 contactor.
Current Limit LED on the SCR drive will stay on. -or- Unable to calibrate zero current adjustment with SISO drive parameters.	Armature current limit adjustment parameter SAIL is wrong.	Verify SAIL parameter on Drive Parameters (F1 - 4) screen set between 200 and 275%.
	Current sensor offset.	Adjust current sensor offset parameter (SISO) on Drive parameter (F1 - 4) screen until test point TP3 on SCR-LGA boards is 0.00mV $\pm$ 1.0mV.
	Bad cable between connector J8 on SCR-LGA and connector J10 on IMC-MB boards.	Replace phone type cable (MCE part # 24-10-0008 - 4', or # 24-10-0009 - 8').
	Bad ribbon cable between connector J5 on SCR-LGA board and connector J9 on IMC-MB board.	Replace ribbon cable between connector J5 on SCR-LGA board and connector J9 on IMC-MB board (MCE part # C-ISCR/26C-8).
	Incorrect +15VDC and -15VDC on IMC-DAS board test points TP16 and TP17.	Verify +15VDC and -15VDC on test points TP16 and TP17 of IMC-DAS board.
	Bad IMC-DAS board.	Replace the defective part.*
	IMC-SCR Drive header.	Verify that the correct Drive header is loaded on the SCR-LGA board.
	Bad SCR-LGA board.	Replace the defective part.*
	Bad SCR-PS board.	Replace the defective part.*

Table 4.12 SCR 12 Pulse Drive Faults

After cycling main power, current sensor offset calibration is working well with SISO drive parameters on F1 - 4 screen. Once either UP or DN direction is enabled, current sensor offset at test point TP3 stuck at some value.	Bad cable between connector J8 on SCR-LGA board and connector J10 on IMC-MB board.	Replace phone cable (MCE part # 24-10-0008 - 4' or # 24-10-0009 - 8'). Call MCE Technical Support.
	Bad ribbon cable between connector J5 on SCR-LGA board and connector J9 on IMC-MB board.	Replace ribbon cable between connector J5 on SCR-LGA board and connector J9 on IMC-MB board (MCE part # C-ISCN/26C-8). Call MCE Technical Support.
	Incorrect +15VDC and -15VDC on IMC-DAS board test points TP16 and TP17.	Verify that there is +15VDC and -15VDC on test points TP16 and TP17 of the IMC-DAS board.
	No +5VDC, -15VDC, and +15VDC on SCR-LGA board test points.	1. Verify ribbon cable SCR-PS is connected to SCR-LGA board. 2. Verify 120VAC at terminals 1 and 2D.
	Defective IMC-DAS board.	Replace the defective part.*
	Defective IMC-DIO board, or a missing IMC-DIO EEPROM.	Replace IMC-DIO board, or install an IMC-DIO EEPROM.
	Defective SCR-LGA board.	Replace the defective part.*
	Defective IMC-SI2/S25 Drive.	Replace the defective part.*
Motor moves very slowly in either UP or DN direction. Everything else normal.	Pattern Scaling (PG) 0.	Verify Pattern Scaling (PG) on Pattern Parameters (F1 - 3) screen set to 1.0.
	Missing shunt jumper on IMC-SCR Drive header.	Verify jumpers JP3=B and JP4=A on IMC-SCR Drive header of SCR-LGA board.
Non-Zero Armature Voltage (LVN) fault.	More than 0.7VDC Armature Voltage even though Drive not engaged.	Misadjustment of R2 trimpot on SCR-LGA board. Consult MCE Tech Support to adjust trimpot or replace SCR-LGA board.
Getting a dynamic brake failure fault (DBF)	Mis-wired or missing connection to System 12 panel mount terminal A2.	Verify that wire is connected to panel mount terminal A2 of the System 12 Drive. Verify connection to RDB.
	Bad IMC-DIO board.	Replace the defective part.*
	Bad SCR-LGA board.	Replace the defective part.*
	Open RDB resistor or connections.	Replace the defective part.*

**Table 4.12 SCR 12 Pulse Drive Faults**

Unable to run on Inspection or Normal mode due to Instantaneous Over current fault.	Check connector. Bad SCR-LGA board.	Check header. Replace the defective part.*
F3 screen shows AC Phase Failure fault and Low Line - Wye Secondary, Low Line - Delta Secondary, Wye P.R., Delta P.R. and 30-degree P.R. LEDs are lit on the SCR drive.	Missing three-phase Delta and Wye winding voltage from System 12 isolation transformer to M1 and M2 contactors.	Check the three-phase Delta winding voltage and the Wye winding voltage directly on the input terminal of the M1 and M2 contactors.
	Incorrect Drive header.	Check Drive header for correct line voltage to IMC-SCR Drive.
	Defective SCR-LGA or SCR-LGD board.	Replace the defective part.*
Elevator shut down due to excessive heat fault though temperature correct.	Loose IDC-J7 connector on SCR-LGA board.	Make sure that IDC-J7 connector is connected properly on SCR-LGA board.
	Defective heat sensor or dry solder connection on heat sensor.	Disconnect IDC-J7 connector from SCR-LGD board and check continuity between the two heat sensor wires.
PLL LED on the SCR-LGA board stays on all the time.	Incompatible software due to wrong version of SCR-LGA board used.	Verify that SCR-LGA board revision is 2-8 (Call Technical Support).
	Incorrect input line voltage frequency.	Verify that line voltage frequency is 60Hz.
	Incorrect SCR-LGA board is installed.	Verify that an SCR-LGA board is being used and not an SCR-LG-50 board (SCR-LG-50 is for Australia only).
	Defective reset button on the IMC-DAS board.	Replace the defective part.*
	Bad SCR-LGA board.	Replace the defective part.*



Note: If replacing part corrects problem, call MCE for an RMA number. Recommended spare parts list available on request.

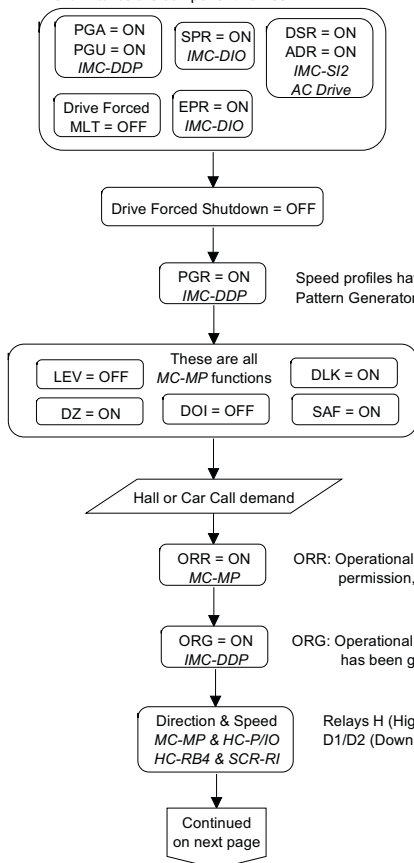
Section 5. IMC-AC Flowcharts



IMC-AC Normal Operation

IMC-AC NORMAL OPERATION

Text in *Italics* are component names



Flags on the Graphic Display of Elevator (F3) screen.

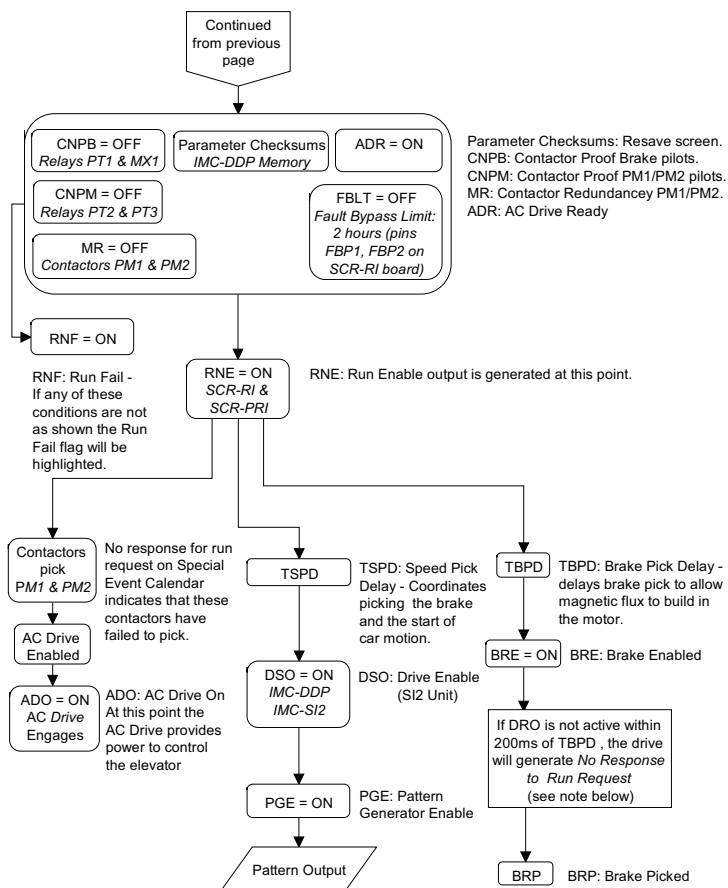
DSR: SI2 Drive Ready
EPR: Emergency Terminal Processor Ready
PGA: Pattern Generator Ready
PGU: Pattern Generator Updated
SPR: Safety Processor Ready
ADR: AC Drive Ready
MLT: Motor Limit Timer

LEV: Is the car still Leveling?
DLK: Are the Doors Locked?
DZ: Is the car in Door Zone?
DOI: Door Open Intent - intention of the computer to have the doors open.
SAF: Safety string made up?

ORR: Operational Run Request - the MC-MP is requesting permission, from the IMC-DDP, to run the car.

ORG: Operational Run Granted - Permission to run the car has been granted by the IMC-DDP.

Relays H (High Speed) and U1/U2 (Up) or D1/D2 (Down) on the HC-RB4 board pick.



Note: TBPD minimum = 0.30 seconds.

Section 6. IMC-AC Troubleshooting



Figure 6.1 Computer Swing Panel

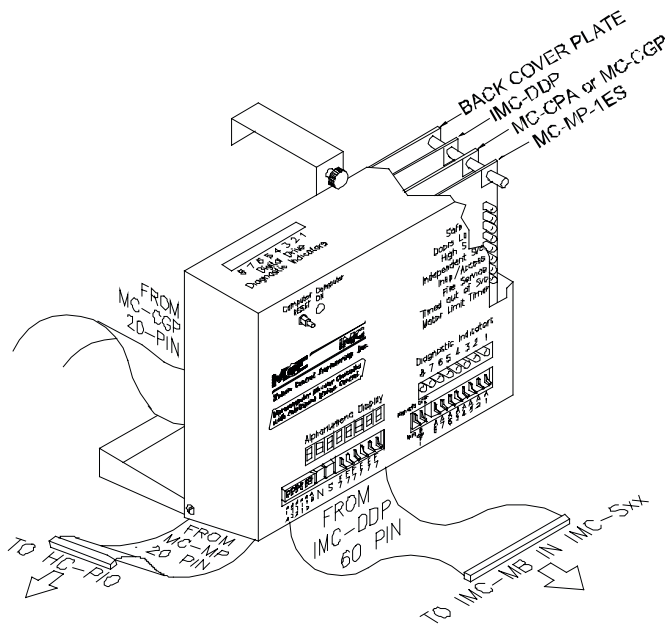


Table 6.1 IMC-AC Computer Swing Panel Faults

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
MC-MP board does not loop (Computer ON LED on front of Swing Panel is blinking ON and OFF).	MC-MP board EPROM at location U9.	1. Verify correct MP EPROM at U9. 2. Verify MP EPROM properly plugged into socket U9 on MC-MP board. 3. Verify orientation of EPROM on MC-MP-1ES board (notch on socket and EPROM matches).
	MC-MP board jumper setting.	Verify jumper settings on MC-MP board (see Table 2.10).
	Defective MC-MP board.	Replace the defective part.*
	Defective EPROM.	Replace the defective part.*

**Table 6.1 IMC-AC Computer Swing Panel Faults**

MC-CGP-x board does not loop (the Computer ON LED on the MC-CGP-x board is blinking ON and OFF) (the CRT is not being refreshed).	MC-CGP-x board EPROMs at locations U17 and U18.	1. Verify correct version CGP EPROMS (U17, U18) per table on contents page iii. 2. Verify CGP EPROMs plugged in, sockets U17, U18 on MC-CGP-x board. 3. Verify orientation of EPROMS on MC-CGP-x board (notch on sockets and EPROMS match).
	MC-CGP-x board jumper setting.	Verify jumper settings on MC-CGP-x board (see Table 13).
	Defective MC-CGP-x board.	Replace the defective part.*
	Defective EPROM.	Replace the defective part.*
IMC-DDP board does not loop (the DDP ON LED on the back plate of the Swing Panel is blinking ON and OFF).	IMC-DDP board EPROMS at locations U5 and U6.	1. Verify DDP EPROMS properly plugged into sockets. 2. Verify orientation of EPROMS on IMC-DDP board (notch on sockets/ EPROMS match).
	IMC-DDP board jumper setting.	Verify jumper settings on IMC-DDP board (see Table 13).
	Defective IMC-DDP board.	Replace the defective part.*
	Defective EPROM.	Replace the defective part.*

Table 6.2 IMC-AC Computer Peripherals Faults

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
CRT does not work.	Com Port 1 programmed incorrectly.	Verify Com Port 1 programmed for a serial cable and a CRT with a keyboard.
	Incorrect CRT setting adjustment.	Default CRT setting parameters and reprogram. See Computer Peripherals Manual and Section 1 of this guide.
	MC-CGP-x board is not looping.	1. Verify correct CGP EPROMs at U17 & U18. 2. Verify CGP EPROMs properly plugged into U17 and U18 on MC-CGP-x board. 3. Verify orientation of EPROMs on MC-CGP-x board (notches on sockets and EPROMs match). 4. Check MC-CGP-x board jumper settings (see Table 2.10).
	Defective or incorrect software.	Verify CGP software version. Replace defective part.*
	Incorrect jumper or switch setting on MC-RS board.	Verify jumper settings on MC-RS board (see Table 2.10).
	CRT cable is plugged into the wrong Com port.	Verify CRT cable connected to Com Port 1 of MC-RS board.
	Defective CRT cable.	Replace the defective part.*
	Defective MC-RS board.	Replace the defective part.*
	Defective MC-CGP-x board.	Replace the defective part.*

* If replacing the part corrects the problem call MCE for an RMA number. A recommended spare parts list is available upon request.

IMC-AC Critical Adjustment Parameters

AC Motors

An AC motor has a rotor which spins inside a stator. The stator is a housing with coils of wire that generates a rotating (Tesla) magnetic field. Slip (most important parameter) helps the Vector drive put out the proper current, voltage and frequency to help keep the rotational frequency of the rotor close to the rotational frequency of the stator magnetic fields.

Have the motor nameplate data in hand before calling MCE. It is *ESSENTIAL* that motor data (screen F1-4) is verified against record of motor data in job file parameters.

Adjustments, Baldor Drive

1. If the car runs on inspection at 10% of contract speed and behaves normally, then the encoder interface hardware is presumed OK.
2. Adjust DCS offset to a minimum level with BAL trimpot.
3. The Command Offset Trim procedure must be completed. Similar to adjusting BAL for DCS.
4. Once above items have been checked the next single most important step is to calculate the **Slip Frequency**. This controls the drives *output frequency and voltage*.

One formula for finding the correct slip frequency is (P1610) (Full Load RPM measured at rated Hz):

$$\text{slip frequency} = \text{Hz} - (\text{Name Plate Full Load RPM} \times \text{Poles} / 120)$$

Poles =

- 8 for 900 rpm (60Hz) and 750 rpm (50Hz) motor.
- 6 for 1200 rpm (60Hz) and 1000 rpm (50Hz) motor.
- 4 for 1800 rpm (60Hz) and 1500 rpm (50Hz) motor.
- Hz = motor rated frequency

To test: run the car on inspection and, if the car speed slowly increases, the slip is set too high. Normally, an AT SPEED or FOLLOWING ERROR fault is displayed if the slip is wrong.



Alternate method to check if slip is correct:

- Check up/down output voltage. They should be within 10% of one another. If not, see the next step.
 - Increase or decrease Slip Frequency to get up/down output voltages closer.
 - If increasing/decreasing Slip Frequency is not effective, try increasing Motor Mag Amps (step 5 below). Try 40% to 55% of motor FLA. Repeat step (b) above.
 - Run car with full load. Up/down voltage should still be close ($\pm 10\%$).
5. Motor Mag Amps *provides torque* (P2505). Usually set between 40% and 55% of motor nameplate FLA. Follow procedure in 18H Vector Drive Manual.
 6. PK Current Limit (P2004) = Limits amount of current the drive is allowed to produce. Should be set between 250% and 300% of motor FLA. If Display of output current on drive Keypad is low, increasing this parameter may help.
 7. PWM Frequency = Limits the amount of PK Current. To get maximum current out of the drive, we must lower PWM. Do not set PWM (P2005) below 8 KHz to avoid increased noise in machine.

Check the motor voltage at contract speed. If it is **LOW**, most likely either the **SLIP FREQUENCY** or **Motor Mag Amps** parameter is not set correctly. Check output voltage. It should be very close: UP/DN empty car. Slip Frequency (P1610) and Motor Mag Amps (P2505) allow us to equalize up/dn voltage. Set Slip Frequency first.

Vibration, Oscillation Problems

If the frequency of the vibration changes with car speed, it usually means that the machine (gear, bearings, etc.) or possibly the encoder coupling (misaligned) is the cause.



Note: Be aware that a small amount of “stair-casing” vibration is inherent in the control scheme the Baldor Vector Drive uses. To eliminate most of this effect, you need to bring the car into the floor relatively hot, avoiding spending too much time transitioning between leveling speeds: Set VHL = VIL = VFL = 5 fpm. Minimize DL and DFL.

Table 6.3 IMC-AC Troubleshooting Vibration/Oscillation

PROBLEM	POSSIBLE CAUSE	SOLUTION
VIBRATION/ OSCILLATION	Increased Cable Length on “Remote” drives.	Insert a 100 Ohm ½ Watt resistor between “purple wire” and “Patt +” terminal on IMC-ACIB board. This helps compensate for capacitance of cable (drive does not provide a substantial load to pattern).
	Pattern	To eliminate pattern, remove wires from terminals 4 & 5 on J1 of the vector drive. a. Place a 5K trimpot between 1, 2 and 3 of J1, with wiper on J1-2 of vector drive. (set trimpot to midpoint of rotation) <i>b. Record Op. Mode (P1401) and set to Standard Run. ¼ This allows us to run the car manually on inspection speed.</i> Both parameters P1401 and P1402 are in the Baldor Parameter INPUT block. c. Record CMD Select (P1402) and set to Potentiometer. d. Run the car on inspection. If oscillation has stopped, the pattern was the source of the problem. If oscillation is still present, then the machine (mechanical problem) or Vector drive is the source of vibration.

**Table 6.3 IMC-AC Troubleshooting Vibration/Oscillation**

VIBRATION/ OSCILLATION	PK Current Limit (P2004) parameter may cause oscillation due to current limiting. Realize that PWM limits how high PK Current Limit can go	a. <i>Verify PK Current Limit Parameter (P2004)</i> is 250 to 270% of motor full load current. b. Decrease PWM frequency from 12.5 to 10 Khz to allow higher current. Otherwise drive "current limiting" could cause vibration. Again observe current on keypad display
	Gain settings	Make sure gains are in nominal range. Set Speed Prop (P1606) gain to nominal range (20-40). Set Speed Int (P1607) gain to nominal range (2-4).
	To eliminate the controller as a source of the vibration (previous actions did not improve) the free-fall test, ALTHOUGH DANGEROUS , will invariably indicate the source, but should only be performed by qualified personnel.	FREE FALL TEST For this test the mechanic must drop the car. Place enough test weight in the car to obtain just over balanced load and release the brake. EXAMPLE: Car capacity = 2000#, CWT = 40%, so $.40 \times 2000 = 800\#$ So placing just over 900 pounds in car will cause the car to fall when started from the top landing. However, if the machine has sleeve bearings you may need to add more weight. The weight allows the car to fall, but not too rapidly. If the vibration is still present with power OFF (on the MCE controller), then the vibration is machine induced and no controller adjustment will remove it. The MACHINE must be repaired.
AFLT FAULT	Indicates that the motor is not following the pattern (similar to tach error).	1. Run car on inspection at 10% of contract speed. If current is normal (30% to 50% of motor FLA) and direction and speed are accurate, then the interface connections for encoder are OK. Otherwise, try ENC Align (P1603). If this doesn't help, try swapping CH A and/or CH B connections from encoder. 2. If Slip and Magnetizing Amps are already set properly, try increasing gains. Set Speed Prop (P1606) gain as high as 80 (nominal is 20 - 40, Similar to GP on SCR). Set Speed Int (P1607) gain as high as 10 (nominal is 2-4, Similar to GI on SCR).

Table 6.3 IMC-AC Troubleshooting Vibration/Oscillation

ADRO	No Response to Run Request Faults	1. Make sure that TBPD = .35 or higher to allow time for stator to magnetize at beginning of a run. This is very similar to forcing the motor field at the beginning of a run with the IMC-SCR. 2. Check your Motor Mag Amps (P2505) parameter (normally = Motor No-Load Amps). Increase as far as necessary to get proper torque control at the beginning of the run (usually set to 40% or more of FLA). Drive rated Mag Amps are listed on the drive name plate. As Mag Amps are increased motor voltage will also increase until saturation of stator. Also set minimum Output Speed (P2002) to ZERO (0)rpm. Maximum Output Speed (P2003)rpm: Set to obtain contract speed. Can be $\neq$ name plate. Be careful here as increasing output speed to 5% over nameplate rpm results in less torque available to lift the load! The torque drops off as maximum rpm is exceeded. PK Current Limit: Set at 2.5 X FLA if current is being limited, then lower PWM (P2005). If you change any motor data parameters please perform the "Calc Preset" (P2508) procedure: Calc Preset changes: Output limits: • Max Output Speed • PK Current Limit Vector Control: • Current Prop Gain • Current Int Gain • Speed Prop Gain • Speed Int Gain Calculates: • CTRL Base speed • Encoder Filter • Slip Frequency
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**Table 6.4 IMC-AC AC Drive Faults**

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Lost User Data fault.	User data has been lost.	1. Restore MCE default parameter values as follows: 2. Verify that controller is on Inspection. 3. Reset drive by pressing RESET button on IMC-DAS board. 4. On the F3 screen, verify Baldor drive does not display Communication Error. 5. *Access F2 - 8 screen to reset AC drive parameters to MCE default values. It will take some time. Note: MCE default values are different from Baldor drive default values. 6. On F1 - 4 screen, enter all required parameters, verifying them with parameter sheet shipped with controller, then save all of parameters. 7. *Turn power OFF at main disconnect. After a few minutes, turn power ON again. Verify all parameters on F1 - 4 screen. 8. Run elevator on Inspection first to verify operation before returning to Normal operation. * These steps must be done.
Any Baldor faults.		Refer to Troubleshooting section of Baldor Drive manual for information helpful in diagnosing and correcting minor drive faults. For major faults in drive, consult MCE before taking any steps.
ADRO fault on F3 screen	DDP did not see DRO within the allotted time	Check TPBD = .40 sec and TSPD is .5 sec
		Check the HC-ACIB
		Check the M contactors
Base ID fault	Invalid base ID number	Default parameters. Reset parameters per factory programming sheet.
		Check AC drive power supply board.
DC Bus high cont:	Too Fast Decel	Slip frequency may be too high
	After a clipped door lock	PADL may be set too high
Following error Fault Cont:	No encoder signal	1. Check for loose connections or loose coupler. 2. Check for signal using an oscilloscope.
	Reversed rotation of encoder signal	Change wiring of encoder Change: A+ with B+ A- with B-

* If replacing the part corrects the problem call MCE for an RMA number. A recommended spare parts list is available upon request.

Table 6.5 IMC-AC Digital Drive Faults (Processor)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
IMC-DIO EEPROM test failed.	IMC-DIO board did not learn properly.	Relearn NTS and ETS switches.
	Defective or incorrect IMC-DIO EEPROM.	1. Verify correct IMC-DIO EEPROM installed. 2. Verify notch on EEPROM and notch on socket are matched on IMC-DIO board.
	Defective IMC-DIO board.	Replace the defective part.*
IMC-DIO board Computer 1 LED is flashing ON and OFF.	IMC-DIO software at location U19.	1. Verify IMC-DIO EEPROM is plugged into socket properly. 2. Verify EEPROM notch and socket notch match.
	Defective EEPROM.	Replace the defective part.*
	Defective IMC-DIO board.	Replace the defective part.*
IMC-DIO board Computer 2 LED is flashing ON and OFF.	ETS software at location U3 on the IMC-DIO board.	1. Verify ETS EPROM installed at location U3 on IMC-DIO board. 2. Verify ETS EPROM is properly plugged into socket. 3. Verify EPROM notch and socket notch match.
	Defective ETS software EPROM.	Replace with a new ETS EPROM at location U3 on IMC-DIO board.
	Defective IMC-DIO board.	Replace the defective part.*
	Bad connection between IMC-MB and IMC-DIO boards.	Replace the defective part.*
The PWR/COMP LED on the IMC-DAS board does not illuminate (turn ON solidly) or blinks ON and OFF.	IMC-DDP-C board does not loop.	1. Verify correct EPROMs installed at locations U5 and U6 2. Verify DDP EPROMs are properly plugged into sockets. 3. Verify EPROM notch and socket notch match. 4. Verify jumper settings on IMC-DDP-C board (see Table 2.10).
	No +5VDC and -15VDC to the IMC-DAS board.	1. Verify +5VDC present at test point TP5 on IMC-DIO board and -15VDC present at test point TP17 on IMC-DAS board. 2. Check +5VDC and -15VDC wire connections on IMC-MB board. 3. Verify Drive Reset button not stuck.
	Defective IMC-DAS board.	Replace the defective part.*
	Bad connection between the IMC-MB and IMC-DAS board.	Replace the defective part.*

**Table 6.5 IMC-AC Digital Drive Faults (Processor)**

Occasionally FLT relay will drop without any drive fault.	Incorrect speed DDP EPROMs. Should be less than 70ns access time.	Replace the defective part.*
Digital Drive Parameters are taking too long to save.	Incorrect IMC-DDP board revision loaded.	Verify IMC-DDP-(x) version. Replace IMC-DDP board if wrong version is loaded.
	Defective IMC-DDP board.	Replace the defective part.*

Table 6.6 IMC-AC Digital Drive Faults (Offset)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Too much speed offset (differences in speed).	BIP calibration OFF.	Verify BIP calibration.
	DCS zero balance calibration offset.	Adjust BAL trimpot for 0.00VDC (± 3 mVDC) on test point DCS of IMC-DAS board



Note: For Digital Drive Faults (Brake, Tachometer, Learn Mode) see the IMC-SCR tables.

Contact MCE Technical Support:

www.techsupport@mceinc.com

916 463 9200

Section 7. Landing Systems



Landing Systems

Both LS-Quad and **LS-Quik** landing systems are used.

LS-Quad

Figure 7.1 LS-QUAD Landing System

Landing System Sensors

UOLM = Up Outer Level Marker

DOLM = Down Outer Level Marker

DP1 = Digital Pulser 1

DP2 = Digital Pulser 2

LU = Level Up Sensor

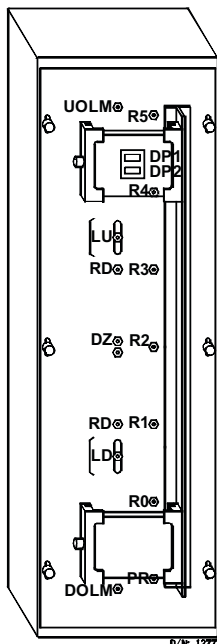
LD = Level Down Sensor

DZ = Door Zone Sensors

RD = Read Sensors

PR = Parity Bit Sensor

R0-R5 = Floor Code Bit Sensors

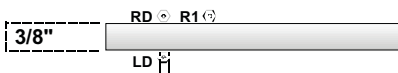


**IMC Pocket Reference**

When the car is floor level, both DZ sensors, as well as both RD sensors, must be activated by the floor magnet. To Set the proper gap between the sensors - use a magnet.



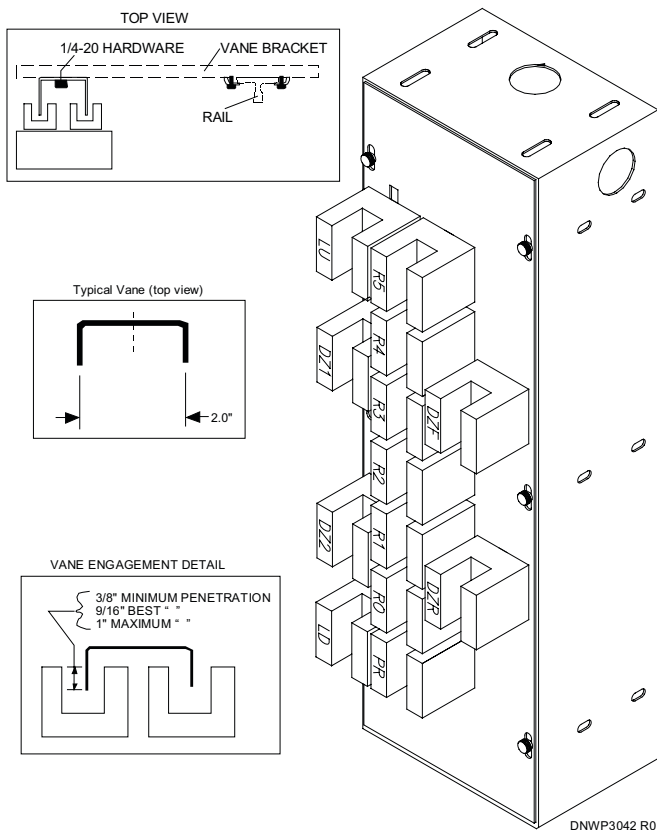
Set gap (3/8") between RD and LU, and between RD and LD using the Door Zone magnet.

**LS-QUAD Spare Parts**

Part #	Description
11-20-0100	Tape guide
33-05-0002-A	4 AMP TRIAC 5MA GATE DR
33-05-0005-A	8 AMP TRIAC MAC 228A10
HC-DFLS	DF landing system board
HC-SB1	Sensor board -LS QUAD
LS-PS1	Magnetic proximity switch

LS-Quik

Figure 7.2 LS-QUIK Landing System



For vane encoding, see Controller Manual.

Sensors

- LD (Level Down) LU (Level Up)
- DZ1 & DZ2 (Door Zone)
- DZF (Front Door Zone) DZR (Rear Door Zone)
- R0 - R5 (Encode Landing) PR (Parity used for encoding)

**LS-QUIK Spare Parts**

Part#	Description
33-05-0002-A	4 AMP TRIAC 5MA GATE DR
33-05-0005-A	8 AMP TRIAC MAC 228A10
HC-DFQ	DF landing system board (QUICK)
LSQK2-ENCDR	LS-QUICK encoder and wheel
VS-1L	Proximity switch

Table 7.1 Landing System Faults

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Absolute distance value on F3 screen is decreasing in UP direction and increasing in DOWN direction.	Quadrature signal wires are reversed.	Swap quadrature signal wires DP1 (terminal 95) and DP2 (terminal 96).
PI's do not increment properly while the car is running on high speed.	Incorrect floor encoding signals from the landing system.	1. Verify landing system wires R0, R1, R2, R3, R4, R5, PR and RD are connected properly to SCR-RI board. 2. Bring car to bottom landing and enter a call to each landing. Verify landing system turns ON correct encoding output for each floor. Verifying Absolute Floor Numbers.
	Defective IMC-DIO board.	Replace the defective part.*
	Defective SCR-RI board.	Replace the defective part.*
OLD fault every time car runs in a certain direction	Outer leveling marker is not working.	Check voltage at terminals 93 & 94 when OLM should be active (12 inches from the floor) change triac and/or sensor
Parity errors	Binary floor code incorrect	Check for correct floor code on R0-R5 and PR on F3 screen and check voltages on terminals of SCR-RI board. Replace triacs or sensors.

Section 8. Door Operators



Door Operators

SmarTRAQ limitless, closed-loop, door operators include a permanent-magnet, brushless motor with built-in encoder and microprocessor-based inverter drive. The compact inverter drive enclosure mounts on the elevator car. The motor replaces the original motor when re-using operator packages or mounts to the new operator package when the complete door operator is being replaced or newly installed. *SmarTRAQ* models support:

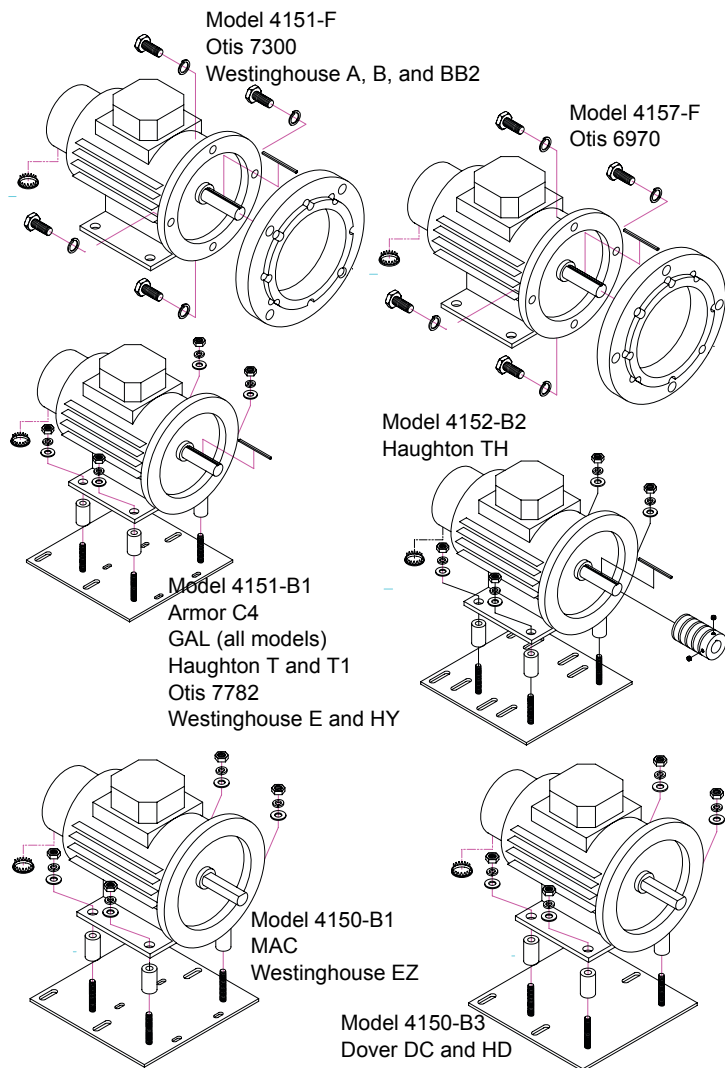
- MCE
 - Center-Parting Operator Package
 - Two-Speed Center-Parting Operator Package
 - Single-Speed Side Slide Operator Package
 - Two-Speed Side Slide Operator Package
- Westinghouse
 - Model A Series
 - Model B Series
 - Model BB2
 - Model E Series
 - Model EZ
 - Model HY
 - Model MG
- Houghton
 - T
 - T1
 - TH
- Montgomery
 - MAC Series
- Dover
 - DC Series
 - HD Series
- Otis
 - 6970
 - 7300
 - 7782
- GAL
 - All Models
- Armor
 - C4



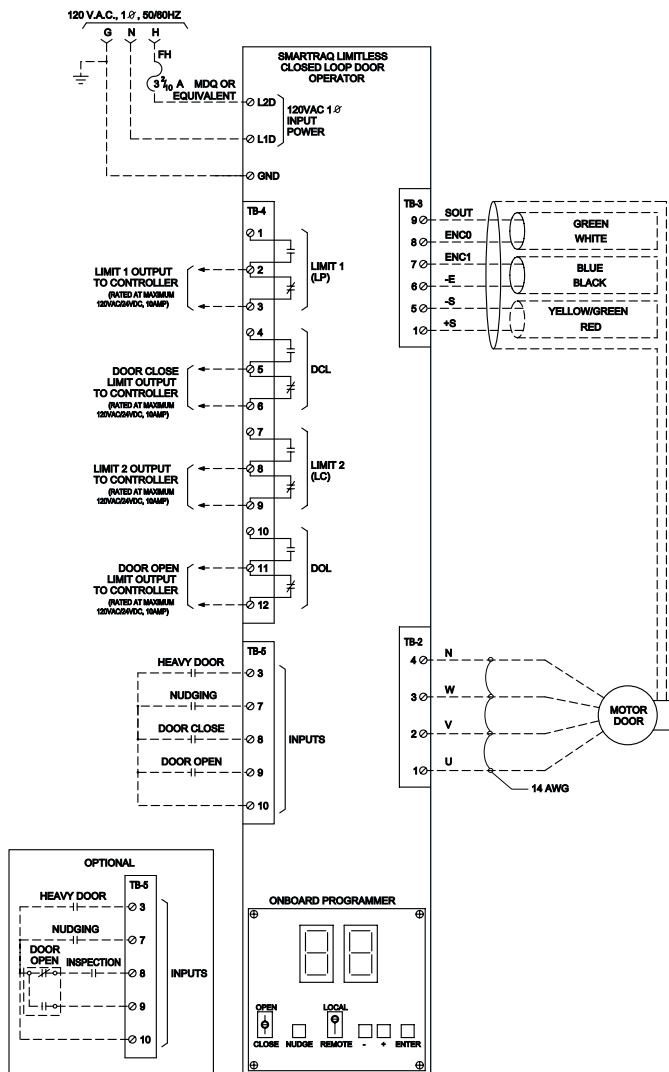
SmarTRAQ Models

To support a wide selection of door operators, *SmarTRAQ* motor configurations include:

Figure 8.1 Motor Configurations



Wiring Diagram and Input Detail



**NOTE: IF COMPLIANCE TO ASME A17.1-1998 (RULE 210.15),
ASME A17.1-2000/CSA B44-00 (REQUIREMENT 2.26.5),
OR CSA B44-94 (REQUIREMENT 3.12.1.5) IS REQUIRED,
A MECHANICAL DOOR POSITION MONITORING SWITCH MUST
BE PROVIDED.**



Learning Full Open and Full Close Positions

Door Open and Door Close Limits are learned during an automated learn process as current rises when doors reach full open or full close. Once limits are learned, *SmarTRAQ* is able to distinguish between an obstruction and full open or full close positions. DOL (Door Open Limit) and DCL (Door Close Limit) are learned only within the last 3/8" of door travel in either direction.

- Doors Full Open: Door Open Limit is OPEN
- Doors Full Closed: Door Close Limit is OPEN

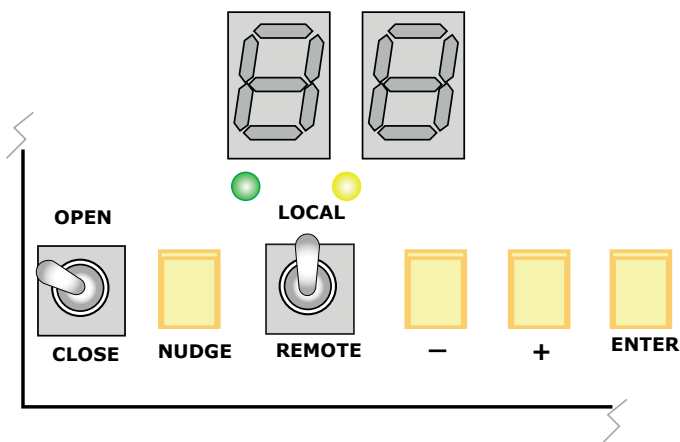


Note: Parameter values can only be changed or viewed when elevator doors are Full Closed and Door Close Limit is OPEN.

You run the learn operation for Door Open and Door Close Limits through programmer switches in the inverter drive enclosure. These switches are:

- Local/Remote: Two-position toggle switch, selecting:
 - Local: Local inverter drive control (from programmer switches)
 - Remote: Remote inverter drive control (from elevator controller)
- Open/Close: Three-position, spring-loaded switch active when Local control is selected:
 - Open: Opens elevator doors
 - Close: Closes elevator doors
- Nudge: Push button. Closes doors at nudging speed when Close is activated.
- - and +: Push buttons. Used to select a parameter to be adjusted and to change value of a parameter after it is selected.
- Enter: Displays a selected parameter and saves its value after editing.

Figure 8.2 Inverter Drive Programmer Switches



Running the Learn Operation

1. Verify that elevator doors are closed.
2. Place Local/Remote switch in the Local position.
3. Turn on power.

For a few seconds, dashes will be displayed on the LED display. Then, the dash on the right hand display will disappear. The inverter drive is ready to accept input.

4. Hold the Open/Close switch in the Close position until PL is displayed. (Motor will cog to synchronize rotor.)
5. Press Enter to select the PL parameter.
6. Press Enter a second time.
7. Press - (minus) to display Lr (Learn).
8. Press Enter.

Dashes will be displayed for a moment, then PL will appear. Doors will automatically open at low speed to FULL OPEN position and will then automatically close at low speed to their FULL CLOSE position. Learning is complete.



Verify Door Operation



Note: Whenever power is turned on, the first open operation will be at Low Speed.

To verify door operation:

1. Hold Open/Close in Open position. Doors will open and detect Full Open position. DOL should be OPEN.
2. Hold Open/Close in Close position. Doors will close and detect Full Close position. DCL should be OPEN.

Adjusting Parameters

All door operator adjustments are made by selecting and changing parameters using inverter drive programmer switches. All parameter values are numeric, from 0 to 31. The higher the number, the greater the parameter value.

Parameter values can only be changed or viewed when elevator doors are Full Closed and Door Close Limit is OPEN.

After changing parameters, you must select the parameter “do” and press Enter to put door operator back in operating mode. You must also place the Local/Remote switch back in Remote position. (Otherwise, operator will not respond to open or close commands from elevator controller.)

Use the following table and the Motion Profile illustration to adjust parameters.

Table 8.1 Inverter Drive Parameters

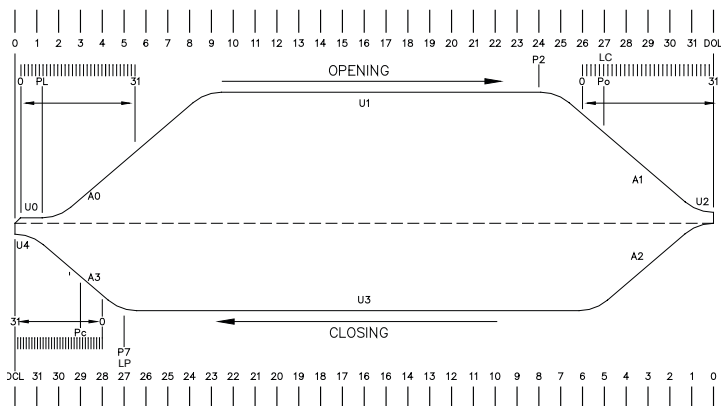
Parameter	Description
PL	Start Open Position: Position where doors start to accelerate. Higher value = Position farther from full close.
P2	Open Slowdown Position: Position where doors begin to reduce high opening speed and decelerate to low opening speed. Higher value = High speed reduces nearer to full open position.
P7	Close Slowdown Position: Position where doors begin to reduce high closing speed and decelerate to low closing speed. Higher value = High speed reduces nearer to full close position.
Po	Reopen Slowdown Position: Higher value = Reopen slowdown position starts nearer to full open.
Pc	Reclose Slowdown Position: Higher value = Reclose slowdown position starts nearer full close.

Table 8.1 Inverter Drive Parameters

Parameter	Description
Pr	Reopen Distance: Distance from full open where Po parameter, Reopen Slowdown Position, and Ar parameter, Reopen Deceleration, can be activated. 00 value = from full open to 75% of full open. Setting parameter from 01 to 31 = from 75% of full open to 25% of full open. Note: Most door operators will not require adjustment of this parameter. This parameter is factory set to 00. Should be set to 00 unless absolutely necessary. See Caution following this table.
U0	Start Open Speed: Higher value = More speed.
U1	High Opening Speed: Higher value = More speed.
U2	Low Opening Speed: Higher value = More speed.
U3	High Closing Speed: Higher value = More speed.
U4	Low Closing Speed: Higher value = More speed.
Ud	Nudging Speed: Higher value = More speed.
A0	Opening Acceleration: Higher value = Faster acceleration.
A1	Opening Deceleration: Higher value = Faster deceleration.
A2	Closing Acceleration: Higher value = Faster acceleration.
A3	Closing Deceleration: Higher value = Faster deceleration.
Ab	Braking Deceleration: Deceleration during door reversal. Higher value = More deceleration.
Ar	Reopen Deceleration: Higher value = Faster deceleration.
F3	Heavy Door High Closing Speed: Higher value = More speed. This value must be lower than U3.
F7	Heavy Door Close Slowdown Position: Position where doors begin to reduce high closing speed and decelerate to low closing speed. Higher value = High speed reduces nearer to full close position.
C1	Full Open Torque: Higher value = Higher Full Open Torque.
C3	Close Torque: Higher value = More torque.
Co	Hold Open Torque: Higher value = More torque. Torque when doors are full open.
Cc	Hold Close Torque: Higher value = More torque. Torque when doors are full close. This value must be lower than the C3 value.
Cb	Braking torque: Limits braking torque during slowdown. Higher Value = More braking torque. Lower Value = Less braking torque. 00 value has no effect. Should be set to 00 unless absolutely necessary. See Caution following this table.
LP	Limit 1: Higher value = Output turns on when doors are nearer to close position. Lower value = Output turns on when doors are farther from full close position.
LC	Limit 2: Higher value = Output turns on when doors are nearer to open position. Lower value = Output turns on when doors are farther from full open position.
do	Select Operation Mode: After adjusting, operation mode must be selected. Otherwise, operator will not respond to open/close commands.
Lr	Learn Command:



Note: Pr and Cb parameters should always be set to “00” unless absolutely necessary.

**Motion Profile and Specifications****Table 8.2 Specifications, Interface Data, and Code Compliance**

Door Operator Drive Technical Data	
Input Voltage	120VAC, 50/60Hz, Single-phase
Output Voltage	3-Phase, 30VAC, 9A (26A peak)
Power Requirement	300VA
Controller Type	Closed Loop, Distance and Velocity Feedback, Limitless
Door Motor Technical Data	
Type	Three-phase, synchronous, brushless motor with permanent magnet excitation and built-in digital encoder
Motor	0.564 HP, 3-Phase AC, 8-Pole, 30 Volt, 9A (26A peak), 0 — 2000 RPM, 0 — 133Hz
Encoder	640 PPR (Pulses Per Revolution)
Elevator Control Interface Data	
Input Signals	Door Open Door Close Nudging Heavy Door
Input Signal Level	Dry Contact
Output Signals	Door Open Limit Door Close Limit Limit 1 Limit 2
Output Signal Level	N.O./N.C. Contact, 10 Amp
Code Compliance	
For ASME A17.1-1996 (Rule 210.15), ASME A17.1-2000/CSA B44-00 (Requirement 2.26.5), or CSA B44-94 (Requirement 3.12.1.5) compliance, mechanical Door Position Monitoring Switch must be provided.	

Section 9. Load Weigher



Isolated Platform Load Weigher

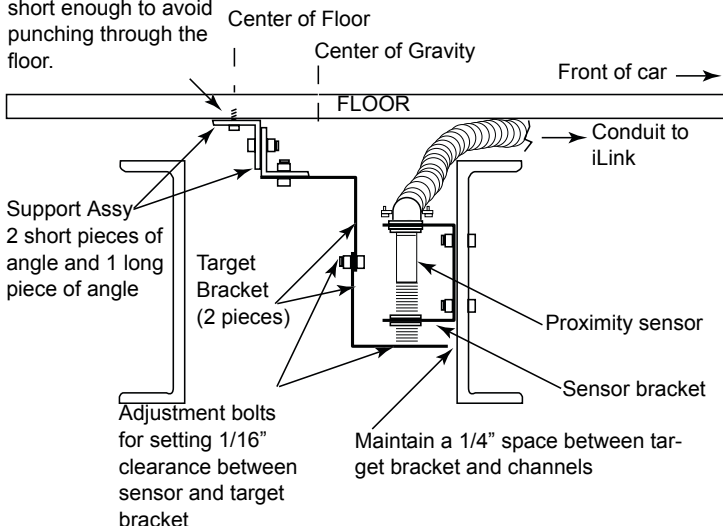
The accuracy of the isolated platform load weigher depends on the condition of the rubber isolation pads. If they are old, cracked or hard, the performance of the load weigher will suffer. Similarly, if the wrong pad material is used, the deflection (with load) can be incorrect.



Note: Increasing the weight in the car must always increase clearance between the proximity sensor and the target for proper operation. The position sensed is where the support assembly for the target bracket is attached to the floor, NOT where the sensor is located.

**Figure 9.1 Target Bracket/Sensor on Support Assembly and Car Frame**

These screws hold the 2 small angles to the bottom of the floor - minimum 2 screws per angle. Screws must be short enough to avoid punching through the floor.



Adjust the Amplifier

1. Before adjusting the sensor amplifier the following conditions must first be met:
 - Power to the controller
 - The car is on Inspection operation
 - The brake is already adjusted to hold 125% of full load
 - The elevator is positioned level with the floor and with doors open so test weights may be added and removed
2. With the car empty, adjust the clearance between sensor and target so that 0.3 to 1.0VDC is present between test points SIG to SCOM. This is a sensitive apparatus, so hold the target while loosening the adjustment bolts of the target, make the adjustment, and tighten the bolts. (Moving the target away from the sensor increases voltage; moving it closer to the sensor decreases voltage.)
3. Remove all personnel from the pit (in case the car moves when fully loaded) and put 100% of load in the car.
4. Set that the sensor Gain trimpot on the amplifier board is fully clockwise and that there is LESS THAN 14VDC between test points LW+ and LW-.
5. Adjust the sensor Gain trimpot so that there is no more than 8VDC and no less than 4VDC between LW+ and LW- (8VDC recommended).



Verify Performance

1. Check the voltages measured between testpoints SIG and SIGCOM with the following loads. This information is used to verify rubber pad compression for the isolation platform. Document the data below.

Table 9.1 Verify MCE Load Weigher Performance

	Load in pounds	Volts SIG to SCOM-	Voltage increase
No load		(1)	
1/4 of full load		(2)	(2)-(1)
1/2 of full load		(3)	(3)-(2)
3/4 of full load		(4)	(4)-(3)
Full load		(5)	(5)-(4)

The variation between voltage increase entries should be linear. If voltage increase is more than 25% different from the entry just above it, check the following:

- Condition of rubber pad
- Voltage variance when weight is in center of car vs. on edge of car (sagging problem)

Recommended Maintenance

Once a month, check the voltage between LW+ and LW-. It should be within 0.3V and 1.0VDC when the car is empty. If the voltage is outside the 0.3 to 1.0VDC range, adjust the target bracket.

Additionally, periodic checks of the voltage increase with varying load conditions will help diagnose when the rubber pads begin to lose compression consistency.