SWIFT®

MERIDIA®

Speed. Precision. Control.

Service Manual

Draft 11

June 10, 2002

COMPUTERIZED ELEVATOR CONTROL CORP.

Moving People. Moving Business.

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MERIDIA SAFETY PROCEDURES

WARNING

The following procedures are intended for the use of qualified and authorized personnel ONLY. In the interest of your personal safety and the safety of others, do NOT attempt ANY procedure that you are NOT qualified and authorized to perform.

These procedures should be performed in accordance with any governing local codes: and where practical, any rules of the latest edition of the National Electrical Code, Article 620; the latest edition of ASME A17.1, Safety Code for Elevators.

Every attempt has been made to ensure that this manual is as accurate and up-to-date as possible. However, Computerized Elevator Controls assumes no liability for consequences resulting from any error or omission. The material contained herein is subject to revision, and Computerized Elevator Controls makes every effort to inform its product users of these revisions as they occur. Please report any problems with this manual to the Technical Support Department.

SAFETY SUMMARY

This information should be read BEFORE any work is performed on the Meridia.

Terms in this Manual

CAUTION statements identify conditions that could result in damage to the equipment or other property if improper procedures are followed.

WARNING statements identify conditions that could result in personal injury if improper procedures are followed.

Use the Proper Fuse

To avoid fire hazard, use only a fuse of the correct type, voltage rating and current rating as specified in the parts list for your product.

Other Electrical Safety Information

Electric shocks can cause personal injury or loss of life. Circuit breakers, switches and fuses may **NOT** disconnect all power to the equipment. Always refer to the wiring diagrams. Whether the AC supply is grounded or not, high voltage to ground will be present at many points.

Do **NOT** remove connections or printed circuit cards from the equipment while power is applied. This can damage equipment.

Always lock out the Mainline Disconnect when power has been removed from equipment.

Installation Wiring

All installation wiring must comply with all applicable national, state, or local codes, and should be in accordance with the U.S. National Electric Code (NEC) where practical.

When Servicing With Power On

Dangerous voltages exist at several points in this product. To avoid personal injury, do **NOT** touch exposed connections or components while power is **ON.**

STATIC PROTECTION GUIDELINES

IMPORTANT!

Read this page before working with electronic circuit boards.

Modern elevator systems use a number of electronic circuit boards to control various functions of the elevator. These boards house components that are extremely sensitive to electrostatic voltage, which can cause board damage or failure.

Proper handling and shipping of boards is important to ensure their reliability and long-term operation. Use the following guidelines when handling circuit boards.

SHIPPING

- All boards, whether they are "good" or "to be repaired," MUST be packaged in a closed and sealed anti-static bag whenever they are being transported.
- Boards MUST also be packaged in sturdy protective cartons for shipping.
- Use only anti-static packing materials (ordinary Styrofoam is not acceptable).

HANDLING

- Store all boards in separate, sealed anti-static bags until time for installation.
- When handling all boards, always wear an anti-static wrist strap with ground wire. Acceptable straps should be available through any local electronics parts supplier.
- Handle boards only by their edges using proper anti-static techniques. Avoid touching components, traces and connectors.
- Always lay boards on a grounded electrostatic protection barrier (i.e., a dissipative mat or an anti-static bag).
- Extra care should be used when handling individual components such as integrated chips, metal oxide semi-conductors, and field-effect transistors, some of which can be destroyed with as little as 30 volts of electrostatic discharge.

Failure to adhere to these guidelines will VOID board warranty!

5.3 RECOMMENDED TOOLS AND TEST EQUIPMENT

The following tools and calibrated equipment are required for installing and adjusting:

- RS-232C compatible PC or terminal capable of operating at 19,200 baud.
- Digital VOM, Fluke 8024B or equivalent.
- Oscilloscope, Tektronix Model T-912 or equivalent.
- Walkie Talkies
- Tachometer
- AC clamp-on Ammeter
- Center reading DC Ammeter with shunts
- Center reading DC Voltmeter (300-0-300)
- TOOLS: Soldering iron, 60/40-rosin core solder, solder sucker, electronic type long nose pliers, and side cutters.

SAFETY NOTICES

WARNING

This equipment contains voltages, which may be as high as 800 Volts and connects to rotating parts on motors and driven machines. High voltage and moving parts can cause serious or fatal injury. Only qualified personnel, familiar with elevator operation, should attempt to start-up or troubleshoot this equipment. Observe these precautions:

- Use extreme caution. Do not touch any circuit board, power device or electrical connection without ensuring that high voltage is not present.
- Electric shocks can cause personal injury or loss of life. Circuit breakers, switches and fuses may not disconnect all power to the equipment (more than one live circuit). Always refer to the wiring diagrams. Whether the AC supply is grounded or not, high voltage to ground will be present at many points.
- All equipment must be properly grounded. Do not apply AC power before following grounding instructions.
- On AC VVVF drive systems: Do not open cover for two (2) minutes after removing AC power to allow capacitors to discharge.
- Improper control operation may cause violent motion of motor shaft and driven equipment. Be certain that unexpected motor shaft movement will not cause injury to personnel or damage to equipment. Peak torques of several times rated motor torque can occur during a control failure.
- Motor circuits may have high voltage present whenever AC power is applied, even when the motor is not rotating.

CAUTION

- Do not remove connections or printed circuit boards from the equipment while power is applied. This can damage the equipment.
- Meggering or "buzzer" type continuity testers can damage electronic components. Damage resulting from their use will void all existing warranties.
- When instruments such as an oscilloscope (line voltage operation) are used to work on live equipment, great caution must be used. The oscilloscope's chassis should be grounded and a differential amplifier input probe should be used. Always refer to the manufacturer's instruction book for proper operation and adjustments of the test equipment.
- Connection of devices such as voltmeters on certain low-level analog circuits or tachometer may degrade performance of the regulator drive system. Always use a voltmeter having a minimum of 20K OHM/VOLT. A digital voltmeter is recommended.
- Always read the complete instructions prior to applying the power or troubleshooting the equipment. Follow the procedures step by step.
- The controller must be grounded at one point only. Refer to the "Site and Installation Planning Guide" section for further information.

For Additional Information or Assistance

If you require assistance or additional information, please contact Technical Support at:

Computerized Elevator Control, Corp.
24 Empire Blvd. (201) 508-2300
Moonachie, N.J. 07074

SECTION 1 - SITE PLANNING & INSTALLATION

Machine Room Layout

Controller. The ***Meridia*** is a front access designed controller. This controller is a RETMA enclosure 45" wide, 18" deep and 34" tall. The doors are hinged to swing open and they are also removable. [See Figure 1-1.]

Warning!

While cutting/punching holes or drilling in the top or side of the controller, take care to prevent metal shavings from entering the controller.

Mounting: The ***Meridia*** is designed to be either a wall mount (structural wall only) or a floor stand mount controller. Place the controller in a location that will provide for proper ventilation and meet local codes for proper work clearances. Note: 2" are required between the controllers for proper ventilation.

Meridia Controller

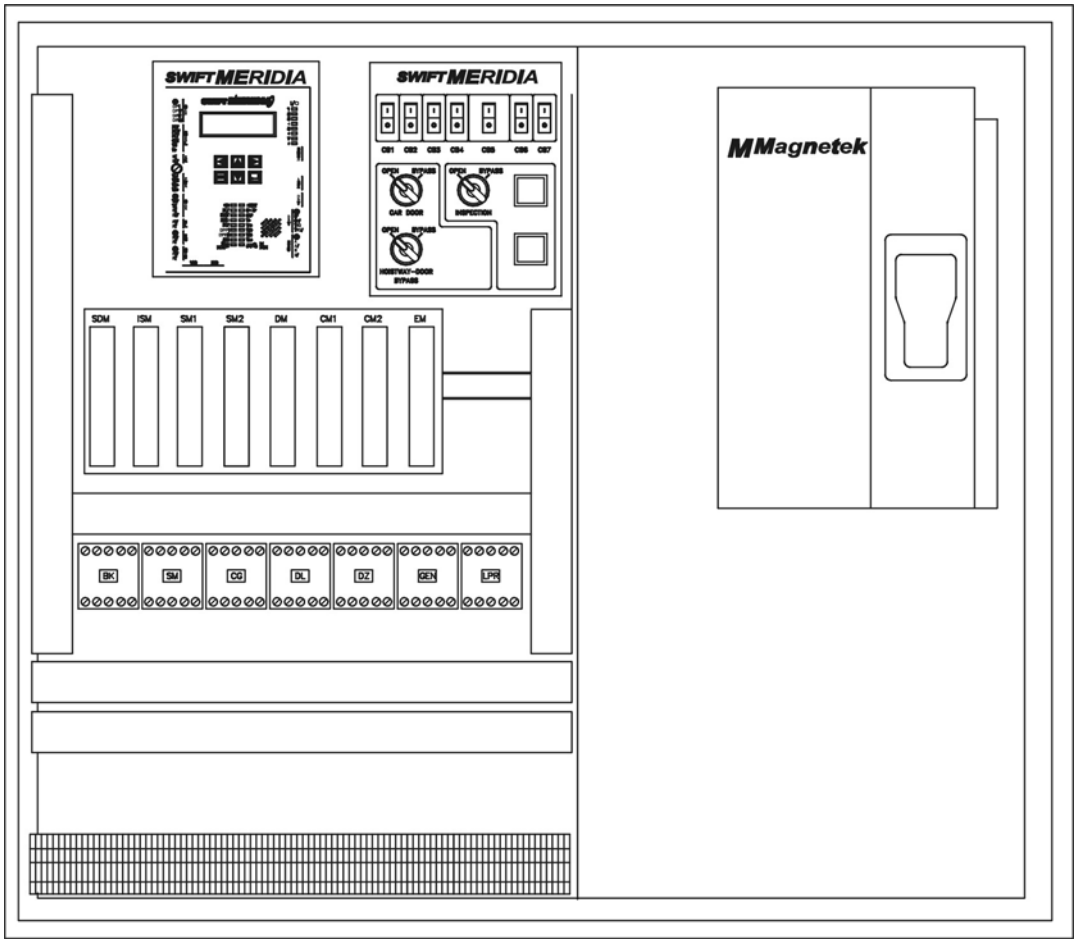


Figure 1-1

Transformers and Chokes (if required). Place transformers and chokes as close to the controller as machine room conditions allow (leave a min. of 2" clearance on each side of the transformers for ventilation). Level the transformer and chokes and secure them properly to the machine room floor.

Motor Encoder. Direct Coupling is required on all geared machines and is strongly recommended for Gearless machines. [See Figure 1-2.]

Motor Encoder Mounting Types

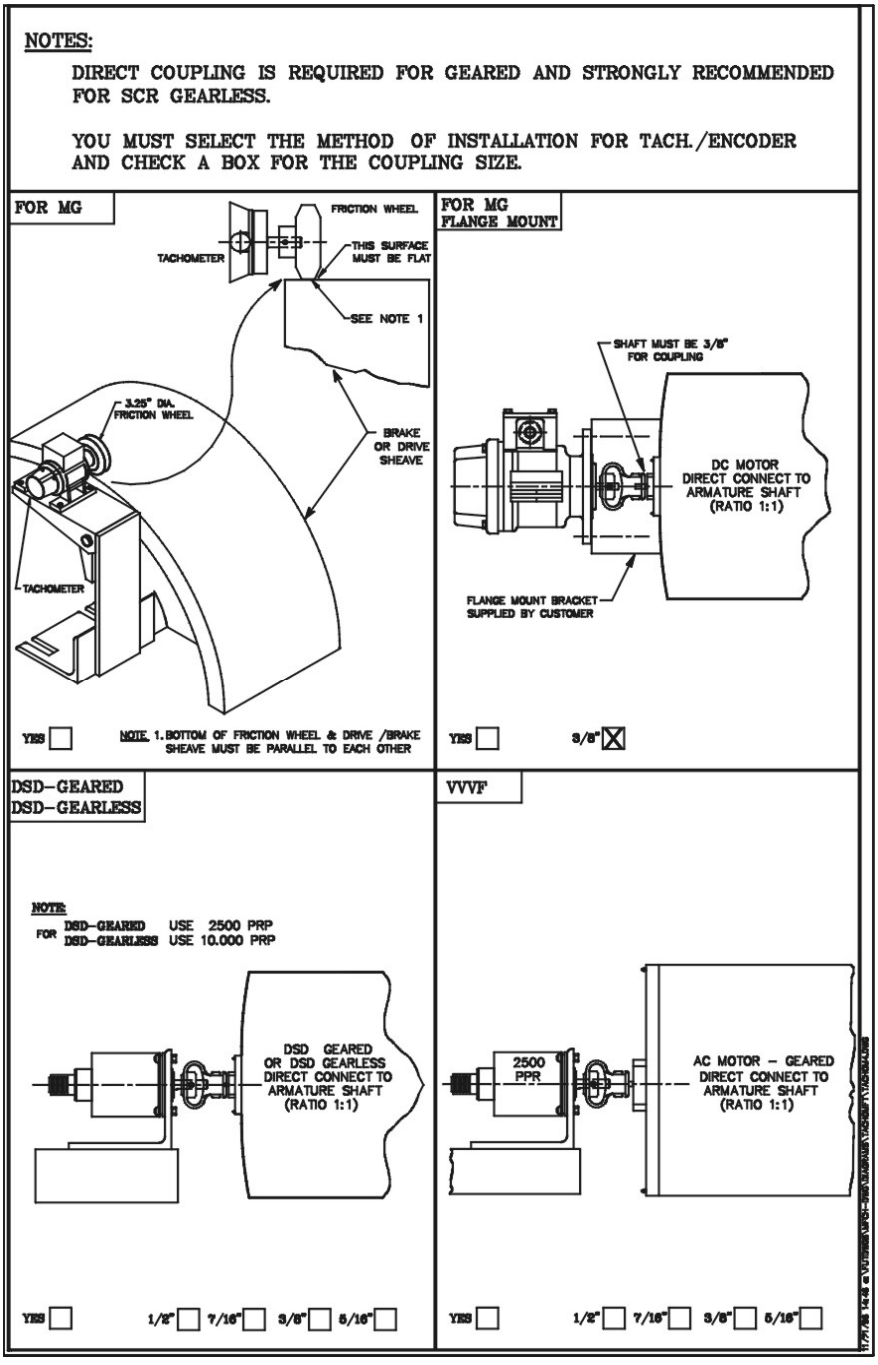


Figure 1-2

Machine Room Duct, Conduit and Wiring

Duct and Conduit

Warning All electrical conduit and ductwork must be properly bonded and grounded according to the latest Applicable Electrical Code.

Caution Use caution when cutting or punching holes into the controller cabinet to prevent metal filings from entering cabinet.

It is important to run the encoder wiring in a separate conduit from the controller. Power wiring from the disconnect and from the transformer (if required) must be run into the controller separately from the hoistway and traveling cable wiring. Use flex conduit when connecting to machines, transformers and chokes to minimize mechanical and electrical vibrations.

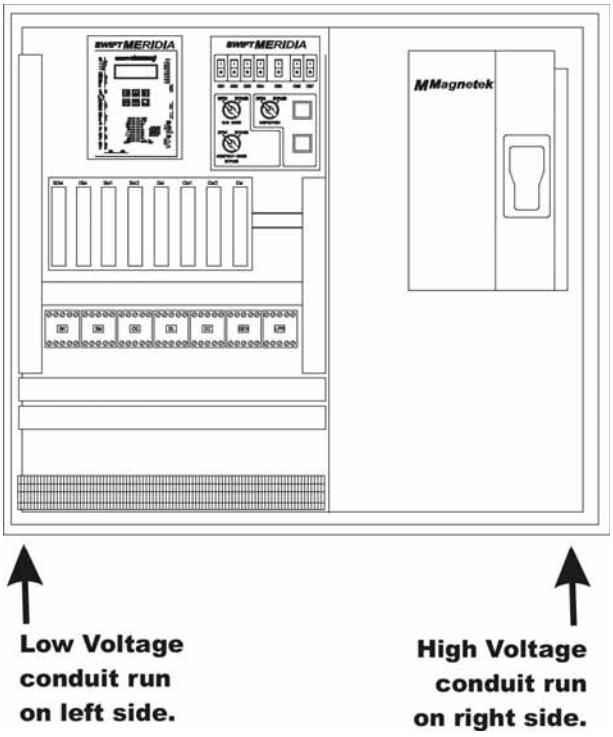


Figure 1-3

Machine Room Wiring

Power wiring to the controller: The power wiring can be a 2, 3 or 4 circuit configuration, depending on the drive system that is supplied.

- An independent, single-phase supply for the cab lighting circuit is the first circuit common to all drive types. [See Figure 1-4.]

Cab Lighting Circuit

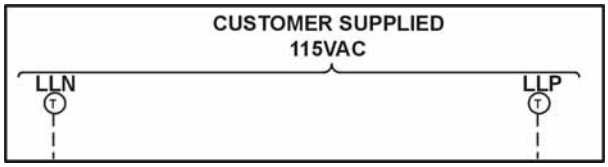


Figure 1-4

Warning The Meridia controller transformer is not designed to support cab lighting and cab ventilation. Using the Meridia 120 VAC control circuits in this manner may cause damage to the transformer and possibly void the warranty.

- An independent, emergency backed, single-phase 120 VAC circuit is common to all drive types (for the first controller of each group only). [See Figure 1-5.]

Hall Call Power Circuit

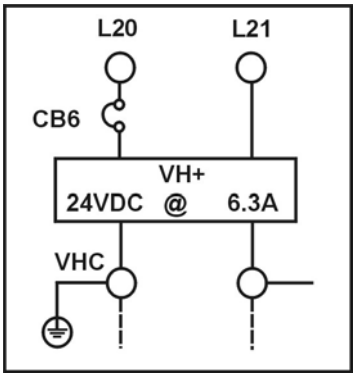


Figure 1-5

- The 3-phase mainline power circuit is common to all drive types. The power may connect directly into a fuse block in the drive side of the controller. Otherwise, the power may connect to the primary side of an Isolation, Step Up or Step Down power transformer [See Figure 1-6 & 1-7]. If a power transformer is used, the secondary side will be wired to the fuse block in the drive side of the controller.

Three-Phase Power Circuit On An AC Drive

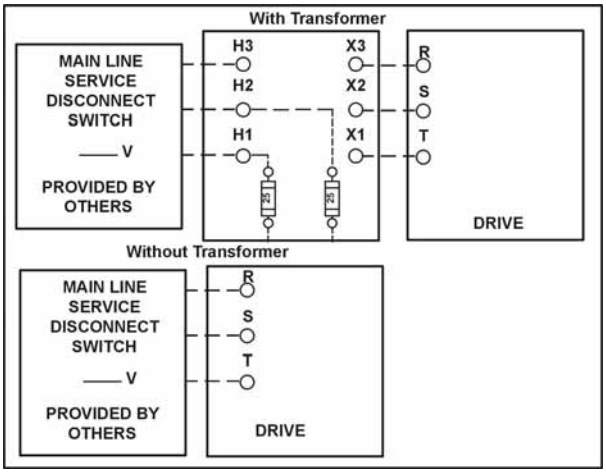


Figure 1-6

Three-Phase Power Circuit On A DC Drive

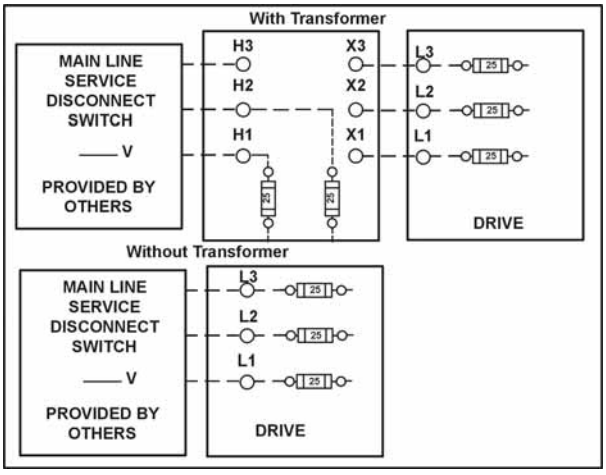


Figure 1-7

- The fourth circuit will only be required if a power transformer is used. A separate fused circuit from the primary side of the power transformer terminals H1 and H2 to the FP1 fuse block on the drive side of the controller. [See Figure 1-8.]

Controller Power Circuit

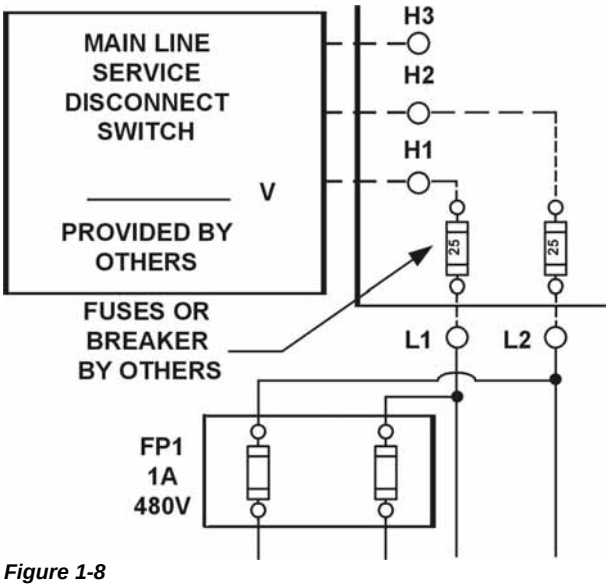


Figure 1-8

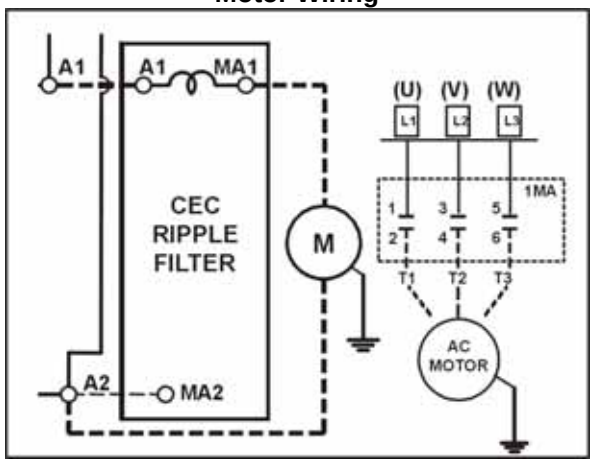
Warning! All wire sizes are to be in accordance with the applicable Electrical Code.

Warning! The main line power must supply a ground wire in accordance to National Electrical Code that is continuous to the source or to an earth ground connection.

Power wiring to the hoist machine: Two to four circuits are required to the elevator hoist machine.

- The first is to the motor, and consists of current conductors wired from the drive output through the choke (if required) to the motor and a ground wire to the grounding lug at the drive side of the controller. [See Figure 1-9.]

Motor Wiring



DC Application **AC Application**

Figure 1-9

- The second circuit provides power to the brake coil Brake Wiring. [See Figure 1-10.]

Brake Coil Wiring

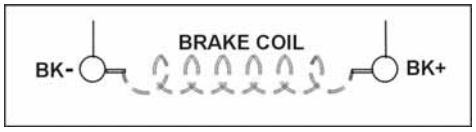
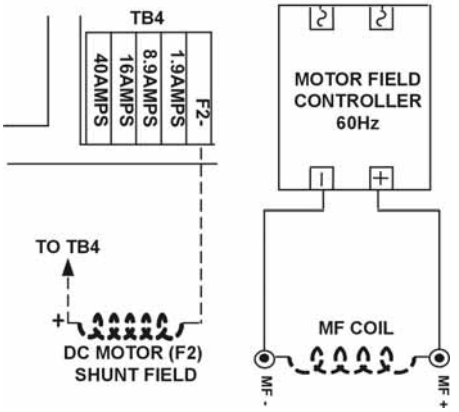


Figure 1-10

- The third circuit brings power to the Motor Fields (if a DC motor used). These 2 wires can be run with the motor wires. [See Figure 1-11.]

Motor Field Wiring



SCR Application **MG Application**

Figure 1-11

- The fourth circuit is for the brake switch (if required). These 2 wires can be run with the motor wires.

Power wiring to the generator: There will be 4 circuits required to the generator (if applicable).

- The first circuit is for the generator A/C motor, which consists of current conductors wired from the controller starter relays to the A/C motor windings. [See Figure 1-12.]

M.G. AC Wiring

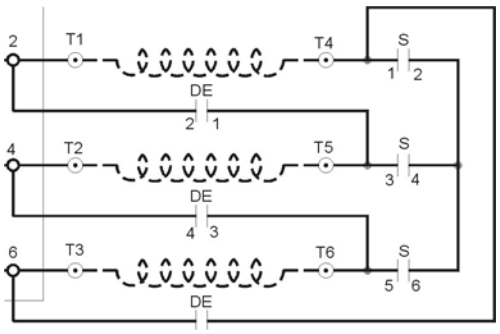


Figure 1-12

- The second circuit is for the Motor Loop, which consists of current conductors wired from the controller to the generator armature. [See Figure 1-13.]

M.G. Loop Circuit

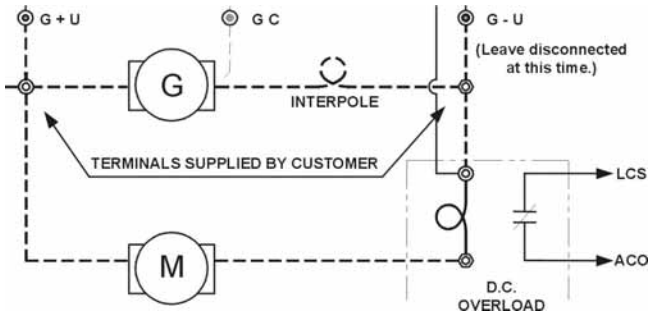


Figure 1-13

- The third is for the generator field, and consists of current conductors that wire from the controller to the Field windings of the generator. [See Figure 1-14.]

M.G. Shunt Field Wiring

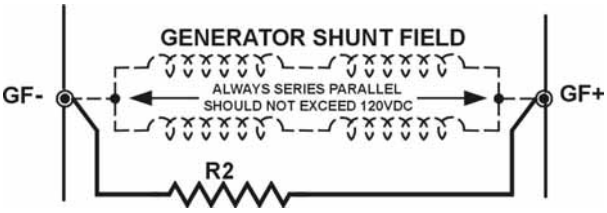


Figure 1-14

- The fourth is for the generator feedback circuits, and consists of two shielded pairs from the controller to the generator armature and the generator inner-poles. [See Figure 1-15.]

M.G. Feedback Wiring

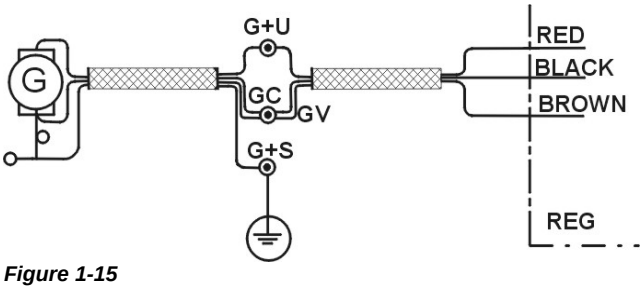


Figure 1-15

Motor Tach wiring: The tach wiring uses a single twisted pair. It is imperative that this wiring is run in separate conduit to the controller. [See Figure 1-16.] It is imperative that this wiring be run in a separate conduit from the encoder to the drive side of the encoder.

Tach Wiring

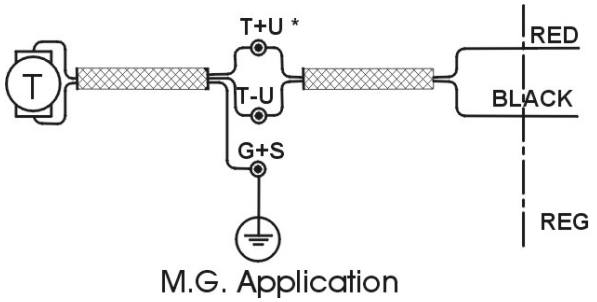
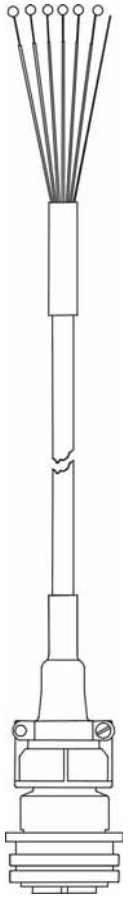


Figure 1-16

Motor Encoder wiring: The encoder wiring uses 3 twisted shielded pairs. This cable is provided by CEC on most applications. [See Figure 1-17.] It is imperative that this wiring be run in a separate conduit from the encoder to the drive side of the encoder.

Motor Encoder Wiring

	ENCODER TYPE						TERMINAL		
	SOLID SHAFT ALL	HOLLOW SHAFT 1024	10K	2500	4096	2500 10K	DSD 412	HPV 900	UNICO 1100
	DYNAPAR 7 PIN	DYNAPAR 10 PIN	BEI 7 PIN	BEI 10 PIN	LUCAS	LUCAS	TB1	TB1	CONN 2
5V	D	D	D	B	D	A	1	25	1
COM	F	F	F	A	G	C	43	19	2
A	A	A	A	D	F	B	2	21	3
$\overline{A}$	C	H	C	G	H	E	3	20	4
B	B	B	B	E	B	D	4	23	5
$\overline{B}$	E	I	E	H	A	F	5	22	6
SHLD							6	26	GND



SCR & VF Application

Figure 1-17

Governor wiring: Two wires are required from the electrical safety switch on the governor to the controller. [See Figure 1-18.]

Governor Circuit

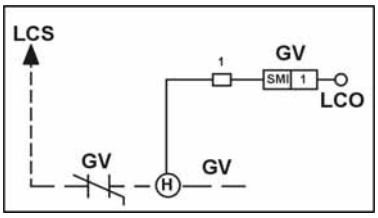


Figure 1-18

Hoistway Switches, Tape and Tapeless Installation, Conduit and Wiring

Hoistway Limit Switches

The Meridia controller uses Final, Direction and Terminal Slowdown switches.

Final limits: Final limits are used at both the top and bottom of the hoistway. They are usually set to open for the bottom final 1" prior to the car hitting the car buffer. The top final is usually set to open 1" prior to counterweight hitting the counterweight buffer, based on 6" run-by. These switches are wired into Safety Circuit in series. See Wiring Diagrams.

Directional Limits (normal limits): Directional limits are also used at both the bottom and top of the hoistway. They are usually set to activate prior to floor level, so a car traveling at 50 fpm in either direction will strike its appropriate switch and stop approximately floor level. This distance should be approximately 1" below top floor and 1" above bottom floor. [See Figure 1-19.] Each of these switches wires directly to the controller. See Wiring Diagrams.

Normal Limits

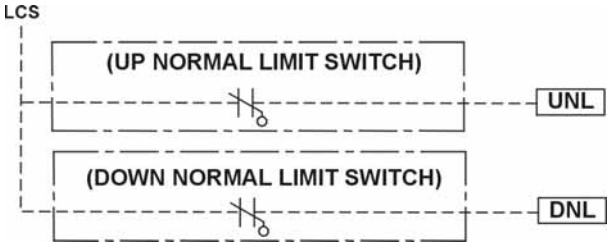


Figure 1-19

Terminal Slowdown Switches: These slowdown switches are also used at the bottom and top of the hoistway. The number of switches depends on the elevator's contract speed. [See Table A.] These switches wire directly to the controller. [See Figure 1-20 and Wiring Diagrams for further details.]

Note: *These switches may be moved during Terminal Slowdown Setup. Make sure enough slack in the wiring is available to move any switch up or down 12".*

Slowdown Limits

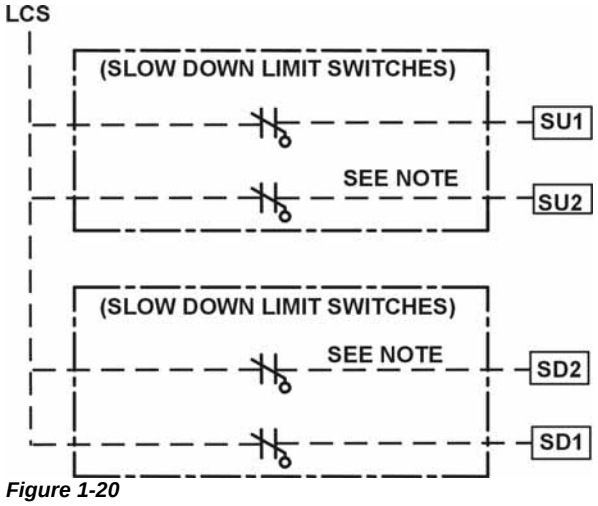


Figure 1-20

Slowdown Distance

FPM	(m/s)	SLD1	Distance	TSV1 Value	SLD2	Distance	TSV2 Value
50	(0.25)	3"	(8 cm)	40			
75	(.375)	6"	(16 cm)	70			
100	(.50)	9.5"	(25 cm)	90			
150	(.75)	15"	(39 cm)	120			
200	(1.0)	24.5"	(63 cm)	160			
250	(1.125)	30.5"	(78 cm)	210			
300	(1.50)	43"	(110 cm)	260			
350	(1.75)	49"	(125 cm)	310			
400	(2.0)	41"	(105 cm)	310	62.5"	(159 cm)	360
450	(2.25)	41"	(105 cm)	310	68.5"	(174 cm)	410
500	(2.5)	41"	(105 cm)	320	84"	(214 cm)	460

Table A

Emergency Terminal Slowdown Vanes: These Emergency vanes are also used at the bottom and top of the hoistway. [See Figure 1-22, Table A and Wiring Diagrams for further details.]

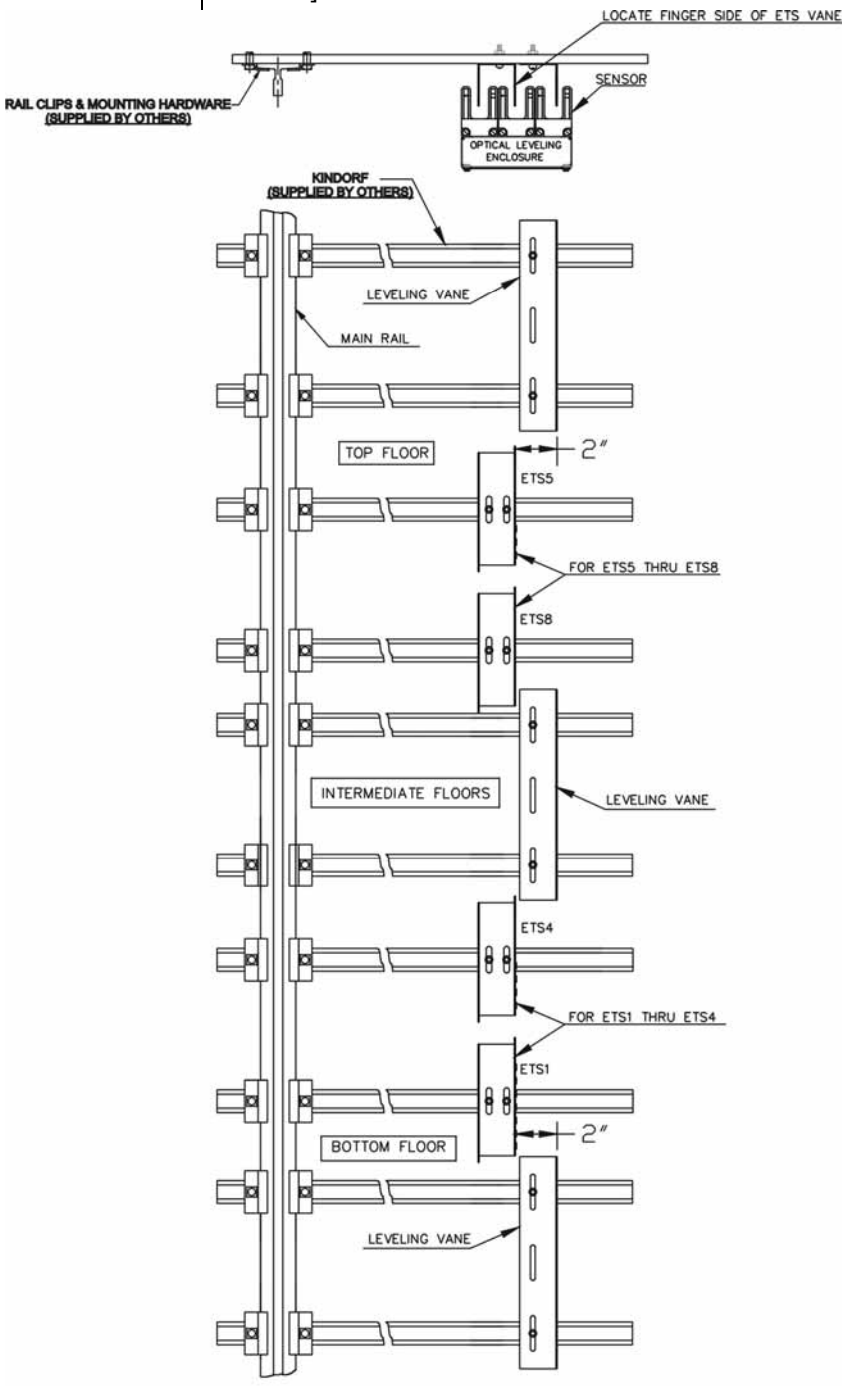
Leveling Vane Installation for Tapeless Applications: The Meridia is designed to run as a tapeless application. A vane is mounted at each floor that will signal the controller when it is at a floor. The vanes are mounted on the rail at a level off the hoistway sill that its center is at the same height as the center of the Optical Leveling Unit when the car is exactly floor level. [See Figure 1-21.]

NOTE: Kindorf (Unistrut) brackets supplied by customer.

Leveling & ETS Vane

(See Wiring Diagrams

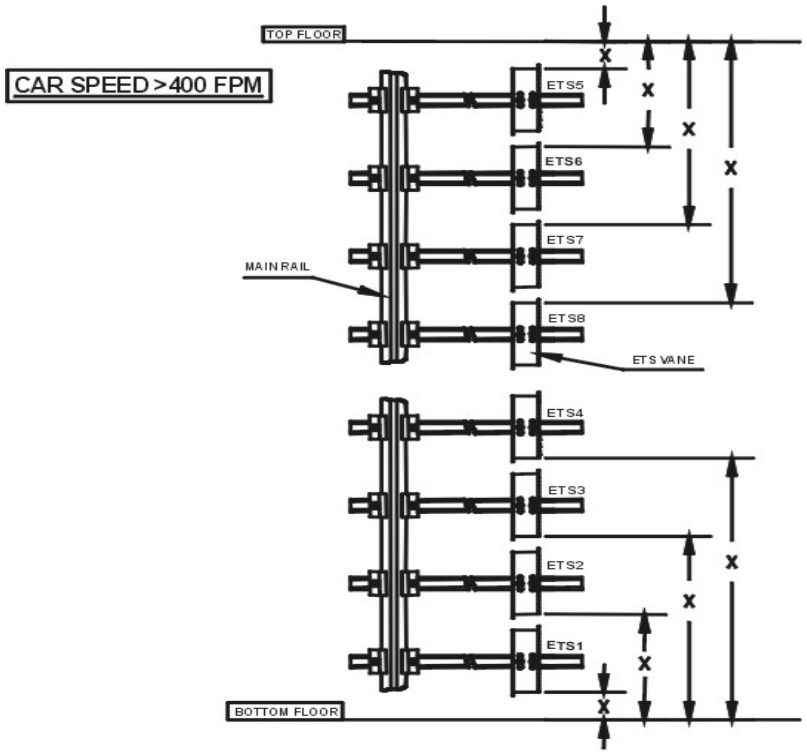
For Specific Details)



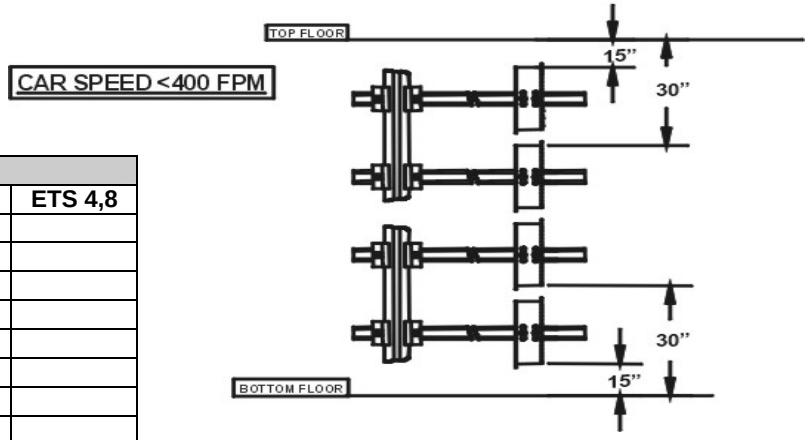
LEVELING/ETS OVERVIEW (TAPELESS)

Figure 1-21

ETS Vane Installation: The Meridia ETS System consists of a series of vanes mounted at both the bottom and the top of the hoistway. [See Figure 1-22 and Table B.]



ETS Vanes (See Wiring Diagrams For Specific Details)



Meridia ETS Limit Distances*				
Speed	**ETS 1,5**	**ETS 2,6**	**ETS 3,7**	**ETS 4,8**
50 fpm	4" (10cm)			
75 fpm	5" (13cm)			
100 fpm	7"(18cm)			
150 fpm	9"(23cm)			
200 fpm	5"(13cm)	17"(43cm)		
250 fpm	7"(18cm)	21"(53cm)		
300 fpm	7"(18cm)	21"(53cm)	34"(86cm)	
350 fpm	14"(36cm)	28"(71cm)	42"(107cm)	
400 fpm	14"(36cm)	28"(71cm)	42"(107cm)	56"(142cm)
450 fpm	15"(38cm)	30"(76cm)	45"(114cm)	60"(152cm)
500 fpm	16"(41cm)	32"(81cm)	48"(122cm)	64"(163cm)

Table B

Note: *Distance is measured from the center of ETS unit to the top of vane at top floor, bottom of vane at the bottom floor when car is at floor level.*

Figure 1-22

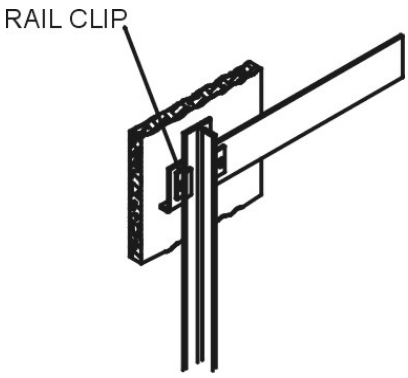
Installation for Tape Application:

Mounting the Tape:

- Locate the quadrant of the hoistway were the tape would not interfere with switches, governor, etc.

- Mount top tape support bracket on the main guide rail high enough so that the car, sitting on a compressed counterweight buffer, would not strike the bracket. (formula: CWT runby + CWT buffer stroke + ½ gravity stopping distance + 6"). [See Figure 1-23.]

Top Tape Bracket



Figiure 1-23

- Make sure the support bracket is square to the main guide rail and securely fastened.

- For most installations place the spool of tape on reel stands and pull the end of the tape up to the top support bracket and secure (snug but still allow to swing right to left).

- Once the tape is connected to the top support bracket and extends the length of the hoistway, allow the tape to hang freely for some period of time (overnight) to allow any twists to disperse.

- After the tape has been allowed to hang freely for a period of time, loosely mount the bottom support bracket. Position the bracket so it is low enough to not interfere with any over travel of the car and is in line with the top support bracket and the centerline of the tape.

- With the tape hanging motionless secure it to the top bracket. [See Figure 1-24.]

Top Tape Bracket with Support

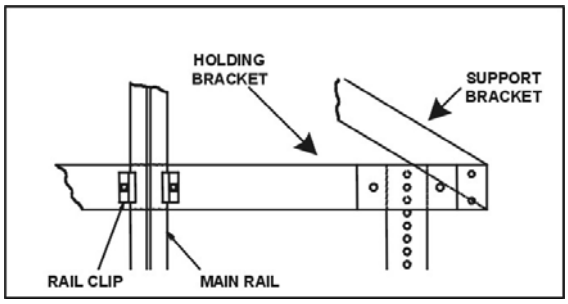


Figure 1-24

- Double over a short portion of the end of the tape and secure the bottom portion of the tape between plate #1 and plate #2. Cut off and discard remaining tape. [See Figure 1-25.]

Spring Tension Plates

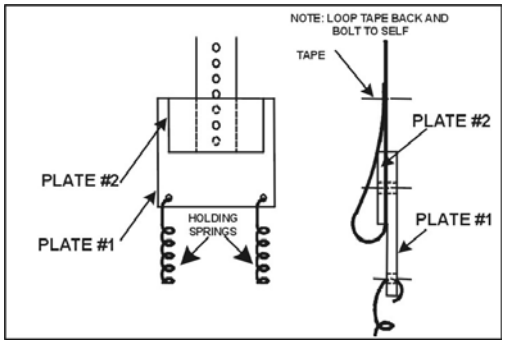


Figure 1-25

- Connect tension springs to plate #1 and to support bracket plate #1. [See Figure 1-26.]

Tape Tensioning Assembly

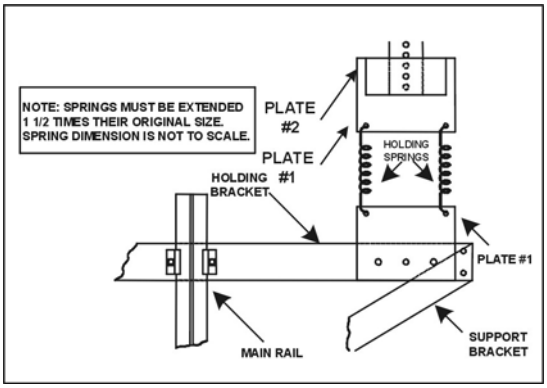


Figure 1-26

- Position the bottom support bracket to a position below the support bracket plate #1 that would allow the springs to become stretched to 1.5 times their original lengths. Verify the support bracket is inline with the top bracket and the centerline of the tape. Securely mount the bottom support bracket to the rail. [See Figure 1-27.]

Bottom Tape Bracket

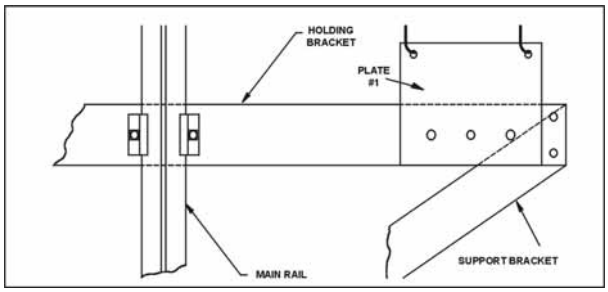


Figure 1-27

- Pull the bottom support bracket plate #1 down and secure it to the bottom support bracket. Verify the springs are approx. 1.5 times their original lengths, move the bottom support bracket if required [See Figure 1-28.]

Tape Tensioning

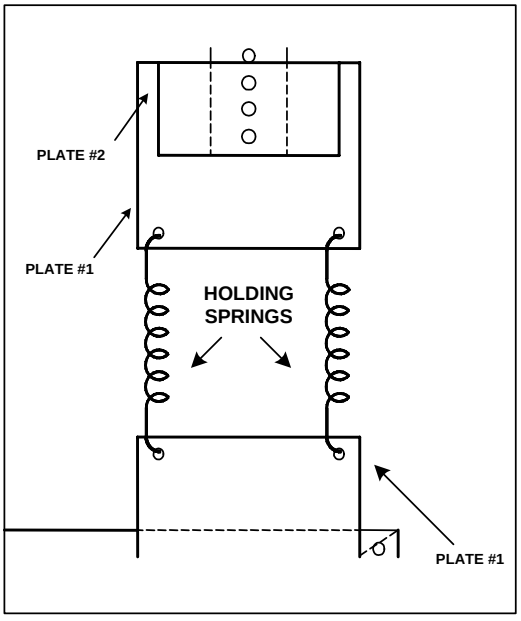


Figure 1-28

Note: *For proper operation and longevity of the selector tape guides the tape must run true from top to bottom without any twists.*

Hall Position Indicator, Push Button and Hall Lantern Wiring

Hall Lantern

The Meridia can support 2 different configurations of wiring for Hall Lanterns: Discrete Circuits and Serial. Check the wiring diagrams for the configuration used for this job.

Discrete Circuits

- From the controller, a common wire is run the length of the hoistway of an individual elevator.
- 2 wires (usually from a multi-cable from the controller) for that particular floor is also connected to the hall lantern.
- From the hall lantern, wires are connected to the applicable wires in the hoistway.
- This process is repeated for every floor where a hall lantern exists. See wiring diagrams for detail.

Serial

- From controller terminals (VL+, VLC) and CCU (HLRT+, HLRT-), 2 twisted pairs all of 12 gauge wire are run the entire length of the hoistway.
- Connect to the bottom of these wires a HPU Termination board. [See Figure 1-29.]

HPU Termination Board

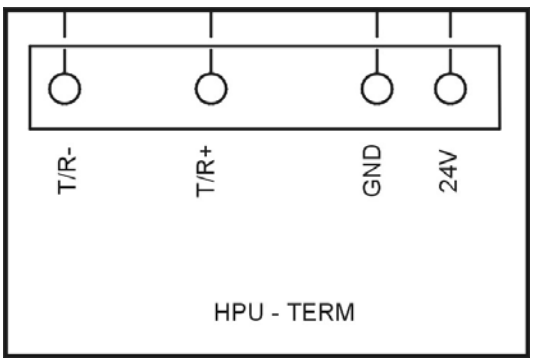
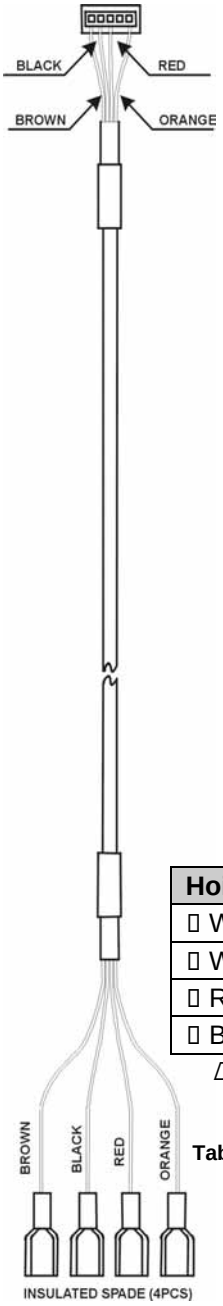
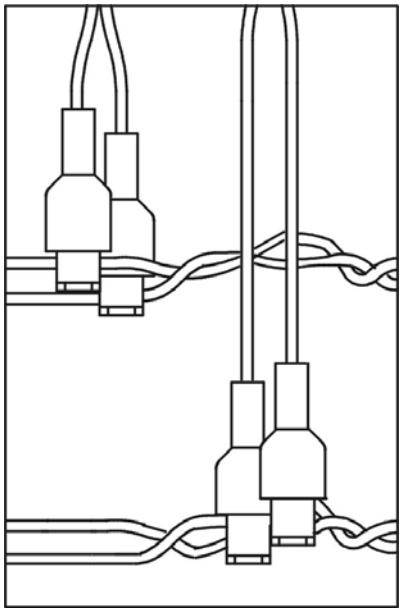


Figure 1-29

- Run the cable provided by CEC from the hall lantern box to the hoistway duct.
- Connect cable to the wires using the fasteners provided. [See Figure 1-30 and Table C.]

HPU Wiring Harness





Hoistway Wire	Harness	Nmonic
□ Wht/Brn	Brown	TX+
□ Wht/Blk	Orange	TX-
□ Red	Red	VH+
□ Black	Black	VHC

□ Color code for CEC provided cabling.

Table C

Figure 1-30

- Connect the other end of the cable to the Hall Lantern HPU board P1 (5 pin) connector (HPU is to remain in the Hall Lantern box). Verify that the connections correspond to their appropriate connections in the hoistway.

Warning! Failure to keep the connection correct will cause damage to the HPU board and possible void of board warranty.

- Connect the Hall Lantern devices to the CEC supplied cable as shown in the wiring diagrams.
- Connect the Hall Lantern cable to the P5 (5 pin) connector on the HPU board. [See Figure 1-31.]
- Verify the HPU address jumpers are correct for that floor. [See Figure 1-32 and HPU Address Jumper Configuration Charts.]

Hall Lantern Wiring

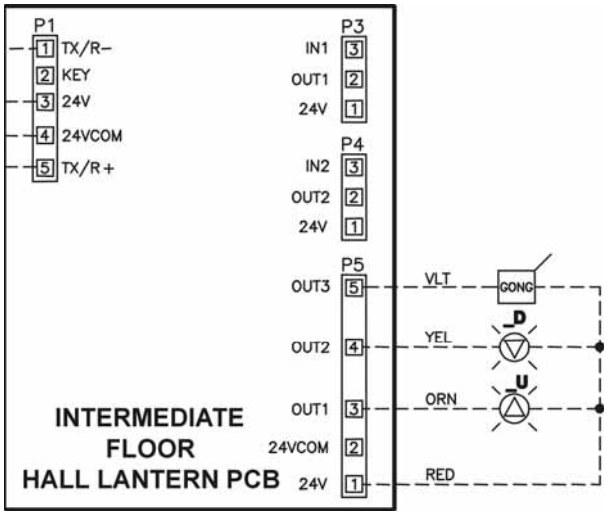


Figure 1-31

- Verify all connections are correct and that the plastic insulating sleeve is installed over the HPU.

Warning! When routing the HPU wiring through the controller it is important to keep 6” or more clearance from any high voltage wiring.

Hall Push Buttons

The Meridia can support 2 different configurations of wiring for Hall Push Buttons: Discrete Circuits (I^2C) and Serial. Check the wiring diagrams for the configuration used for this job.

Discrete Circuits (I^2C)

- From the group controller, Power and Common wires are run the length of the hoistway of an individual elevator.
- From the Hall Push Button, wires are connected to the applicable wires in the hoistway.
- The 3rd and 4th wires (usually from a multi-cable from the group controller) for that particular floor are also connected to the Hall Push Buttons.
- This process is repeated for every floor where a hall push button exists. See wiring diagrams for detail.

Serial

- From group controller terminals (VH+, VHC) (HCRT+, HCRT-), 2 twisted pairs all of 12 gauge wire are run the entire length of the hoistway.
- Connect to the bottom of these wires a HPU Termination board. [See Figure 1-29.]
- Run the cable provided by CEC from the hall push button box to the hoistway duct.
- Connect the cable to the wires using the provided fasteners. [See Figure 1-30.]
- Connect the other end of the cable to the Hall Push Button HPU board P1 (5 pin) connector (HPU is to remain in the Hall Call Box). Verify that the connections correspond to their appropriate connections in the hoistway. [See Figure 1-32.]

Warning! Failure to keep the connection correct will cause damage to the HPU board and possible void of board warranty.

- Connect the hall push buttons to the CEC-supplied cable as shown in wiring diagrams.
- Verify the HPU address jumpers are correct for that floor (each board has floor designation on back). [See Figure 1-32.]

HL & HC HPU Cards

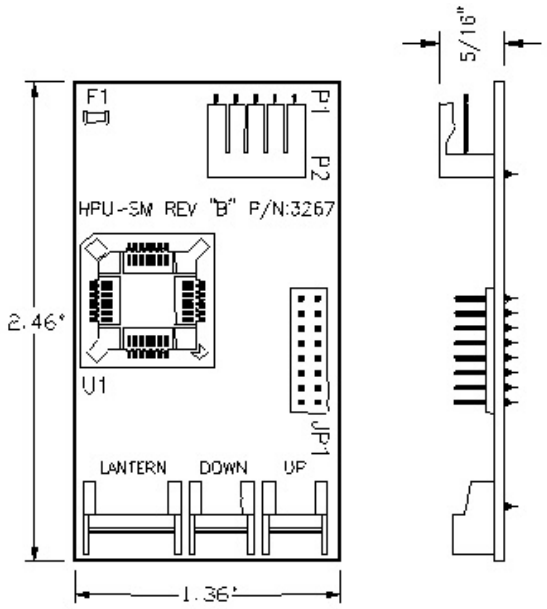


Figure 1-32

Note: *Jumper must be installed along with proper address jumpers for hall lantern operation.*

- Connect the Hall Push Button cable(s) to the P3 and/or P4 (3 pin) connector(s) on the HPU board. [See Figure 1-33.]

Hall Call Wiring

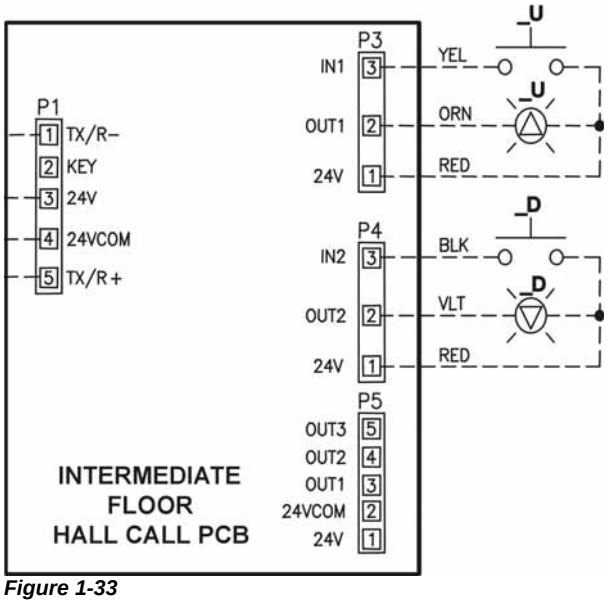


Figure 1-33

- Verify all connections are correct and that the plastic insulating sleeve is installed over the HPU.

Warning!

When routing the HPU wiring through the controller, it is important to keep 6" or more clearance from any high voltage wiring.

Hall Position Indicators

The Meridia can support 3 different configurations of wiring for Hall Position Indicators: Binary, Discrete Circuits and Serial. Check the wiring diagrams for the configuration used for this job.

Binary & Discrete Circuits

- From the car controller, Power and Common wires are run the length of the hoistway of an individual elevator.
- From the P.I., wires are connected to the applicable wires in the hoistway.
- A wire (usually from a multi-cable from the controller) for each particular floor is also connected to the P.I. or wires from the controller to the same designated wires at the P.I.
- This process is repeated for every floor where a hall position indicator exists. See Wiring Diagrams for detail.

Serial

- From controller terminals (VL+, VLC) and CCU (HLRT+, HLRT-), 2 twisted pairs all of 12 gauge wire are run the entire length of the hoistway.

  Note: *If Serial Hall Lanterns are used, connection should be made to these wires.*

- Run the P.I. cable from the box to the hoistway duct.
- Connect the cable to the wires using the provided fasteners.

Hall P.I. Wiring

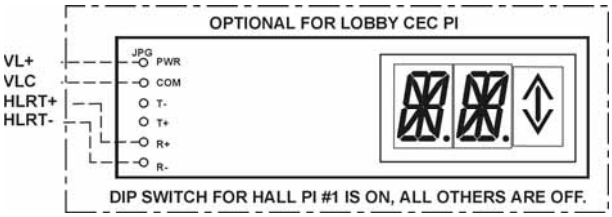


Figure 1-34

- Repeat this process wherever a hall position indicator is present.

Warning!

Failure to keep the connection correct will cause damage to the P.I. board and possible void of board warranty.

Car Top Box and Encoder Installation

Car Top Box: The standard *Meridia* Car Top Box contains the terminals for the termination of the traveling cable wires as well as the CPT, COP, CC1, Door Board, Car top inspection station, Work light and Car position indicators. [See Wiring Diagrams for details.] This box must be placed in a convenient location for piping and wiring as well as conforming to any and all codes governing car top clearances. (usually mounted on the front side of car top next to cross head). [See Figure 1-28.]

Car Position Encoder: This encoder is mounted on the cross head above the roller guides. [See Figure 1-35.]

Car Top Controller (CTC) and Encoder Wiring

The CTC has color coded terminals that directly relate to the colors of the traveling cable, 10 yellow terminals for travelers 1 – 10, 10 orange terminals for travelers 11 – 20 and 10 brown terminals for travelers 21 – 30. See wiring diagrams for details.

The Car Top Encoder wires to the CPE are located in the Car Top Controller Box. [See Figure 1-36.]

The stationary bracket for the Optical Leveling Unit is mounted plumb from top to bottom on the car top in the same quadrant where the floor vanes are to be located. Verify that there will be enough clearance between the VSU and the vane (3/4"). [See Figure 1-37.]

Encoder Wiring

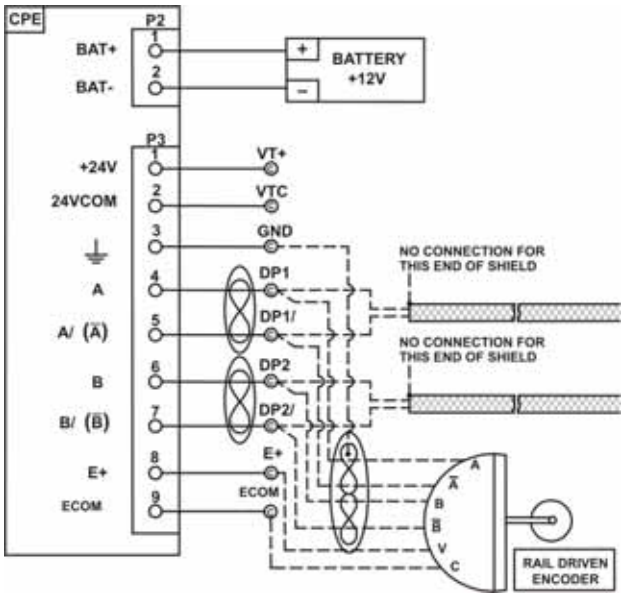


Figure 1-35

Car Encoder Mounting

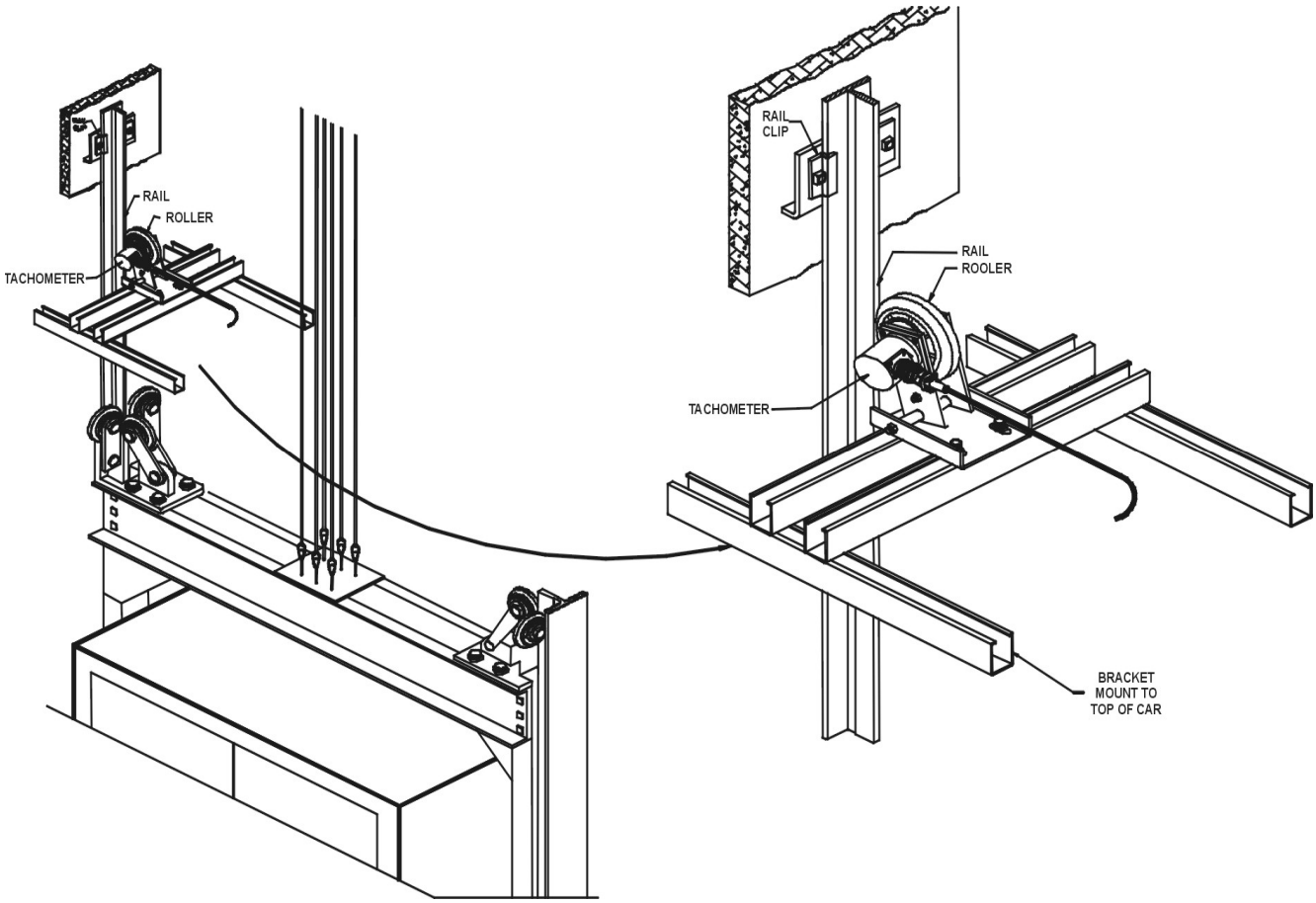


Figure 1-36

Optical Leveling Unit

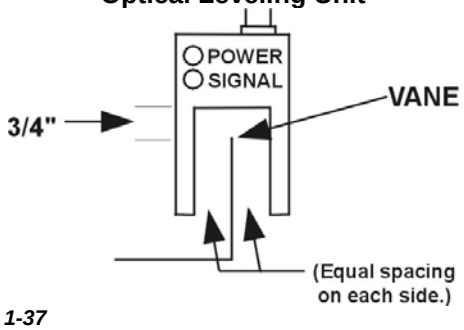


Figure 1-37

COP and CC1 Board Installation

These boards are to be located in the Car Operating Panel when serial communication is required to the COP. [See Figure 1-38.]

Car Call Wiring

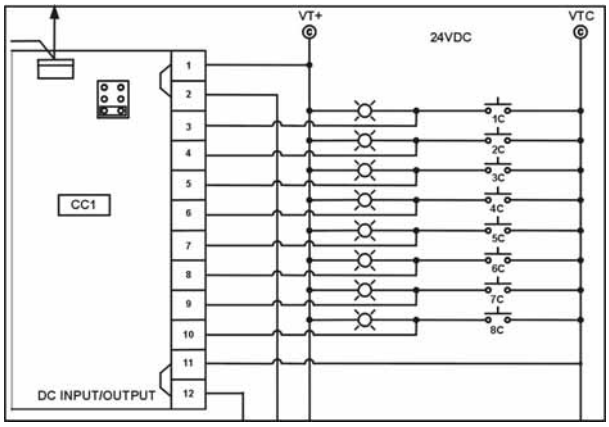


Figure 1-38

These boards are connected to the CTC using provided flat ribbon cable. Each device will have a port designated for installation of the communication cable.

Note: *See wiring diagrams for job specific wiring of the COP and CC1 boards***.**

C.E.C. Door Board Installation

The door board is supplied in its own 12" wide controller box. [See Figure 1-39.]

C.E.C. Door Board Controller

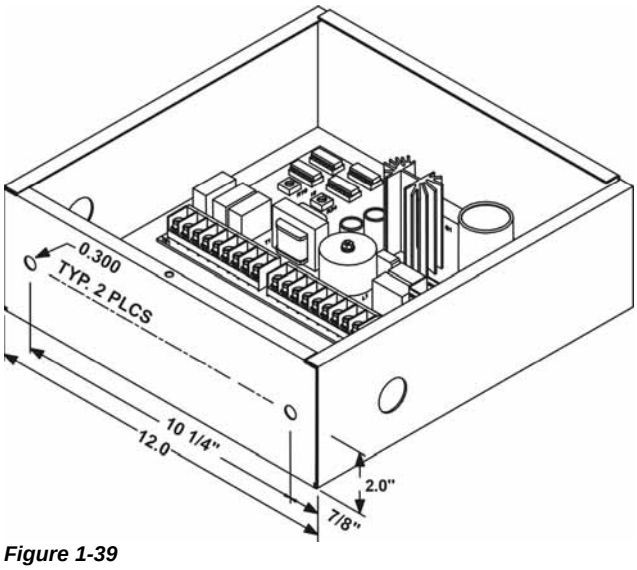


Figure 1-39

The door board requires the following inputs from the existing operator: DOL, DCL, DL6, ODS1, ODS2, CDS1, CDS2 limits. [See Figure 1-40.]

Note*: These must be dry inputs (no voltage other than supplied by door board) from the operator. Verify no wiring exists on these switches other than what is required on wiring diagrams.*

Door Operator Wiring

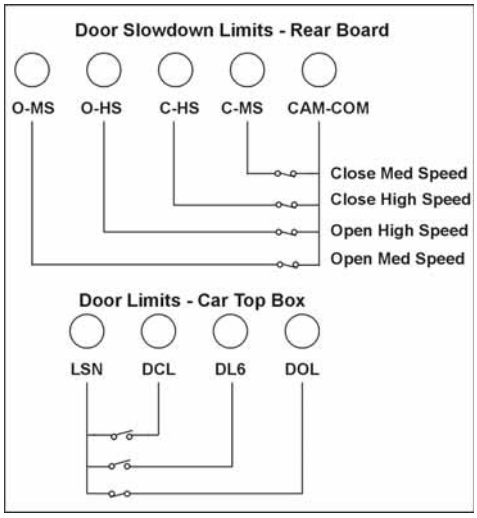


Figure 1-40

The door board also requires an armature connection to the door motor and a motor field connection (if required). Check existing door motor for details on motor field requirements. [See Figure 1-41.]

Door Motor Field Wiring

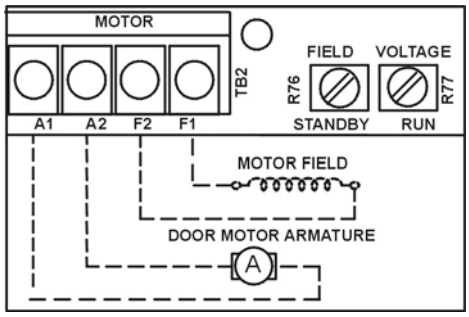
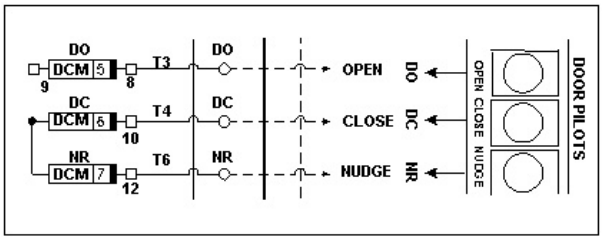


Figure 1-41

From the Car Top Controller (CTC) there will be 3 inputs required to the door boards. They are DO, DC and Nudging (NR). [See Figure 1-42.]

Door Controller Wiring



CTC **Door Board**

Figure 1-42

Car Safety Circuit Wiring

Safety devices located on the car are wired to the Car Top Box. See wiring diagrams for specific details.

Car Gate Switch and Hoistway Door Locks

See the wiring diagrams for your particular job for specific wiring details.

From the controller, the Door Board will require 2 power supplies, LSN/LCO and LD1/LD2. These supplies will be available on the terminal connectors in the CTC. [See Figure 1-43.]

C.E.C. Door Controller Power Wiring

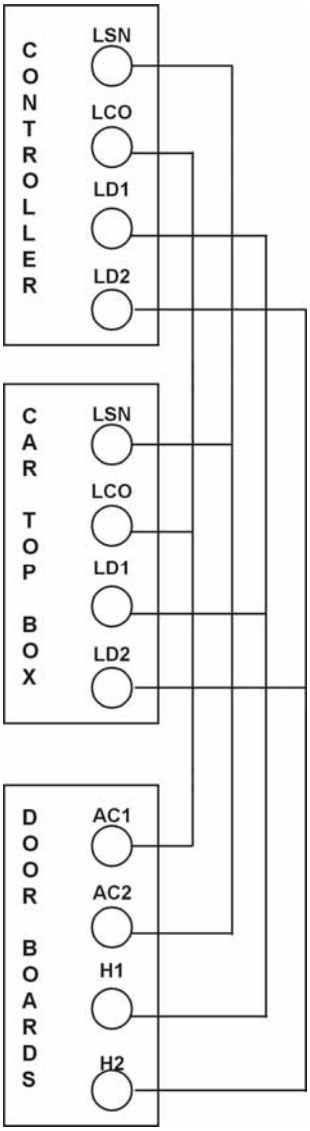
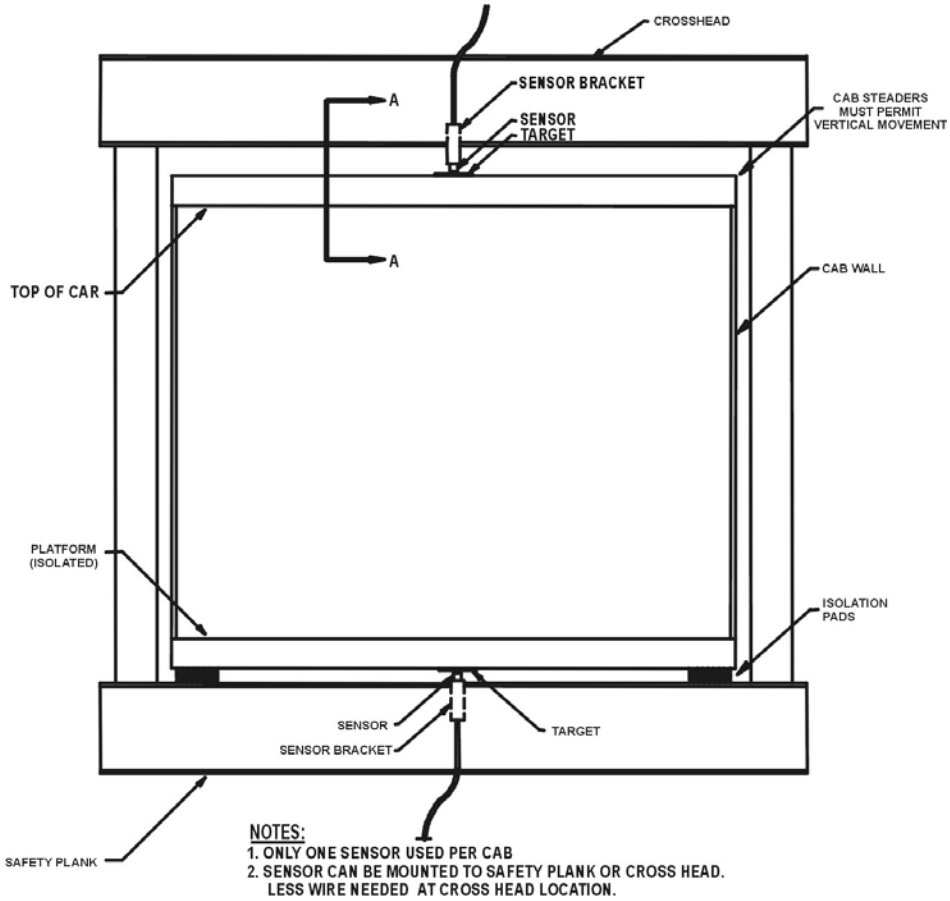


Figure 1-43

Load Weigher Mounting



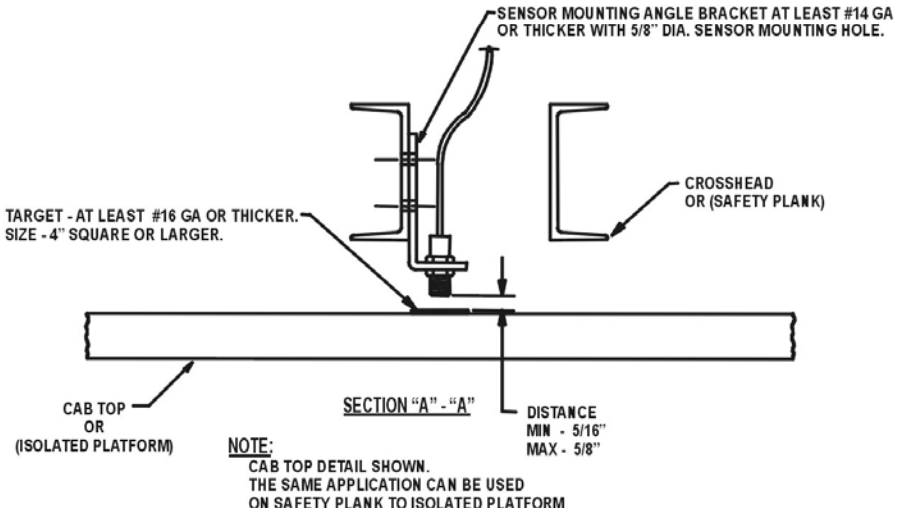
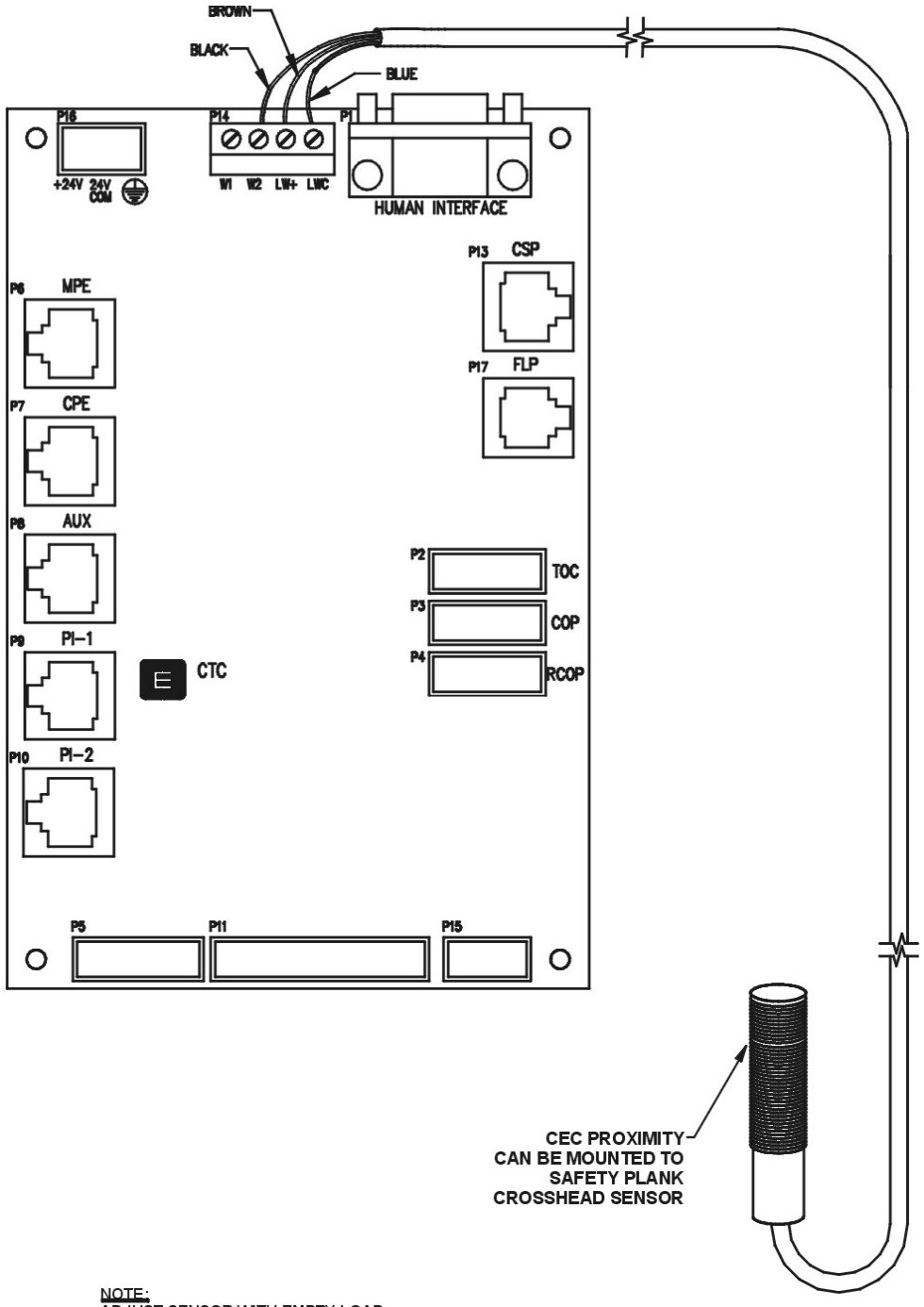


Figure 1-44

Once proper location has been determined and the load weigher mounted it will wire into the CTC unit. [See Figure 1-44.]

Load Weigher Wiring



NOTE:
ADJUST SENSOR WITH EMPTY LOAD
AT BOTTOM LANDING FOR BETWEEN
4.2V AND 4.6V. [READ POINTS W2 TO GND]
MOVING SENSOR FURTHER FROM TARGET INCREASES
VOLTAGE. MOVING CLOSER DECREASES VOLTAGE

Figure 1-45

NOTES

SECTION 2 - MERIDIA STARTUP PROCEDURES With HPV 900

Machine Room Preparations

FIELD WIRING CHECK

1. Verify Mainline disconnect is in the **OFF** position and properly locked out.

2. Verify all the circuit breakers on the front panel (located at the top of the controller) are in the off position. [See Figure 2-1.]

Meridia Circuit Breakers

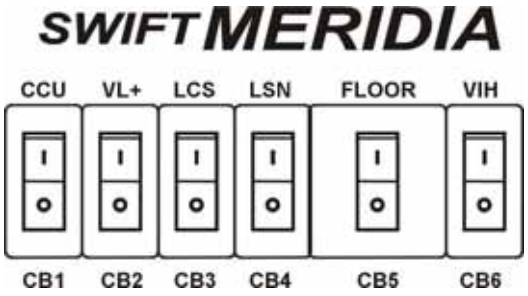


Figure 2-1

3. Turn the INSPECTION switch to the **ON** position.

4. Verify Door Bypass switches are in the **OFF** position.

5. Verify that the following field wires are connected as described in the Installation portion of this manual.

   A. **<u>Power wiring to the controller:</u>** The power wiring can be a 2, 3 or 4 circuit configuration, depending on the drive system that is supplied.

      1) An independent, single-phase supply for the cab lighting circuit is the first circuit common to all drive types.

Warning!

The MERIDIA controller transformer is not designed to support cab lighting and cab ventilation. Using the MERIDIA 120 VAC control circuits in this manner may cause permanent damage to the main controller transformer.

      2) An independent, emergency backed, single-phase 120 VAC circuit is common to all drive types (for the first controller of each group only) [See Figure 2-2.]

Hall Call Power Circuit

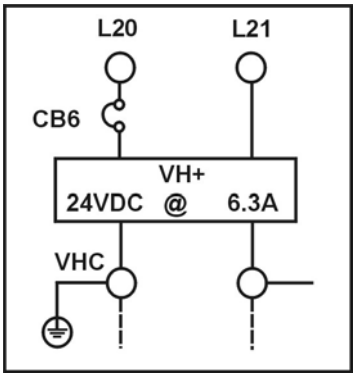


Figure 2-2

      3) The 3-phase mainline power circuit is common to all drive types. The power may connect directly into the drive side of the controller. [See Figure 2-3.]

Three-Phase Power Circuit

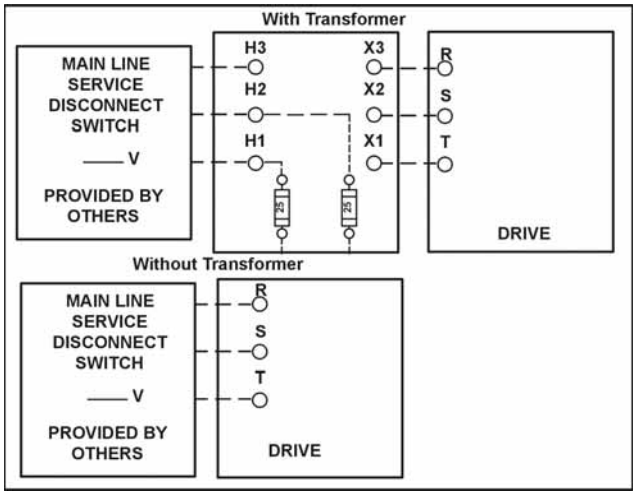


Figure 2-3

Warning!

All wire sizes are to be in accordance to the applicable National Electrical Code.

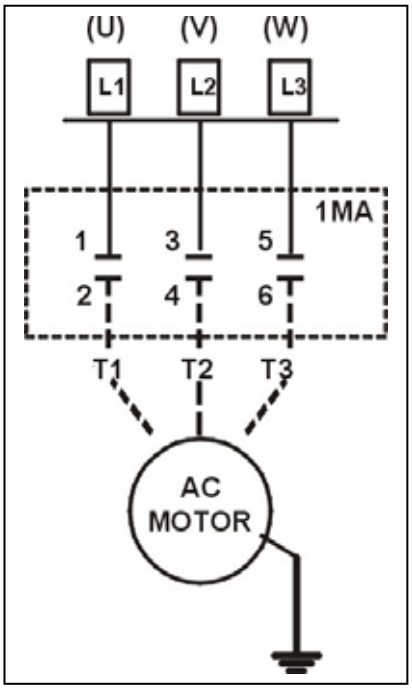
Warning!

The main line power must supply a ground wire in accordance to National Electrical Code that is continuous to the source or to an earth ground connection.

B. **Power wiring to the hoist machine:** There will be 2 to 4 circuits required for the elevator hoist machine.

1) Machine Wiring: The first is to the motor that consists of current conductors wired from the drive output through the choke (if required) to the motor, and a ground wire to the grounding lug at the drive side of the controller. [See Figure 2-4.]

Motor Wiring



AC Application

Figure 2-4

2) Brake Coil Wiring: The second circuit provides power to the brake coil. These 2 wires can be run with the motor wires. [See Figure 2-5.]

Brake Coil Wiring

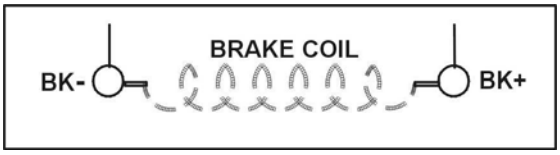


Figure 2-5

3) Brake Switch Wiring: The third circuit is for the brake switch (if required).

4) Motor Encoder Wiring: The encoder wiring uses 3 twisted shielded pairs. This cable is provided from CEC on most applications. See wiring diagrams for connections. It is imperative that this wiring be run separately from the encoder to the drive side of the controller and connected properly. [See Figure 2-6.]

VERIFYING CIRCUIT RESISTANCES

1. Check the brake coil:

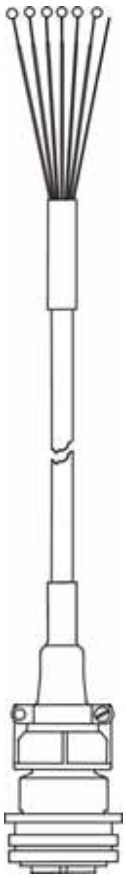
A. Disconnect the brake coil leads (BK- & BK+).

B. With an ohmmeter, measure the coil resistance and verify it matches the value given on the wiring diagram power distribution page. Note the resistance values.

C. Next measure the brake coil leads to ground and verify that neither brake lead is grounded.

Motor Encoder Wiring

	ENCODER TYPE						TERMINAL		
	SOLID SHAFT ALL	HOLLOW SHAFT 1024	10K	2500	4096	2500 10K	DSD 412	HPV 900	UNICO 1100
	DYNAPAR 7 PIN	DYNAPAR 10 PIN	BEI 7 PIN	BEI 10 PIN	LUCAS	LUCAS	TB1	TB1	CONN 2
5V	D	D	D	B	D	A	1	25	1
COM	F	F	F	A	G	C	43	19	2
A	A	A	A	D	F	B	2	21	3
$\bar{A}$	C	H	C	G	H	E	3	20	4
B	B	B	B	E	B	D	4	23	5
$\bar{B}$	E	I	E	H	A	F	5	22	6
SHLD							6	26	GND



VVVF Application

Figure 2-6

<u>Governor wiring</u> two 18 gauge wires are required from the electrical safety switch on the governor to the controller. [See Figure 2-7.]

Governor Wiring

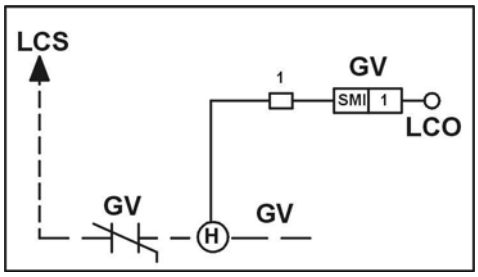


Figure 2-7

ISOLATION TRANSFORMER CONFIGURATION (If required)

1. Verify the mainline voltage:

   A. Measure and record the input voltage at the mainline disconnect.

   B. Ensure the voltage agrees with the job voltage +/- 10%. See the Power Distribution page of the wiring diagrams.

   C. If the job has an isolation transformer, verify the data nameplate meets the actual job requirements for input and output voltages. See Power Distribution page of the wiring diagrams.

   D. Verify all transformer taps are connected for proper voltage according to the Power Distribution page of the wiring diagrams.

CONTROLLER TRANSFORMER CONFIGURATION

1. Verify the wires from the FP1 fuses are connected to the proper Primary taps on the controller transformer. This tap setting should be the same as the 3 phase voltage at the disconnect. [See Figure 2-8.]

2. Verify the secondary taps of T1 are wired per Power Distribution Print for the brake and door voltages.

Controller Transformer

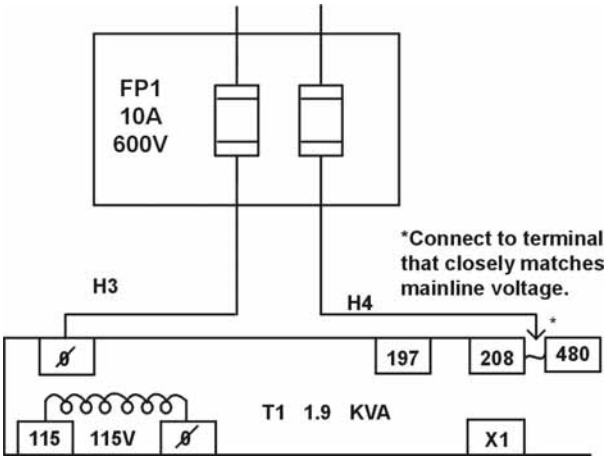


Figure 2-8

JUMPER CONFIGURATION

1. Install the following jumpers to bypass these circuits that may not be installed at this time. [See Table A.]

Temporary Jumpers					
Circuit	**From**	**To**	**Circuit**	**From**	**To**
UP Normal Limit	LCS	UNL	Car Gate	GLT	CG
DN Normal Limit	LCS	DNL	Front Locks	GLT	DL
Governor	LCS	GV	Group Power	V+	NP+
Hoistway Safeties	GV	HS	Group Common	VC	NPC
Car Safeties	HS	ICS	Normal Power	NP+	NP
Car Insp. Switches	ICS	II	Drive Switch	V+	DRVS
Rear Gate	GLT	RCG	Rear Locks	RDL	GLT
Panel test operation	TIC	TIA			

Table A

Warning!

These jumpers are only installed for temporary operation. Never operate a car at high speed with temporary jumpers. They must be removed as the door and safety circuit wiring is installed.

AC VOLTAGE AND SWITCH TEST

1. With the controller circuit breakers off, turn on the mainline disconnect and verify the building 3 phase is within 10% of what is noted on the wiring diagrams.

2. Verify the proper voltage across the bottom of Drive Connections R – S – T.

3. Verify that the primary voltage across the bottom of the FP1 fuses is the same as the building 3 phase voltage noted in Step 1.

4. Verify the voltage is within 10% at the T1 controller transformer located behind the logic door. See wiring diagrams for proper voltages.

5. Verify secondary voltages per power distribution print.

CIRCUIT BREAKER & POWER VERIFICATION

1. Turn on CB3 and verify there is 115VAC between LCS & LCO.

2. Verify the drive is also powered up.

3. Turn on CB4 and verify there is 115VAC between LSN & LCO.

4. Turn on CB5 and verify there is the proper voltage for the door operator. See wiring diagrams for details.

5. Turn off CB5.

CCU POWER-UP, INITIALIZATION

1. With the mainline disconnect switch on, turn on CB1.

2. Verify the CCU front panel V+ LED stays lit green and display is active. [See Figure 2-10.]

Note: *First, the window will display the job number and the car number you are working on. Next, the window will display any Communication faults with the CCU devices. If the Car Top Box is not connected, a CTC fault will occur. Disregard any faults for devices that are not connected.*

3. Press the <MENU> key on the CCU for accessing password menu. [See Figure 2-9.]

CCU Key Pad

Figure 2-9

4. After reading the directions, enter the password "INSTALL" then press the <ENTER> key. The display should now show the main menu. If not, enter the password again.

   A. Use the ▲▼ arrow keys to select the proper character. Starting with the ▼ (down) button will display the alphabetic characters first.

   B. Use the ◄► arrow keys to move from one character to another.

   Note: *Do not press <ENTER> after each character. Only press the <ENTER> key after the last character has been selected for the password.*

Display Menu (While Entering Password)

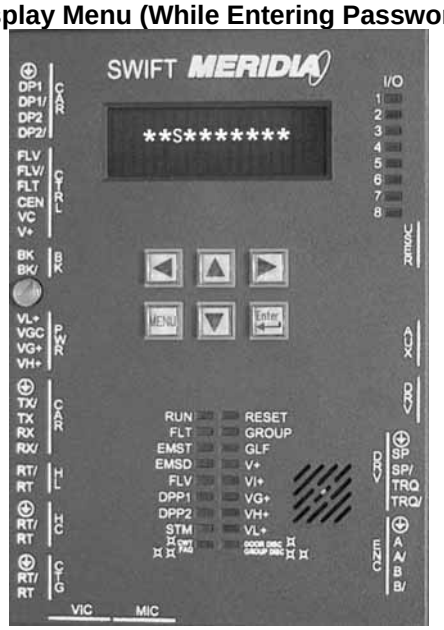


Figure 2-10

SETUP MODE AND WRT COMMAND

1. Using the ▲▼ arrow keys scroll to **Car Control** and press <ENTER>.

Meridia CCU (While on Main Menu Screen)

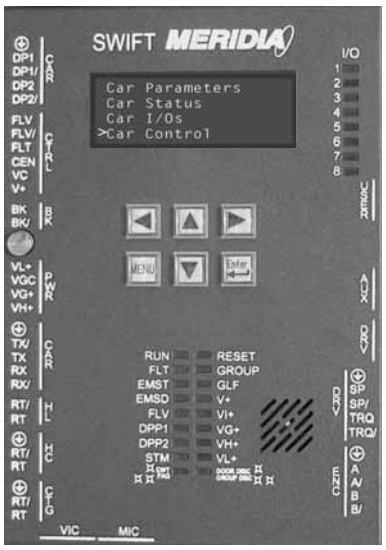


Figure 2-11

2. Scroll down to **Set UP Mode Sel** (this mode allows you to move the car without the cartop devices installed) and press <ENTER>. This should start the STM LED to start flashing orange. [See Figure 2-12.]

3. Press <MENU> button until you return to the Diagnostic Status Display.

4. Verify CEN, DL and CG relays are energized.

Meridia CCU (While on Car Status Screen)

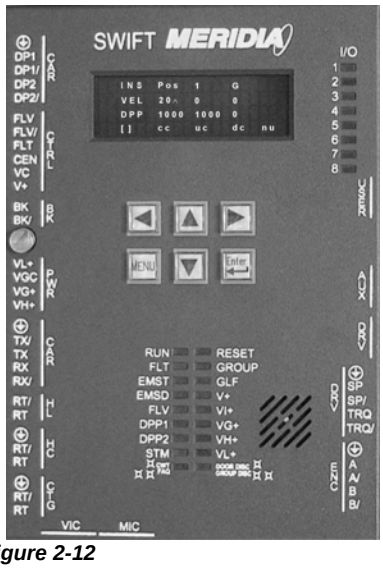


Figure 2-12

Parameter Adjustment

Note: *To change a parameter value, use the arrow keys to scroll to the parameter desired. Press <ENTER>. This will cause the last digit of that value to blink. Use the ▲▼ keys to change this value. Use the ◄► keys to move from digit to digit. Press <ENTER> to save desired value.*

Note: *These changes are only saved and not written to flash memory until the WRT command has been selected under the Car Commands menu.*

1. Measure resistance between BR1 & BR2 with brake leads connected. Record this value for calculation of parameter BRR. (Brake Board located on Rear of Swing Door.)
2. Press <MENU> button until you get to Main Menu.
3. Scroll to **Car Parameters** and press <ENTER>.
4. Scroll to **Brake** and press <ENTER>.
5. Verify the parameters for the Brake Adjustments. [See Table B.]
6. Press <MENU> once to return to the **Car Parameters** sub-menu.
7. Scroll to **Control** and press <ENTER>.
8. Set parameters listed in Table C.

Control Parameters

Parameter	Description
CCN =	car number in the group you are working on.
BED =	Building Elevator Number
RPM =	Motor RPM required to achieve Contract Motor Speed, as per wiring diagrams on default parameter page (top Speed RPM) (Note: Same as Drive A1-Contract Motor speed.)
PPR =	Per motor encoder name plate. (Note: Same as Drive A1-Encoder pulses.)
SCT =	Set to 25
LAG =	Set to 15

Table C

9. Press the <MENU> key to return to **Car Parameters** sub-menu screen.
10. Scroll to **Pos** and press <ENTER>.

DPF Requirements

Rail Encoder	DPF = 2552
Tape	DPF = 320
Governor Shaft Encoder	DPF = PPR/FPR
FPR = (Governor Sheave diameter* X 3.1416) / 12	
PPR = Encoder pulses per revolution on data tag.	

***Table D** (* in inches)*

11. Verify the **DPF** parameter matches what is required for this job. Change as above if required. [See Table D]
12. Press <MENU> and return to the sub-menu screen.
13. Scroll to **Vel** and press <ENTER>.
14. Set the **IVE** parameter to 20 and press <ENTER>.
15. Press <MENU> until you return to the Main Menu.

Brake Parameters

Parameter	Range	Default	Units	Adjustment Description
BCL	0-32	16	1/64 SEC	Brake Control Lift timer delay**.** **Note**: *Only used on VVVF drives.*
BHV	0-500	JOB	VOLTS	Brake Hold Voltage. Set to desired Brake Hold voltage. (Normally 80% of BLV.)
BLT	0-320	1	1/64 SEC	Brake Lift Time. Set at 1 for Fastest Brake Pick on Inspection.
BLV	10-500	JOB	VOLTS	Brake Lift Voltage. Set to desired Brake Pick voltage. (Must not exceed 90% of BMV.)
BMA	1-20	JOB	AMPS	Brake Maximum lift Amps. Set at 1 for Non-serial Brake board. If using large current Brake board, set to match jumper configuration.
BMV	20-500	JOB	VOLTS	Brake Maximum Line Voltage. Set to match AC incoming to Brake board. (Normally 145 or 290 VAC)
BRR	0-65535	JOB	NUMERIC	Brake regulator resistance configuration. Once BHV is set, increase or decrease the output at BK+ and BK- to equal the BHV setting +/- 5VDC.

Table B

16. Scroll to **Car Hoistway** and press <ENTER>.

17. Temporarily set parameters **ESV**, **ETV**, and **TSV** to contract speed minus 10 fpm (feet per minute).

18. Press <MENU> until you return to the Main Menu.

19. Scroll to **Car Commands** and press <ENTER>.

20. Scroll down to **WRT** Command and press <ENTER>.

Setting Up the Drive

Note 1: *Though the drive is shipped pre-configured to suit the motor required for this application, it is strongly suggested to verify the drive parameters in Table E.*

Note 2: *If any problems are suspected with the drive unit, refer to Table E for generic setting of the drive.*

Note 3: *Refer to the HPV 900 Drive Manual for directions to navigate drive using the tool.*

The HPV 900 communicates with the control system via an RS232 serial link. This communication channel conveys all speed and torque information to the drive system and receives information regarding the drive status.

Establishing Correct Direction and Speed

1. Refer to the Job Configuration Sheets provided with the controller. Verify the A1 through A5 parameters.
2. Connect the encoder cable appropriately and ensure that the cable is routed through a separate metal conduit. [See Figure 2-13.]

   Note: *Failure to keep the encoder away from high voltage will result in erratic drive operation.*

3. Verify Encoder Hook up.

   A. Uncouple the Encoder so it can be spun by hand.

   B. Verify Drive is set for "Forward" Motor rotation. (C1 User switches.)

   C. Set Drive to display Speed Feedback at (D1).

   D. Rotate encoder for Up direction and verify feedback is positive.
   Rotate encoder for Down direction and verify feedback is negative.

   Note: If feedback is reversed, swap the (A) and (A) wires. Then check for correct feedback.

4. Recouple the encoder to the motor shaft.

5. Use Panel Test Button to move the car UP or DN.

6. Verify direction and speed of car.

   A. If direction is correct but speed is excessive, reverse the encoder connections on the drive as follows: [See Figure 2-14.]

   - Interchange the wires in terminals TB1-20 (A) and TB1-22 (B).
   - Interchange the wires in terminals TB1-21 (A) and TB1-23 (B).

   B. If direction is incorrect and speed is stable; interchange any two motor leads

   C. If direction is incorrect and speed is excessive, simply reverse any two motor leads.

   D. If the car runs slowly and the motor current is high; then interchange the A and $\overline{A}$ wires connected to TB1-20 and TB1-21. [See Figure 2-13.]

   Note: *Monitor the current at the display D2 of the drive.*

7. Verify that the car speed is equal to the speed demand (IVE parameter in the control system). During initial setup it is unlikely that there will be a car top encoder for speed feedback, so a hand held tachometer will be needed. Adjust the drive parameter (CONTRACT MOTOR SPEED in the A1 list) to make the car velocity equal to the speed demand.

HPV Parameters

Drive A1	
Contract Car speed	Contract speed in fpm
Contract Motor speed	Motor rpm required to achieve contract speed
Response	10
Inertia	2
Encoder Pulses	per encoder used

S-Curves A2	
Accel Rate 0	7.9
Decel Rate 0	7.9
Jerk Rate 0	0
Lev Jerk Rate 0	0

Power Converter A4	
UV alarm level	80
UV Fault level	70
External reactance	set only if external reactor is used
Input L-L volts	phase voltage

User Switches C1	
Spd command Src	serial
Run Command Src	External TB1
Hi/Lo gain Src	Internal
Speed Reg Type	elev spd reg
Motor Rotation	forward
Spd ref release	reg release
Cont Confirm	External TB1
Pre-torque Src	serial
Pre-Torque latched	None
Pre-Torque latch src	None
Fault reset src	External TB1

Logic Inputs C2	
Log In 1	RUN
Log In 2	DRIVE ENABLE
Log In 3	FAULT RESET
Log In 4	N/A
Log In 5	N/A
Log In 6	N/A
Log In 7	N/A
Log In 8	N/A
Log In 9	Cont Confirm

Logic Outputs C3	
Log Out 1	N/A
Log Out 2	N/A
Log Out 3	MTR Overload
Log Out 4	N/A
Relay Coil 1	Ready to Run
Relay Coil 2	Run Confirm

Motor A5	
Motor ID	see note 1
Rated motor power	nameplate
Rated motor volts	nameplate
Rated excit. Freq	nameplate
Rated motor current	nameplate
Motor poles	nameplate
Rated motor speed	see note 2
% no load current	see note 1
Stator leakage X	9
Rotor leakage X	9
Stator resistance	1.5
Motor iron loss	0.5
Motor mech. Loss	1
Flux sat break	75
Flux sat slope 1	0
Flux sat slope 2	0

Table E

If motor is 1800 rpm/4 pole, then both STATOR and ROTOR LEAKAGE should be set to 11%. If motor is 1200 rpm/6 pole, then set to 9%.

Note 1: *The HPV-900 has a library of motors commonly used and these are selected by ID number which presets the parameters.*

Note 2: *This is the nameplate rpm of the motor which is used to calculate the vector currents and has no bearing on the contract speed. Never change from nameplate value.*

Motor Encoder Wiring

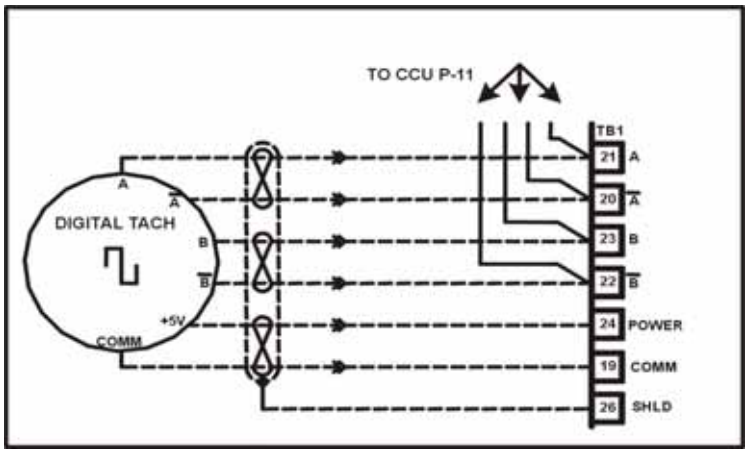


Figure 2-13

Moving the Car on Inspection For Serial Drives

1. Verify the CCU is displaying the **Car Status**. [See Figure 2-14.] If not, press <MENU> button until displayed.

Car Status Display

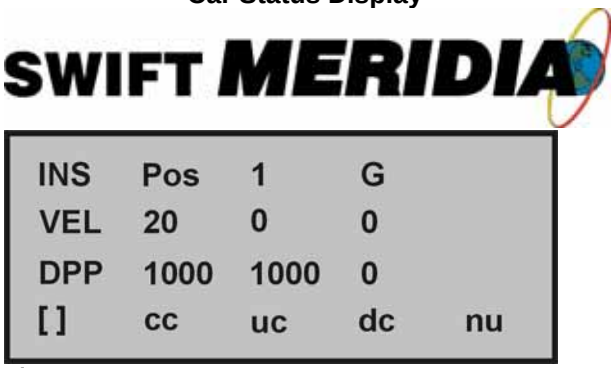


Figure 2-14

2. Briefly press the UP button on the Panel Test Station while observing the drive sheave.

3. Verify the car now moves up when the UP button is pressed and down when the DN button is pressed.

Note: *Should the drive sheave turn in the opposite direction, swap two motor leads.*

4. With a handheld Tachometer, verify the car speed is +/- 2 FPM from SR. If not, increase or decrease the Drive A1 Contract Motor Speed until proper speed is achieved.

Note: *Skip Step 5 if Car Top Box is not yet mounted.*

5. Verify the SR & VEL are close to speed within +/- 2 FPM in both directions. If not within tolerance, adjust the DPF parameter until SR and VEL are within +/- 2 FPM.

Note: *RPM parameter must match Drive A1 Contract Motor Speed and PPR parameter must match Drive A1 Encoder pulse. If not, change as necessary.*

6. Rotate the status screen to the VIC screen using the ◄► arrows.

7. Run the car in the UP direction. Verify that the VIC direction arrow is in the same direction. Do the same for the DOWN. The VIC direction comes from the motor encoder. To change the direction, swap the Encoder wiring to the CCU as follows: A and $\overline{A}$ or B and $\overline{B}$. [See Figure 2-13.]

8. If displayed speed is not equal to the SR speed, correct by changing RPM to a value equal to the A1 Motor Contract Speed.

VIC Status

Figure 2-15

9. Ensure that machine brake is able to pick clearly away from brake drum. Also verify that brake will hold 125% of rated load of car and is working mechanically per manufacturer's specification.

INSPECTION OPERATION

Note: *The brake assembly MUST be in good working condition in order to achieve proper brake operation. Do not continue until all operational problems have been corrected.*

1. Set the IVE parameter at a safe working speed and save the new parameter.

2. Verify that the brake is fully picking when the car runs. If not further adjustment of the brake or brake parameters may be required.

3. Verify brake can stop and hold 125% of the capacity of the elevator in the down direction. See manufacturer's information for details.

4. Verify the brake drops when the car stops.

5. Remove temporary jumper TIC – TIA to allow the car to run from the Car Top Station and disable the panel test buttons.

6. Remove Temporary jumper from II to ICS.

7. Verify that the Panel Test run buttons are in-active.

8. Verify the Governor switch opens the safety circuit and the car does not run.

Note: *When wiring in a car top run station, make sure the stop switch is also wired and functioning. [See Figure 2-16.]*

Temporary Inspection Wiring

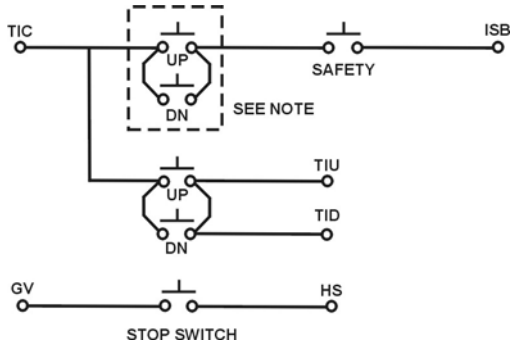


Figure 2-16

Note: *Make these connections only if two-pole buttons are used.*

SECTION 3 - MERIDIA STARTUP PROCEDURES With DSD 412

Machine Room Preparations

FIELD WIRING CHECK

1. Verify Mainline disconnect is in the off position and properly locked out.

2. Verify all the circuit breakers on the front panel (located at the top of the controller) are in the off position. [See Figure 3-1.]

Meridia Circuit Breakers

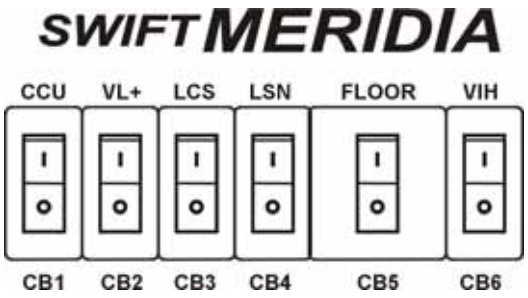


Figure 3-1

3. Turn the Inspection switch to the **ON** position.

4. Verify Door Bypass switches are in the **OFF** position.

5. Verify that the following field wires are connected as described in the Installation portion of this manual.

   A. **Power wiring to the controller:** The power wiring can be a 2, 3 or 4 circuit configuration, depending on the drive system that is supplied.

      1) An independent, single-phase supply for the cab lighting circuit is the first circuit common to all drive types.

Warning! The MERIDIA controller transformer is not designed to support cab lighting and cab ventilation. Using the MERIDIA 120 VAC control circuits in this manner may cause permanent damage to the main controller transformer.

2) An independent, emergency backed, single-phase 120 VAC circuit is common to all drive types (for the first controller of each group only) [See Figure 3-2.]

Hall Call Power Circuit

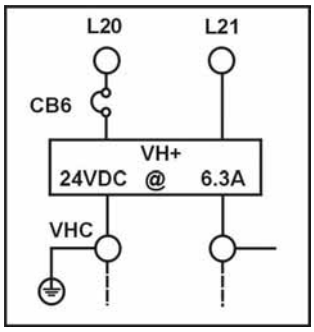


Figure 3-2

3) The 3-phase mainline power circuit is common to all drive types. The power connects to the primary side of an Isolation, Step UP or Step Down power transformer. The secondary side will be wired to the fuse block in the drive side of the controller. [See Figure 3-3.]

Three-Phase Power Circuit

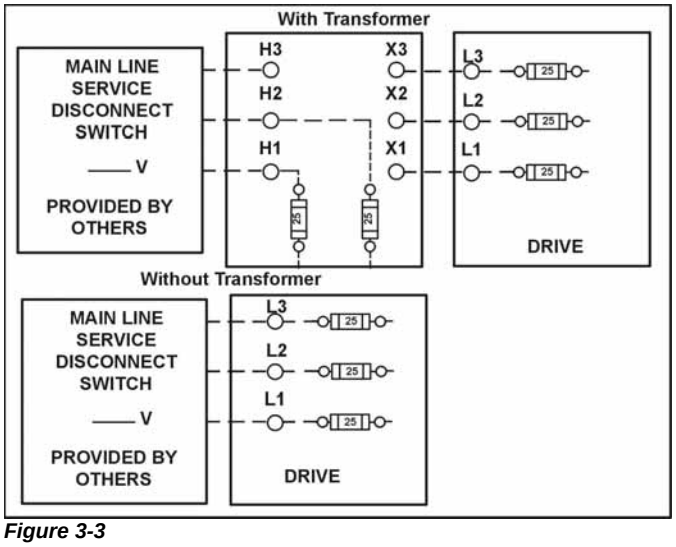


Figure 3-3

4) The fourth circuit is a separate fused circuit from the primary side of the power transformer terminals L1 and L2 to the FP1 fuse block on the drive side of the controller. [See Figure 3-4.]

Controller Power Circuit

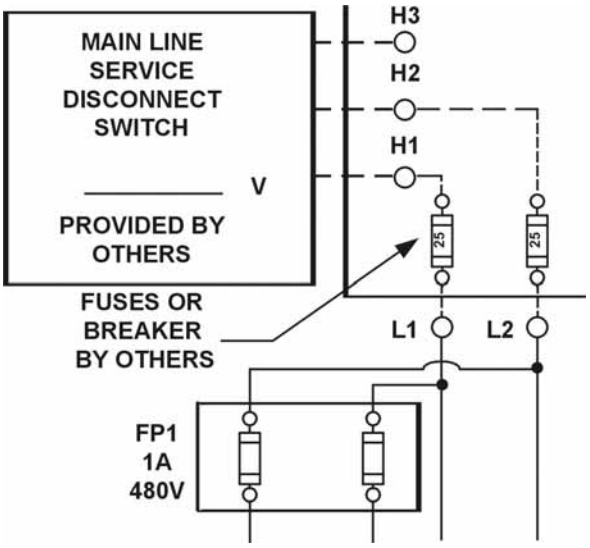


Figure 3-4

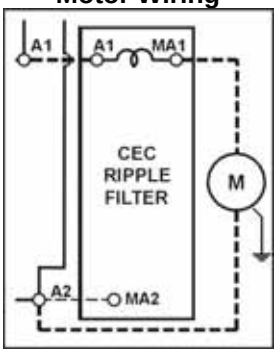
Note: *All wire sizes are to be in accordance to the National Electrical Code*.

Note: *The main line power must supply a ground wire in accordance to National Electrical Code that is continuous to the source or to an earth ground connection.*

B. **Power wiring to the hoist machine:** There will be 2 to 4 circuits required to the elevator hoist machine.

1) The first is to the motor that consists of current conductors wired from the drive output through the choke (if required) to the motor, and a ground wire to the grounding lug at the drive side of the controller. [See Figure 3-5.]

Motor Wiring



DC Application

Figure 3-5

2) The second circuit provides power to the brake coil. These 2 wires can be run with the motor wires. [See Figure 3-6.]

Brake Wiring

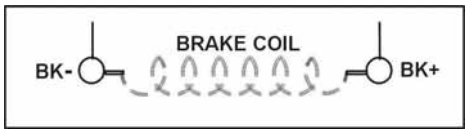


Figure 3-6

3) The third circuit is to bring power to the Motor Fields. These 2 wires can be run with the motor wires. Verify Dipswitches are set for proper Motor Field Current. [See Wiring Diagrams and Figure 3-7.]

Motor Field Wiring

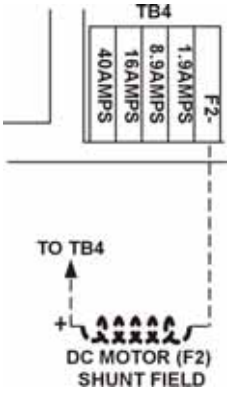


Figure 3-7

4) The fourth circuit is for the brake switch (if required).

Motor Encoder Wiring: The encoder wiring uses 3 twisted shielded pairs. This cable is provided from CEC on most applications. See wiring diagrams for connections. It is imperative that this wiring be run separately from the encoder to the drive side of the controller and connected properly. [See Figure 3-8.]

Motor Encoder

	ENCODER TYPE						TERMINAL		
	SOLID SHAFT ALL	HOLLOW SHAFT 1024	10K	2500	4096	2500 10K	DSD 412	HPV 900	UNICO 1100
	DYNAPAR 7 PIN	DYNAPAR 10 PIN	BEI 7 PIN	BEI 10 PIN	LUCAS	LUCAS	TB1	TB1	CONN 2
5V	D	D	D	B	D	A	1	25	1
COM	F	F	F	A	G	C	43	19	2
A	A	A	A	D	F	B	2	21	3
$\overline{A}$	C	H	C	G	H	E	3	20	4
B	B	B	B	E	B	D	4	23	5
$\overline{B}$	E	I	E	H	A	F	5	22	6
SHLD							6	26	GND

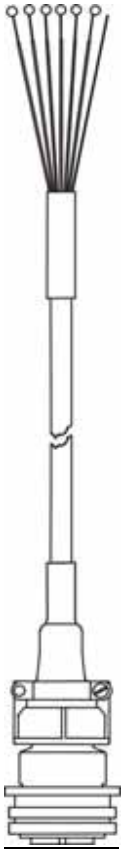


Figure 3-8

Governor Wiring two 18 gauge wires are required from the electrical safety switch on the governor to the controller. See [Figure 3-9.]

Governor Wiring

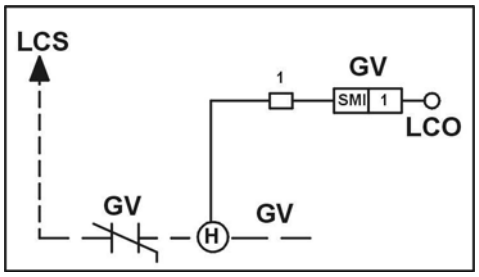


Figure 3-9

VERIFYING CIRCUIT RESISTANCES

1. Check the brake coil:

   A. Disconnect the brake coil leads (BK- & BK+).

   B. With an ohmmeter, measure the coil resistance and verify it matches the value given on the wiring diagram power distribution page. Note this value.

   C. Next measure the brake coil leads to ground and verify that neither brake lead is grounded.

2. Disconnect Motor Field Leads. With an ohmmeter measure the motor leads at the controller to ensure the motor is not grounded. Record this value. Verify the motor field is wired in the proper configuration and the Dip Switch settings are correct on the A3 Motor Field. See Notes page on the wiring diagrams for details.

ISOLATION TRANSFORMER(S) CONFIGURATION (If required)

1. Verify the mainline voltage:

   A. Measure and record the input voltage at the mainline disconnect.

   B. Ensure the voltage agrees with the job voltage +/- 10%. See the Power Distribution page of the wiring diagrams.

2. On the isolation transformer, verify the data nameplate meets the actual job requirements for input and output voltages. See Power Distribution page of the wiring diagrams.

3. Verify all transformer taps are connected for proper voltage according to the Power Distribution page of the wiring diagrams.

CONTROLLER TRANSFORMER CONFIGURATION

1. Verify the wires from the FP1 fuses are connected to the proper taps on the controller transformer. This tap setting should be the same as the 3 phase voltage at the disconnect. [See Figure 3-10.]

Controller Transformer

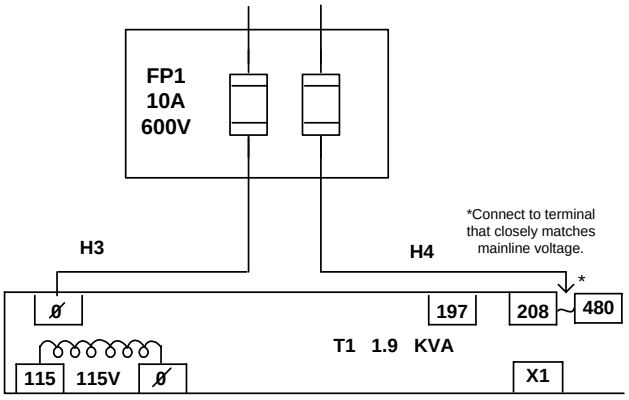


Figure 3-10

2. Verify the transformer configuration for the brake circuit. See wiring diagrams for details.

3. Verify the 115 VAC taps are configured correctly. [See wiring diagrams for details.]

CHOKE CONFIGURATION

Verify the motor armature wires are connected properly to the Choke Assembly and SCR drive. [See Figure 3-11 and Wiring Diagrams.]

Loop Filter Wiring

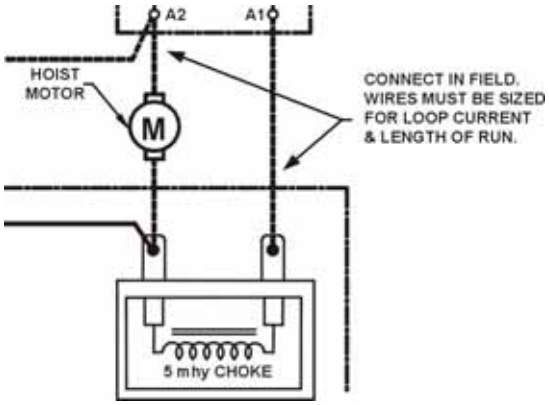


Figure 3-11

JUMPER CONFIGURATION

Install the following jumpers to bypass these circuits that may not be installed at this time. [See Table A.]

Temporary Jumpers					
Circuit	**From**	**To**	**Circuit**	**From**	**To**
UP Normal Limit	LCS	UNL	Car Gate	GLT	CG
DN Normal Limit	LCS	DNL	Front Locks	GLT	DL
Governor	LCS	GV	Group Power	V+	VG+
Hoistway Safeties	GV	HS	Group Common	VC	VGC
Car Safeties	HS	ICS	Normal Power	VG+	NP
Car Insp. Switches	ICS	II	Drive Switch	V+	DRVS
Rear Gate	GLT	RCG	Rear Locks	RDL	GLT
Panel test operation	TIC	TIA			

Table A

Warning!

!

These jumpers are only temporary and must be removed as the circuits are installed. Never operate a car at high speed with door and safety related circuit jumpers still installed.

AC VOLTAGE AND SWITCH TEST

1. With the controller circuit breakers off, turn on the mainline disconnect and verify the building 3 phase is within 10% of what is noted on the wiring diagrams.

2. Verify the Secondary voltage on the isolation transformer (if required) is within 10% of nameplate voltage.

3. Verify the proper voltage across the bottom of drive fuses F1 – F3. This voltage should be equal to the voltage recorded in Step 2 if a transformer is supplied or Step 1 if no transformer is supplied.

4. Verify that the voltages across the bottom of the FP1 fuses are the same as the building 3 phase voltage noted in Step 1.

5. Verify the primary voltage is within 10% at the T1 controller transformer located behind the logic door. See wiring diagrams for proper voltages.

CIRCUIT BREAKER & POWER VERIFICATION

1. Turn on CB3 and verify there is 115VAC between LCS & LCO.

2. Verify the drive is also powered UP.

3. Turn on CB4 and verify there is 115VAC between LSN & LCO.

4. Turn on CB5 and verify there is the proper voltage for the door operator. See wiring diagrams for details.

5. Turn on CB1 and verify the following.

   A. The CCU V+ LED should be lit and the display active. Disregard any other LEDs.

6. Turn off all circuit breakers and mainline disconnect.

CCU POWER-UP, INITIALIZATION

1. With the mainline disconnect switch on, turn on CB1.

2. Verify the CCU front panel V+ LED stays lit green and display is active. [See Figure 3-13.]

Note*: First, the window will display the job number and the car number you are working on. Next, the window will display any Communication faults with the CCU devices. If the Car Top Box is not connected, a CTC fault will occur. Disregard any faults for devices that are not connected.*

3. Press the <MENU> key on the CCU for accessing password menu. [See Figure 3-12.]

CCU Key Pad

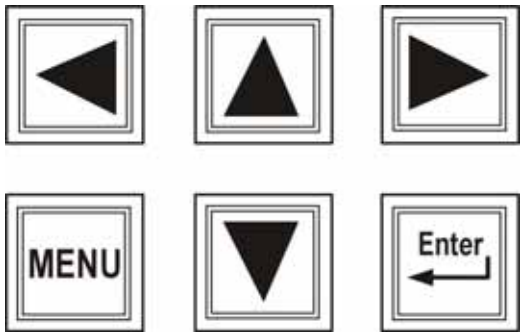


Figure 3-12

4. After reading the directions, enter the password “INSTALL” then press the <ENTER> key (the display should now show the main menu. If not, enter the password again).

   A. Use the ▲▼ arrow keys to select the proper character. Starting with the ▼ (down) button will display the alphabetic characters first.

   B. Use the ◄► arrow keys to move from one character to another.

   Note: *Do not press <ENTER> after each character. Only press the <ENTER> key after the last character has been selected for the password.*

Display Menu (While Entering Password)

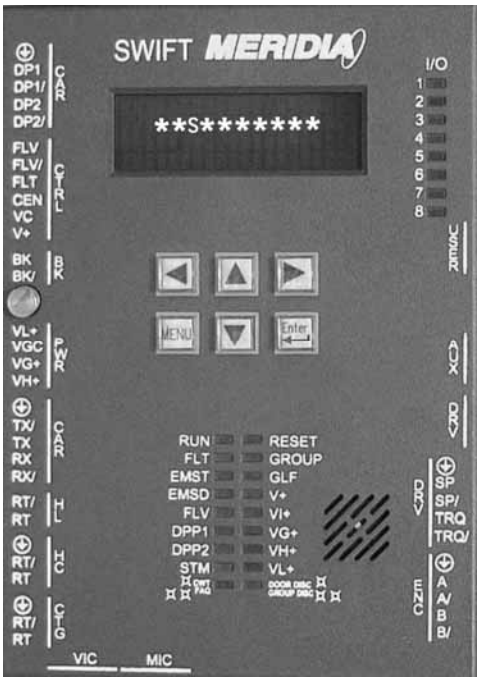


Figure 3-13

SETUP MODE AND WRT COMMAND

1. Using the ▲▼ arrow keys scroll to **Car Control** and press <ENTER>.

Display Menu (While on Main Menu)

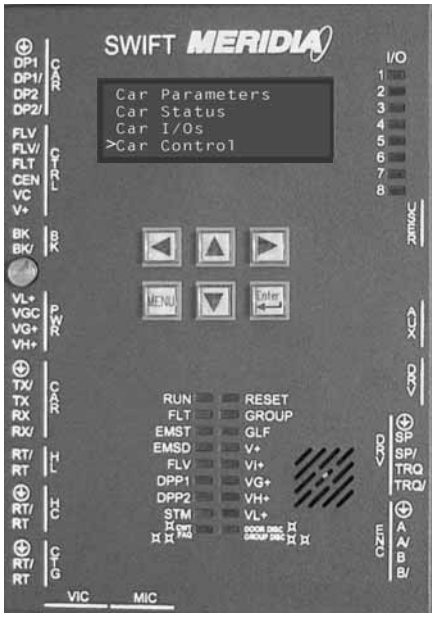


Figure 3-14

2. Scroll down to **Set UP Mode Sel** (this mode allows you to move the car without the cartop devices installed) and press <ENTER>. This should start the STM LED to start flashing orange. [See Figure 3-15.]

3. Press <MENU> button until you return to the Diagnostic Status Display.

4. Verify CEN, DL and CG relays are energized.

Note: *If CEN, DL and CG relays are not energized, check temporary jumpers and troubleshooting section of this manual.*

Meridia CCU (While on Diagnostic Screen)

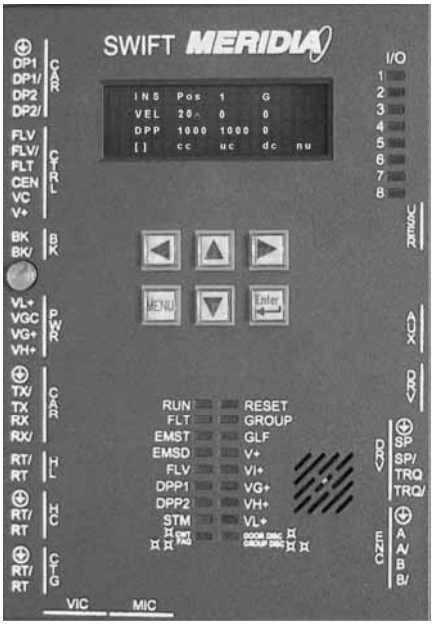


Figure 3-15

Parameter Adjustment

Note: *To change a parameter value, use the arrow keys to scroll to the parameter desired. Press <ENTER>. This will cause the last digit of that value to blink. Use the ▲▼ keys to change this value. Use the ◄► keys to move from digit to digit. Press <ENTER> to save desired value.*

Note: *These changes are only saved and not written to flash memory until the WRT command has been selected under the Car Commands menu.*

1. Measure resistance between BR1 & BR2 with brake leads connected. Record this value for calculation of parameter BRR. (Brake Board located on Rear of Swing Door.)
2. Press <MENU> button until you get to Main Menu.
3. Scroll to **Car Parameters** and press <ENTER>.
4. Scroll to **Brake** and press <ENTER>.
5. Verify the parameters for the Brake Adjustments. [See Table B.]
6. Press <MENU> once to return to the **Car Parameters** sub-menu.
7. Scroll to **Control** and press <ENTER>.
8. Set parameters listed in Table C.

Control Parameters

Parameter	Description
CCN =	car number in the group you are working on.
BED =	Building Elevator Number
RPM =	as per wiring diagrams power distribution page (top Speed RPM) (**Note**: Same as Drive A1 F11 motor speed)
PPR =	Per motor encoder name plate. (**Note**: Same as Drive F10 encoder pulses per revolution.)
SCT =	Set to 25
LAG =	Set to 15

Table C

9. Press the <MENU> key to return to **Car Parameters** sub-menu screen.
10. Scroll to **Pos** and press <ENTER>.

DPF Requirements

Rail Encoder	DPF = 2552
Tape	DPF = 320
Governor Shaft Encoder	DPF = PPR/FPR
FPR = (Governor Sheave diameter* X 3.1416) / 12	
PPR = Encoder pulses per revolution on data tag.	

***Table D** (* in inches)*

11. Verify the **DPF** parameter matches what is required for this job. Change as above if required. [See Table D]
12. Press <MENU> and return to the sub-menu screen.
13. Scroll to **Vel** and press <ENTER>.

Brake Parameters

Parameter	Range	Default	Units	Adjustment Description
BCL	0-32	16	1/64 SEC	Brake Control Lift timer delay. Note: *Only used on VVVF drives.*
BHV	0-500	JOB	VOLTS	Brake Hold Voltage. Set to desired Brake Hold voltage. (Normally 80% of BLV.)
BLT	0-320	1	1/64 SEC	Brake Lift Time. Set at 1 for Fasted Brake Pick on Inspection.
BLV	10-500	JOB	VOLTS	Brake Lift Voltage. Set to desired Brake Pick voltage. (Must not exceed 90% of BMV.)
BMA	1-20	JOB	AMPS	Brake Maximum lift Amps. Set at 1 for Non-serial Brake board. If using large current Brake board, set to match jumper configuration.
BMV	20-500	JOB	VOLTS	Brake Maximum Line Voltage. Set to match AC incoming to Brake board. (Normally 145 or 290 VAC)
BRR	0-65535	JOB	NUMERIC	Brake regulator resistance configuration. Once BHV is set, increase or decrease the output at BK+and BK- to equal the BHV setting +/- 5VDC.

Table B

14. Set the **IVE** parameter to 20 and press <ENTER>.

15. Press <MENU> until you return to the Main Menu.

16. Scroll to **Car Hoistway** and press <ENTER>.

17. Temporarily set parameters **ESV**, **ETV**, and **TSV** to contract speed minus 10 fpm (feet per minute).

18. Press <MENU> until you return to the Main Menu.

19. Scroll to **Car Commands** and press <ENTER>.

20. Scroll down to **WRT** Command and press <ENTER>.

SETTING UP THE DRIVE

Magnatek DSD 412 Parameter Setup and Check

1. With the controller mainline, CB2 and CB6 on, look at the drive display (SCDU) and verify it is active.

   Note: *On a normal power-UP the SCDU will show "P-UP". If there is a number shown it is a fault number and should be disregarded at this time.*

2. Verify the parameters in the drive match actual job conditions. See Quick Reference (Table E).

   A. Use the UP or DN (down) arrow keys on the drive to select the parameter number required.

      Note: *Both the DATA and the DATA PEND LEDs are off.*

   B. Press the DATA/FCTN key to display the setting of this parameter.

      Note: *The DATA LED is now lit green.*

   C. Use the UP and DN arrow keys on the drive to change this data to the required value.

      Note: *Once this setting is changed the DATA PEND LED is now lit red and the DATA LED is off.*

   D. Once you have changed the data to the required setting push the ENT key on the drive.

      Note: *Once ENT is pushed, the DATA LED is now green and the DATA PEND LED is now off.*

Saving Drive Parameters

1. To save any changed parameter(s), use the UP or DN arrow keys to function number 994.

2. Turn the NV Ram Protection switch to the off position.

Note: *The un-protect LED will now be lit.*

3. Press the DATA/FNCT key. This will show "REST" on the SCDU.

Note: *The DATA LED will now be lit green.*

4. Press the UP arrow key and the SCDU will now display "SAVE".

Note: *The DATA PEND LED is now lit red.*

5. Press the ENT key.

Note: *The DATA LED should now be lit green.*

6. Place the NV Ram Protect switch back in the on position.

Self Test

1. Place the inspection switch in the on position.

2. Place the NVRAM protect switch in the off position.

3. Press the UP arrow on the drive to display the parameter 998.

4. Press DATA/FCTN key.

Note: *SCDU displays "ENT". Do not push the ENT key yet.*

5. From the CCU Main Menu, select **Car Commands**.

6. Using the ▲▼arrow keys scroll to **SEF** and press <ENTER> to set controller to the Self test mode.

7. Press <ENTER> again to activate.

   Note: *This will pull in the required relays on the Meridia controller for the SCR test*

8. Press the ENT key on the SCDU.

   Note: *The SCDU will now display "TEST". The Main Contactor (1MA) will pull in and drop briefly then pull in again as it tests the motor.*

9. After the test is complete the SCDU should flash "Pass".

10. Once the test is completed place the NVRAM switch back to the on position.

Self Tune

1. Place the inspection switch in the on position.

2. Place the NVRAM protect switch in the off position.

   Note: *The un-protect LED will now be lit*

3. Press the UP arrow on the drive to display the parameter 997.

4. Press DATA/FCTN key.

   Note: The Data LED will now be lit.

   Note: *SCDU displays "ENT". Do not push the ENT key yet*

5. From the CCU Main Menu, select **Car Commands**.

6. Using the ▲▼ arrow keys scroll to **SEF** and press <ENTER> to set controller to the Self test mode.

7. Press <ENTER> again to activate.

   Note: *This will pull in the required relays on the Meridia controller for the SCR test.*

8. Press the ENT key on the SCDU.

   Note: *The SCDU will now display "TEST". The Main Contactor (1MA) will pull in and drop briefly then pull in again as it tests the motor.*

9. After the test is complete the SCDU should flash "Pass".

10. Once the test is completed place the NVRAM switch back to the on position.

    Note: *At this time the un-protect LED should be off.*

11. Record values in drive Parameters 613 (Arm. Resistance), 614 (Arm. Inductance) and 615 (Measured Field L/R).

12. Take the values recorded in Step 11 and place them accordingly into drive parameters 4 (Arm. Resistance), 6 (Arm. Inductance) and 51 (Measured Field L/R) respectively.

13. Follow Steps described in "Saving Drive Parameters" using the 994 save function on page 3-8.

Note: Refer to the DSD-412 Drive Manual for aditional drive information.

Quick Reference for Geared DSD 412 Applications			
Function	**Description**	**Units**	**Settings**
1	Current Limit	%	250
2	Enable Self Tune Values	Off/On	Off
3	Rated Armature Amps	Amps	Motor Nameplate
4	Armature Ohms	Ohms	From Self Tune
6	Armature Inductance	Henrys	From Self Tune
7	Rated Armature Voltage	Volts	Motor Nameplate
8	Irregular Crossover	Rads	500
9	Nominal A/C input Voltage	Volts	Drive Input A/C
10	Encoder Pulses per Revolution	PPR	Encoder Nameplate
11	Motor Speed	RPM	Motor Nameplate
12	Motor Overspeed	%	110
14	Arm. Voltage Sensing	%	25
15	Tach (encoder) Sensing	%	5
16	Gearless Ratio	Ratio	1
17	Rated Velocity (speed)	FPM	Contract Speed
21	Rated Acceleration Rate	F/S/S	4
32	Full Field Sensing	%	30
40	Response	Rads	5
41	System Inertia	Sec	2
42	Stability		1
49	Weak Field Current	Amps	Job Prints
50	Full Field Current	Amps	Job Prints
51	Motor Field Time Constant	Sec	From Self Tune
52	Rated Field Voltage	Volts	Job Prints
53	Standing Field Current	Amps	Job Prints
54	Field Response	Rads	5
55			Same As 9
56	Field Strength Speed	%	90
57	Field Weaken Speed	%	80
58	Field Strength Rate	Sec	2
59	Field Weaken Rate	Sec	2
63	Direction UP/DN Bit PickUP	%	0.01
80	Overspeed Test Enable	Off/On	Off
81	Overspeed Multiplier	X	1
82	Reference Multiplier	X	1
83	Motor Overload Time Out	Sec	90
84	Motor Overload Level		1
85	Current Delay Ramp	Sec	0.2
86	LPR Delay Time	Sec	0.3
95	Analog Output 0	PU	0 (speed ref.)
96	Analog Output 1	PU	0 (speed ref.)
104	I Serial Gain Switch	Off/On	On
105	Gain Switch Speed	% Speed	0.05
107	Tach (encoder) Rate Gain		0
108	Gain Reduce	X	0.2

Quick Reference for Geared DSD 412 Applications			
Function	**Description**	**Units**	**Settings**
View Only Functions			
600	Car Speed	FPM	N/A
601	Motor RPM	RPM	N/A
602	Speed Reference	FPM	N/A
603	Pretorque Input	%	N/A
609	CEMF VDC	Volts (DC)	N/A
610	Motor Armature Voltage	Volts (DC)	N/A
611	Motor Armature Current	Amps. DC	N/A
612	Motor Field Current	Amps. DC	N/A
613	Measured Motor Resistance	OHMS	N/A
614	Measured Motor Inductance	HENRIES	N/A
615	Measured Field L/R Time Constant	Sec.	N/A
616	Speed Error	F/M	N/A
617	AC Line Frequency Parameter	Hz	N/A
618	Heatsink Temperature	C°	N/A
619	AC Line Voltage	Volts (AC)	N/A
Internal Command Controls			
994	Used to Save Parameters		
997	Self Tune Test		
998	Self Diagnostics		

Table E

MOVING THE CAR ON INSPECTION FOR SERIAL DRIVES

1. Verify the CCU is displaying the **Car Status**. [See Figure 3-16.]

Car Status Display

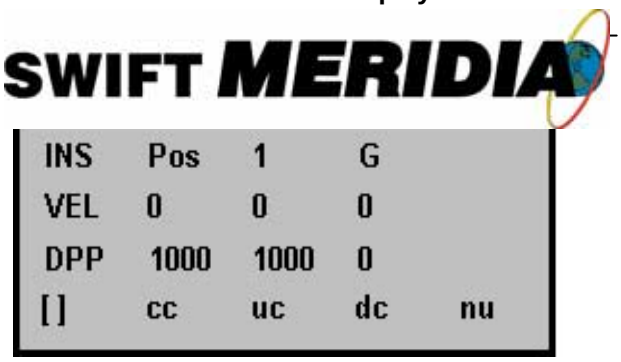


Figure 3-16

2. Uncouple the motor encoder from machine.

3. By hand, rotate the encoder in the UP direction. Verify that P600 Car Speed on drive displays a positive direction. Do the same for the DOWN for a negative speed. To change the direction, swap the Encoder wiring to the DSD 412 as follows: A and $\overline{A}$ or B and $\overline{B}$.

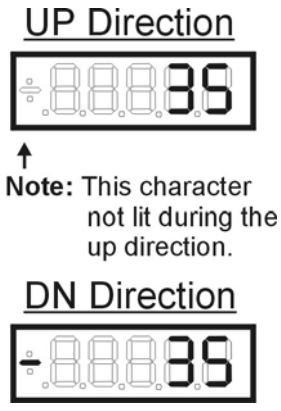


Figure3-17

4. Recouple the encoder to Motor. Briefly press the UP button on the Panel Test Station while observing the drive sheave.

   Note: *Should the drive sheave turn in the UP direction at an uncontrolled speed, swap the A and A wires (also the B and B wires) at the drive from the encoder. [See Figure 3-18.]*

   Note: *Should the drive sheave turn in the opposite direction at an uncontrolled speed, swap MF+ and MF- from the motor.*

5. Verify that the car speed is equal to the speed demand (IVE parameter in the control system) during initial setup. It is unlikely that there will be a cartop encoder for speed feedback, so a handheld tachometer may be needed. Adjust the drive parameter 11, motor speed (RPM), to make the car velocity equal to the speed command.

Motor Encoder Wiring

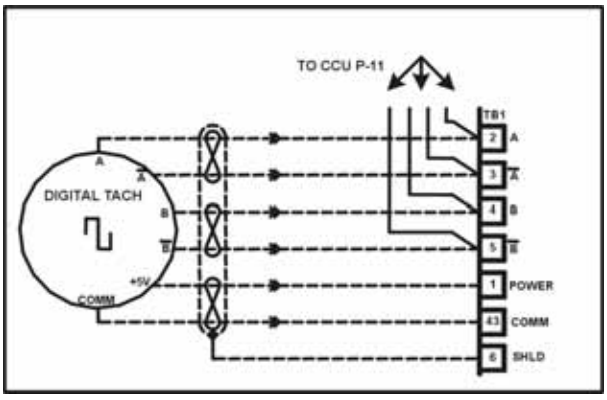


Figure 3-18

6. Verify the car now moves UP when the UP button is pressed and down when the down button is pressed.

7. Set PPR parameter to equal the value of Drive parameter 10 (Encoder Speed).

8. Set RPM to equal the Drive parameter 11 (Motor Speed).

9. Rotate the status screen to the VIC screen.

VIC Status

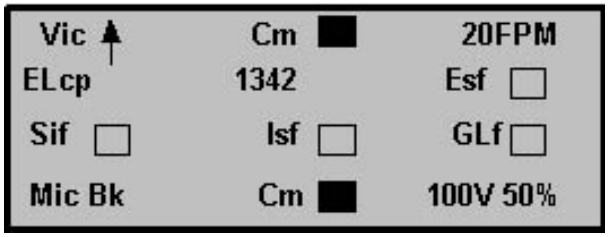


Figure 3-19

10. Run the car in the **UP** direction. Verify that the VIC direction arrow is in the same direction. Do the same for the DOWN. The VIC direction comes from the motor encoder. To change the direction, swap the Encoder wiring to the **CCU** as follows: A and B, $\overline{A}$ and $\overline{B}$.

INSPECTION OPERATION

Note: *The brake assembly MUST be in good working condition in order to achieve proper brake operation. Do not continue until all operational problems have been corrected.*

1. Set the IVE parameter at a safe working speed and save the new parameter.

2. Verify that the brake is fully picking when the car runs. If not further adjustment of the brake or brake parameters may be required.

3. Verify brake can stop and hold 125% of the capacity of the elevator in the down direction. See manufacturer's information for details.

4. Verify the brake drops when the car stops.

5. Remove temporary jumper TIC – TIA to allow the car to run from the Car Top Station and disable the panel test buttons.

6. Remove temporary jumpers to II to ICS.

7. Verify that the Panel Test run buttons are in-active.

8. Verify the Governor switch opens the safety circuit and the car does not run.

Note: *When wiring in a car top run station make sure the stop switch is also wired in and functioning. [See Figure 3-20.]*

Car Top Inspection Wiring

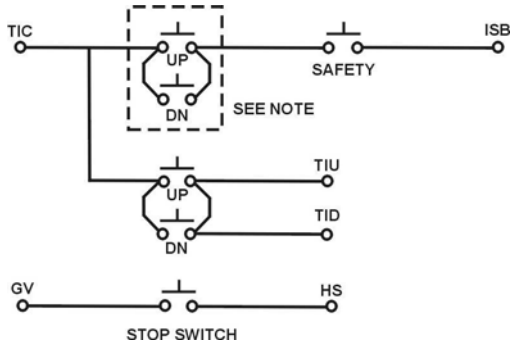


Figure 3-20

Note: *Make these connections only if two-pole buttons are used.*

NOTES

SECTION 5 - MERIDIA STARTUP PROCEDURES With Motor Generator Set

Machine Room Preparations

FIELD WIRING CHECK

1. Verify Mainline disconnect is in the off position and properly locked out.

2. Verify all the circuit breakers on the front panel (located at the top of the controller) are in the off position. [See Figure 3-1.]

Meridia Circuit Breakers

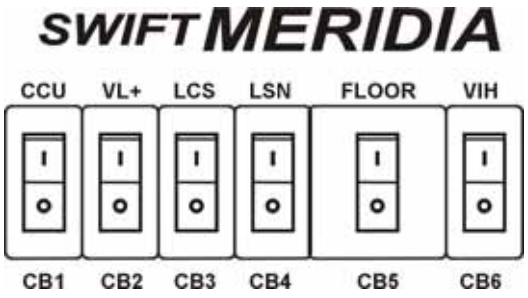


Figure 5-1

3. Turn the Inspection switch to the **ON** position.

4. Verify Door Bypass switches are in the **OFF** position.

5. Verify that the following field wires are connected as described in the Installation portion of this manual.

   A. **Power wiring to the controller:** The power wiring can be a 2, 3 or 4 circuit configuration, depending on the drive system that is supplied.

      1) An independent, single-phase supply for the cab lighting circuit is the first circuit common to all drive types.

Warning! The MERIDIA controller transformer is not designed to support cab lighting and cab ventilation. Using the MERIDIA 120 VAC control circuits in this manner may cause permanent damage to the main controller transformer.

2) An independent, emergency backed, single-phase 120 VAC circuit is common to all drive types (for the first controller of each group only) [See Figure 3-2.]

Hall Call Power Circuit

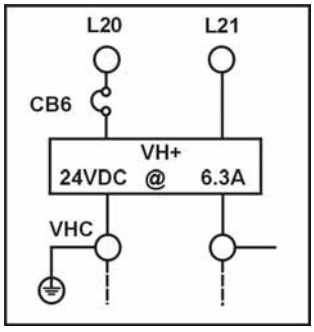


Figure 5-2

3) The third circuit is a separate fused circuit from the primary side of the power transformer terminals L1 and L2 to the FP1 fuse block on the drive side of the controller. [See Figure 5-4.]

Controller Power Circuit

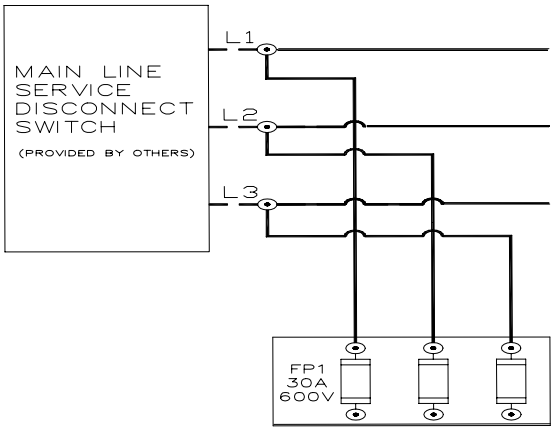


Figure 5-4

Note: *All wire sizes are to be in accordance to the National Electrical Code*.

B. <u>Governor Wiring</u> two 18 gauge wires are required from the electrical safety switch on the governor to the controller. See [Figure 5-9.]

Governor Wiring

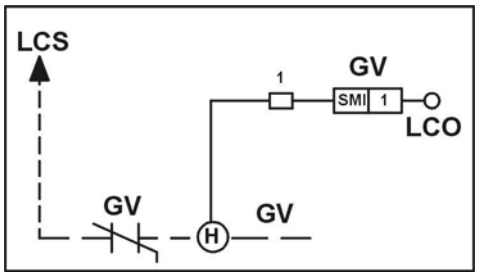


Figure 5-9

VERIFYING CIRCUIT RESISTANCES

1. Check the brake coil:

   A. Disconnect the brake coil leads (BK- & BK+).

   B. With an ohmmeter, measure the coil resistance and verify it matches the value given on the wiring diagram power distribution page. Note this value.

   C. Next measure the brake coil leads to ground and verify that neither brake lead is grounded.

2. Disconnect Motor Field Leads. With an ohmmeter measure the motor leads at the controller to ensure the motor is not grounded. Record this value. Verify the motor field is wired in the proper. See Notes page on the wiring diagrams for details.

JUMPER CONFIGURATION

Install the following jumpers to bypass these circuits that may not be installed at this time. [See Table A.]

Temporary Jumpers					
Circuit	**From**	**To**	**Circuit**	**From**	**To**
UP Normal Limit	LCS	UNL	Car Gate	GLT	CG
DN Normal Limit	LCS	DNL	Front Locks	GLT	DL
Governor	LCS	GV	Group Power	V+	VG+
Hoistway Safeties	GV	HS	Group Common	VC	VGC
Car Safeties	HS	ICS	Normal Power	VG+	NP
Car Insp. Switches	ICS	II	Drive Switch	V+	DRVS
Rear Gate	GLT	RCG	Rear Locks	RDL	GLT
Panel test operation	TIC	TIA			

Table A

Warning!

These jumpers are only temporary and must be removed as the circuits are installed. Never operate a car at high speed with door and safety related circuit jumpers still installed.

AC VOLTAGE AND SWITCH TEST

1. With the controller circuit breakers off, turn on the mainline disconnect and verify the building 3 phase is within 10% of what is noted on the wiring diagrams.

2. Verify that the voltages across the bottom of the FP1 fuses are the same as the building 3 phase voltage noted in Step 1.

3. Verify the voltage is within 10% at the T1 controller transformer located behind the logic door. See wiring diagrams for proper voltages.

115VAC from X0 to X1, X0 to X2, and X0 to X3 at the T1 transformer.

115VAC from Z1 to Z2 at the T1 transformer.

115VAC from Y1 to Y2 at the T1 transformer.

CIRCUIT BREAKER & POWER VERIFICATION

1. Turn on CB3 and verify there is 115VAC between LCS & LCO.

2. Make sure there is 115VAC from X0 to L11, X0 to L12, and X0 to L13 terminals. Standby voltage as indicated on the Power Control Schematic for motor field terminals MF+ to MF-.

3. Turn on CB4 and verify there is 115VAC between LSN & LCO.

4. Turn on CB5 and verify there is the proper voltage for the door operator. See wiring diagrams for details.

5. Turn on CB1 and verify the following.

   A. The CCU V+ LED should be lit and the display active. Disregard any other LEDs.

   B. Only the +/-15 volt power indicator LED and the triggering oscillator LED (OSC) must be illuminated on the REG board.

   C. Ensure that the "CEN" (Control Enable) relay is energized. (If it is not, refer to the schematics.)

   D. The processor will turn on the 'GEN' output as long as the following inputs are energized: NP (Normal Power), DRVS (Drive Switch), DF (Drive Fault), GV,HS, CS, and ICS.

   WARNING: If the PF LED on the REG is lit, it indicates that a phase is missing or that the phase rotation is incorrect. The phase must be switched only at the FP main fuse block. Changing the phase rotation at the RTG board or at the SCR packs can damage the regulator board and the elevator equipment.

6. Turn off all circuit breakers and mainline disconnect.

PRELIMINARY ADJUSTMENTS

CAUTION: All preliminary adjustments on the REG board must be done with the car not running.

Regulator Board Preliminary Adjustments

Adjust the following pots on the REG board as indicated:

1. T—Tach Scaling: Turn fully counterclockwise.

2. R—Response: Turn fully counterclockwise, then 3 turns clockwise.

3. IR—Current Feedback: Turn fully counterclockwise.

4. LT—Linear Time: Turn fully clockwise.

CAUTION: No other pots on the regulator board should be adjusted or tampered with at this point.

CCU POWER-UP, INITIALIZATION

1. With the mainline disconnect switch on, turn on CB1.

2. Verify the CCU front panel V+ LED stays lit green and display is active. [See Figure 5-13.]

Note*: First, the window will display the job number and the car number you are working on. Next, the window will display any Communication faults with the CCU devices. If the Car Top Box is not connected, a CTC fault will occur. Disregard any faults for devices that are not connected.*

3. Press the <MENU> key on the CCU for accessing password menu. [See Figure 5-12.]

CCU Key Pad

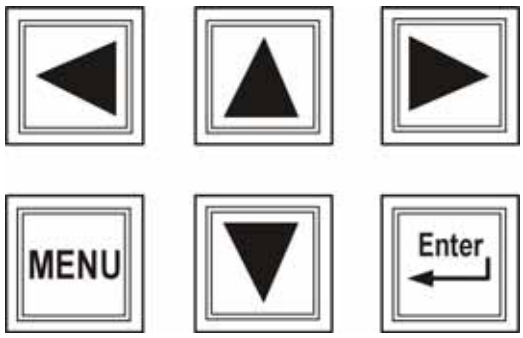


Figure 5-12

4. After reading the directions, enter the password "INSTALL" then press the <ENTER> key (the display should now show the main menu. If not, enter the password again).

   A. Use the ▲▼ arrow keys to select the proper character. Starting with the ▼ (down) button will display the alphabetic characters first.

   B. Use the ◄► arrow keys to move from one character to another.

   Note: *Do not press <ENTER> after each character. Only press the <ENTER> key after the last character has been selected for the password.*

Display Menu (While Entering Password)

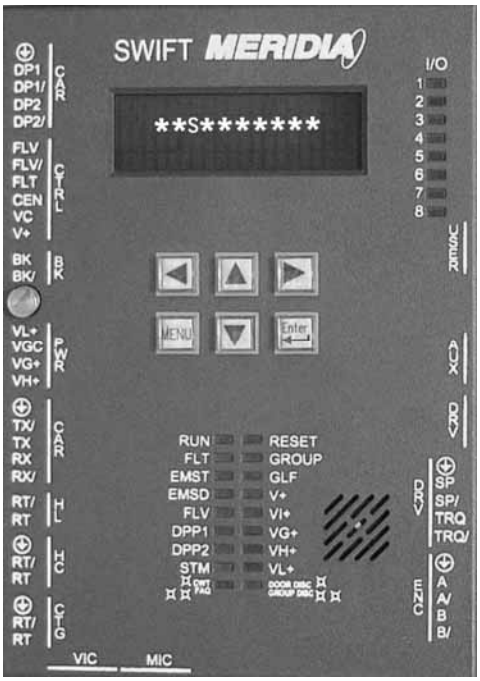


Figure 5-13

SETUP MODE AND WRT COMMAND

1. Using the ▲▼ arrow keys scroll to **Car Control** and press <ENTER>.

Display Menu (While on Main Menu)

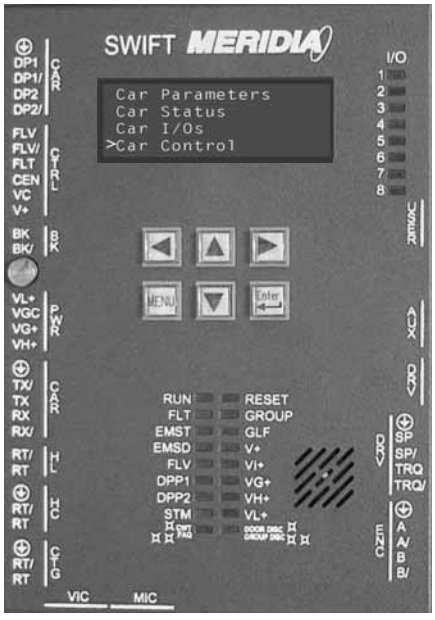


Figure 5-14

2. Scroll down to **Set UP Mode Sel** (this mode allows you to move the car without the cartop devices installed) and press <ENTER>. This should start the STM LED to start flashing orange. [See Figure 3-15.]

3. Press <MENU> button until you return to the Diagnostic Status Display.

4. Verify CEN, DL and CG relays are energized.

Note: *If CEN, DL and CG relays are not energized, check temporary jumpers and troubleshooting section of this manual.*

Meridia CCU (While on Diagnostic Screen)

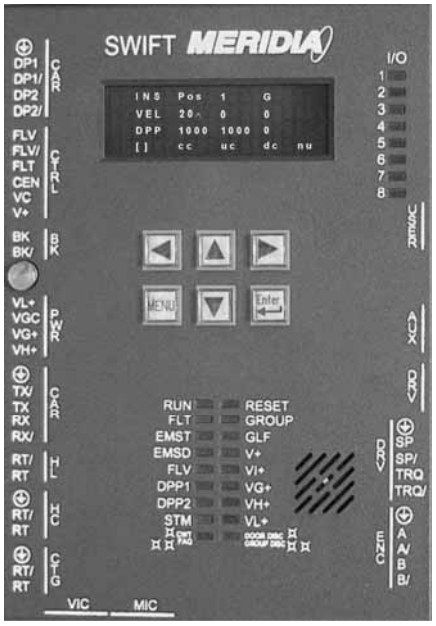


Figure 5-15

Parameter Adjustment

Note: *To change a parameter value, use the arrow keys to scroll to the parameter desired. Press <ENTER>. This will cause the last digit of that value to blink. Use the ▲▼ keys to change this value. Use the ◄► keys to move from digit to digit. Press <ENTER> to save desired value.*

Note: *These changes are only saved and not written to flash memory until the WRT command has been selected under the Car Commands menu*

1. Measure resistance between BR1 & BR2 with brake leads connected. Record this value for calculation of parameter BRR. (Brake Board located on Rear of Swing Door.)

2. Press <MENU> button until you get to Main Menu.

3. Scroll to **Car Parameters** and press <ENTER>.

4. Scroll to **Brake** and press <ENTER>.

5. Verify the parameters for the Brake Adjustments. [See Table B.]

Initial Brake Parameters

Parameter	Description
BMV=	Max AC Voltage. Refer to brake wiring diagrams.
BLV =	Brake Lift Voltage as shown in diagrams
BHV =	Brake Hold Voltage as shown in wiring diagrams.
BCL =	16
BLT =	1
BRR=	Brake coil resistance x 100 /(Resistance between Terminals BR1 & BR2 on Brake Regulator Board) *if applicable*

Table B

6. Press <MENU> once to return to the **Car Parameters** sub-menu.

7. Scroll to **Control** and press <ENTER>.

8. Set parameters listed in Table C.

Control Parameters

Parameter	Description
CCN =	car number in the group you are working on.
BED =	Building Elevator Number
RPM =	as per wiring diagrams power distribution page (top Speed RPM) (**Note**: Same as Drive A1 P11 motor speed)
PPR =	Per motor encoder name plate. (**Note**: Same as Drive P10 encoder pulses per revolution.)
SCT =	Set to 25
LAG =	Set to 15

Table C

9. Press the <MENU> key to return to Car Parameters sub-menu screen.

10. Scroll to **Pos** and press <ENTER>.

11. Verify the **DPF** parameter matches what is required for this job. Change as above if required. [See Table D]

DPF Requirements

Rail Encoder	DPF = 2552
Tape	DPF = 320
Governor Shaft Encoder	DPF = PPR/FPR
FPR = (Governor Sheave diameter* X 3.1416) / 12	
PPR = Encoder pulses per revolution on data tag.	

Table D *(* in inches)*

12. Press <MENU> and return to the sub-menu screen.

13. Scroll to **Vel** and press <ENTER>.

14. Set the **IVE** parameter to 20 and press <ENTER>.

15. Press <MENU> until you return to the Main Menu.

16. Scroll to **Car Hoistway** and press <ENTER>.

17. Temporarily set parameters **ESV**, **ETV**, and **TSV** to contract speed minus 10 fpm (feet per minute).

18. Press <MENU> until you return to the Main Menu.

19. Scroll to **Car Commands** and press <ENTER>.

20. Scroll down to **WRT** Command and press <ENTER>.

TACH VOLTAGE VERIFICATION

1. Set the voltmeter for DC voltage and place the positive lead on T+U and the negative lead on T-U terminals.

2. Turn the tach shaft in the direction that it will rotate if the car is moving up. The UT input will turn on. The voltage on the meter must be positive. (Refer to the print for module location).

3. Turn on the tach shaft in the direction that it will rotate if the car is moving down. The DT input will turn on. The voltage on the meter must be negative. (Refer to the print for module location).

MOTOR FIELD VERIFICATION

Refer to table E for Motor Field Verification.

1. Remove power to the motor fields.

2. Wait 10 seconds for the field current to dissipate, then remove one of the motor field leads from MF+ or MF-.

3. Measure the resistance of the motor fields with an ohm meter. The resistance must be equal to that indicated in the Power Control schematic. If the resistance is Different, the motor fields may need to be reconnected in either series or series-parallel configuration.

4. After all necessary reconnections have been made to the motor field circuit, turn the power back on.

5. Set the voltmeter for DC voltage and place the positive led on the MF+ terminal and the negative lead on MF- terminal. The voltage must be the **Standby** voltage indicated on the Power Control schematic.

MOTOR FIELD

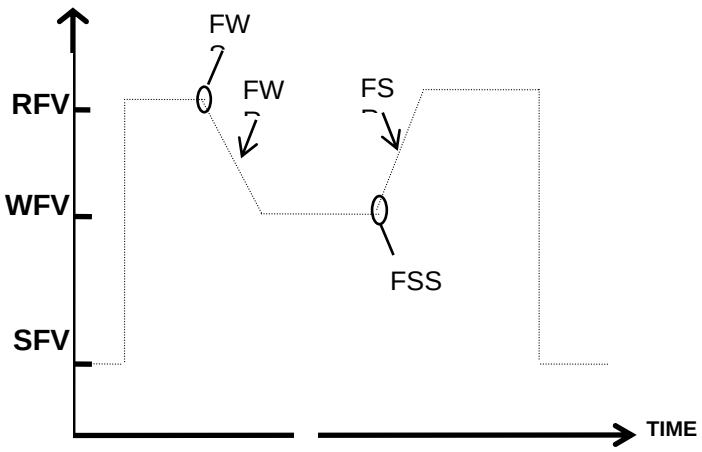


Fig 5-15

Adjustable Parameters

RFV = Rated Field Voltage
WFV = Weak Field Voltage
SFV = Standby Field Voltage

FWR = Field Weaken Rate (1/16 second)
FSR = Field Strength Rate (1/16 second)

FWS = Field Weaken Speed (fpm)
Speed in fpm that field weaken starts.
FSS = Field Strength Speed (fpm)
Speed in fpm that field strengthen starts.

FLV = Field Line Voltage

FBC = Field Board Current Rating

MFC = Minimum Field Current

Generator Verification

1. Turn off power to the controller and disconnect the DC loop circuit.

2. Remove a brake coil wire lead from either BK+ or BK- on brake controller.

3. Turn on the CB1 circuit breaker. (The SPU switch must be on.)

4. Place the positive lead of the meter on the GF+ terminal and the negative lead on the GF- terminal.

5. Monitor the DC voltage when pressing the UP inspection button. The panel switch must be on TEST. GF+ must be positive with respect to GF-.

6. Repeat the same procedure for the DN inspection button. GF+ must be negative with respect to GF-. The polarity of the voltage of the generator shunt fields (GF+ to GF-) must be the same as the speed reference voltage on the REG board, test point SR to common. If the voltage polarity is incorrect on the generator shunt fields, the cause is either an incorrect polarity from the speed reference, or a reverse wire connection on GF+ to GF-.

7. Place the positive lead of the meter on G+U and the negative lead on GC terminals. The interpole reference G-U should not be connected at this point.

8. Push the Up inspection button. G+U must be positive with respect to GC.

9. Repeat the same procedure for the DN inspection button. G+U must be negative with respect to GC. If the polarities are opposite, reverse the G+U and GC feedback wires.

10. Turn off power to the controller. Reconnect the DC loop circuit and the brake coil wire.

11. Apply power to the controller and press the UP inspection button for a couple of seconds (inching operation).

12. Verify that the rotation of the hoist motor is correct, and that the tach feedback voltage is positive on T+U to T-U.

CAUTION ***Before proceeding, ensure that all of the following are positive for the up direction of movement: G+U with respect to GC, T+U with respect to T-U, GF+ with respect to GF-, and SR with respect to common (⏚).***

Regulator Inspection Adjustments

CAUTION: ***The following adjustment procedure must be done with an empty car.***

NOTE: Refer to Human Interface, for comprehensive descriptions on cited commands, parameters, and error codes.

1. Make sure that the diagnostic terminal is connected on the USER PORT.

2. With the car standing STILL, adjust parameter DZO for 0 volts.

3. Voltage on the REG board connector J2, pin 1 and 2, must read 0 mV. If does not, adjust DZO accordingly. Note that the value **2048** is equivalent to 0 volts. Higher values correspond to higher positive voltage.

4. Set the inspection speed to 10% of the top speed (IVE parameter).

5. Place meter leads on SR and common (⏚) on the REG. The positive lead must be on SR. Run the car up and down on inspection and monitor the DC voltage.

6. Adjust the R50 pot (OFFSET) on the REG to equalize the voltages in both directions. ***EXAMPLE:*** If the R50 pot is -0.9 volts in the down direction and +1.0 volt in the up direction, adjust the OFFSET so that it reads -0.95 volts in the down direction and +0.95 volts in the up.

7. Adjust the R53 pot (Gain) to set the equal values. +1.00 volt in the up direction and -1.00 volt in the down direction.

8. Run the car in either direction and monitor the CCU Screen. Adjust the T pot (Tach Scaling)

on the REG board so that the actual car velocity equals the demand velocity. If there is no diagnostic screen, type **VEL** and then press <**Enter** ↵> on the terminal.

9. At this point, connect the G-U feedback wire. Lower the inspection speed to 6 FPM or as low as possible without a stall condition. Run the car in both directions and verify the speeds using the tach output voltage. Equalize the tach output voltage by adjusting the IR pot (Current Feedback).

10. Enter **STM** (Setup) mode. Run the car on inspection at 50 FPM (0.25 m/s). While the car is moving, type **IVE=0** <**Enter** ↵> on the diagnostic terminal. The car must ramp immediately to zero speed and hold for at least 1/2 second: try this in both directions.

11. If the car drifts and does not hold zero speed, check the following:

    A. Run the car at **IVE=0** and measure R+U and R-U for both directions. Make sure the voltage is equal to 0.000V with a tolerance of 0.001V.

    B. If the voltage in step 1 is correct, measure the voltage from SR to common (⏚). If it is not 0.00V, readjust the R50 and R53 pots as necessary.

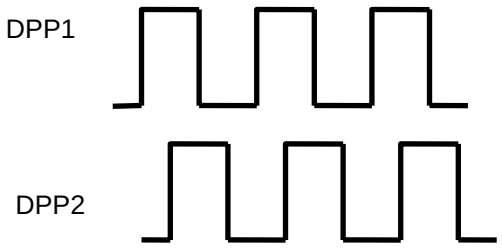
12. Place meter leads on test points TR to common (⏚) on the REG and monitor the DC voltage while running the car on inspection at 10% contract speed. Compare that value with the value on test points TFS to common (⏚) while running the car under the same condition.

13. Adjust R202 pot (Tach Fault Sensitivity) so that TFS voltage is equal to TR or greater than TR by no more than 0.02V. It is important, that TFS never be less than TR.

Digital Position Pulse (DPP) Verification

1. Connect a voltmeter between DP1 and DP1/ on the CCU. Run the car up and down on inspection at 50 FPM (0.25 m/s). Set the meter to the AC scale and monitor the pulsed DC voltage. The voltage should be ideally 2.7 VAC. If this is not the case, adjust the distance between the sensor and the magnet accordingly. Do this again between the DP2 and DP2/ points.

2. If an isolated oscilloscope with two channels is available, place the leads on DP1and DP2 and move the car. Verify that the amplitude of the square waves are correct, that the signals are not distorted, and that the two signals are approximately 90° out of phase with each other. See Figure 5-16 below. (If an oscilloscope is not available, the above procedure may be bypassed.)



DPP SIGNALS

Fig 5-16

3. Verify that following conditions DO NOT exist in reference to the DPP signal:
   - Excessive electrical noise spikes
   - Ringing or oscillation
   - Distortion

4. Do the following if any of the above three conditions exist:
   - Verify that the DPP signal is wired (continuous run) through a twisted shielded cable.
   - Verify that cable shields are grounded only on the controller ground terminal.
   - Verify that the DPP wiring is not run in the same traveling cable with high voltage signals.
   - Verify that the minimum wire gauge used for the DPP signal is 18 AWG.

INSPECTION OPERATION

Note: *The brake assembly MUST be in good working condition in order to achieve proper brake operation. Do not continue until all operational problems have been corrected.*

1. Set the IVE parameter at a safe working speed and save the new parameter.

2. Verify that the brake is fully picking when the car runs. If not further adjustment of the brake or brake parameters may be required.

3. Verify brake can stop and hold 125% of the capacity of the elevator in the down direction. See manufacturer's information for details.

4. Verify the brake drops when the car stops.

5. Remove temporary jumper TIC – TIA to allow the car to run from the Car Top Station and disable the panel test buttons.

6. Remove temporary jumpers to II to ICS.

7. Verify that the Panel Test run buttons are in-active.

8. Verify the Governor switch opens the safety circuit and the car does not run.

Note: *When wiring in a car top run station make sure the stop switch is also wired in and functioning. [See Figure 5-17.]*

Car Top Inspection Wiring

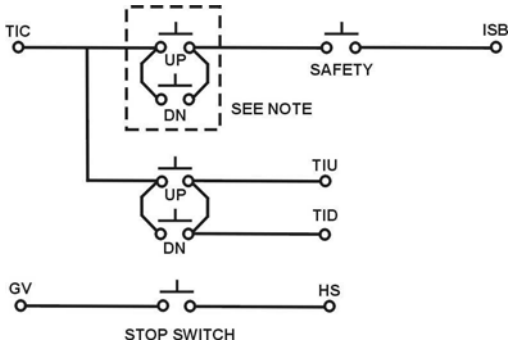


Figure 5-17

Note: *Make these connections only if two-pole buttons are used.*

NOTES

SECTION 6 - MERIDIA ADJUSTMENT PROCEDURES WITH HPV 900

Hoistway Verification

Inspection Operation

1. Remove the car gate and door lock jumpers that were installed during temporary operation.
2. Remove any safety circuit jumpers that were installed during temporary operation.
3. Remove jumpers from normal and slowdown limits.
4. Remove temporary run cord and any wiring used to make temporary operation available.
5. Verify all Inspection switches are in the Inspection Mode and all safety circuit switches are in their correct positions.
6. Verify that the car is now ready for inspection operation via the top of car run station. [Refer to Table A.] All Inputs/Outputs are High. (High is 120 VAC for all except DRVS and NP which is 24 VDC.)

Note: *If laptop with Wizard 15 software or RVU Unit is not available, use CCU to navigate and display the status of I/O. (See section 11 page 3).*

I/Os required to run Car Top Inspection		
Port	**Location**	**Module**
VIC	SDM 1	UNL
VIC	SDM2	SU1
VIC	SDM3	SU2 (If required)
VIC	SDM5	GL
VIC	SDM6	SD2 (If required)
VIC	SDM7	SD1
VIC	SDM 8	DNL
VIC	ISM 5	DLS
VIC	SM1 1	GV
VIC	SM1 4	CGS
VIC	SM1 7	DRV
VIC	SM1 8	GLB
VIC	SM2 1	CG
VIC	SM2 2	DL
VIC	SM2 7	RDY
VIC	DM 3	DRVS
VIC	EM 5	NP
VIC	CM2 4	GLT (output)
TOC	HSM 1	CS
TOC	HSM 2	ICS
TOC	HSM 4	HS
TOC	HSM 1	CS
TOC	RLM1	TCI

Table A **Note:** *Check additional modules if rear doors or freight doors are used.*

Door and Gate Check

While running from Car Top inspection switches, open each door and gate to verify the car stops.

Safety Switch Check

1. While running the car, verify that each safety circuit device stops the car.
2. Verify that all limit switches are activated mechanically. (Example: Top final limit is broken by cam on car.)

Note: *You will have to jump normal limits to check finals. You may also have to eliminate TOC comm. to get past Top and Bottom Floor level.*

Normal Limits Check

1. Verify that that top directional switch stops the car from running up and the bottom directional switch stops the car when running down.
2. Verify that the directional switches open when the car is within 2 inch of the floor level.

Vane and Switch Placement

1. If using encoder leveling (No tape), verify ULZ and DLZ sensors are moved to their maximum spacing.

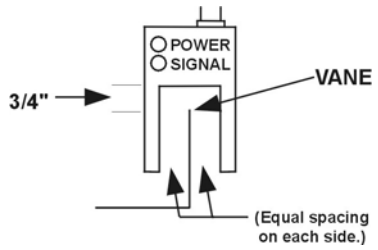


Figure 6-1

2. Verify that a floor leveling vane has been placed at each floor.

Note*:* *Vanes are mounted equally between the ULZ and DLZ sensors with the car at floor level. Vanes should be mounted within +/- 0.50 inches of floor level or a new hatch scan will need to be done after the car is setup.*

3. Verify that the ETS vanes are mounted at the required distance from both terminal floors. [See Table B.]

Meridia ETS Limit Distances* Version 7 and later				
Speed	**ETS 1,5**	**ETS 2,6**	**ETS 3,7**	**ETS 4,8**
50 FPM	4" (10cm)			
75 FPM	5" (13cm)			
100 FPM	7"(18cm)			
150 FPM	9"(23cm)			
200 FPM	5"(13cm)	17"(43cm)		
250 FPM	7"(18cm)	21"(53cm)		
300 FPM	7"(18cm)	21"(53cm)	34"(86cm)	
350 FPM	14"(36cm)	28"(71cm)	42"(107cm)	
400 FPM	14"(36cm)	28"(71cm)	42"(107cm)	56"(142cm)
450 FPM	15"(38cm)	30"(76cm)	45"(114cm)	60"(152cm)
500 FPM	16"(41cm)	32"(81cm)	48"(122cm)	64"(163cm)

Table B

Note: *Distance is measured from the center of the selector box to the leading edge of the vane when the car is at floor level. See prints for more detail.*

4. Verify the terminal slowdown switches open at the correct distance from the terminal floor +/-2". [See Table C.]

5. If using a tape, refer Magnet Placement section on page 6-5.

Slowdown Distance

FPM	(m/s)	SLD1 Distance	TSV1 Value	SLD2 Distance	TSV2 Value
50	(0.25)	3" (8cm)	40		
75	(.375)	6" (16cm)	70		
100	(.50)	9.5" (25cm)	90		
150	(.75)	15" (39cm)	120		
200	(1.0)	24.5" (63cm)	160		
250	(1.125)	30.5" (78cm)	210		
300	(1.50)	43" (110cm)	260		
350	(1.75)	49" (125cm)	310		
400	(2.0)	41" (105cm)	310	62.5"(159cm)	360
450	(2.25)	41" (105cm)	310	68.5" (174cm)	410
500	(2.5)	41" (105cm)	320	84" (214cm)	460

Table C

DPP Setup

Note: *This step is only required if a tape driven selector is used. Skip this step if using a rail or governor mounted encoder.*

AC Voltmeter Method

1. Using a voltmeter on the **AC scale** to verify the DPP signals, connect it between DPP1+ (positive lead) and DPP1- (negative lead) on the DP1 and DP1/ on CPE or CTI boards.

2. Run the car Up and Down on Inspection at 50 FPM.

3. Adjust the meter settings to monitor the Pulsed voltage. The reading should be between 2.7 VAC to 3.0 VAC.

4. If not within tolerance, adjust the distance between the sensor and the magnet.

Note: *Adjust the sensors and /or magnets IN or OUT in 360° increments. Failure to do so can result in improper selector operation.*

5. Repeat steps 2-4 until the reading is within tolerance.

6. Repeat steps 1-5 for DPP2-DPP2/.

Oscilloscope Method

An alternate and more accurate method of verifying the DPP signals is using the Oscilloscope method. It is the preferred method but can be bypassed if an Oscilloscope is not available.

1. With an isolated dual channel oscilloscope, connect the one channel to DPP1+ and the other channel to DDP2+ [with ground on TP4 (GND)] on the CPE or CTI boards.

2. Run the car Up and Down on Inspection at 50 FPM.

3. Verify the proper waveforms and amplitude of the square waves are correct. The Oscilloscope Time/div setting should be set at 0.5 seconds/div.

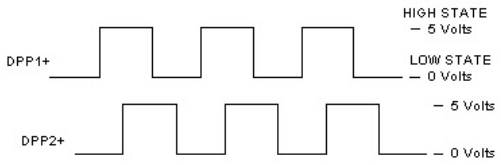


Figure 6-2

4. Adjust the sensors and magnets to obtain a 50% duty cycle. Signal should be high for the same amount of time as it is low.

5. Verify the two signals are 90° out of phase with each other.

Verify the following conditions **do not** exist in the DPP signals on the display.

- Excessive Noise Spikes
- Ringing or Oscillations
- Distortion

(See Figure 6-3 for examples of incorrect waveforms.)

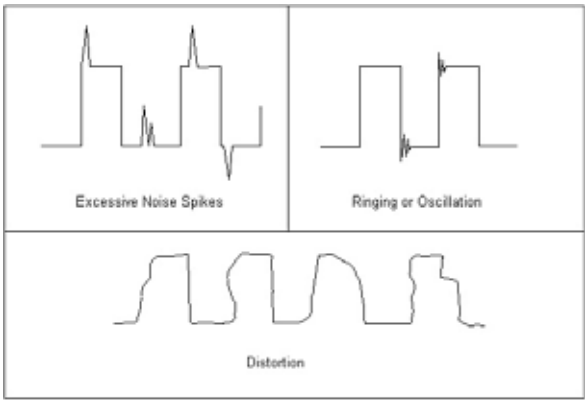


Figure 6-3

If any of these conditions exist, verify the following:

- The DPP signal is wired (continuous run) through the twisted shielded cable.
- The shielded cable is grounded on the controller ground terminal.
- The DPP wiring is not run in the same traveling cable with the high voltage signals (over 120 VAC).
- The minimum wire gauge for the DPP signal is 18 AWG.

Correct as necessary.

Tape Car Position Transducer

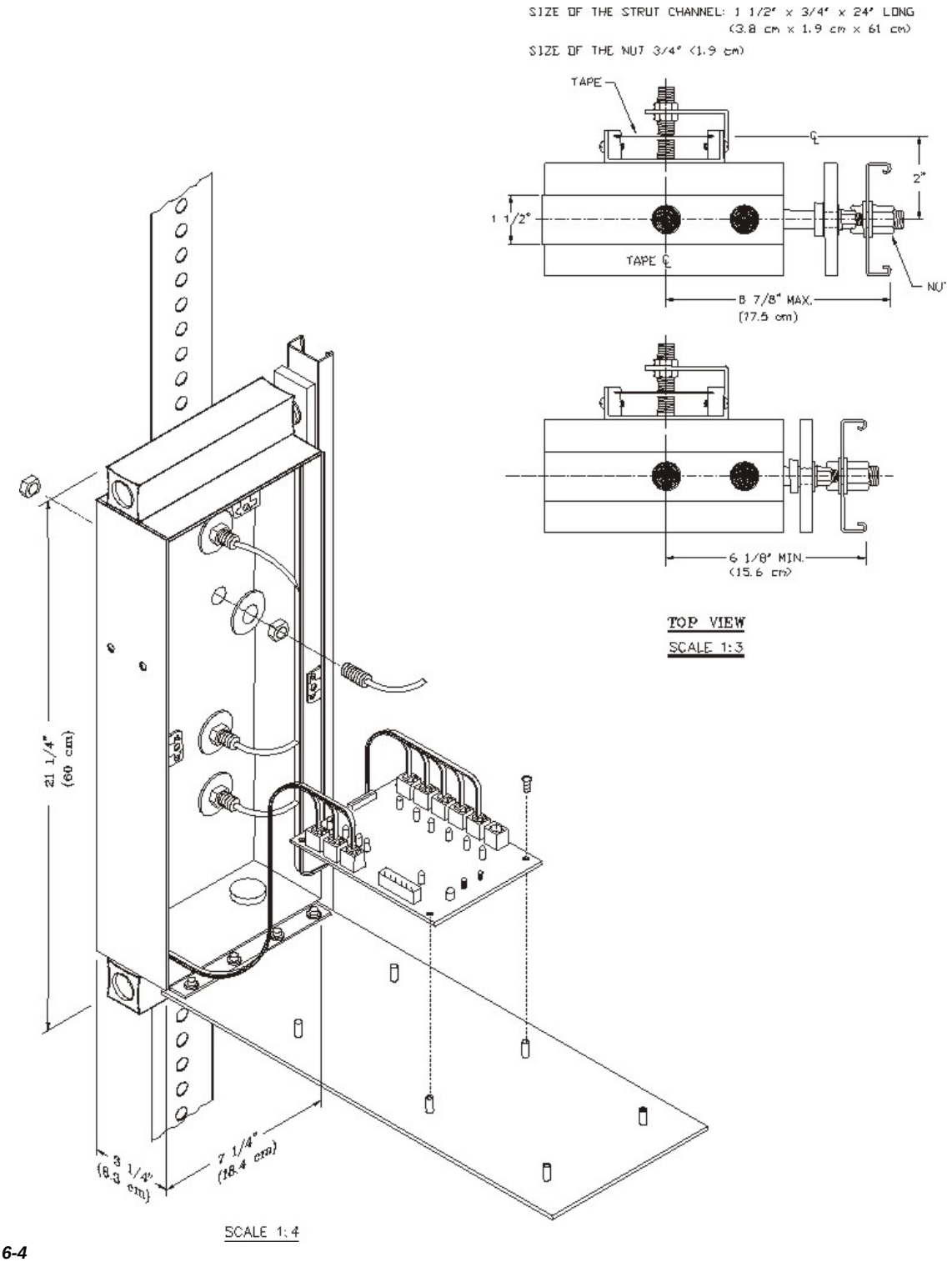


Figure 6-4

Magnet Placement (when using Tape)

The Meridia tape system incorporates a series of magnets for leveling. The magnets consist of a 12" Leveling Magnet.

1. Place the car floor exactly floor level.

2. Scribe a mark across the tape that is even with the top of the CPT.

Note: *Do not mark across the bearing box.*

3. Using the template provided, place the template on the right side of the tape.

4. Align the top of the template to the scribed mark. Place the 12" magnet at the position shown on the template with its white mark outward.

5. Repeat until all floors have a leveling magnet installed.

Door Operator Check

Setup the door operation per manufacturer specifications.

Note: *If using a CEC supplied Door Board refer to appendix for Operator setup instructions.*

Door Limit Check

Verify the following modules:

PARAMETER	OPEN	HALF OPEN	CLOSED
DOL	LOW	HIGH	HIGH
DLC	HIGH	HIGH	LOW
DL6	HIGH	HIGH	LOW

Table D

CPE Communications Check

In the top of the car box, plug the battery into the CPE board and check CPE communication according to the communications status chart. [See Table E.]

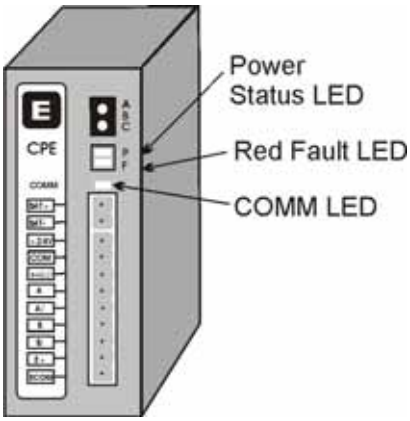


Figure 6-5

Communications Status

The Power Status LED blinks as follows:		
MODE	**24V+**	**BATTERY**
Solid	OK	OK
Double Blink	OK	Testing Battery
Fast Blink	OK	Charging Battery
Slow Blink	Fail	OK using battery power
Off	Look for Red Fault LED	
Red Fault LED Status:		
MODE	**OPERATION**	
Single Blink	Board in reset	
Double Blink	Battery fail or battery unplugged	
Off	Look at power status	
Comm LED Status:		
MODE	**OPERATION**	
Off	NO COMM to motor room	
Blink	COMM OK to motor room	

Table E

Machine Room Verification

1. Place all **Car inspection** switches in the automatic position.

2. Place the car on independent service using key switch in car or jump terminal 8 of the CFM board to VTC.

Note: *CFM board is normally found in COP.*

3. Verify the car will run the Up and Down using panel test buttons.

4. In the **Car Hoistway** submenu, set the TSV and ESV parameters to temporary values as follows:

   If one slowdown switch is used:
   TSV 1 =Contract speed minus 10 FPM.
   ESV 1 =Contract speed minus 10 FPM.

   If two slowdown switches are used:
   TSV 2 = Contract speed minus 10 FPM.
   ESV 2 = Contract speed minus 10 FPM.
   TSV 1 = Contract speed minus 20 FPM.
   ESV 1 = Contract speed minus 20 FPM.

5. In the **Car Hoistway** menu, set the ETV parameters as follows:

   One Vane:
   ETV 1 = Contract speed minus 10 FPM

   Two Vanes:
   ETV 2 = Contract speed minus 10 FPM
   ETV 1 = Contract speed minus 20 FPM

   Three Vanes:
   ETV 3 = Contract speed minus 10 FPM
   ETV 2 = Contract speed minus 20 FPM
   ETV 1 = Contract speed minus 30 FPM

   Four Vanes:
   ETV 4 = Contract speed minus 10 FPM
   ETV 3 = Contract speed minus 20 FPM
   ETV 2 = Contract speed minus 30 FPM
   ETV 1 = Contract speed minus 40 FPM

6. Go to the **Car Commands** submenu and scroll to **WRT** and press <ENTER>.

Counter-weighting

Note: *Until the brake is fully adjusted in the next step, extreme care should be taken when loading and unloading weights in car and counterweight*.

1. Place the balanced load on elevator. This is normally between 40 to 45% of capacity. (Example: 3000 lbs. x 45% =1575 lbs.)
2. Set the car inspection speed to 20 FPM.
3. Set Drive to display motor current at D2 of Drive.
4. Run the car through the center of the hoistway in both directions. Note the current in both directions while running the car.

Note: ** If current is within 2-3 Amps. of each other, the car is counter balanced sufficiently.*
** If the current is larger in the up direction, then weights must be added to the counterweight.*
** If the current is larger in the down direction, then weights must be removed from the counterweight.*

5. Remove or add counterweights as necessary until current readings are equal in both directions.

Note: ***It is extremely important that the elevator is counter-balanced in order for the drive to operate correctly. You may wish to check the balance mechanically.***

Brake Setup

1. Move the elevator to the lowest landing and verify the brake can hold 125% of capacity by adjusting the brake spring tension.

2. Once the brake spring has been adjusted, place the balanced load on the elevator.

3. Verify parameter BMV is per power distribution print and BMA is set to maximum amps. used by brake.

4. Run the elevator up or down and adjust BRR so that the brake board has the output voltage equal to the BHV voltage setting.

5. Adjust brake per manufacturer specifications.

Note: Use both Manufacturer's setup procedure and Table F for electrical and mechanical setting of the brake.

Brake Steps

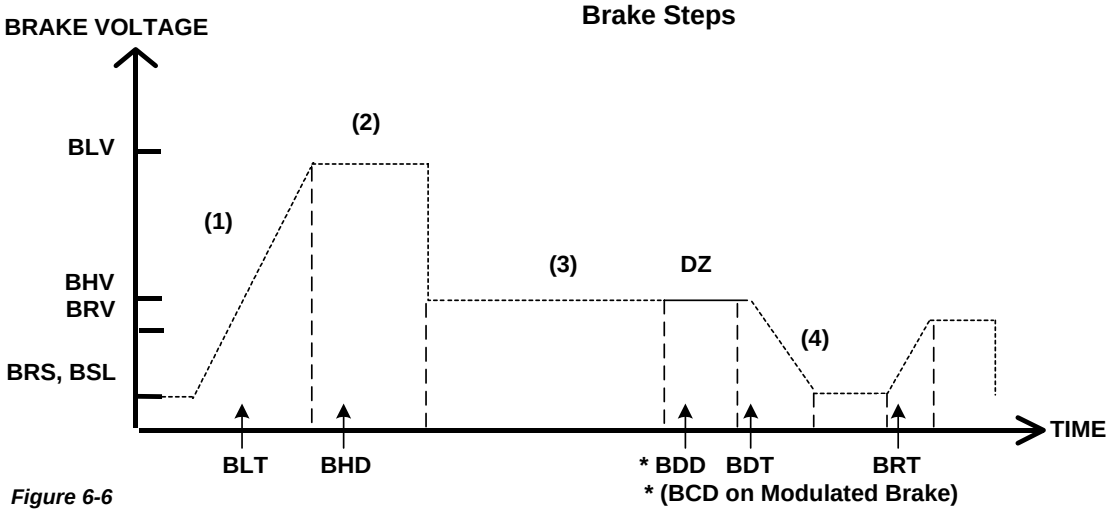


Figure 6-6

Adjustment Parameters			
Parameter	**Range**	**Units**	**Description of Car Adjustment Parameters**
BMV	20-500	VOLTS	**B**rake **M**aximum line **V**oltage. - AC line voltage applied to the Brake board.
BMA	1-20	AMPS	**B**rake **M**aximum **A**mps. – Maximum Amps used by the brake.
BLV	10-500	VOLTS	**B**rake **L**ift **V**oltage. – Initial Brake voltage. Maximum value is 90% of the Brake Maximum Voltage (BMV) parameter.
BHV	0-500	VOLTS	**B**rake **H**old **V**oltage. - Brake voltage when the car is running.
BLT	0-320	1/64 SEC	**B**rake **L**ift **T**ime. - Amount of time from Brake Start Lift (BSL) voltage to Brake Lift Voltage (BLV).
BHD	0-320	1/64 SEC	**B**rake **H**old **D**elay. - Amount of time from when brake voltage reaches Brake Lift Voltage (BLV) to voltage being lowered to BHV value.
BCL	0-32	1/64 SEC	**B**rake **C**ontrol **L**ift timer delay. –This parameter delays BKC output from energizing BK contactor. **Note**: *Only used on VVVF drives*.
BSL	0-100	VOLTS	**B**rake **S**tart **L**ift voltage. - The brake voltage output to the brake when a run is initiated.
BRV	1-500	VOLTS	**B**rake **R**e-level **V**oltage. - Lift voltage during a re-level.
BRT	0-320	1/64 SEC	**B**rake **R**e-level lift **T**ime. - The amount of time from the Brake Re-level Start voltage (BRS) to the Brake Re-level Lift Voltage (BRV).
BRS	0-500	VOLTS	**B**rake **R**e-level **S**tart lift Voltage. - The voltage output to the brake when a re-level is initiated.
BDD	0-320	1/64 SEC	**B**rake **D**rop **D**elay. - Time delay after the 2” (5 cm) door zone Brake voltage is reduced to zero volts.
BDT	0-320	1/64 SEC	**B**rake **D**rop **T**ime. - The rate at which the brake voltage is reduced to zero volts.
BRR	0-65535	NUMERIC	**B**rake **R**egulator **R**esistance – Brake Board scaling factor

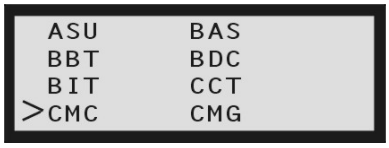
Table F

Note: *BDD and BDT will be set up after the car is H.S.*

CCU Communications

1. If using the CCU, at the Main Menu select **Car Commands** and press <ENTER>.

2. Scroll down to the **CMC** Command and press <ENTER>. This will allow you to check the communication status to each board.



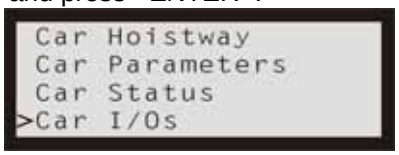
3. Verify that each board is communicating. [See sample screens in the CCU usage appendix.]

4. Scroll down through each board. If the board has input and output boards, use the ◄► arrow keys to check them.

Note: *See Car Commands for more information regarding the CMC*.

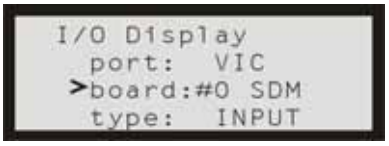
Slowdown Switch Check

1. On the CCU, at the Main Menu, select **Car I/Os** and press <ENTER>.



2. Set **Port** to **VIC** using the ◄► keys.

3. Set **Board** to **SDM** using the ◄► keys.



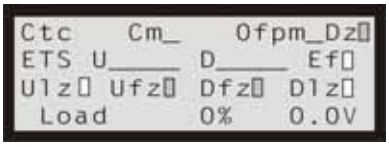
4. Run the car to both terminal landings and verify that the slowdowns and normal limits break in the correct order.
(Example: SU2 – 1st; SU1 – 2nd; UNL – 3rd)

5. If the switches do not break in the correct order, go back and see that the car is breaking switches as necessary.

Selector and ETS Check

1. On the CCU, at the Main Menu, select **Car Status** and press <ENTER>.

2. Using the ◄► keys scroll to **CTC** screen.

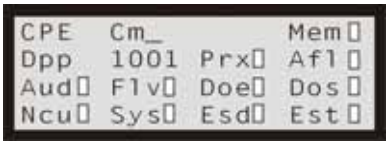


3. Run the car to both terminal landings and verify that the required ETS vanes turn on as floor level is reached.

4. While running the car in the up direction and passing an intermediate floor vane, verify that ULZ, UFZ, DFZ, and DLZ turn on then turn off in the correct order.

Car Position Encoder Test

1. Using the ◄► keys, change the display screen to the **CPE** display.



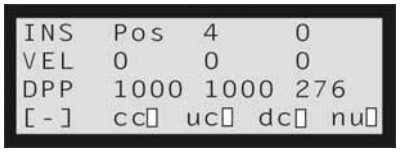
2. Run the car in the up direction and verify direction arrow is up and DPP is counting up.

3. Run the car in the down direction and verify direction arrow is down and DPP is counting down.

Note: *If either the arrow or the count direction is wrong, swap B and B coming from the car top encoder at the top of car terminal strip.*

Note: *If on a tape application, swap DPP1 and DPP2 sensor wiring at CTI Board located in the Selector box.*

4. Rotate the display screen to main display using the ◄► keys.



5. Run the car in both directions and verify DPP increases when running up and decreases when running down.

Note: *If the count is counting in reverse, swap the DP1 and DP1/ coming to the CCU Plug P2.*

6. Verify car speed is equal to Demand speed (**SR**) using a handheld tachometer. If it is not equal, change the A1 Contract Motor Speed of Drive.

7. Verify the displayed speed (**Vel)** is equal to the Demand speed (**SR**) within +/- 2 FPM in both directions. If not within tolerance, adjust the DPF parameter until **SR** and **Vel** are within +/- 2 FPM of each other.

8. Rotate to VIC display and verify direction and speed are correct. If direction is incorrect, swap B and B at the CCU encoder plug (P11). If speed is incorrect, adjust the RPM parameter in the **Car Control** submenu to match that of the A1 Contract Motor Speed.

Note: *If using the wizard program, some of the above steps will not be necessary. You may view the different boards and displays via the diagnostic screens.*

Drive Parameters

Verify the drive parameters are setup per prints.

Auto Setup (Hatch Scan)

1. Run the car so it is approximately 1-2 ft. above the first opening.

2. Go to the Main Menu on the CCU and select **Car Parameters** and press <ENTER>.

3. Scroll to **Vel** and press <ENTER>.

4. Scroll to **IVE** and enter 20 FPM.

5. Return to the Main Menu by pressing <MENU>.

6. Select **Car Commands** and press <ENTER>.

7. Scroll to **ASU** and press <ENTER>.

8. Using the panel run buttons, run the car down. It will stop past the bottom floor with just ULZ and UFZ activated.

Note: *You may have to jump out bottom final.*

9. Next run the car up until the car stops past the top floor.

Note: *If the elevator is stopped prior to reaching the top floor, the Auto Setup will be invalid and have to be done again.*

Note: *If using the Wizard, verify the position is advancing to the next floor as you run car up the hoistway.*

10. Once the car has stopped above the top landing, return to the Main Menu by pressing <MENU> button.

11. Scroll to **Car Hoistway** and press <ENTER>.

12. Scroll to **COT** and press <ENTER>.

13. Verify that the Center of Target has values that are different than default values of 1000, 1400, 1800, etc…

14. Verify parameters EUR, EDR, DLR and ULR under **Car Hoistway** submenu also have values different than the default. Verify the TSV, ESV and ETV settings are still set to those installed in step 4 of the Machine Room Verification on page 6-6.

Note: *If any of the above values are set to zero, insert a value that is approximately equal to where the switch is located in the hoistway.*

15. If these parameters all have values, return to the Main Menu and select **Car Commands** by pressing <ENTER>.

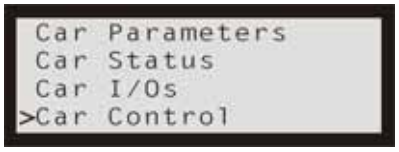
16. Scroll to the **WRT** command and press <ENTER>.

17. Run the car down away from the top terminal floor using the DN button.

Preparation for Running High Speed

1. Go to the Main Menu in the CCU.

2. Scroll to **Car Control** and press <ENTER>.



3. Scroll to **Door Disconnect** and press <ENTER> to remove doors from operation.

4. Scroll to **Pos** and increase FDZ parameter to 10.

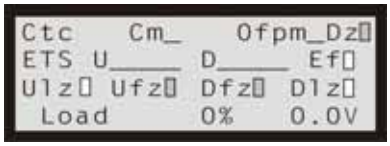
Note: *FDZ is only required when using rail or governor encoder.*

5. Use BIT command and set Bit 11 of Control Status Word 10 to turn on DPP count update. (BITS11, 10)

6. For Tape Selector applications, use the BIT command to set the Bit 10 of Control Status Word 10 to turn on the selector leveling sensors.

Relevel Test

1. Press <MENU> button until you get to the display window. Use the ◄► keys to scroll to the CTC display.



2. Run the car UP or DN until you get ULZ or DLZ to go high.

3. Turn the inspection switch to off to allow the car to go into automatic. Verify the car levels into floor level.

4. Turn the car back to inspection mode and run car so the other leveling sensor is high and repeat step 3.

One Floor Run

1. Go to the Main Menu in CCU.

2. Scroll to **Car Commands** and press <ENTER>.

3. Using the STD and STU commands run the car up and down one floor at a time. Verify the car will come into floor level and stop without overshooting the floor level.

Note: *You may have to make some temporary adjustments to the S-Curve to achieve this. If FDZ is too low, it may cause excessive relevels.*

Preset "S" Curves

1. Verify a balanced load is on the elevator.

2. Choose one of the S-Curve speed profiles provided using the SPD command.

- Profile 1 = Fast
- Profile 2 = Moderate
- Profile 3 = Smooth

Note: *You may manually set up the S-Curve profile by entering individual values for the S-Curve. See S-Curve Profile Table G. It is better to start out with a smoother ride Profile while tuning the drive.*

Obtaining High Speed

1. Once the car is able to make controlled stops at each floor, scroll to the SCC command and start to make Multi-Floor runs.

2. Verify the car will come to a controlled stop after each run.

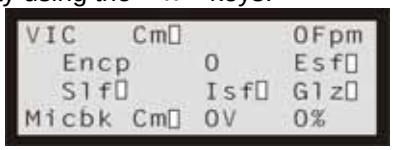
3. Once we have reached the point where the controller is demanding High Speed on a run and the car comes to a controlled stop, make long runs avoiding the terminal floors.

Note: *Demand speed may be viewed using the Main display screen.*

4. During a High Speed run verify the speed of the car using a handheld tachometer. To change the speed of car, raise or lower the Contract Motor Speed in the drive A1 parameter list.

5. Verify the displayed car speed is within 1-2 FPM of the demand speed. Raise or lower Parameter DPF to correct any speed deviations at High Speed. DPF is in the POS submenu.

6. Go to the display screen and scroll to the **VIC** display using the ◄► keys.



7. Verify the VIC displays the correct car speed. To change the VIC display, change the RPM setting in the Control submenu to a value equal to the Contract Motor Speed (A1) setting of the drive.

HPV-900 Adaptive Tune

Note: *For more detailed information see Section 5 of the HPV-900 manual.*

1. Using the BIT command set Bit 5 of Control Status Word 7.

2. Set MMS Parameter in submenu Motion to 70% of contract speed.

Note: *If control problems occur while using the MMS speed setting, you may have to adjust some of the following parameters: MRS, MAR, MRA, MRD, MDR, MRL, or MLG. These parameters mirror the S-Curve settings of the reduced speed profile.*

3. While running long 70% speed runs, refer to the HPV-900 manual Section 5.5.1.2. (Tuning Motor No-Load Current, page 134) and set the no-load current.

4. Using the BIT command, reset bit 5 of Word 7 to allow car to go back to running at contract speed.

5. While running at contract speed, refer to the HPV-900 manual section 5.5.1.2. (Tuning Motor's Flux Saturation Curve, page 135) to set the Flux Saturation Slope 2.

6. Place a full load on the car.

7. While running the car at 100% loaded and high speed, refer to HPV-900 Manual Section 5.5.1.3. (Tuning Rated Motor RPM, page 135) to set the Rated Motor RPM.

8. Place the balanced load back on the elevator.

9. While running with balanced load at High Speed, set up the System Inertia. Refer to section 5.6.1. of the HPV-900 manual (page 136).

Note: *Should Drive Case Charts be required refer to the end of this section.*

Final Approach Adjustments

1. Choose the desired S-Curve Profile under the SPD command or enter the values for the desired profile manually. [See S-Curve Table G.]

2. With the car running High Speed with a balanced load on car, perform the following:

   A. Run car to the middle of the hoistway.

   B. After car stops, enter the FDR command.

   C. Record the System Lag during deceleration.

   D. Go to the Motion submenu and enter this value into the LAG parameter.

   E. Repeat these steps several times to verify the LAG remains consistent.

3. With the car at balanced load, run car into a floor that is midway in the hoistway. Verify that the car is stopping the same way in both directions.

   A. Refer to Figure 6-7 to adjust the final approach to floor level.

   B. Verify that the car comes to a complete stop electrically prior to the brake setting.

   C. Go to the **Control** submenu and set SCT so the drive stays on until just after the brake sets.

Observing the 'S' Curve on the Drive (HPV 900)

(OPTIONAL)

Note: ***A dual channel storage scope is required to view the speed command and speed feedback.***

1. Set the 'O' scope to storage, 2 channels with a .5-second per division sweep.

2. Place Channel one probe (Speed Command) on TB1-33 (ANA OUT 1) and the ground clip on TB1-34 (ANA Output Common).

3. Place Channel two probe (Speed Feedback) on TB1-35 (ANA OUT 2) and the ground clip on TB1-34 (ANA Output Common).

4. Set ANA OUT 1 in the C4 submenu to "Speed Command."

5. Set ANA OUT 2 in the C4 submenu to Speed FBK.

6. Set the Probe Voltage to a setting to allow the 'S' curve to be completely shown on the screen. (10 Volt output at high speed.)

   Note: *To view final approach a lower voltage setting around .2V/Div may be used.*

7. Adjust the 'S' curve parameter until a stable final approach is achieved.

   Note: *With both traces set on the same division line prior to a run, a stable approach will have the speed feedback merging and following speed command during the LVE portion of the final approach.*

Note: *If the speed feedback crosses and goes below the speed command, the drive's response may be set too low.*

Initial O'scope Setting:

STORAGE 10V/div.
5 sec/div.

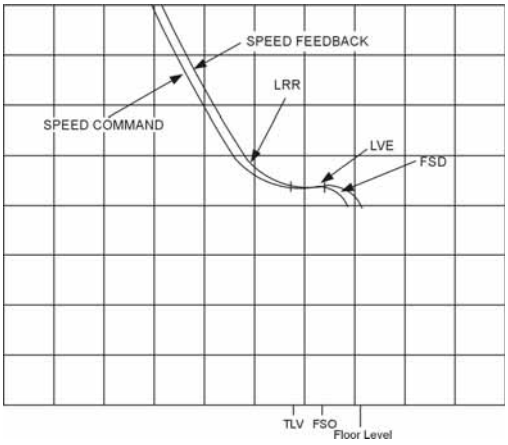


Figure 6-7

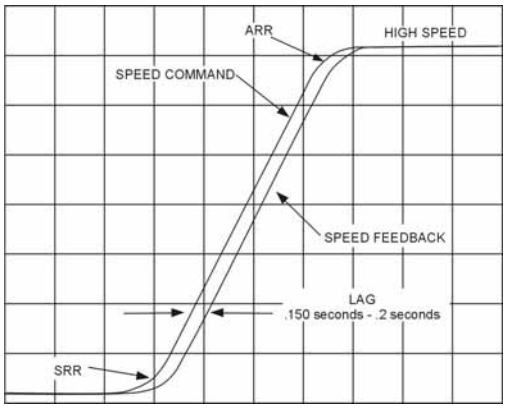


Figure 6-8

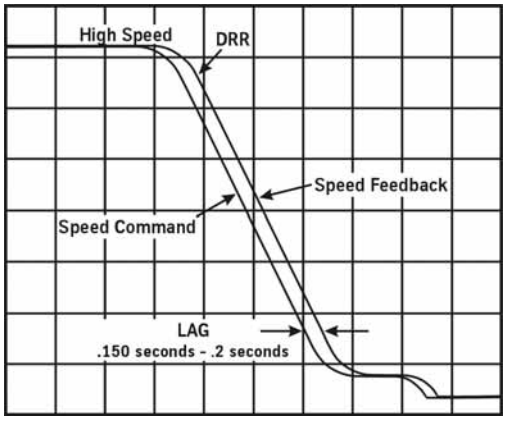


Figure 6-9

Speed Profile

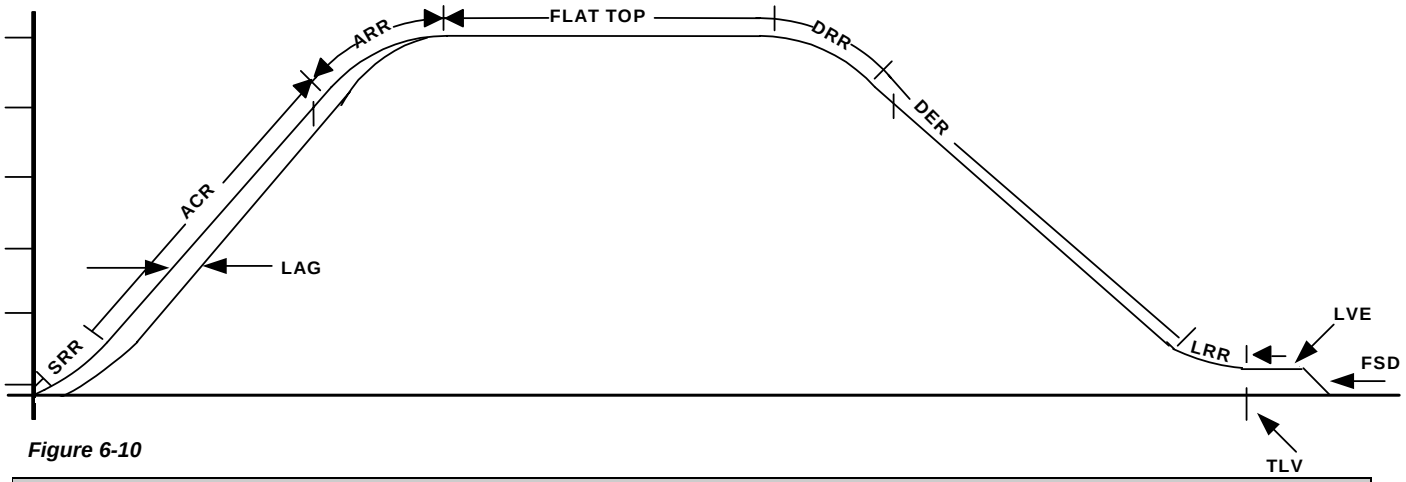


Figure 6-10

Parameter	Range	Default	Units	Description of Car Adjustment Parameters
FSD	0-24	0	1/64 sec	Final Stop Damping. Velocity Damping during the final stop. The damping time represents the number of samples that are averaged every 1/64 second. On final stop, the demand velocity is changed from the leveling velocity to zero instantly. Having a damping of 8 would cause the velocity to slope down from the leveling velocity to zero in 1/8 second (8/64).
FDZ	1-32	5	DPP	Floor Dead Zone: The number of counts the car must go out of dead level to cause the car to re-level. (In DPP counts)
FSO	0-26	3	DPP	Floor Stop Offset: Number of counts prior to reaching the floor dead level position that a stop sequence begins for a normal run. (In DPP counts)
DER	80-300	150	F/ms	Deceleration Rate: The rate of Constant Deceleration of the car to the transfer to leveling. Divide DER by 60 to convert to feet per second. (or multiply DER by 0.00508 to convert to m/s^2). Raising value makes ramp to floor level sharper. Lowering value makes ramp longer.
DRR	1-480	250	F/ms^2	Decel Roll Rate: The rate in which the car rolls into Constant Deceleration from Top Speed.
ACR	75-300	150	F/ms	Acceleration Rate: The rate of constant acceleration for the car to top speed. Divide ACR parameter by 60 to convert value into feet-per-second. (multiply ACR by 0.00508 to convert to m/s^2)
ARR	1-480	250	F/ms^2	Acceleration Roll Rate into top speed. Raise value for less rounding.
LAG	1-320	0	1/64 sec	Car LAG compensation
LRR	1-480	250	F/ms^2	Leveling Roll Rate into leveling speed.
LVE	1-20	8	F/m	Leveling VElocity (feet per minute).
RSO	0-20	4	DPP	Floor Re-level Stop Offset: Number of counts prior to reaching the floor dead level position that a stop sequence begins for a re-level. (In DPP counts)
SRR	1-480	250	F/ms^2	Start Roll Rate from Zero speed.
TLV	0-80	5	DPP	Transfer to Leveling Vane (DPP): Distance from floor level at which the constant leveling velocity takes effect. NOTE: When car enters the 2 inch Leveling Zone (5 cm), a constant leveling velocity is introduced.

Table G

8. Once the car is leveling and stopping correctly with a balanced load, use full load and empty load to verify the car stops and starts throughout the load range.

   A. You may have to increase the response of the drive so the car will level with the full load.

   B. Verify the car does not have roll back when full or empty load is on the car. Use BLT, BLV, BSL, and SRR to achieve good starts.

Floor Accuracy Adjustments

1. Place balanced load on the elevator.

2. If using the encoder leveling system (no tape), verify that FDZ is set to minimize relevels.

Note: *To calculate the dead zone, use the following formula:*

$$\left(\frac{DPF}{10}\right) \div 12 = \text{Pulse Per Inch}$$

For ¼" Dead zone and DPF of 2552, FDZ would equal approximately 5.

Note: *The lower FDZ is set, the tighter the dead zone. (less movement for relevels) The higher FDZ is set, the more distance needed to cause a relevel.*

3. Run the car to each floor and check the Floor accuracy in both directions.

   A. If the car is stopping high, counts will need to be removed.

   B. If the car is stopping low, counts will need to be added.

4. To add or remove counts, change the FOF settings in the **Car Hoistway** submenu.

   A. To change counts, scroll to the desired floor and press <ENTER>.

   B. Use the ▲ key to add counts or the ▼ key to remove the desired counts then press <ENTER>.

Note: *FOF1 = the first opening;*
FOF2 = the second opening; etc…
Care should be taken to change the correct floor.

Note: *If using the Wizard Program, to change floor levels use the following for an example:*

FOF3 = + 7 To add counts
FOF5 = 0 - 3 To remove counts

Note: *The maximum amount of offset is 10. If you need to increase more than 10 you will have to move the leveling vane and then do a new Hatch Scan.*

5. Repeat steps 3 and 4 for each floor.

6. If using a tape and magnets for leveling, set the ULZ and DLZ sensors for the desired dead zone.

7. Set FSO to 1.

8. To change the floor level accuracy, you will have to move the 12" leveling magnet to get the car to stop at floor level.

Note: *If Magnets are moved more that 3/8 of an inch, a new Hatch Scan should be done.*

9. Once the floor offsets have been entered, go to the **Car Commands** at the CCU and press <ENTER>.

10. Then scroll to **WRT** command and press <ENTER> to store all changes.

Terminal Backup Setup and Tests

Terminal Backup using the CCU

Note: *Proceed to the Appendix for a sample of the Terminal Backup Case Chart. Table B, C, and D are referred to in these steps.*

1. Set the **LPE** Parameter in the **Pos** parameter submenu to 1000.

2. Verify Bit 11 of the Control Status Word C10 is set using the BIT command in the Car Command submenu.

3. In the **Car Hoistway** submenu, verify the ETV, ESV, and TSV values are set high so the car will not fault out.

Note: *Refer to Machine Room verification for the values.*

4. Run the car into the top terminal floor at high speed. After the car stops, go to the **Car Hoistway** submenu and record the top terminal positions in Table B (of the Appendix) by entering the ULB and EUB commands.

5. Run the car into the bottom terminal floor at high speed. After the car stops, go to the **Car Hoistway** submenu and record the bottom terminal position and velocity in Table C (of the Appendix) by entering the DLB and EDB commands.

6. After both the top and bottom distances have been recorded, calculate the distance from the floor level and record in Table B and C (of the Appendix).

   A. If switches or vanes are not within 3 inches of each other, move either the top or bottom switch or vane to correct.

   B. If switches or vanes needed to be moved, repeat steps 4 – 6 until switches and vanes are in the correct location.

7. If the learned values are within 3" of each other, enter these learned values in their corresponding references The reference values are located under the **Car Hoistway** submenu.

   Example: ULR1 = 22568
   EUR = 22731

8. After switches are in their correct location and reference set, run the car into the top and bottom terminal floors. When the car stops, go to the **Car Hoistway** submenu and enter the appropriate commands listed in Table D (of the Appendix). Record the data in table.

9. After all data is recorded, verify up and down speeds are within +/- 5 of each other.

10. In the Car Hoistway submenu, enter the TSV, ETV, and ESV values from the table.

11. Set LPE to a value of 6".
    $LPE = (DPF \div 20)$
12. Run the car into both top and bottom terminals using multifloor runs and verify that there are no errors.

13. In the **Car Commands** submenu, scroll to **WRT** command and press <ENTER> to save all new values.

Note: *If using the Wizard program, the limit velocities and positions are accessed with different commands. See Table H.*

CCU	Wizard
ULB	ULB
EUB	ELB
DLB	DLB
EDB	ELB
TUB	ULB
TDB	DLB
ETB	ELB
ESB	Not Used

Note: ESV = TSV + 10 FPM
Therefore if TSV1 equals 178,
ESV1 equals 188

Table H

Load Weigher Setup

Note: *This procedure is only for the CEC proximity sensor.*

1. Place the elevator with no load at the bottom landing on car top inspection.
2. Using a voltmeter on the DC scale, connect the positive lead on LW2 and the negative lead on GND in the CTC. [See Figure 1-37.]
3. For crosshead mounted sensor, adjust the sensor until the voltmeter measures +1.0 to +1.4 Volts DC
4. For Isolated platform mount sensor the voltage will be between +4.2 and +4.6 VDC.
5. Lock the sensor in place with the lock nut.
6. Place the car on Independent Service.
7. Using the CCU select **Car Commands**.
8. Scroll down to the **LWU** command and press <ENTER>.
9. Select the **Proximity Sensor Setup** and press <ENTER>.
10. Select the installation type (either Cross head mount or under platform) and press <ENTER>.
11. With the car empty at the bottom floor, select **LWU1** and press <ENTER>.
12. Once the display shows **LWU1 OK**, press <ENTER>.
13. Place full load on the elevator.
14. Select **LWU2** and press <ENTER>.
15. Once the display shows **LWU2 OK**, press <ENTER>.
16. From inside the elevator, run the fully loaded car on Independent to the top floor.
17. Select **LWU3** and press <ENTER>.
18. Once the display shows **LWU3 OK**, press <ENTER>.
19. Remove all weights from inside the elevator.
20. Select **LWU4** and press <ENTER>.
21. Once the display shows **LWU4 OK**, press <ENTER>.
22. Press <ENTER> to scroll to the **WRT** command and press <ENTER> to save these readings.
23. Scroll to **LWU** and press <ENTER>.
24. Select **Activation Offset Calibration** and press <ENTER>.
25. Scroll to the **WRT** Command and press <ENTER> to save the new parameters.
26. Press <MENU> twice to return to the Main Menu

Setting Pre-torque

1. Place an empty car at the top floor.
2. Set the following CSW bits:
3. **CS3 bit 7 CS8 bit 9 CS9 bit 11**
4. Set car parameter BAL to the % amount the car is counterweighted. This is usually 40% to 45%.
5. Set car parameter PDT to 24.
6. Set SST car parameter to a value that will cause the car to roll back 1” before accelerating.
7. Increase car parameter TLC in increments of 500 until no roll back is present.
8. Scroll to the WRT Command and press ENTER to save the new parameters.

Additional Parameter Adjustments

1. Scroll to the **Car Parameters** and press <ENTER>.

2. Scroll to **Vel** and press <ENTER>.

3. Set the following parameters. See Table I.

VEE	Highest difference between Speed Reference and Velocity during Acceleration plus 30.
MLV	150 (FPM)
MRV	60 (FPM)

Table I

4. Press the <MENU> button to return to the Car Parameter sub-menu.

CDL	DPP position count of the elevator when the platform is even with the top of the counter-weight. **Only if CWT derailment is required.**
CDH	DPP position count of the elevator when the crosshead is even with the bottom of the counter-weight. **Only if CWT derailment is required.**

Table J

Miscellaneous Adjustments

Setting the Hoistway Access

1. Place the car at the top floor on Inspection (ICA)

2. Set parameters ACT to a value to stop the car to a preferred level.

   Note: *ACT and ACB values are not used until the car travels off of SD1 or SU1.*

3. Access car down verifying car stops where desired.

4. Repeat at bottom floor setting ACB.

Note: If top access is located other that top floor, set ACF to the Top Access Floor

Setting Earthquake Collision (If required)

1. Run the car on inspection 1-2' below the point where the bottom of the counterweight would strike the car.

2. Record the DPC count.

3. Set CDL to the value recorded in step 2.

4. Run the car up 1-2' beyond the point where the bottom of the car would strike the counterweight.

5. Record the DPC count.

6. Set CDH to the value recorded in step 5.

7. Enter the WRT command.

Various Door Parameters and Control Status Word Settings

DOORS			
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
0	13	R	When set and on independent service, the doors will close automatically when a car call is registered.
1	4	R	When set, pre-opening is disabled for the front doors.
1	5	R	When set, front door pre-opening will occur at the 2” leveling zone.
2	1	R	If set, pressing the door close button shortens the door open time. If reset, DCB has no affect on door open time.
2	8	R	If set, does not allow reopening of doors with the safety edge or the electric eye during nudging.
3	13	R	If set, door-nudging operation is disabled.
4	5	R	If set, front door pre-opening will occur when car reaches 6” from floor level.
5	3	R	If set, car will shutdown if car goes out of the level zone and doors are open.
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
6	3	R	Set to disable electronic detector edge time out.
6	4	R	Set to enable electronic detector edge operation Vs. mechanical safety edge.
6	5	R	Set to enable electronic proximity edge operation Vs. mechanical safety edge.
6	14	R	Set to enable drive fault GLR error. (both GLR input and DOL input active while at the floor)
7	10	R	Set to invert detector edge input.
9	5	R	Set to require DCL on (with GLI and GL) to start car.

DOORS			
PAR	**RANGE**	**UNIT**	**DESCRIPTION**
CDT	16-200	1/16s	Door Open Time: Time for doors after answering a car call.
DCC	2-20	Units	Door Cycle protection Counter: Normally adjusted for 6 cycles before removing power form doors.
DCP	5-20	Sec.	Door Close Protection time: The amount of time the doors are given to close before taken out of service on door protect.
DDT	0-80	Sec.	Door open Time after activation of DOB input.
DHT	0-64	1/16s	Door Hold Time: Delay time before high-speed door opening. Only used on Dover OHS door operator circuits.
DOH	0-360	Sec.	Extra Door Open button Hold time: Only used with door hold buttons.
DOP	5-20	Sec.	Door Open Protective time: Amount of time allowed to open the doors before taken out of service on door protects
DOT	0-60	Sec.	Door Open button Time-out: Maximum amount of time doors are allowed to remain open form the door open input.
LDT	32-200	1/16s	Long Door open Time: Time used when car answers a hall call.
NDT	5-120	Sec.	Nudging Door Time: Time doors are allowed to be held open before nudging goes into effect.
SDT	4-48	1/16s	Short Door Time: Door time after electric eye or safety edge has been activated.

FIRE			
PAR	**RANGE**	**UNIT**	**DESCRIPTION**
FAL	1-# FLs	Unit	Fire recall Alternate Floor: The alternate floor to which car recalls when main fire floor sensor is activated.
FBT	1-65535	1/64s	Fire Bypass Timer for GSA fire standard.
FIR	1-# FLs	Unit	Fire Recall Floor: The main fire floor for phase 1 recall mode.
IFT	0-300	Sec.	Independent Fire Time: Time system takes to override independent service during fire phase 1 operation.

FIRE			
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
1	8	R	When set, the fire buzzer is pulsed.
1	9	R	When set, the fire emergency light is pulsed.
1	10	R	When set, the stop switch is not bypassed. When reset, it is bypassed according to bit 11.
1	11	R	When set, stop switch is bypassed all the time. When rest, the stopswitch is bypassed according to ANSI code standard.
1	13	R	When set, the in-car fire service light also operates during phase II.
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
1	14	R	When set, the doors will close when a car call is registered. If reset, the door must be closed with the door close button.
3	3	R	If set, allows car to shut automatically after phase II key switch is set to “OFF” and phase I condition exists.
3	5	R	When set, the door open button is disabled during phase I fire service.
3	14	R	If set, door-nudging operation is activated during phase I fire service operation while the door is closing. **This bit will override bit 13 (disable nudging).**
4	0	R	If reset, car will open front door automatically when it reaches the fire floor during phase I.

CALL			
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
0	4	R	If set, dumps all calls after consecutive car calls answered per CCD parameter number order with no electric eye break.
4	10	R	If set, car calls will not be cancelled when the car has a reversal slowdown.
4	11	R	If set, cancel car calls for positions above the car when the car is moving down and cancel car calls below the car when the car is moving up.
7	15	R	Set to pulse car call output for low intensity lights.

Buffer Test

1. Place the car two floors above the bottom floor (for car buffer test) or two floors below the top floor (for a Counterweight buffer test).

Note: *For car buffer, place full load on car.*

2. Record the values for the following parameters: ETV, ESV, TSV, LPE and VEE.

3. Set the following parameters to their new Temporary values:
   ETV, ESV and TSV = CONTRACT SPEED, VEE=300, LPE=1000.

4. Install the following Temporary jumpers to bypass:

FROM	TO	DESCRIPTION
SD1	SU1	Closest terminal slowdown*
UNL	DNL	Directional limits
HS	CS	Disable emergency inputs on car top.
LCS	HS	Final Limits (if required by local code.)

* Other SU_ and SD_ slowdown switches will need to be jumpered if provided.

5. Enter BITS 0,1 so the DPC count is not updated when the car starts.

6. Set DPC is equal to the COT value for the next floor above the car for a car buffer test or next floor below for a counterweight buffer test.

7. Enter SCC1 for the car to run down to the car buffer or enter SCC_n the top floor for the car to past the top floor for the counterweight buffer.

8. When the buffer is hit by the car or counterweight place the car on Panel test in the machine room.

9. Lift the car or counterweight off the buffer by running the car on Machine room inspection.

10. Repeat for the other buffer.

Note: *Remove the weight for CWT buffer.*

Note: *If using reduced speed buffers, lower High Speed using MMS parameter and set BIT 5 of CS7.*

Over Speed Test

1. Run fully loaded car to the top floor.

2. Place the car on Door Disconnect.

3. Record original value for VEE and temporarily set the parameter to 300.

4. Place a jumper around the governor switch.

5. Set the Overspeed Multiplier in the Drive A1 to desired value. Multiplier = (Governor Trip Speed divided by Car Speed) times 100.

6. Turn on Overspeed Test in Drive U4.

Note: *See page 80 of the HPV-900 manual for more details.*

7. Run car down by entering SCC2 car call.

8. Reset VEE to the original value recorded in step 3.

9. Remove the jumper from the governor switch.

10. Reset the A1 Multiplier setting to 100.

SECTION 7 - MERIDIA ADJUSTMENT PROCEDURES WITH DSD 412

Hoistway Verification

Inspection Operation

1. Remove the car gate and door lock jumpers that were installed during temporary operation.
2. Remove any safety circuit jumpers that were installed during temporary operation.
3. Remove jumpers from normal and slowdown limits.
4. Remove temporary run cord and any wiring used to make temporary operation available.
5. Verify all Inspection switches are in the Inspection Mode and all safety circuit switches are in their correct positions.
6. Verify that the car is now ready for inspection operation via the top of car run station. [Refer to Table A.] All Inputs/Outputs are High. (High is 120 VAC for all except DRVS and NP which is 24 VDC.)

Note: If laptop with Wizard 15 software or RVU Unit is not available, use CCU to navigate and display the status of I/O. (See section 11 page 3).

I/Os required to run Car Top Inspection		
Port	**Location**	**Module**
VIC	SDM 1	UNL
VIC	SDM2	SU1
VIC	SDM3	SU2 (If required)
VIC	SDM5	GL
VIC	SDM6	SD2 (If required)
VIC	SDM7	SD1
VIC	SDM 8	DNL
VIC	ISM 5	DLS
VIC	SM1 1	GV
VIC	SM1 4	CGS
VIC	SM1 7	DRV
VIC	SM1 8	GLB
VIC	SM2 1	CG
VIC	SM2 2	DL
VIC	SM2 7	RDY
VIC	DM 3	DRVS
VIC	EM 5	NP
VIC	CM2 4	GLT (output)
TOC	HSM 1	CS
TOC	HSM 2	ICS
TOC	HSM 4	HS
TOC	HSM 1	CS
TOC	RLM1	TCI

Table A **Note:** *Check additional modules if rear doors or freight doors are used.*

Door and Gate Check

While running from Car Top inspection switches, open each door and gate to verify the car stops.

Safety Switch Check

1. While running the car, verify that each safety circuit device stops the car.
2. Verify that all limit switches are activated mechanically. (Example: Top final limit is broken by cam on car.)

Normal Limits Check

1. Verify that that top directional switch stops the car from running up and the bottom directional switch stops the car when running down.
2. Verify that the directional switches open when the car is within 1 inch of the floor level.

Vane and Switch Placement

1. If using encoder leveling (No tape), verify ULZ and DLZ sensors are moved to their maximum spacing.

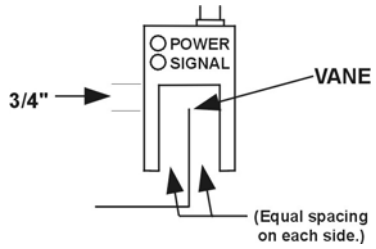


Figure 7-1

2. Verify that a floor leveling vane has been placed at each floor.

Note*: Vanes are mounted equally between the ULZ and DLZ sensors with the car at floor level. Vanes should be mounted within +/-0.50 inches of floor level or a new hatch scan will need to be done after the car is setup.*

3. Verify that the ETS vanes are mounted at the required distance from both terminal floors. [See Table B.]

Meridia ETS Limit Distances* Version 7 and later				
Speed	**ETS 1,5**	**ETS 2,6**	**ETS 3,7**	**ETS 4,8**
50 FPM	4" (10cm)			
75 FPM	5" (13cm)			
100 FPM	7"(18cm)			
150 FPM	9"(23cm)			
200 FPM	5"(13cm)	17"(43cm)		
250 FPM	7"(18cm)	21"(53cm)		
300 FPM	7"(18cm)	21"(53cm)	34"(86cm)	
350 FPM	14"(36cm)	28"(71cm)	42"(107cm)	
400 FPM	14"(36cm)	28"(71cm)	42"(107cm)	56"(142cm)
450 FPM	15"(38cm)	30"(76cm)	45"(114cm)	60"(152cm)
500 FPM	16"(41cm)	32"(81cm)	48"(122cm)	64"(163cm)

Table B

Note: *Distance is measured from the center of the selector box to the leading edge of the vane when the car is at floor level. See prints for more detail.*

4. Verify the terminal slowdown switches open at the correct distance from the terminal floor +/-2". [See Table C.]

5. If using a tape, refer to Magnet Placement section on page 7-5.

Slowdown Distance

FPM	(m/s)	SLD1 Distance	TSV1 Value	SLD2 Distance	TSV2 Value
50	(0.25)	3" (8cm)	40		
75	(.375)	6" (16cm)	70		
100	(.50)	9.5" (25cm)	90		
150	(.75)	15" (39cm)	120		
200	(1.0)	24.5" (63cm)	160		
250	(1.125)	30.5" (78cm)	210		
300	(1.50)	43" (110cm)	260		
350	(1.75)	49" (125cm)	310		
400	(2.0)	41" (105cm)	310	62.5"(159cm)	360
450	(2.25)	41" (105cm)	310	68.5" (174cm)	410
500	(2.5)	41" (105cm)	320	84" (214cm)	460

Table C

DPP Setup

AC Voltmeter Method

1. Using a voltmeter on the **AC scale** to verify the DPP signals, connect it between DPP1+ (positive lead) and DPP1- (negative lead) on the CPE or CTI boards.
2. Run the car Up and Down on Inspection at 50 FPM.
3. Adjust the meter settings to monitor the Pulsed voltage. Reading should be 2.7 VAC +/-0.5 VAC.
4. If not in tolerance, adjust the distance between the sensor and the magnet.

Note: *Adjust the sensors IN or OUT 360° increments. Failure to do so can result in improper selector operation.*

5. Repeat steps 2-4 until the reading is in tolerance.
6. Repeat step 1-5 for DPP2 – DPP2/.

Oscilloscope Method

An alternate and more accurate method of verifying the DPP signals is using the Oscilloscope method. It is the preferred method but can bypassed if an Oscilloscope is not available.

1. With an isolated dual channel oscilloscope, connect the one channel to DPP1+ and the other channel to DDP2+ [with ground on TP4 (GND)] on the CPE or CTI boards.
2. Run the car Up and Down on Inspection at 50FPM.
3. Verify the proper waveforms and amplitude of the square waves are correct. The Oscilloscope Time/div setting should be set at 0.5 seconds/div.

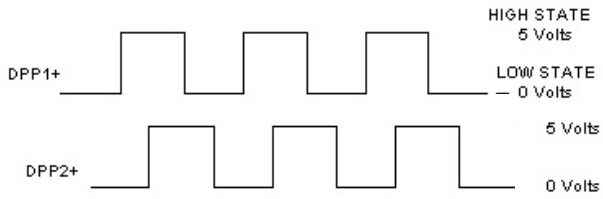


Figure 7-2

4. Adjust the sensors and magnets to obtain a 50% duty cycle. Signal should be high for the same amount of time as it is low.
5. Verify the two signals are 90° out of phase with each other.

Verify the following conditions **do not** exist in the DPP signals on the display.

- Excessive Noise Spikes
- Ringing or Oscillations
- Distortion

(See Figure 7-3 for examples of incorrect waveforms.)

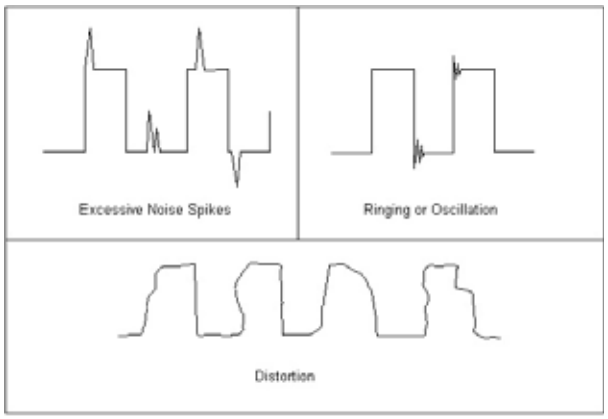


Figure 7-3

If any of these conditions exist, verify the following:

- The DPP signal is wired (continuous run) through the twisted shielded cable.
- The shielded cable is grounded on the controller ground terminal.
- The DPP wiring is not run in the same traveling cable with the high voltage signals (over 120 VAC).
- The minimum wire gauge for the DPP signal is 18 AWG.

Correct as necessary.

Tape Car Position Transducer

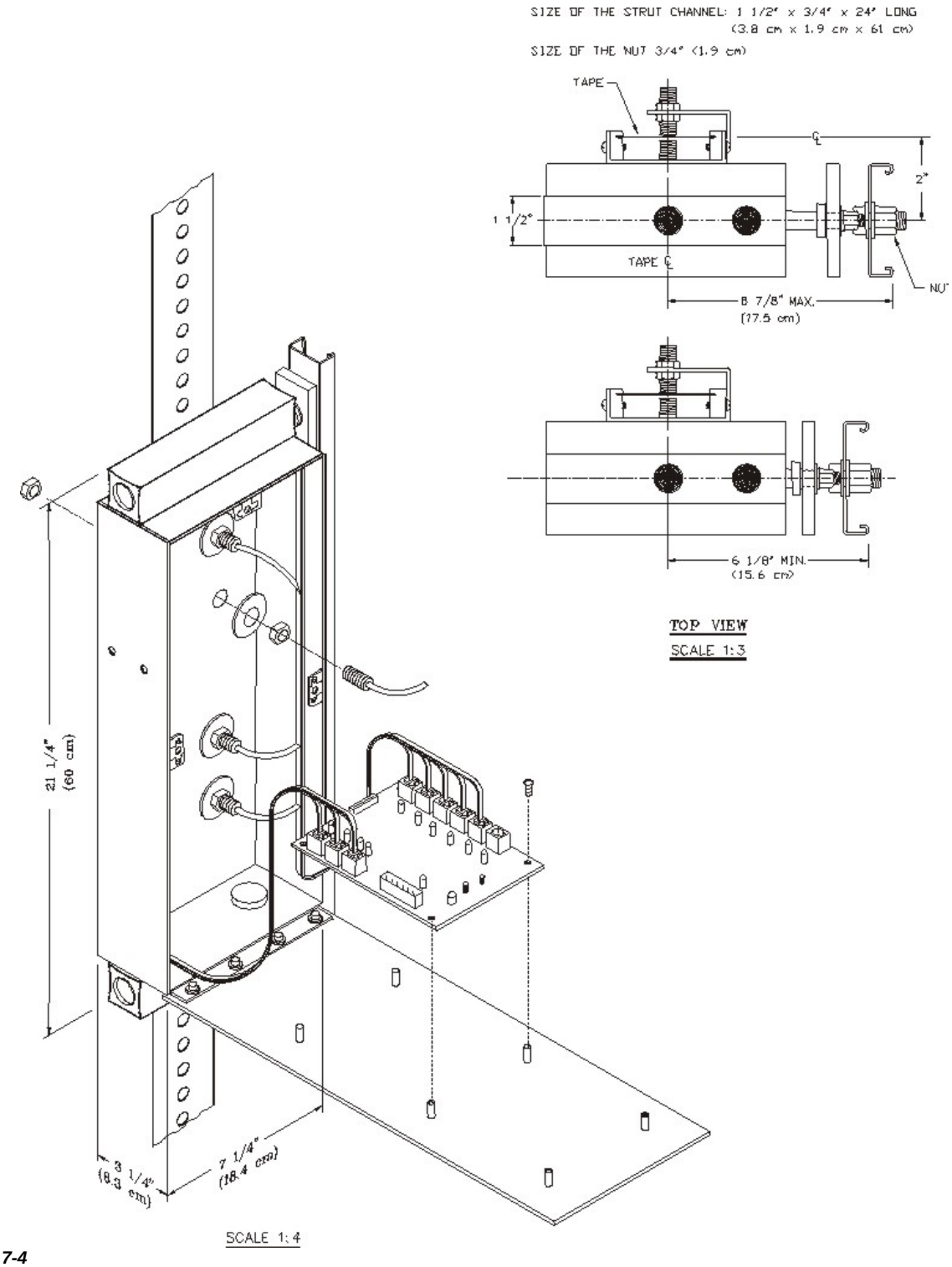


Figure 7-4

Magnet Placement (when using Tape)

The Meridia tape system incorporates a series of magnets for leveling and floor identification. The magnets consist of a 12" Leveling Magnet and 3" Parity Magnets. Use the following procedure for placing magnets.

1. Place the car floor exactly floor level.

2. Scribe a mark across the tape that is even with the top of the CPT.

Note: Do not mark across the bearing box.

3. Using the template provided, place the template on the right side of the tape.

4. Again aligning the top of the template to the scribed mark. Place the 12" magnet at the position shown on the template with its white mark outward.

5. Repeat until all floors have magnets installed.

Door Operator Check

Setup the door operation per manufacturer specifications.

Note: *If using a CEC supplied Door Board refer to appendix for Operator setup instructions.*

Door Limit Check

Verify the following modules:

PARAMETER	OPEN	HALF OPEN	CLOSED
DOL	LOW	HIGH	HIGH
DLC	HIGH	HIGH	LOW
DL6	HIGH	HIGH	LOW

Table D

CPE Communications Check
In the top of the car box, plug the battery into the CPE board and check CPE communication according to the communications status chart. [See Table E.]

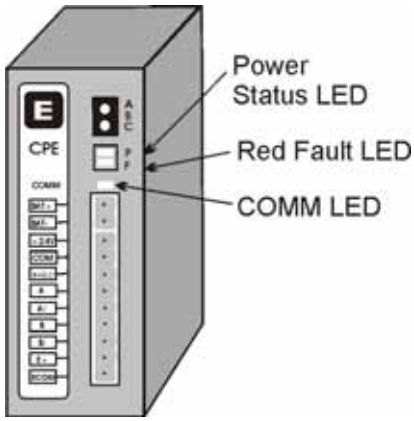


Figure 7-5

Communications Status

The Power Status LED blinks as follows:		
MODE	**24V+**	**BATTERY**
Solid	OK	OK
Double Blink	OK	Testing Battery
Fast Blink	OK	Charging Battery
Slow Blink	Fail	OK using battery power
Off	Look for Red Fault LED	
Red Fault LED Status:		
MODE	**OPERATION**	
Single Blink	Board in reset	
Double Blink	Battery fail or battery unplugged	
Off	Look at power status	
Comm LED Status:		
MODE	**OPERATION**	
Off	NO COMM to motor room	
Blink	COMM OK to motor room	

Table E

Machine Room Verification

1. Place all **Car inspection** switches in the automatic position.

2. Place the car on independent service using key switch in car or jump terminal 8 of the CFM board to VTC.

Note: *CFM board is normally found in COP.*

3. Verify the car will run the Up and Down using panel test buttons.

4. In the **Car Hoistway** submenu, set the TSV and ESV parameters to temporary values as follows:

   If one slowdown switch is used:
   TSV 1 =Contract speed minus 10 FPM.
   ESV 1 =Contract speed minus 10 FPM.

   If two slowdown switches are used:
   TSV 2 = Contract speed minus 10 FPM.
   ESV 2 = Contract speed minus 10 FPM.
   TSV 1 = Contract speed minus 20 FPM.
   ESV 1 = Contract speed minus 20 FPM.

5. In the **Car Hoistway** menu, set the ETV parameters as follows:

   One Vane:
   ETV 1 = Contract speed minus 10 FPM

   Two Vanes:
   ETV 2 = Contract speed minus 10 FPM
   ETV 1 = Contract speed minus 20 FPM

   Three Vanes:
   ETV 3 = Contract speed minus 10 FPM
   ETV 2 = Contract speed minus 20 FPM
   ETV 1 = Contract speed minus 30 FPM

   Four Vanes:
   ETV 4 = Contract speed minus 10 FPM
   ETV 3 = Contract speed minus 20 FPM
   ETV 2 = Contract speed minus 30 FPM
   ETV 1 = Contract speed minus 40 FPM

6. Go to the **Car Commands** submenu and scroll to **WRT** and press <ENTER>.

Counter-weighting

Note: *Until the brake is fully adjusted in the next step, extreme care should be taken when loading and unloading weights in car and counterweight*.

1. Place the balanced load on elevator. This is normally between 40 to 45% of capacity. (Example: 3000 lbs. x 45% =1575 lbs.)
2. Set the car inspection speed to 20 FPM.
3. Set Drive SCVD by accessing Function 611 to display motor current at D2 of Drive.
4. Run the car through the center of the hoistway in both directions. Note the current in both directions while running the car.

   Note: *If current is within 2-3 Amps. of each other, the car is counter balanced sufficiently.*

   If the current is larger in the up direction, then weights must be added to the counterweight.

   If the current is larger in the down direction, then weights must be removed from the counterweight.

5. Remove or add counterweights as necessary until current readings are equal in both directions.

Note: It is extremely important that the elevator is counter-balanced in order for the drive to operate correctly.

Brake Setup

1. Move the elevator to the lowest landing and verify the brake can hold 125% of capacity by adjusting the brake spring tension.
2. Once the brake spring has been adjusted place the balanced load on the elevator.
3. Verify parameter BMV is per power distribution print and BMA is set to maximum amps. used by brake.
4. Run the elevator up or down and adjust BRR so that the brake board has the output voltage equal to the BHV voltage setting.
5. Adjust brake per manufacturer specifications.

Note: *Use both Manufacturer's setup procedure and Table F for electrical and mechanical setting of the brake.*

Brake Steps

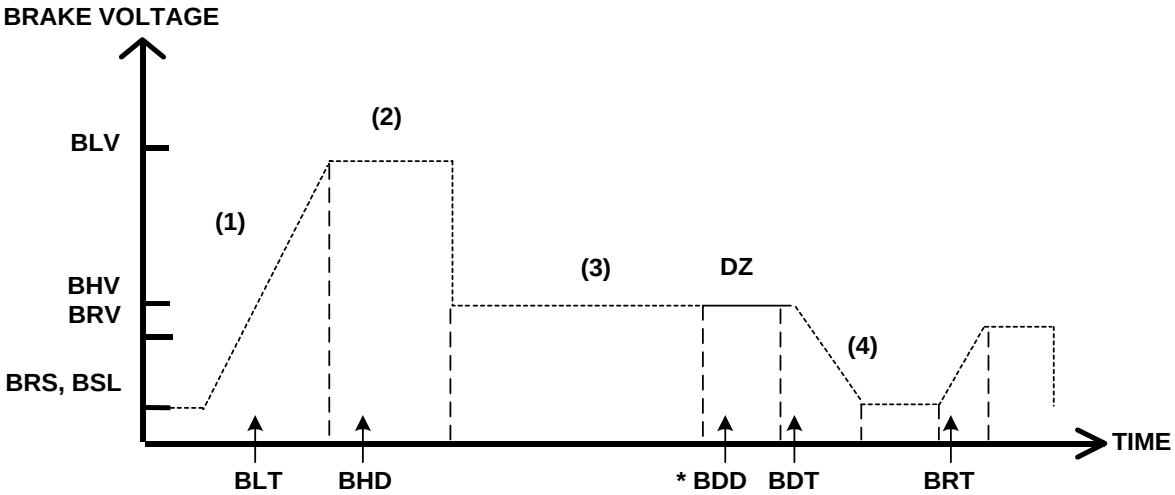


Figure 7-6

Adjustment Parameters			
Parameter	**Range**	**Units**	**Description of Car Adjustment Parameters**
BMV	20-500	VOLTS	**B**rake **M**aximum line **V**oltage. - AC line voltage applied to the Brake board.
BMA	1-20	AMPS	**B**rake **M**aximum **A**mps. – Maximum Amps used by the brake.
BLV	10-500	VOLTS	**B**rake **L**ift **V**oltage. – Initial Brake voltage. Maximum value is 90% of the Brake Maximum Voltage (BMV) parameter.
BHV	0-500	VOLTS	**B**rake **H**old **V**oltage. - Brake voltage when the car is running.
BLT	0-320	1/64 SEC	**B**rake **L**ift **T**ime. - Amount of time from Brake Start Lift (BSL) voltage to Brake Lift Voltage (BLV).
BHD	0-320	1/64 SEC	**B**rake **H**old **D**elay. - Amount of time from when brake voltage reaches Brake Lift Voltage (BLV) until voltage is lowered to BHV value.
BSL	0-100	VOLTS	**B**rake **S**tart **L**ift voltage. - The brake voltage output to the brake when a run is initiated.
BRV	1-500	VOLTS	**B**rake **R**e-level **V**oltage. - Lift voltage during a re-level.
BRT	0-320	1/64 SEC	**B**rake **R**e-level lift **T**ime. - The amount of time from the Brake Re-level Start voltage (BRS) to the Brake Re-level Lift Voltage (BRV).
BRS	0-500	VOLTS	**B**rake **R**e-level **S**tart lift Voltage. - The voltage output to the brake when a re-level is initiated.
BDD	0-320	1/64 SEC	**B**rake **D**rop **D**elay. - Time delay after the 2” (5 cm) door zone Brake voltage is reduced to zero volts.
BDT	0-320	1/64 SEC	**B**rake **D**rop **T**ime. - The rate at which the brake voltage is reduced to zero volts.
BRR	0-65535	NUMERIC	**B**rake **R**egulator **R**esistance – Brake Board scaling factor

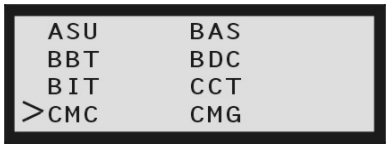
Table F

Note: *BDD and BDT will be set up after the car is H.S.*

CCU Communications

1. If using the CCU, at the Main Menu select **Car Commands** and press <ENTER>.

2. Scroll down to the **CMC** Command and press <ENTER>. This will allow you to check the communication status to each board.



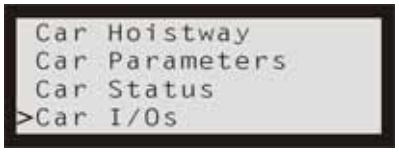
3. Verify that each board is communicating. [See sample screens in the CCU usage appendix.]

4. Scroll down through each board. If the board has input and output boards, use the ◄► arrow keys to check them.

Note: *See Car Commands for more information regarding the CMC*.

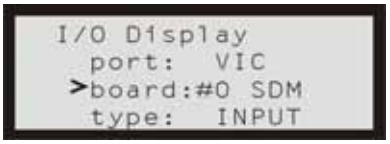
Slowdown Switch Check

1. On the CCU, at the Main Menu, select **Car I/Os** and press <ENTER>.



2. Set **Port** to **VIC** using the ◄► keys.

3. Set **Board** to **SDM** using the ◄► keys.



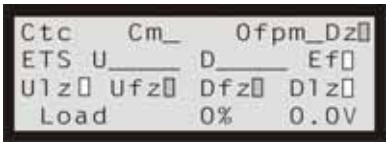
4. Run the car to both terminal landings and verify that the slowdowns and normal limits break in the correct order.
(Example: SU2 – 1st; SU1 – 2nd; UNL – 3rd)

5. If the switches do not break in the correct order, go back and see that the car is breaking switches as necessary.

Selector and ETS Check

1. On the CCU, at the Main Menu, select **Car Status** and press <ENTER>.

2. Using the ◄► keys scroll to **CTC** screen.

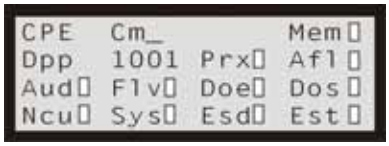


3. Run the car to both terminal landings and verify that the required ETS vanes turn on as floor level is reached.

4. While running the car in the up direction and passing an intermediate floor vane, verify that ULZ, UFZ, DFZ, and DLZ turn on then turn off in the correct order.

Car Position Encoder Test

1. Using the ◄► keys, change the display screen to the **CPE** display.



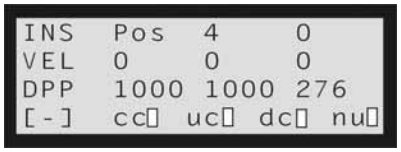
2. Run the car in the up direction and verify direction arrow is up and DPP is counting up.

3. Run the car in the down direction and verify direction arrow is down and DPP is counting down.

Note: *If either the arrow or the count direction is wrong, swap B and B coming from the car top encoder at the top of car terminal strip.*

Note: *If on a tape application, swap DPP1 and DPP2 sensor wiring at CTI Board located in the Selector box.*

4. Rotate the display screen to main display using the ◄► keys.



5. Run the car in both directions and verify DPP increases when running up and decreases when running down.

Note: *If the count is counting in reverse, swap the DP1 and DP1/ coming to the CCU Plug P2.*

6. Verify car speed is equal to Demand speed (**SR**) using a handheld tachometer. If it is not equal, change the F-11 Motor RPM.

7. Verify the displayed speed (**Vel)** is equal to the Demand speed (**SR**) within +/- 2 FPM in both directions. If not within tolerance, adjust the DPF parameter until **SR** and **Vel** are within +/- 2 FPM of each other.

8. Rotate to VIC display and verify direction and speed are correct. If direction is incorrect, swap B and B at the CCU encoder plug (P11). If speed is incorrect, adjust the RPM parameter in the **Car Control** submenu to match that of the F-11 Motor RPM.

Note: *If using the wizard program, some of the above steps will not be necessary. You may view the different boards and displays via the diagnostic screens.*

Drive Parameters

Verify the drive parameters are setup per prints.

Auto Setup (Hatch Scan)

1. **Run the car so it is approximately 1-2 ft. above the first opening.**

2. Go to the Main Menu on the CCU and select **Car Parameters** and press <ENTER>.

3. Scroll to **Vel** and press <ENTER>.

4. Scroll to **IVE** and enter 20 FPM.

5. Return to the Main Menu by pressing <MENU>.

6. Select **Car Commands** and press <ENTER>.

7. Scroll to **ASU** and press <ENTER>.

8. Using the panel run buttons, run the car down. It will stop past the bottom floor with just ULZ and UFZ activated.

Note: *You may have to jump out bottom final.*

9. Next run the car up until the car stops past the top floor.

Note: *If the elevator is stopped prior to reaching the top floor, the Auto Setup will be invalid and have to be done again.*

Note: *If using the Wizard, verify the position is advancing to the next floor as you run car up the hoistway.*

10. Once the car has stopped above the top landing, return to the Main Menu by pressing <MENU> button.

11. Scroll to **Car Hoistway** and press <ENTER>.

12. Scroll to **COT** and press <ENTER>.

13. Verify that the Center of Target has values that are different than default values of 1000, 1400, 1800, etc…

14. Verify parameters EUR, EDR, DLR and ULR under **Car Hoistway** submenu also have values different than the default. Verify the TSV, ESV and ETV settings are still set to those installed in step 4 of the Machine Room Verification on page 6-6.

Note: *If any of the above values are set to zero, insert a value that is approximately equal to where the switch is located in the hoistway.*

15. If these parameters all have values, return to the Main Menu and select **Car Commands** by pressing <ENTER>.

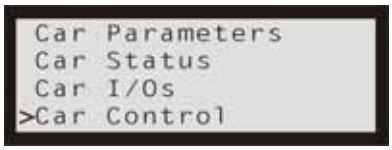
16. Scroll to the **WRT** command and press <ENTER>.

17. Run the car down away from the top terminal floor using the DN button.

Preparation for Running High Speed

1. Go to the Main Menu in the CCU.

2. Scroll to **Car Control** and press <ENTER>.



3. Scroll to **Door Disconnect** and press <ENTER> to remove doors from operation.

4. Scroll to **Pos** and increase FDZ parameter to 10.

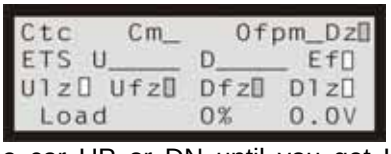
Note: *FDZ is only required when using rail or governor encoder.*

5. Use BIT command and set Bit 11 of Control Status Word 10 to turn on DPP count update.

6. For Tape Selector applications, use the BIT command to set the Bit10 of Control Status Word 10 to turn on selector leveling sensors.

Relevel Test

1. Press <MENU> button until you get to the display window. Use the ◄► keys to scroll to the CTC display.



2. Run the car UP or DN until you get ULZ or DLZ to go high.

3. Turn the inspection switch to off to allow the car to go into automatic. Verify the car levels into floor level.

4. Turn the car back to inspection mode and run car so the other leveling sensor is high and repeat step 3.

One Floor Run

1. Go to the Main Menu in CCU.

2. Scroll to **Car Commands** and press <ENTER>.

3. Using the STD and STU commands run the car up and down one floor at a time. Verify the car will come into floor level and stop without overshooting the floor level.

Note: *You may have to make some temporary adjustments to the S-Curve to achieve this. If FDZ is too low, it may cause excessive relevels.*

Preset "S" Curves

1. Verify a balanced load is on the elevator.

2. Choose one of the S-Curve speed profiles provided using the SPD command.

- Profile 1 = Fast
- Profile 2 = Moderate
- Profile 3 = Smooth

Note: You may manually set up the S-Curve profile by entering individual values for the S-Curve. See S-Curve Profile Table F. It is better to start out with a smoother ride Profile while tuning the drive.

Obtaining High Speed

1. Once the car is able to make controlled stops at each floor, scroll to the SCC command and start to make Multi-Floor runs.

2. Verify the car will come to a controlled stop after each run.

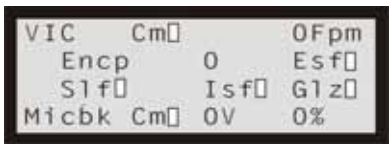
3. Once we have reached the point where the controller is demanding High Speed on a run and the car comes to a controlled stop, make long runs avoiding the terminal floors.

Note: *Demand speed may be viewed using the Main display screen.*

4. During a High Speed run verify the speed of the car using a handheld tachometer. To change the speed of car, raise or lower the Motor Speed in the drive Function 11 (F11) parameter list. (Refer to Page 3-9 Quick Reference Chart.)

5. Verify the displayed car speed is within 1-2 FPM of the demand speed. Raise or lower Parameter DPF to correct any speed deviations at High Speed. DPF is in the POS submenu.

6. Go to the display screen and scroll to the **VIC** display using the ◄► keys.



7. Verify the VIC displays the correct car speed. To change the VIC display, change the RPM setting in the Control submenu to a value equal to the Motor Speed (F11) setting of the drive. (Refer to Page 3-10 Quick Reference Chart.)

DSD 412 Final Adjustments

1. Remove any weights from the car.

2. Place the car on Machine Room Inspection.

3. Verify the motor data and the parameters in the drive are in agreement.

4. From the CCU Main Menu select **Car Parameters**.

5. Scroll to **VEL** and press <ENTER>.

6. Scroll to **IVE** and press <ENTER>.

7. Set **IVE** to 10 and press <ENTER>.

8. Start with parameter 40 on the SCR drive at a value of 7.

9. From the panel test buttons at the controller press the down direction button monitoring the drive sheave.

   Note the amount of up rollback.

10. Increase the drive parameter 41 (System Inertia) until there is very little rollback.

    Note: *Some rollback is required.*

11. Set the **IVE** parameter to 50 and run the elevator up and down.

12. Observe the machine for any vibrations.

13. Should vibration exist lower the SCR drive parameter 40 (Response) until the vibration is eliminated.

14. Take the car off Machine Room Inspection and make high speed runs up and down.

    Note: *Should a 407 fault appear on the drive, Lower your motor field weakening value (49) and possibly Field Weaken Speed (57) until the 407 is just eliminated. Verify Armature voltage (610) is just below nameplate in the Down direction, Empty car. [See DSD 412 Manual for Fault Descriptions.]*

15. Should the car have any vibration at high speed use the following to set the Reduced Gain:

    A. Using the SDCU scroll to parameter **104**.

    B. Set **104** to the OFF position and press <ENTER>.

    C. Scroll to **105** and press <Data> Key. Note this value.

    D. Set **105** to a % of high Speed you wish to start reducing the gain. (start at .80) and press <ENTER>. (105 should be set to a speed just prior to the start of the vibration)

    E. Scroll to parameter **108** and press <Data> Key. Note this value.

    F. Set **108** to the % of Gain desired when reduce gain is requested. (start at .70) and press <ENTER>. (108 should be set just low enough to eliminate the vibration)

    G. Continue running high speed up and down and adjust **105** and **108** for the best ride quality possible.

       Note: *The gain and speed reduction should never be taken under .50. Should the vibration continue check for possible other cause, possibly mechanical*.

15. Using the SDCU on the drive, scroll to parameter **994** and save the new settings. (Refer to “Saving Drive Parameters” on page 3-8.)

16. Return to “Running High Speed” in the Meridia Adjustment Procedures.

Observing the 'S' Curve on the Drive (DSD 412)

(OPTIONAL)

Note: *A dual channel storage scope is required to view the speed command and speed feedback.*

1. Set the 'O' scope to storage, 2 channels with a .5-second per division sweep.

2. Place Channel one probe to Test Point TP41 (Speed Reference) with the ground clip to TP47 (Common).

3. Place Channel two probe to Test Point TP44 (Speed Feedback) with the ground clip to TP47 (Common).

4. Verify P95 on the drive is set to 0 for Speed Reference.

5. Verify P96 on the drive is set to 0 for Speed Feedback.

6. Set the Probe Voltage to a setting to allow the 'S' curve to be completely shown on the screen. (10 Volt output at high speed.)

   Note: *To view final approach a lower voltage setting around .2V/Div may be used.*

7. Adjust the 'S' curve parameter until a stable final approach is achieved.

   Note: *With both traces set on the same division line prior to a run, a stable approach will have the speed feedback merging and following speed command during the LVE portion of the final approach.*

   Note: *If the speed feedback crosses and goes below the speed command, the drive's response may be set too low.*

Initial O’scope Setting:

STORAGE 10V/div.
5sec./div.

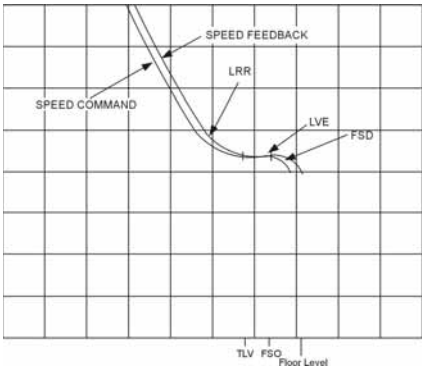


Figure 7-7

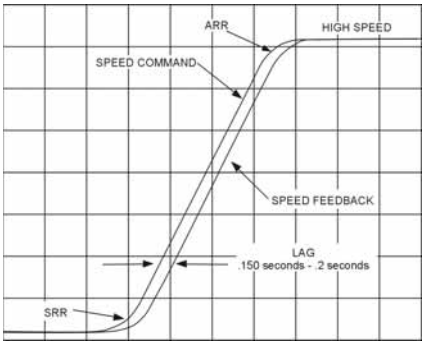


Figure 7-8

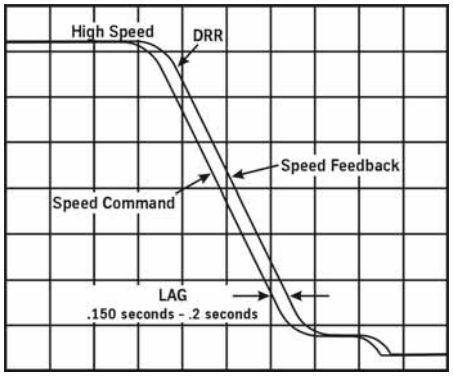


Figure 7-9

Speed Profile

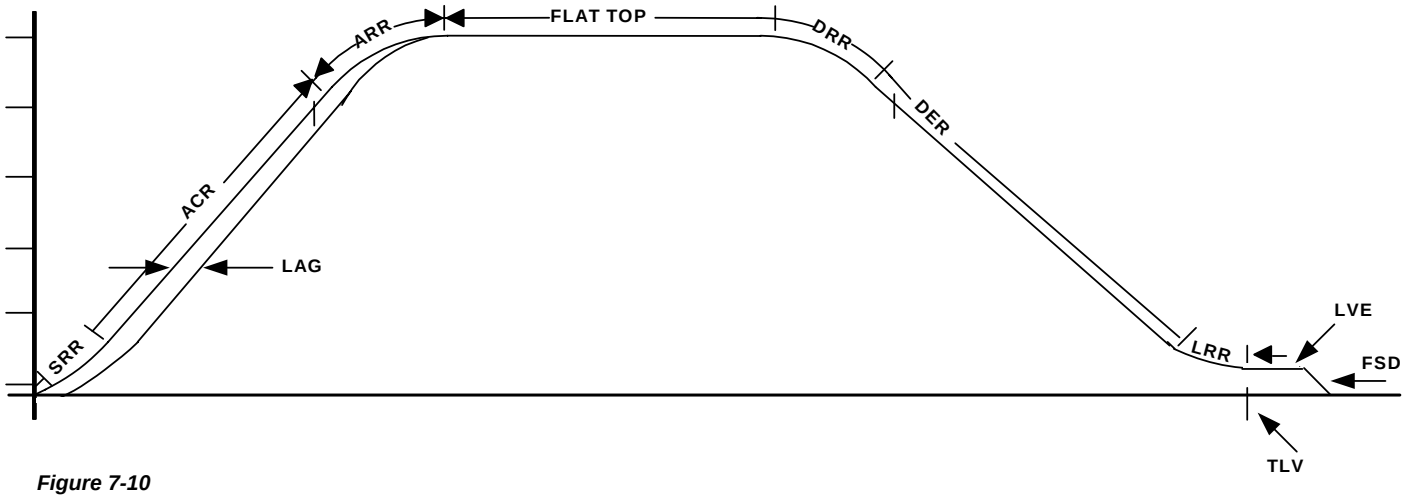


Figure 7-10

Parameter	Range	Default	Units	Description of Car Adjustment Parameters
FSD	0-24	0	1/64 sec	Final Stop Damping. Velocity Damping during the final stop. The damping time represents the number of samples that are averaged every 1/64 second. On final stop, the demand velocity is changed from the leveling velocity to zero instantly. Having a damping of 8 would cause the velocity to slope down from the leveling velocity to zero in 1/8 second (8/64).
FDZ	1-32	5	DPP	Floor Dead Zone: The number of counts the car must go out of dead level to cause the car to re-level. (In DPP counts)
FSO	0-26	3	DPP	Floor Stop Offset: Number of counts prior to reaching the floor dead level position that a stop sequence begins for a normal run. (In DPP counts)
DER	80-300	150	F/ms	Deceleration Rate: The rate of Constant Deceleration of the car to the transfer to leveling. Divide DER by 60 to convert to feet per second. (or multiply DER by 0.00508 to convert to m/s^2).
DRR	1-480	250	F/ms^2	Decel Roll Rate: The rate in which the car rolls into Constant Deceleration from Top Speed.
ACR	75-300	150	F/ms	Acceleration Rate: The rate of constant acceleration for the car to top speed. Divide ACR parameter by 60 to convert value into feet-per-second. (multiply ACR by 0.00508 to convert to m/s^2)
ARR	1-480	250	F/ms^2	Acceleration Roll Rate into top speed.
LAG	1-320	0	1/64 sec	Car LAG compensation
LRR	1-480	250	F/ms^2	Leveling Roll Rate into leveling speed.
LVE	1-20	8	F/m	Leveling VElocity (feet per minute).
RSO	0-20	4	DPP	Floor Re-level Stop Offset: Number of counts prior to reaching the floor dead level position that a stop sequence begins for a re-level. (In DPP counts)
SRR	1-480	250	F/ms^2	Start Roll Rate from zero speed.
TLV	0-80	5	DPP	Transfer to Leveling Vane (DPP): Distance from floor level at which the constant leveling velocity takes effect. NOTE: When car enters the 2 inch Leveling Zone (5 cm), a constant leveling velocity is introduced.

Table G

8. Once the car is leveling and stopping correctly with a balanced load, use full load and empty load to verify the car stops and starts throughout the load range.

   A. You may have to increase the response of the drive so the car will level with the full load.

   B. Verify the car does not have rollback when full or empty load is on the car. Use BLT, BLV, BSL, and SRR to achieve good starts.

Floor Accuracy Adjustments

1. Place balanced load on the elevator.
2. If using the encoder leveling system (no tape), verify that FDZ is set to minimize relevels.

Note: *To calculate the dead zone, use the following formula:*

$$\left(\frac{DPF}{10}\right) \div 12 = \text{Pulse Per Inch}$$

For ¼" Dead zone and DPF of 2552, FDZ would equal approximately 5.

3. Run the car to each floor and check the Floor accuracy in both directions.

   A. If the car is stopping high, counts will need to be removed.

   B. If the car is stopping low, counts will need to be added.

4. To add or remove counts, change the FOF settings in the **Car Hoistway** submenu.

   A. To change counts, scroll to the desired floor and press <ENTER>.

   B. Use the ▲ key to add counts or the ▼key to remove the desired counts then press <ENTER>.

Note: *FOF1 = the first opening;*
FOF2 = the second opening; etc…
Care should be taken to change the correct floor.

Note: *If using the Wizard Program, to change floor levels use the following for an example:*

FOF3 = + 7 To add count
FOF5 = 0 - 3 To remove count

Note: *The maximum amount of offset is 10. If you need to increase more than 10 you will have to move the leveling vane and then do a new Hatch Scan.*

5. Repeat steps 3 and 4 for each floor.
6. If using a tape and magnets for leveling, set the ULZ and DLZ sensors for the desired dead zone.
7. Set FSO to 1.
8. To change the floor level accuracy, you will have to move the 12" leveling magnet to get the car to stop at floor level.

Note: *If Magnets are moved more that 3/8 of an inch, a new Hatch Scan should be done.*

9. Once the floor offsets have been entered, go to the **Car Commands** at the CCU and press <ENTER>.
10. Then scroll to **WRT** command and press <ENTER> to store all changes.

Terminal Backup Setup and Tests

Terminal Backup using the CCU

Note: Proceed to the Appendix for a sample of the Terminal Backup Case Chart. Table B, C, and D are referred to in these steps.

1. Set the **LPE** Parameter in the **Pos** parameter submenu to 1000.
2. Verify Bit 11 of the Control Status Word C10 is set using the BIT command in the Car Command submenu.
3. In the **Car Hoistway** submenu, verify the ETV, ESV, and TSV values are set high so the car will not fault out.

Note: *Refer to Machine Room verification for the values.*

4. Run the car into the top terminal floor at high speed. After the car stops, go to the **Car Hoistway** submenu and record the top terminal positions in Table B (of the appendix) by entering the ULB and EUB commands.

5. Run the car into the bottom terminal floor at high speeds. After the car stops, go to the **Car Hoistway** submenu and record the bottom terminal position and velocity in Table C (of the appendix) by entering the DLB and EDB commands.

6. After both the top and bottom distances have been recorded, calculate the distance from the floor level and record in Table B and C (of the appendix).

   A. If switches or vanes are not within 3 inches of each other, move either the top or bottom switch or vane to correct.

   B. If switches or vanes needed to be moved, repeat steps 4 – 6 until switches and vanes are in the correct location.

7. If the learned values are within 3" of each other, enter these learned values in their corresponding references The reference values are located under the **Car Hoistway** submenu.

   Example: ULR1 = 22568
   EUR = 22731

8. After switches are in their correct location and reference set, run the car into the top and bottom terminal floors. When the car stops, go to the **Car Hoistway** submenu and enter the appropriate commands listed in Table D (of the appendix). Record the data in table.

9. After all data is recorded, verify up and down speeds are within +/- 5 of each other.

10. In the Car Hoistway submenu, enter the TSV, ETV, and ESV values from the table.

11. Set LPE to a value of 6".

$$LPE = (DPF \div 20)$$

12. Run the car into both top and bottom terminals using multifloor runs and verify that there are no errors.

13. In the **Car Commands** submenu, scroll to **WRT** command and press <ENTER> to save all new values.

Note: *If using the Wizard program, the limit velocities and positions are accessed with different commands. See Table H.*

CCU	Wizard
ULB	ULB
EUB	ELB
DLB	DLB
EDB	ELB
TUB	ULB
TDB	DLB
ETB	ELB
ESB	Not Used

Note: ESV = TSV + 10 FPM
Therefore if TSV1 equals 178,
ESV1 equals 188

Table H

Load Weigher Setup

Note: *This procedure is only for the CEC proximity sensor.*

1. Place the elevator with no load at the bottom landing on car top inspection.
2. Using a voltmeter on the DC scale, connect the positive lead on LW2 and the negative lead on GND in the CTC. [See Figure 1-37.]
3. For crosshead mounted sensor, adjust the sensor until the voltmeter measures +1.0 to +1.4 Volts DC
4. For Isolated platform mount sensor the voltage will be between +4.2 and +4.6 VDC.
5. Lock the sensor in place with the lock nut.
6. Place the car on Independent Service.
7. Using the CCU select **Car Commands**.
8. Scroll down to the **LWU** command and press <ENTER>.
9. Select the **Proximity Sensor Setup** and press <ENTER>.
10. Select the installation type (either Cross head mount or under platform) and press <ENTER>.
11. With the car empty at the bottom floor, select **LWU1** and press <ENTER>.
12. Once the display shows **LWU1 OK**, press <ENTER>.
13. Place full load on the elevator.
14. Select **LWU2** and press <ENTER>.
15. Once the display shows **LWU2 OK**, press <ENTER>.
16. From inside the elevator, run the fully loaded car on Independent to the top floor.
17. Select **LWU3** and press <ENTER>.
18. Once the display shows **LWU3 OK**, press <ENTER>.
19. Remove all weights from inside the elevator.
20. Select **LWU4** and press <ENTER>.
21. Once the display shows **LWU4 OK**, press <ENTER>.
22. Press <ENTER> to scroll to the **WRT** command and press <ENTER> to save these readings.
23. Scroll to **LWU** and press <ENTER>.
24. Select **Activation Offset Calibration** and press <ENTER>.
25. Scroll to the **WRT** Command and press <ENTER> to save the new parameters.
26. Press <MENU> twice to return to the Main Menu

Setting Pre-torque

1. Place an empty car at the top floor.
2. Set the following CSW bits:

   CS3 bit 7 CS8 bit 9 CS9 bit 11

3. Set car parameter BAL to the % amount the car is counterweighted. This is usually 40% to 45%.
4. Set car parameter PDT to 24.
5. Set SRR car parameter to a value that will cause the car to roll back 1” before accelerating.
6. Increase car parameter TLC in increments of 500 until no roll back is present.
7. Scroll to the WRT Command and press ENTER to save the new parameters.

Additional Parameter Adjustments

1. Scroll to the **Car Parameters** and press <ENTER>.
2. Scroll to **Vel** and press <ENTER>.
3. Set the following parameters. See Table I.

VEE	Highest difference between Speed Reference and Velocity during Acceleration plus 30.
MLV	150 (FPM)
MRV	60 (FPM)

Table I

4. Press the <MENU> button to return to the **Car Parameter** sub-menu.

CDL	DPP position count of the elevator when the platform is even with the top of the counter-weight. **Only if CWT derailment is required.**
CDH	DPP position count of the elevator when the crosshead is even with the bottom of the counter-weight. **Only if CWT derailment is required.**

Table J

Miscellaneous Adjustments

Setting the Hoistway Access

1. Place the car at the top floor on Inspection (ICA)
2. Set parameters ACT to a value to stop the car to a preferred level.

   Note: *ACT and ACB values are not used until the car travels off of SD1 or SU1.*
3. Access car down verifying car stops where desired.
4. Repeat at bottom floor setting ACB.

NOTE If top access is located other that top floor, set ACF to the Top Access Floor

Setting Earthquake Collision (If required)

1. Run the car on inspection 1-2' below the point where the bottom of the counterweight would strike the car.
2. Record the DPC count.
3. Set CDL to the value recorded in step 2.
4. Run the car up 1-2' beyond the point where the bottom of the car would strike the counterweight.
5. Record the DPC count.
6. Set CDH to the value recorded in step 5.
7. Enter the WRT command.

Various Door Parameters and Control Status Word Settings

DOORS			
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
0	13	R	When set and on independent service, the doors will close automatically when a car call is registered.
1	4	R	When set, pre-opening is disabled for the front doors.
1	5	R	When set, front door pre-opening will occur at the 2” leveling zone.
2	1	R	If set, pressing the door close button shortens the door open time. If reset, DCB has no affect on door open time.
2	8	R	If set, does not allow reopening of doors with the safety edge or the electric eye during nudging.
3	13	R	If set, door-nudging operation is disabled.
4	5	R	If set, front door pre-opening will occur when car reaches 6” from floor level.
5	3	R	If set, car will shutdown if car goes out of the level zone and doors are open.
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
6	3	R	Set to disable electronic detector edge time out.
6	4	R	Set to enable electronic detector edge operation Vs. mechanical safety edge.
6	5	R	Set to enable electronic proximity edge operation Vs. mechanical safety edge.
6	14	R	Set to enable drive fault GLR error. (both GLR input and DOL input active while at the floor)
7	10	R	Set to invert detector edge input.
9	5	R	Set to require DCL on (with GLI and GL) to start car.

DOORS			
PAR	**RANGE**	**UNIT**	**DESCRIPTION**
CDT	16-200	1/16s	Door Open Time: Time for doors after answering a car call.
DCC	2-20	Units	Door Cycle protection Counter: Normally adjusted for 6 cycles before removing power form doors.
DCP	5-20	Sec.	Door Close Protection time: The amount of time the doors are given to close before taken out of service on door protect.
DDT	0-80	Sec.	Door open Time after activation of DOB input.
DHT	0-64	1/16s	Door Hold Time: Delay time before high-speed door opening. Only used on Dover OHS door operator circuits.
DOH	0-360	Sec.	Extra Door Open button Hold time: Only used with door hold buttons.
DOP	5-20	Sec.	Door Open Protective time: Amount of time allowed to open the doors before taken out of service on door protects
DOT	0-60	Sec.	Door Open button Time-out: Maximum amount of time doors are allowed to remain open form the door open input.
LDT	32-200	1/16s	Long Door open Time: Time used when car answers a hall call.
NDT	5-120	Sec.	Nudging Door Time: Time doors are allowed to be held open before nudging goes into effect.
SDT	4-48	1/16s	Short Door Time: Door time after electric eye or safety edge has been activated.

FIRE			
PAR	**RANGE**	**UNIT**	**DESCRIPTION**
FAL	1-# FLs	Unit	Fire recall Alternate Floor: The alternate floor to which car recalls when main fire floor sensor is activated.
FBT	1-65535	1/64s	Fire Bypass Timer for GSA fire standard.
FIR	1-# FLs	Unit	Fire Recall Floor: The main fire floor for phase 1 recall mode.
IFT	0-300	Sec.	Independent Fire Time: Time system takes to override independent service during fire phase 1 operation.

FIRE			
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
1	8	R	When set, the fire buzzer is pulsed.
1	9	R	When set, the fire emergency light is pulsed.
1	10	R	When set, the stop switch is not bypassed. When reset, it is bypassed according to bit 11.
1	11	R	When set, stop switch is bypassed all the time. When rest, the stopswitch is bypassed according to ANSI code standard.
1	13	R	When set, the in-car fire service light also operates during phase II.
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
1	14	R	When set, the doors will close when a car call is registered. If reset, the door must be closed with the door close button.
3	3	R	If set, allows car to shut automatically after phase II key switch is set to “OFF” and phase I condition exists.
3	5	R	When set, the door open button is disabled during phase I fire service.
3	14	R	If set, door-nudging operation is activated during phase I fire service operation while the door is closing. **This bit will override bit 13 (disable nudging).**
4	0	R	If reset, car will open front door automatically when it reaches the fire floor during phase I.

CALL			
CSn	**Bit**	**DEFAULT**	**DESCRIPTION**
0	4	R	If set, dumps all calls after consecutive car calls answered per CCD parameter number order with no electric eye break.
4	10	R	If set, car calls will not be cancelled when the car has a reversal slowdown.
4	11	R	If set, cancel car calls for positions above the car when the car is moving down and cancel car calls below the car when the car is moving up.
7	15	R	Set to pulse car call output for low intensity lights.

Buffer Test

1. Place the car two floors above the bottom floor (for car buffer test) or two floors below the top floor (for a Counterweight buffer test).

Note: For the Car Buffer, place a full load on the car.

2. Record the values for the following parameters: ETV, ESV, TSV, LPE and VEE.

3. Set the following parameters to their new Temporary values:
   ETV, ESV and TSV = CONTRACT SPEED, VEE=300, LPE=1000.

4. Install the following Temporary jumpers to bypass:

FROM	TO	DESCRIPTION
SD1	SU1	Closest terminal slowdown*
UNL	DNL	Directional limits
HS	CS	Disable emergency inputs on car top.
LCS	HS	Final Limits (if required by local code.)

* Other SU_ and SD_ slowdown switches will need to be jumper if provided.

5. Enter BITS0,1 so the DPC count is not updated when the car starts.

6. Set DPC to equal the COT value for the next floor above the car for a car buffer test or next floor below for a counterweight buffer test.

7. Enter SCC1 for the car to run down to the car buffer or enter SCC_n the top floor for the car to past the top floor for the counterweight buffer.

8. When the buffer is hit by the car or counterweight place the car on Panel test in the machine room.

9. Lift the car or counterweight off the buffer by running the car on Machine room inspection.

10. Repeat for the other buffer.

Note: *Remove the weight for CWT buffer.*

Note: *If using reduced speed buffers, lower high speed using MMS parameter and set BIT 5 of CS7.*

Over Speed Test

1. Run fully loaded car at the top floor.
2. Record the values in the drive for the encoder pulses per revolution. DSD 412 is Parameter 10.
3. Record original value for VEE and temporarily set it to 300.
4. Divide the value recorded in Step 2 by the contract speed of the elevator. This will give you the pulses per foot of speed. Record this value.
5. Check the governor data tag for the proper switch speed and safety activation speed.
6. Multiply the switch speed with the value recorded in step 4. This will give you the new Encoder value to enter into the dive to run the car at switch trip speed.
7. Place this new value into Parameter 10 of the DSD 412.
8. If required, place a jumper from **LCS** to **GV** to bypass the safety switch.
9. Place a call one floor above the bottom landing. The car should accelerate normally to the switch trip speed and activate the switch.

   Note: *The Encoder value may need to have further adjustment to obtain the desired speed.*

10. After switch over speed test is complete set the encoder value back to the original setting and run the car to the top floor.
11. Multiply the safety activation speed with the value recorded in step 4. This will give you the new Encoder Value for the safety activation speed.
12. Enter this new value from step 13 into the Encoder Value in the drive.
13. Place a temporary jumper from **LCS** to **GV** if not already installed.
14. Place a jumper from **HS** to **CS** if required by local codes to bypass the safety plank.
15. Have someone stand next to the disconnect and be ready to place the car on Machine room inspection.
16. Place a call for 1 floor above the bottom landing. The car will accelerate to a speed that will activate the car safeties.

    Note: *Should a F407 appear on the drive, the motor field weakening value (P49) will have to be lowered by 30% and the field weaken speed (p57) set to 50.*

17. Once the safeties have been engaged and stopped the car the car should be placed on Machine room panel test.
18. Reset the drives encoder value to the original setting recorded in step 2.
19. Reset VEE to its original value recorded in step 3.
20. If required, reset the field weakening (P49) and Field weakening Speed (P57) value to their original values.
21. Remove all installed temporary jumpers.

    Note: *It is recommended that the safeties be released by running the car in the up direction while under Inspection operation.*

NOTES

SECTION 10 - MERIDIA GROUP SETUP

HPU Hall Call Activation

1. Verify that all HPUs for the hall push buttons have been installed and properly addressed. See Section 1 page 7 for details.

2. Verify the following Group CSW bits are reset (disabled):

- CS4 bit 5 - Set to use I^2C for Hall Calls else HPUs
- CS4 bit 13 - Set to enable front auxillary riser.
- CS4 bit 14 - Set to enable rear auxillary riser.

3. Set Group CS4 bit 3 to disable Emergency dispatching. This will be reset after HPU are communicating.

4. Verify hoistway wiring for HPUs are connected to terminals, VH+, VHC, HCRT+ & HCRT- and is clear from all high voltage wires.

5. Verify this wiring is at least 6" away from any high voltage wiring. (mainline and motor).

   Note*: If the HPU's LED is flashing, check the VH+ & VHC power connections to the card. If it is on solid, check the HCRT+ and HCRT- communication connections.*

6. Scroll to Car Commands and select CMG and press enter (this can only be done when connected to the group car). This will display the address of each hall HPU and the status of its communication. The primary HPU addresses are 11 through 42.

   Note: *If there are any with 100% failures, check the connection address of that HPU. If problem still exists, replace HPU.*

7. With all the HPUs showing good communications, place the car on Automatic and, using the hall push button stations, call the car to each landing, using both the up and down push buttons.

   Note: *If aux. risers are used, set Group CS4 bit 13 and repeat step 6.*

   Note: *If rear aux. risers are used, set Group CS4 bit 14 and repeat step 6.*

I^2C Hall Call Activation

1. Verify all hall call wiring has been connected to its proper terminal.

2. Verify Group CS4 bit 5 is set to enable I^2C hall call enabling, and bits 13 and 14 are reset.

3. Set Group CS4 bit 3 to disable Emergency dispatching. This will be reset after HPUs are communicating.

4. Scroll to Car Commands and select CMG and press enter (this can only be done when connected to the group car). This will display the address of Group I^2C device and the status of its communication.

   Note: *If there are any with 100% failures, check the connection address of that I^2C Device. If problem still exists, replace I^2C.*

5. With all the I^2C Devices showing good communications, place the car on Automatic and, using the hall push button stations, call the car to each landing, using both the up and down push buttons.

   Note: *If aux. Risers are used, set Group CS4 bit 13 and repeat from step 1.*

6. Scroll to Car Commands and select CMG and press enter (this can only be done when connected to the group car). This will display the address of each hall HPU and the status of its communication. The primary HPU addresses are 11 through 42.

7. With all the HPUs showing good communications, place the car on Automatic and, using the hall push button stations, call the car to each landing, using both the up and down push buttons.

8. Reset CS4, 3 to enable emergency dispatch.

9. Set up EDS System using Black Terminal Screen.

Setting Additional Group Parameters

1. Set the following parameters for the group under the Group Parameters Menu.

   Note: *These parameters that set floors must also be set to the same floor in each car.*

LBY	Lobby Floor Designation
FIR	Main Fire Recall Landing
FAL	Fire Alternate Floor Landing
EPF	Emergency Power Floor
MEP	Maximum Cars on Emergency Power
LER	Elevator Lobby Request Set to 0

Group Dispatching

Note: *This procedure can be set up when 2 or more of the cars have been put into service. It is ideal to set the group up when all cars are in service.*

Note: *Prior to setting up the group, it is a good idea to monitor and note existing traffic patterns. For example, if the main lobby has continuous traffic all day, then an elevator might want to be returned to the lobby when free.*

The Meridia is defaulted so that elevators will stay at the last floor served if there is no demand. If this is what is required, there is no further adjustment necessary.

Parking One or More Cars at the Lobby

1. Note which floor in the building is referred to as the main lobby.

2. Set Group parameter LER to the number of elevators wanted to be placed at the lobby. In most cases this will be 0 (no elevators required) or 1.

3. Place all the elevators on Automatic and observe, verifying that the number of cars returning to the lobby matches what was set for parameter **LER.**

   Note: *If the lobby has floors below, an elevators going up from those lower floors will always stop at the lobby.*

4. Once the proper number of elevators have been assigned to stop at the lobby an extended door time can be programmed in for that floor. If this is desired set CSW 0 bit 1 and entering the time required to stay open at group parameter NDH.

Should the remainder of the elevators be required to space themselves out in the building once they are free for a period of time, then Zoning will be required.

Zoning Setup

1. Note the traffic in the building and determine the following:

   A. Is one or more cars required in the lobby?

   B. Are there certain floors where you would want to park an elevator?

   C. What floor spacing would be required to accommodate one elevator per zone? (Having an elevator parked at the lobby will be a separate zone function).

2. Count the number of elevators that are in the group minus **LER** value and set Group Parameter **NZN** to that number.

3. Set **CSW 0 Bit 4** to have the elevators park at specific floors.

4. Set **ZN1** (first zone) to the floor where an elevator should park.

5. Set **ZN2** (second zone) to the floor where an elevator should park.

6. Continue setting **ZN#** until there are no more elevators for zones. The **ZN#** should equal the **NZN** parameter.

7. Set the time the elevators have to set idle before zoning using **PFT** parameter.

8. Once these are set, use the **WRT** Car command to save to flash memory.

Up Peak and Down Peak

1. In order to trigger up peak automatically from the number of calls or load, set the following Group Parameter:

   UCC – Number of trips from the lobby with more than 2 calls entered.

   ULC – Number of trips from the lobby with load switch tripped.

2. In order for Down peak to be triggered by calls, ETA times and wait times, set the following parameters:

   DCC – Number hall calls initiated at one time.

   DTT – Average ETA time. The time that triggers down peak if the average ETA time exceeds this value.

   DWT – Long down call waiting time. If a down call is not answered in this amount of time the system will swing to Down Peak.

Setting Elevator ETA Parameters in the Group

In order for the group to properly dispatch the elevators to the call, it must know specific details of each elevator.

1. Using a stop watch, observe and note the following:

   A. Average acceleration time it takes the elevator to reach top speed.

   B. Average transfer time the doors are fully open when loading and unloading passengers.

   C. Blind travel time it takes the car to travel through a blind hoistway.

   D. Door closing time it takes the doors to close.

   E. Average deceleration time it take the elevator to slow from top speed to stopping at a floor.

   F. Door open time it takes to open the doors fully.

   G. Speed of elevator in timed units by using the formula:

Average floor height (h)/(Speed in FPM/60) X 16 =SPE value

or for metric

Average floor height in meters X 3.28/(Speed in meters per second/.3048) X 16.

   H. If this is a generator application the time it takes for the generator to start completely.

2. Using the ***Group Command REE***, enter the car number you are working on, then enter the previous values For example, REE = 1.

3. With the exception of **SPE** all values recorded in the previous steps will be multiplied by 16 and entered into these related group parameters. **ACC, ATT, BTT, DCT, DEC, DOT, GPT, SPE.**

NOTES

SECTION 11 –DIAGNOSTICS

This section describes how to communicate, or "interface" with the ***Meridia***™ controller via either a PC or a terminal (Human Interface). This section is critical in setting up the controller and performing diagnostics. We recommend that you read it over carefully. If you have any questions about any part of this section, please call CEC Technical Support.

This manual uses several operative terms, which describe various ways information is transferred between the user and the system. They are called: error code, command, input, output, parameter, bit, and device. In some cases, the terms are interchangeable, but most often each refers to a specific type of informational exchange between the system and the user, or within the system for serving different purposes.

ERROR CODE: A failure (also called fault or error) status indicator, which is returned by the system in order to locate the source/resolution of a problem occurrence. These codes are programmed into the system by the manufacturer (i.e.: Error code 96 signifies that the CCU board tach was not in UP position while car was running UP).

COMMAND: A request entered (or "input") by the user (via the computer keyboard) which orders the controller to perform a specific function (i.e.: <**RFL**> asks the system to Reset all the Faults). Commands must be recognizable to the system in order to trigger a response, and therefore are written exclusively in the language of the system by the manufacturer. Various tables of commands and their descriptions are presented in this section, and most commands in this manual are presented in a specific way for easy identification and input.

INPUT: Data entered by the user or from external mechanical devices (i.e.: switches, etc.) which is necessary for the system to process information and execute commands.

OUTPUT: Data (signals) sent from the CPU to the mechanical devices to (de)activate.

PARAMETER: A variable entered (or "input") by the user and assigned a value, which refers to a specific function of the system. Parameters are used for setting limits, timers, etc. (i.e.: <CDT = 5> is what is entered to set the Car Call Door Timer at 5 seconds)

BIT: A variable setting, which determines enabling, or disabling of specific features in the system.

DEVICE: Generic term usually referring to a physical/mechanical component (i.e.: board, switch, or other mechanical equipment) monitored by and used to execute/trigger input and output signals.

Note: *We recommend that a list of the parameter and bit settings be recorded and maintained for each individual controller as each initial controller setup is completed. This list will be helpful in the event the settings are accidentally changed or lost. We also recommend that any person placing a technical support call to CEC have this list available.*

Terminal Mode Operation

Terminal Mode operation allows the user to interface directly with all the parameters and commands of the controller. One does not need the ***Meridia***™ ***WIZARD*** interactive tool to operate exclusively on terminal mode. A PC with a serial port and any regular terminal program can be used to interface with the controller.

Your computer or terminal must be connected to P15 (USER) RS-232 port located on the side of the CCU chassis. The following communication parameter settings must be available:

Baud Rate	19200
Word Length	8
Parity	No Parity
Stop Bit	1

Wizard Mode Operation

The ***Meridia***™ ***WIZARD*** is a PC-based visual interface, which operates under the Microsoft Windows operating system. The information is grouped logically, permitting easy navigation through the menus.

The ***WIZARD*** permits interfacing with all controller functions, including the DSD drive system parameters, diagnostics, and uploading of software (whereas the Terminal mode only permits manipulation of certain parameters, which are accessible through Terminal mode). Door timing setup, diagnostics, or downloading new software is accomplished by selecting, with the mouse, the appropriate *icon*. However, full Terminal operation is also available from within the ***WIZARD.***

CONTROLLER COMMANDS & PARAMETERS

Line Editing And Control Characters

The examples shown in this chapter are based on the assumption that no typing errors occur. The *Meridia*™ Operating System provides line-editing controls to permit you to correct typing mistakes.

You can use specific characters to control and edit terminal input. Some of these characters correspond to single keys on your terminal (such as <enter ↵>/Carriage RETURN or <backspace ← > /DELETE). Any time it is necessary to delete a character, use the backspace key; the delete key <del> is not used on the *Meridia*™. For others, called control characters, you must hold down the <ctrl> key while also pressing an alphabetical key. The *Meridia*™ Operating System recognizes control/edit characters as follows:

<enter ↵>

Terminates the current line and executes the command.

<backspace ← >

Deletes the previous character in the input line. Each execution of the Backspace key (←) removes a character from the screen and moves the cursor back to that position. Used in place of delete <del> key.

The ***WIZARD*** software is provided for ***Meridia***™ installations. This ***Meridia***™ interactive tool is based on a regular PC or a notebook PC with integral mouse control (preferred) and requires a standard RS-232 serial communication port (usually COMM 1) to operate. The reason why an integral mouse control is preferred is because notebooks without the integral port use the RS-232 serial communication port for the mouse. The ***WIZARD*** is an optional item, available in color or monochrome. The online HELP system for this visual interface is provided with the ***WIZARD*** software.

For comprehensive instruction on the ***WIZARD,*** please see the ***Meridia***™ ***WIZARD*** Startup Guide.

<ctrl>+<R>

If the current line is not empty, this command reprints the line with editing performed. If it is empty, it reprints the previous line and executes it.

<ctrl>+<X>

Discards the current line: echoes a pound sign (#) followed by a carriage return/line feed.

<ctrl>+<S>

Places the terminal in stopped mode (stops output). This feature can be used to pause or freeze the display when viewing scrolling data. You can resume output without loss of data by entering **<ctrl> +<Q>.**

<ctrl>+<Q>

Resumes output mode. (See <**ctrl>+<S>**)

<ctrl>+<Z>

Aborts output to the terminal. This feature can be used to stop scrolling data on the display and return to the terminal prompt.

Power-Up Or Reset Message Sequence

When power is applied to the CCU chassis, the CPU board boots up invoking a System Confidence Test (**SCT**). This confidence test will display its results on the terminal through the P15 USER port. The normal power-up or reset message sequence is shown in the example below. A GO or NO GO status indicates whether or not the test was successful. If any (except the load weigher) of these tests fail, the processor will not enter into the control mode.

The RAM Memory and FLASH Memory (EEPROM) tests are associated with devices on the CPU board. If the FLASH test fails, it probably indicates a **checksum** error or invalid job parameter(s).

MERIDIA 5434-1 Car # 1)

Software Version 0.1

System Confidence Test

TEST	**STATUS**
Memory (CMOS RAM)	**GO**
Battery Test	**GO**
LCD Display	**GO**
Job Configuration	**GO**
I/O Configuration	**GO**
Analog Load Weigher	**GO**
EEPROM (Car Parameters)	**GO**
EEPROM (Group Parameters)	**GO**

WAIT…Initializing Drive

Enter Password >

On Line

Figure 11-2 System Confidence Test Screen (No Failure)

When new software is installed in the car controller, it may be necessary to initialize the FLASH (EEPROM). To determine if the FLASH requires initialization, check the "Status" in the System Confidence Test (SCT) for "No EEPROM". (See System Confidence Screen below.) Check both the "FLASH (Car Parameters)" and "FLASH (Group Parameters)" lines. If status is “No EEPROM”, then the FLASH must be initialized.

MERIDIA 5434-1 Car # 1)

Software Version 0.1

System Confidence Test

TEST	**STATUS**
Memory (CMOS RAM)	**GO**
Battery Test	**GO**
LCD Display	**GO**
Job Configuration	**GO**
I/O Configuration	**GO**
Analog Load Weigher	**GO**
EEPROM (Car Parameters)	**NO-GO**
### EEPROM NO EEPROM	**NO-GO**

WAIT…Initializing Drive

Enter Password >

On Line

Figure 11-3 System Confidence Test Screen (Flash Memory Failure)

To **initialize FLASH (Car parameters)**, perform the following steps (Terminal Mode only):

1. Get Car Prompt: Logon as <**HUDSON.BAY**> <**enter** ↵>

2. Enter <**EPI2374**> to initialize the RAM memory.

3. Additional parameter adjustments may be needed. Enter <**GET**> to update the RAM. If any parameters require adjustment, a message will be displayed naming the parameter. A value is entered for this parameter and steps 2 and 3 are repeated. If after entering <**GET**> your response is "OK", then you have successfully completed the initialization of FLASH (Car Parameters).

4. Power down and Power up CCU. Re-log the System password.

To **initialize FLASH (Group parameters)**, perform the following steps (Terminal Mode only:

1. Get Car Prompt: Logon as <**HUDSON.BAY**> <**enter** ↵>
2. Go to Group prompt: Enter <**GRP**>
3. Enter <**EPI2374**> to initialize the **EEPROM** memory.
4. Additional parameter adjustments may be needed. Enter <**GET**> to update the RAM. If any parameters require adjustment, a message will appear naming the parameter. Enter a value for this parameter and repeat steps 2 and 3. If after entering <**GET**> your response is "OK," you have successfully initialized FLASH (Group Parameters).
5. To return to the Car prompt enter <**CAR**>.
6. Power down and Power up CCU. Re-log password.

Log-On

When prompted for the password, type in the system password, then <**enter** ↵> (see Note). Each character you type will be displayed as an asterisk on the terminal screen for security. It is important that you enter the password carefully. If you enter the password incorrectly, the system will prompt you to re-enter the password continually until the correct password is recognized. Then the system will acknowledge by displaying "OK."

Note: <INSTALL> *is the factory default system password. Each time you disconnect and reconnect, you must re-enter the password.*

EXAMPLE (How to Type in the Password)

Enter Password
On Line
******* <**enter** ↵>
(* represents each password key entry)
OK>
C # 1 =>
(ready to perform diagnostics or adjustments)

Changing Passwords

The Change Password <**CHP**> command has been provided to allow the user to change the default passwords used to enter the human interface. The first two levels of password protection can be changed using this command (see below).

Note: *Once the passwords are changed, CEC will not be able to help you if you forget the new passwords. To provide extra security, the passwords cannot be read back from the terminal. It is critical that you write down any new passwords and store them in a safe place.*

	FACTORY SET <PASSWORD>	PROMPT	FIXED?	AVAILABLE FUNCTIONS
Level #1	SNOW-FLAKE	C# 1=:	(Changeable)	Adjust, View, and Change Password
Level #2	INSTALL	C# 1=>	(Changeable)	Adjust and View
Level #3	INSTALL	C# 1=>	(Changeable)	Adjust and View
Level #4	HUDSON.BAY	C# 1=.	(Fixed)	View Only

Figure 11-4

To change any of the passwords you must first log-on using the level #1 password, then type the **<CHP>** command. You will be prompted for the password ID level and the new password. You will be prompted to enter the password twice in order to ensure that the password is entered correctly. It is then necessary to execute the **<WRT>** command in order to save any changes made with the **<CHP>** command.

Note: *The prompt " =: " indicates that you have logged-on using the 1st level password. <SNOW-FLAKE> is the default 1st level password (dash must be included).*

To Change the Password:

```
Enter Password >
  On Line
**********
OK >
C#  1 = : CHP
  Input the ID (1 - 3)  3
  Input the new Password (max 10 char) *******
    Again *******
CHP>> OK
C#  1 = :  WRT
Please Wait...
WRT>>  OK
C#  1 = :
```

Figure 11-6 Change Password Screen

1. Log on as <**SNOW-FLAKE**> <**enter**>
2. Enter password level.
3. Enter new password.
4. Repeat password entry.
5. Type **<WRT>** <**enter** ↵> (Write to FLASH memory. Saves change.)
6. Disconnect the connector from the J2 Human Interface port and then reconnect it. You should now be able to log-on using the new password.

NOTES

SECTION 12 - CAR COMMANDS AND PARAMETERS

From the Human Interface terminal, type <**CAR**> to establish communication with the car functions. The prompt in Car Human Interface mode is:

C# 1=>

CAR DIAGNOSTIC COMMANDS

<COMMAND>	DESCRIPTION OF CAR COMMAND
ASU	**A**utomatic **S**et **U**p: (Hoistway Scan) Limit switch position and Floor Center of Target (COT) Position Reference Set-up. **NOTE:** *Refer to Auto Setup (Hatch Scan) on page 6-9 for HPV 900 or page 7-9 for DSD 412:*
BAS	**BAS**e of output: Output base setting can be either 10 or 16. If set to 10, all values returned by the controller will be in decimal notation (easiest to read). If set to 16, all values returned by the controller will be in hexadecimal notation. It is advisable to leave it at 10.
BBT	**B**rake to **B**rake last travel **T**ime: This command returns time period of last run performed by car.
BDC	**B**rake **D**uty **C**ycle. Typing "BDC=[number 1 to 255]<ENTER>" while the car is on inspection sends a turn on duty cycle to the brake device. Manually pushing in MC and BK contactors will lift the brake. Typing "BDC <ENTER>" or placing the car on AUTO will turn off the brake command.
CCS	**C**ar **C**all pilot **S**tatus: Displays the pilot status of the car. An UP pilot is a call above current car position. A DOWN pilot is a call below current car position. The hexadecimal numbers below indicate the pilot status: 0H - no pilot 1H - up pilot 2H - down pilot 3H - up and down pilot 4H - at call floor 5H - at call floor and up pilot 6H - at call floor and down pilot 7H - at call floor and up and down pilot

<COMMAND>	DESCRIPTION OF CAR COMMAND
CCT	**C**ar **C**all **T**est. The car call test automatically activates car calls at selected floors to allow the car to run continuously in a test mode unattended. The command CCT toggles the car call test operation on and off. To select the desired floor, type "CCTF" for front or "CCTR" for rear car calls and follow the prompt to select the individual floor. More than one car call must be selected to activate the test. Loss of power or activation of fire service will cancel the car call test operation. **Note:** *Must be done in Black Terminal screen with the doors on Door Disconnect.* **Note:** *If car is placed in Automatic Service, the call will continue to be answered. CCT must be disabled by re-entering the CCT command.*
CLS	**CL**ear terminal **S**creen. Clears the terminal screen on the wizard or human interface terminal device.
CMC	This command displays **C**ar smart controllers **C**o**M**munication status (Communication Status of the following Devices): OK > C# 1=> CMC **COMMUNICATIONS STATUS**

HI	ST	RCV	FAIL	%F				
DRV	ST	RCV	FAIL	%F				
2	--	0	0	0				

VIC	ST	RCV	FAIL	%F	INBD:	01234567	OUTBD:	01234567
11	OK	69	0	0		11111100		11000000
CAR	ST	RCV	FAIL	%F	INBD:	01234567	OUTBD:	01234567
8	OK	67	0	0				
19	OK	67	0	0		10000000		11000000
20	OK	25	0	0		10001100		10001100
31	OK	66	0	0				
MIC	ST	RCV	FAIL	%F	INBD:	01234567	OUTBD:	01234567
12	OK	69	0	0		00000000		00000000
AUX	ST	RCV	FAIL	%F	INBD:	01234567	OUTBD:	01234567

NOTE: *Comm Status*
0 = No Comm
1 = Poor Comm
2 = Comm O.K.
3 = Comm Perfect

<COMMAND>	DESCRIPTION OF CAR COMMAND

NOTE the following definitions:

HI = human interface port (CCU)
DRV = drive port (CCU)
VIC = local I2C port controlled by the VIC microcontroller (on CCU)
CAR = car RS-485 port controlled by the MIC microcontroller (on CCU)
MIC = local I2C port controlled by MIC microcontroller (on CCU)
AUX = local RS-485 port controlled by VIC microcontroller (on CCU)
ST (status) line indicates "OK" when the device is communicating
RCV = the # of packets received
FAIL = the # of failed packets
%Fail = percentage failure of 100 packets
INBD = input board comm status on device I2C port (0=no comm,1=comm)
OUTBD = output board comm status on device I2C port (0=no comm,1=comm)

If no data is displayed, then the port is not being used to access an intelligent device.

The following indicates the corresponding address to each intelligent device:

DEVICE COMMUNICATION

DEVICE NAME	COMMUNICATION ADDRESS	DESCRIPTION
DRV	2	**DRiVe** System
CTC	8	**C**ar **T**op **C**ontroller
BK	9	**B**ra**K**e Board
MF	10	**M**otor **F**ield
VIC	11	**V**elocity **I**nterface **C**ontroller (on CCU board)
MIC	12	**M**otor room **I**nterface **C**ontroller (on CCU board)
MPC1	13	**M**otor room **P**ort **C**ontroller **1**
MPC2	14	**M**otor room **P**ort **C**ontroller **2**
MPC3	15	**M**otor room **P**ort **C**ontroller **3**
MPC4	16	**M**otor room **P**ort **C**ontroller **4**

<table>
<tr><th><COMMAND></th><th colspan="3">DESCRIPTION OF CAR COMMAND</th></tr>
<tr><td></td><td>DEVICE NAME</td><td>COMMUNICATION ADDRESS</td><td>DESCRIPTION</td></tr>
<tr><td></td><td>MPC5</td><td>17</td><td>Motor room Port Controller 5</td></tr>
<tr><td></td><td>MPC6</td><td>18</td><td>Motor room Port Controller 6</td></tr>
<tr><td></td><td>TOC</td><td>19</td><td>Top Of Car Device</td></tr>
<tr><td></td><td>COP</td><td>20</td><td>Car Operating Panel</td></tr>
<tr><td></td><td>RCOP</td><td>21</td><td>Rear Car Operating Panel</td></tr>
<tr><td></td><td>CPC1</td><td>22</td><td>Car Port Controller 1</td></tr>
<tr><td></td><td>CPC2</td><td>23</td><td>Car Port Controller 2</td></tr>
<tr><td></td><td>CPC3</td><td>24</td><td>Car Port Controller 3</td></tr>
<tr><td></td><td>CPC4</td><td>25</td><td>Car Port Controller 4</td></tr>
<tr><td></td><td>CPC5</td><td>26</td><td>Car Port Controller 5</td></tr>
<tr><td></td><td>CPC6</td><td>27</td><td>Car Port Controller 6</td></tr>
<tr><td></td><td>CPE</td><td>31</td><td>Car Position Encoder</td></tr>
<tr><td>CMG</td><td colspan="3">Displays Group CoMmunication status status (Communication Status of the following Devices):</td></tr>
<tr><td></td><td colspan="3"><u>COMMUNICATION STATUS (GROUP)</u></td></tr>
<tr><td></td><td colspan="3">
HI ST RCV FAIL %FAIL CTG
3 OK65 0 0 201

ST RCV FAIL %FAIL
OK 81 0 0 11
202 OK 81 0 0
203 OK 81 0 0
204 OK 81 0 0

HC ST RCV FAIL %FAIL
OK 43 0 0 0
12 OK 43 0 0
13 OK 43 0 0
14 OK 43 0 0
15 OK 43 0 0
16 OK 43 0 0
17 OK 43 0 0
18 OK 43 0 0
19 OK 43 0 0
20 OK 43 0 0
211 OK 43 0 0

The following description indicates the corresponding address to each board:

<table>
<tr><th>DEVICE NAME</th><th>COMMUNICATION ADDRESS</th><th>DESCRIPTION</th></tr>
<tr><td>HI</td><td>3</td><td>Human Interface</td></tr>
<tr><td>HPU_HC</td><td>11-42</td><td>HPU Hall Calls for floors 1 through 32</td></tr>
<tr><td>HPU_IGEMP</td><td>74</td><td>HPU Inter-group Emergency Power I/O</td></tr>
<tr><td>HPU_EMP-FIR</td><td>75</td><td>HPU Emergency Power Recall/Fire light I/O</td></tr>
<tr><td>HPU_GIO1</td><td>76</td><td>HPU General Purpose I/O 1</td></tr>
<tr><td>HPU_GIO2</td><td>77</td><td>HPU General Purpose I/O 2</td></tr>
<tr><td>HPU_GIO3</td><td>78</td><td>HPU General Purpose I/O 3</td></tr>
<tr><td>MPE_HC</td><td>79</td><td>HPU Hall Calls run from MPE Board for floors 1-32</td></tr>
<tr><td>MPE_HC_RAX</td><td>80</td><td>HPU Rear AUX Hall Calls from MPE Board for floors 1-32</td></tr>
<tr><td>MPE_HC_R</td><td>81</td><td>HPU Rear Hall Calls run from MPE Board for floors 1-32</td></tr>
<tr><td>MPE_HC_AX</td><td>82</td><td>HPU AUX Hall Calls run from MPE Board for floors 1-32</td></tr>
<tr><td>MPE_IR1</td><td>83</td><td>HPU IR1 Hall Calls run from MPE Board for floors 1-32</td></tr>
<tr><td>MPE_IR2</td><td>84</td><td>HPU IR2 Hall Calls run from MPE Board for floors 1-32</td></tr>
</table>
</td></tr>
</table>

<COMMAND>	DESCRIPTION OF CAR COMMAND		
	MPE_RIR1	85	**HPU** RIR1 Hall Calls run from **MPE** Board for floors 1-32
	MPE_RIR2	86	**HPU** RIR2 Hall Calls run from **MPE** Board for floors 1-32
	MPE_CB	87	**HPU** CB Hall Calls run from **MPE** Board for floors 1-32
	MPE_RCB	88	**HPU** RCB Hall Calls run from **MPE** Board for floors 1-32
	MPE_VIP	89	**HPU** VIP Hall Calls run from **MPE** Board for floors 1-32
	MPE_RVIP	90	**HPU** RVIP Hall Calls run from **MPE** Board for floors 1-32
	GIO1	91	**I2C** I/O 1 run from MPE Board
	GIO2	92	**I2C** I/O 2 run from MPE Board
	GSEC	93	**I2C** I/O Group Security
	HC	94	**I2C** Hall Call
	RHC	95	**I2C** Rear Hall Call
	IR	96	**I2C** Inconspicuous Riser Hall Call
	RIR	97	**I2C** Rear Inconspicuous Riser Hall Call
	CB	98	**I2C** Code Blue and Rear Code Blue Riser
	VIP	99	**I2C** VIP and Rear VIP Riser
	GRP	200	**GR**ou**P** Communication Address
	CAR 1	201	**Car #1** Communication Address
	CAR 2	202	**Car #2** Communication Address
	CAR 3	203	**Car #3** Communication Address
	CAR 4	204	**Car #4** Communication Address
	CAR 5	205	**Car #5** Communication Address
	CAR 6	206	**Car #6** Communication Address
	CAR 7	207	**Car #7** Communication Address
	CAR 8	208	**Car #8** Communication Address
	CAR 9	209	**Car #9** Communication Address
	CAR 10	210	**Car #10** Communication Address
	RVU	211	**RVU** on Hall Call Bus
	RVU	212	**RVU** on Car To Group Bus

NOTE the following definitions:

HI = human interface port (CCU)
CTG = Car to Group(CCU)
HC = Hall Call (CCU)
ST indicates "OK" when the devise is communicating
RCV = # packets received
FAIL = # of failed packets
FAIL = the # of failed packets
%Fail = percentage failure of 100 packets

<table>
<tr><th><COMMAND></th><th>DESCRIPTION OF CAR COMMAND</th></tr>
<tr><td>COT</td><td>Center of Target: Center Of Target: This value is the DPP position for where the center of the floor target is located. COT parameters are set during auto-setup. See FOF for adjusting to place the car level to the door sill.

C# 1=> COT

<table>
<tr><th>FLOOR #</th><th>COT</th><th>FOF</th><th>FCP</th></tr>
<tr><td>1</td><td>1000</td><td>-6</td><td>994</td></tr>
<tr><td>2</td><td>1400</td><td>0</td><td>1400</td></tr>
<tr><td>3</td><td>1800</td><td>0</td><td>1800</td></tr>
<tr><td>4</td><td>2200</td><td>0</td><td>2200</td></tr>
<tr><td>5</td><td>2600</td><td>-2</td><td>2598</td></tr>
<tr><td>6</td><td>3000</td><td>0</td><td>3000</td></tr>
<tr><td>7</td><td>3400</td><td>0</td><td>3400</td></tr>
<tr><td>8</td><td>3800</td><td>+4</td><td>3804</td></tr>
<tr><td>9</td><td>4200</td><td>0</td><td>4200</td></tr>
<tr><td>10</td><td>4600</td><td>0</td><td>4600</td></tr>
<tr><td>11</td><td>5000</td><td>0</td><td>5000</td></tr>
<tr><td>12</td><td>5400</td><td>0</td><td>5400</td></tr>
<tr><td>13</td><td>5800</td><td>0</td><td>5800</td></tr>
<tr><td>14</td><td>6200</td><td>0</td><td>6200</td></tr>
<tr><td>15</td><td>6600</td><td>0</td><td>6600</td></tr>
</table>
Note: The COT values shown here are default values. Your values may differ.</td></tr>
<tr><td>CPY</td><td>CoPY flash parameters to RAM or RAM parameters to flash.
CPYR - Copies RAM parameters to flash.
CPYF - Copies flash parameters to RAM.</td></tr>
<tr><td>DATE</td><td>Set the real time calendar clock DATE. The date is entered as month/day/year. To exit this command without changing the date, hit <ENTER ↵> before typing in new date values.
Current date: 6/21/94
Enter new date: 7/26/94</td></tr>
<tr><td>DCS</td><td>Down Call pilot Status:
a) Up Pilot -- down hall call above current car position
Down Pilot -- down hall call below current car position</td></tr>
<tr><td>DLB</td><td>Down Limit Break: Car velocity and position when the Down Limit switches first break open during a run. This command is entered after the elevator has tripped all the slowdown limit switches on a run to the first landing.</td></tr>
<tr><td>DPC</td><td>Digital Position Count: This command returns the DPP count of the current elevator position. This value is also displayed on the car diagnostic screen under "Pos Cn".</td></tr>
</table>

<COMMAND>	DESCRIPTION OF CAR COMMAND
DPY	**D**iagnostic **D**ispla**y** Control: The <DPY> commands allow the user to capture up to 128 frames of the car diagnostic display for playback at a later time. The capturing of the diagnostic display can be triggered on the activation of any error code. DPYD or DPYTD — Enter diagnostic display mode. This mode will display the captured frames of the diagnostic display Enter: <**B**> to play **B**ackward one frame <**F**> to play **F**orward one frame <**C**> to get **C**urrent frame <**CTRL>** + <**C**> to quit diagnostic display mode DPYT — Displays all the DPY commands DPYTS — Setup diagnostic triggering DPYTR — Reset triggering display (returns display to normal mode)
ELB	**E**TS (Emergency Terminal Slowdown) **L**imit **B**reak: Car velocity and position when the ETS Limits first break open during a run. This command is entered after the elevator has tripped all the slowdown limits on a run to the first landing. *VIC and CTC Emergency Limit Velocity* **Down Limit Fault at limit #* **Up Limit Fault at limit #* *Emergency Slowdown Velocity (ESV):* ***1**= 350; **2**= 450;* **Down Emergency Terminal Slowdown Fault* **Up Emergency Terminal Slowdown Fault;* ***ETS Up Direction* ***ETS Up Direction* *ETS Velocity: 351* *ETS Up Limit Position: 12184* *ETS Down Limit Position: 0* * Displayed only if the corresponding fault condition occurs. ** Displayed according to direction entering or leaving the ETS limit.
EXE	**EX**clude **E**rror code. This command creates a list of error codes that are not stored in the error buffer. EXES - Set bit to exclude error code from buffer. Eg. Type EXES54<ENTER> to exclude error code 54 from buffer. EXER - Reset bit that excludes error code from buffer. Eg. Type

<table>
<tr><th><COMMAND></th><th>DESCRIPTION OF CAR COMMAND</th></tr>
<tr><td></td><td>EXER54<ENTER> to allow error code 54 to be placed in the buffer.
EXEC - Clear error code exclusion list. Allow all error codes to be placed in buffer.
EXEL - List error codes excluded from being placed in error buffer.</td></tr>
<tr><td>FCP</td><td>Floor position Count Preset: This is the reference DPP position for where dead level is for each floor. The FCP position is the sum of COT (Center Of Target from Hoistway Scan) and/or FOF (Floor Offset) parameters.

C# 1=> FCP

<table>
<tr><th>FLOOR #</th><th>COT</th><th>FOF</th><th>FCP</th></tr>
<tr><td>1</td><td>1000</td><td>-6</td><td>994</td></tr>
<tr><td>2</td><td>1400</td><td>0</td><td>1400</td></tr>
<tr><td>3</td><td>1800</td><td>0</td><td>1800</td></tr>
<tr><td>4</td><td>2200</td><td>0</td><td>2200</td></tr>
<tr><td>5</td><td>2600</td><td>-2</td><td>2598</td></tr>
<tr><td>6</td><td>3000</td><td>0</td><td>3000</td></tr>
<tr><td>7</td><td>3400</td><td>0</td><td>3400</td></tr>
<tr><td>8</td><td>3800</td><td>+4</td><td>3804</td></tr>
<tr><td>9</td><td>4200</td><td>0</td><td>4200</td></tr>
<tr><td>10</td><td>4600</td><td>0</td><td>4600</td></tr>
<tr><td>11</td><td>5000</td><td>0</td><td>5000</td></tr>
<tr><td>12</td><td>5400</td><td>0</td><td>5400</td></tr>
<tr><td>13</td><td>5800</td><td>0</td><td>5800</td></tr>
<tr><td>14</td><td>6200</td><td>0</td><td>6200</td></tr>
<tr><td>15</td><td>6600</td><td>0</td><td>6600</td></tr>
</table>
</td></tr>
</table>

<COMMAND>	DESCRIPTION OF CAR COMMAND
FLTn (See Error Code Definitions)	**F**au**LT**s (Errors): The ***MERIDIA***™ Operating System keeps a record of the previous 24 faults that have occurred along with the number of occurrences, time of day, the floor number, the velocity, digital position count and various status bytes. The faults are labeled 0-23. This command displays four of the 24 faults starting at fault n (n = 0-23). The n is optional. If not used, the <**FLT>** command displays all 24 faults. Zero indicates no fault occurrence. Note that CS and DS are in hexadecimal form, which must be converted into binary form. The fault is displayed on screen as follows: *C# 1>FLT0* *FLT COUNT FLR TIME DATE DPP DMD VEL DM DZ SV CS DS* *FLT0= 80 1 11 4:39:22p 6/02/94 5279 350 350 3 00H 26 AFH 0FH* *FLT1= 0 0 0 0:00:00a 0/00/94 0 0 0 0 00H 0 00H 00H* *FLT2= 0 0 0 0:00:00a 0/00/94 0 0 0 0 00H 0 00H 00H* *FLT3= 0 0 0 0:00:00a 0/00/94 0 0 0 0 00H 0 00H 00H* The headings in the above table are detailed below: FLT = Fault number COUNT = Number of occurrences FLR = Floor where the error occurred TIME = The time the fault occurred (from the system real time calendar clock) DATE = Date of occurrence DPP = Digital Position Pulse count DMD = Demand velocity VEL = Car's Velocity calculated from the Digital Position Pulse DM = Digitizer Mode Value. The value that appears is the last value that successfully registered in fault registry. If the value "3" appears then the car was in the Flat Top mode when the fault was registered. **Definitions** **0** Stop **1** Acceleration **2** Roll **3** Top Speed **4** Flat Top **5** Deceleration **6** Leveling **7** Emergency **8** Inspection

<COMMAND>	DESCRIPTION OF CAR COMMAND

DZ = Door Zone status

To interpolate the information below, convert the hexadecimal number under the DZ heading into a binary number. The 8-bit binary number will correspond to the bits shown below. Bit 0 will be the least significant, or the "right-most" bit. Wherever there is one (1) on the specified bit, this signifies that the item described next to the bit was active when the fault occurred.

BITS

- **0** up level zone
- **1** up final level zone
- **2** down final level zone
- **3** down level zone
- **4** dz
- **5** Not Used
- **6** Not Used
- **7** Not Used

SV = Car service type

Numbers shown correspond directly to status (no conversion needed)

0=INVALID	**1**=SAFETIES	**2**=DRIVE OFF
3=PWR LOSS	**4**=INSPECT	**5**=### INIT
6=DRIVE FLT	**7**=CWT DRL	**8**=CTLSHUTDN
9=EARTH Q.	**10**=FIRE PH 2	**11**=FIRE PH 1
12=CODE BLUE	**13**=EM RECALL	**14**=HOMING
15=INDEPEND	**16**=ATT	**17**=DOOR DISC
18=REAR DISC	**19**=VIP	**20**=LBY IND
21=DISP LOSS	**22**=STOP SW	**23**=SERV PROT
24=LOAD BP	**25**=SECURITY	**26**=AUTOMATIC
27=IR SERV	**28**=EMT	**29**=SPECIAL
30=BLDG SVC	**31**=NIGHT SVC	**32**=SHUTTLE
33=PRE ALARM	**34**=PRIORITY	**35**=EM RECALL
36=SEC RCALL	**37**=LOAD CAL	

CS = Car Status

Convert hexadecimal numbers to binary as in DZ above.

BITS

- **0** start sequence
- **1** run sequence
- **2** EMST (Emergency Stop Output)
- **3** EMSD (Emergency Stop Input)
- **4** SRU (Speed Reference Up)
- **5** SRD (Speed Reference Down)
- **6** up motion
- **7** down motion

<COMMAND>	DESCRIPTION OF CAR COMMAND
	DS = Door Status Convert hexadecimal numbers to binary as in DZ and CS above. BITS **0** door open limit (DOL) **1** door close limit (DCL) **2** rear door close limit (RDCL) **3** rear door open limit (RDOL) **4** door open pilot **5** door close pilot **6** rear door open pilot **7** rear door close pilot
FLTXn (See Error Code Definitions)	**F**au**LT**s (errors - see FLTn): This command shows the e**X**tended fault buffer corresponding to the faults shown with the above **<FLT>** command. The "n" value is set to the fault index number label from 0 to 23. From the **<FLT>** command example shown below, the "n" number is selected to retrieve additional fault information for fault code 80 stored at index number 0. Convert the hexadecimal numbers to binary for bit settings. (An explanation of the conversion process can be found on page 12-15.) *C# 1=> FLTX3* *FLT,COUNT,FLR, TIME , DATE , DPP, DMD, VEL, DM, DZ, SV, CS, DS* *FLT 3=143, 1, 3, 7:34:45p, 1/01/00, 1762, 405, 441, 5, 00H, 26, 5EH, 03H* *CS1,CS2,CS3,CS4,VS1,VS2,VICV,VICDPP,CTS,CTCV,CPS,CPEDPP,MFS, BKS, GR* *00H, 32H,90H,7DH,20H,00H, 424, 1217, 03H, 0, 0DH, 1651, 00H, 90H, 201* *DS1,DS2,DS3,DRVCM,EX1,EX2,EX3,EX4,EX5* *00H,00H,00H, 0000H,00H,00H,00H,00H,00H* The following details the headings in the above table, ***which are <u>NOT</u> to be confused with Control Status Word Bits (see page 11-1).*** CS1 = Car Status 1 BITS **0** Rope Gripper Trip **1** Rope Gripper Fault **2** Fault Trip **3** Relay Fault **4** Controller Fault **5** Motion Fault **6** Gate & Lock (GLR) Fault **7** Run Time-Out Fault CS2 = Car Status 2 BITS **0** mg fault **1** Motion Master (elevator motion allowed) **2** Gate or Lock On Fault **3** Drive Fault **4** Communication Initialized Ok **5** Tach Direction (CCU DPP quadrature: 1=up, 0=dn)

<COMMAND>	DESCRIPTION OF CAR COMMAND

6 Tach Direction Error (Drive, CCU, VIC, or CPE)
7 CCU Tach Direction Error

CS3 = Car Status 3
BITS
0 Up Call Pilot
1 Down Call Pilot
2 At Floor Call Pilot
3 Drop Leveling Velocity Output (LVE)
4 Moving
5 Leveling
6 Lev DZ
7 CCU Thermal Sensor

CS4 = Car Status 4
BITS
0 SYSTEM MASTER (SRD/SRU ok)
1 Proximity
2 CGS & DLS
3 Gate & Lock (GL)
4 SM Input From Contactor
5 MA Input From Contactor
6 BKR (Brake Relay)
7 Door Operation

VS1 = VIC Board Status 1
BITS
0 Slowdown Limit Fault (SLF)
1 Inspection Speed Fault (ISF)
2 GL Speed Fault (GLF)
3 Not Used
4 Not Used
5 Moving Up
6 Moving Down
7 Emergency Stop Fault (ESF)

VS2 = VIC Board Status 2
BITS
0 Slowdown Fault At Limit 1
1 Slowdown Fault At Limit 2
2 Not Used
3 Not Used
4 Not Used
5 Not Used
6 0=Up Limit Fault, 1=Dn Limit Fault
7 Not Used

VICV = Car's velocity from VIC (motor encoder) Digital Position Pulse

VICDPP = VIC Position Count (Unit: pulses/foot)

CTCS = CTC ETS Status
BITS
0 Up ETS limit hit
1 Down ETS limit hit
2 Up ETS limit error
3 Down ETS limit error
4 Up direction at ETS limit
5 Down direction at ETS limit

<COMMAND>	DESCRIPTION OF CAR COMMAND

6 Not Used
7 Not Used

CTCV = CTC Velocity (Unit: ft/min)

CPES = CPE Car Position Encoder Status
BITS
0 Position Count Memory Lost
1 Low Battery
2 No Battery Connected
3 Up direction from car encoder
4 Down direction from car encoder
5 Not Used
6 Not Used
7 Position count initialized

CPEDPP = CPE Position Count (Unit: dpp/foot)

MFS = Motor Field Board Status
BITS
0 +24v fail
1 +15v fail
2 -15v fail
3 No AC Input to Board
4 Motor Field Fault
5 Not Used
6 Not Used
7 Not Used

BKS = Brake Board Status
BITS
0 +24v fail (N/A if IGBT Brake Board)
1 +15v fail (N/A if IGBT Brake Board)
2 -15v fail (N/A if IGBT Brake Board)
3 No AC Input to Board (N/A if IGBT Brake Board)
4 Brake Board Fault
5 Not Used
6 Not Used
7 On if IGBT Brake board used

GR = Car number of car that is the master:

201 = car 1
202 = car 2
203 = car 3
204 = car 4
205 = car 5
206 = car 6
207 = car 7
208 = car 8

IF DSD-412 DRIVE:
(If applicable, reference DSD Drive Manual - Book 3, especially fault codes f97 through f905)

DS1 = Drive Status 1
BITS
0 Set to 1 for Synchronization (Comm. Status between drive and controller).
1 Set to 1 for Synchronization

<COMMAND>	DESCRIPTION OF CAR COMMAND

2 Tach Direction Is Up
3 Tach Direction Is Down
4 Tach Overspeed Fault (f97)
5 Tach Loss Fault (f98)
6 Reverse Tach Fault (f99)
7 Serial Comm Fault

DS2 = Drive Status 2
BITS
0 Motor Fault (f400)
1 Excessive Field Current (f401)
2 Contactor Failure (f402)
3 Drive is at CEMF Limit
4 DH Input Fault (f405)
5 E-Stop Fault (f406)
6 A Drive Fault exists
7 Drive is Ready

DS3 = Drive Status 3
BITS
0 A “No Loop Fault” Exists (f900)
1 PCU 1st Fault (f901)
2 Line Synchronization Failure (f903)
3 Low Line Fault (f904)
4 Field Loss Fault (f905)
5 Not Used
6 Not Used
7 Not Used

DRVCM = Drive Command
BITS
0 Set To 1 For Synchronization
1 Set To 1 For Synchronization
2 Run Command (SMC)
3 Fault Reset (AFR)
4 Run Down (SRD)
5 Run UP (SRU)
6 Full Field Command (FEI)
7 Not Used
8 Not Used
9 Not Used
10 Not Used
11 Not Used
12 Not Used
13 Not Used
14 Not Used
15 Not Used

END DSD-412
EX1 = Extended Error Data 1 (programmer defined, call CEC)
EX2 = Extended Error Data 2 (programmer defined, call CEC)
EX3 = Extended Error Data 3 (programmer defined, call CEC)
EX4 = Extended Error Data 4 (programmer defined, call CEC)
EX5 = Extended Error Data 5 (programmer defined, call CEC)

<COMMAND>	DESCRIPTION OF CAR COMMAND

In the event of a support call to CEC, you may be asked to provide the appropriate bit description as listed below.

Convert hexadecimal numbers to binary for bit settings:

In the example shown on page 12-11, the value under CS4 is "**7D**H". The "H" at the end of the value represents that it is a number in Hexidecimal.

Break down the number **7D** into its components of **7** and **D**.

From the conversion chart below, we see that **7** is equivalent to binary **0111** and **D** is equivalent to **1101**. We can then put it together to show that **7D**$H_{exidecimal}$ = **01111101** (binary).

Some tips:
In the binary system;

- the right most digit is called the Least Significant Bit (LSB) or Bit 0.
- the left most digit is called the Most Significant Bit (MSB) or Bit 7.

Conversion Chart

Hex	Binary
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

<COMMAND>	DESCRIPTION OF CAR COMMAND
FPR	**F**loor **P**osition **R**eference at present floor.
FPU	**F**loor **P**osition **U**pdate: Shows the position count of the car when reaches each door zone target, indicates the direction of hitting the target, if the position count was updated and shows the position count error at each target. C# 1=> FPU Floor Position Update Count for 2 in: 10 FLOOR Position Count Update Status Error 1 0 00H 0 2 1828 01H + 2 3 2664 01H + 3 4 3499 01H + 3 5 4335 01H + 4 6 5170 01H + 3 7 6006 01H + 4 8 6842 01H + 5 9 7677 01H + 5 10 8513 01H + 6 11 9348 01H + 6 12 10184 01H + 7 13 11019 01H + 7 14 11854 01H + 6 15 12687 81H + 4 Update Status: 00H = no data 01H = Moving Up no update 02H = Moving Down no update 81H = Moving Up position count updated 82H = Moving Down position count updated
FWL	**F**lash **W**rite access **L**og. When data or program is written to flash memory or EEPROM the SPU the bios software will log the event in battery backed ram. This command prints the data log to the terminal screen. **FWLC** clears the write access log.
GET	**GET/**load the parameters from EEPROM: This command restores modified parameters. (Also verifies the checksum and displays any errors.) **Note:** COT, ULR, DLR, EUR, EDR, ESV & TSV parameters must all be valid for <GET> to return an 'OK'.
GRP	Enter the **GR**ou**P** Human Interface (Prompt: Group =>)

<COMMAND>	DESCRIPTION OF CAR COMMAND
IOCn	**I/O C**ontroller that controls I2C input/output boards. An IOC logical device that operates an I2C serial port to read input or output data from an I/O board. This device can be a microcontroller on the CCU board such as the MIC or VIC, a board in the TOC box such as the CTC that controls three I2C ports addressed as the TOC, COP and RCOP or an MPE used to expand car or group I/Os such as the MPC1 or CPC3. Displays the I/O status for each I/O board controlled by an intelligent device. “n” represents the device comm port number as listed table at the bottom of this entry. C# 1=> IOC1 MIC IOC 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 Input: = = = = = = = = Output: = = = = = = = = 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 **Note: MIC is the I2C device controller (IOC).** Port # IIC device controller 0 VIC Velocity Interface Controller 1 MIC Motor room Interface Controller 2 MPC1 Motor Room Port Controller 1 3 MPC2 Motor Room Port Controller 2 4 MPC3 Motor Room Port Controller 3 5 MPC4 Motor Room Port Controller 4 6 MPC5 Motor Room Port Controller 5 7 MPC6 Motor Room Port Controller 6 8 TOC Top of Car 9 COP Car Operating Panel 10 RCOP Rear Car Operating Panel 11 CPC1 Car Port Controller 1 12 CPC2 Car Port Controller 2 13 CPC3 Car Port Controller 3 14 CPC4 Car Port Controller 4 15 CPC5 Car Port Controller 5 16 CPC6 Car Port Controller 6

<COMMAND>	DESCRIPTION OF CAR COMMAND
LWR	**L**oad **W**eigher **R**eading. Displays the load weigher voltage and percent load.
LWU[n]	**L**oad **W**eigher **U**ser interface setup. This command guides the user through the load weigher setup. If the LWU command is entered without a number immediately following, a list of four options are given for the user to select from show below: 1. Proximity sensor setup. 2. Strain gauge sensor setup. 3. Observe sensor setup parameters. 4. Activate offset calibration procedure. If proximity or strain gauge sensor setup is selected, the user is prompted for additional information to start the setup procedure. Once setup is activated, the following "LWU" commands are entered to validate the load condition of the car. LWU1 - Command is entered when the sensor voltage is setup between 1.0 and 1.4 volts and the car is empty at the bottom landing. LWU2 - Command is entered when the car has full load at the bottom floor. LWU3 - Command is entered when the car has full load at the top floor. LWU4 - Command is entered when the car is empty at the top floor. **Note:** *Can only be accessed via the Black terminal.*
MEN	CCU BIOS **MEN**u: Use to upload the software into FLASH memory without Wizard Program.
PAR	**PAR**ameters: This command offers a speedy way to Enter or Review all of the above adjustment parameters. Typing <**PAR>** <ENTER ↵> displays all parameters with a slight delay.
PARA	The '**A**' (Alter) suffix permits changing or reviewing all the **PAR**ameters. Each command will be displayed with the current value followed by a question mark. You can now change its value or hit <ENTER ↵> to skip to the next one.
POS	True Car **POS**ition, e.g. 1 through 15 (including 13)
RCC	**R**eset all **C**ar **C**alls
RCM	**R**eset **C**o**M**munication status log. Resets failure counts for all COMM devices (See <**CMC**> command)

<COMMAND>	DESCRIPTION OF CAR COMMAND
RDE	**R**eset **D**evice **E**rrors: Resets communication errors for the following boards: RDED Drive RDEV VIC device RDEB Brake Board or MIC device RDEM Motor Field Board RDEC CPE Board RDEE CTC (ETS) Board
RFL	**R**eset the **F**au**L**t Hold memory
RMA	**R**equest **MA**ster. When entered at the terminal of a car that is not the group, this car will request to become the master car, i.e. the group. The existing master car will relinquish group control to this car.
RSL	**R**equest **SL**ave. When entered at the terminal of the car that is currently the group controller, the car will relinquish group control to the next available car with the lowest car number. If no car is available, this car will time out and become the group again.
SCCn	**S**et **C**ar **C**all at floor (**n**)
SDCn	**S**et **D**own **C**all at floor (**n**)
STD	**ST**art **D**own: The <**STU>** and <**STD>** commands can be used while in automatic operation to provide a one (1) floor run up or down respectively.
STM	**S**e**T** Up **M**ode: This command allows car to run on inspection mode without the Digital Position Pulse while setting up the car,. This operating mode bypasses the normal safety check and prevents car from shutting down. This operating mode can also be initiated from front panel push buttons in the circuit breaker panel. If car loses power or if inspection switch is moved to automatic mode, elevator will automatically be removed from **Setup** mode.
STU	**ST**art **U**p (similar to the Attendant Buttons): The <**STU>** and <**STD>** commands can be used while in automatic operation to provide a one (1) floor run up or down respectively.
SUCn	**S**et **U**p **C**all at floor (**n**)
TIM	Computer up **TIM**e since the last power-up (day-hour:min:sec)
TIME	Set real **TIME** calendar clock. Time is entered as hour:min:sec followed by 'a' for am or 'p' for pm. To exit this command without changing the time, hit <ENTER ↵> before typing new time value. **Eg**: Current time: 11:12:32p Enter new time: 10:22:30 a
UCS	**U**p **C**all pilot **S**tatus (See CCS for explanations.)
ULBn	Car Velocity when the **U**p **L**imit(n) first **B**reak open: This command is useful when adjusting TSV. It permits "freezing" the car velocity at the instant each terminal limit switches open.

<COMMAND>	DESCRIPTION OF CAR COMMAND
VEL	Actual Car **VEL**ocity in FPM
VER	Displays software **VER**sions for all communications boards. See <**CMC**> command for description of devices: **DEVICE VERSION** (SYS= system; LOC= local; DRV= drive; HC= hall call) **SYS** Ver **LOC** Ver **CAR** Ver **DRV** Ver **HC** Ver 201 010 9 008 8 006 2 44 006 202 010 11 008 18 005 211 006 212 003 12 007 19 006
VIC	**V**elocity **I**nterface **C**ontroller Status: ***Velocity Interface Controller Status*** **Slowdown Limit Fault* **Inspection Speed Fault* **INS Velocity: 110 fpm* **Gate and Lock Speed Fault* **GL Velocity: 150 fpm (0.76 m/s)* *Moving Dn* *Moving Up* **Emergency Stop Fault* *VIC Velocity: 500 fpm (2.54 m/s)* *VIC position count: 1453* **Note:** Car must be traveling at velocity greater than 52 fpm (0.26 m/s) for VFC board to display velocity greater than 0. * Displayed only if corresponding fault condition occurs.
VLT	**V**elocity **L**imit **T**est. Sets a test variable to disable the SPU from limiting the velocity when a slowdown limit is hit. This flag is set for a single run.
WRT	**Wr**i**T**e parameters to EEPROM: This command stores changes in non-volatile memory. **Note:** It is not necessary to write <WRT> altered parameters immediately to EEPROM. You can test operation, continue to operate elevator, and store to EEPROM when satisfied. In case of removal of power to CPU, or if terminal is disconnected, parameters are restored to former value (no change occurs).
ZON	**ZON**e floor: Displays floor to which car is zoning.
ZPS	**Z**one **P**ilot **S**tatus (Refer to <**CCS>** command for explanation)

SECTION 13 - CAR ADJUSTMENT PARAMETERS

The ***Meridia***™ operating system provides a series of adjustment parameters, which allow the user to fine tune elevator operation, and control the operation of some devices associated with the elevator. For example, the parameter ACR controls the elevator acceleration rate, while the parameter DOD controls door timing.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
ABT	0-65535	0	SEC	Attendant Buzzer Time. Duration timer for the attendant buzzer to sound while a hall call is not being serviced.
ACB	0-65535	16	DPP	**B**ottom **AC**cess offset from SLD1 (Slow Down Limit Switch input): On access mode, this parameter value equals the number of DPP counts at which the car will stop when traveling UP from the SLD1 limit switch.
ACF	1-6	1	FL.#	**AC**cess **F**loor when mid-shaft.
ACR	75-300	150	Feet/ min/ sec	**AC**celeration **R**ate: The rate of constant acceleration for the car to top speed. Divide ACR parameter by 60 to convert value into feet-per-second. (multiply ACR by 0.00508 to convert to m/s^2)
ACT	0-65535	0	DPP	**T**op **AC**cess offset from SLU1: On access mode, this is the number of DPP counts at which the car will stop when traveling down from the SLU1 limit switch.
AND	0-10	0	# Car calls	**AN**ti-nuisance **D**umping: Number of Car Calls which must be registered to enable dumping all the car calls when the Anti-Nuisance Load switch is not triggered.
ARR	1-480	250	Fpm/s^2	**A**cceleration **R**oll **R**ate into top speed.
AST	5-180	30	SEC	**A**utomatic **S**ervice **T**ime-out: After this time, car is taken out of group service or hall service.
BAL	0-100	0	%CWT	**BAL**anced load (percent). Set to the percent that the car is counterweighted to obtain balanced load. Set to a value of 45 for 45% counterweighting.
BCD	0-64	16	1/64 SEC	**B**rake **C**ontrol **D**rop delay timer. Controls drop time for Brake Controller (BKC output) after car stops.
BCL	0-32	16	1/64 SEC	**B**rake **C**ontrol **L**ift timer delay. This parameter delays BKC output from energizing BK contactor: **Note:** *Only used on VVVF drives.*
BDD	0-320	16	1/64 SEC	**B**rake **D**rop **D**elay. Time delay after the 2" (5 cm) door zone point is reached to begin reducing the brake voltage to zero volts.
BDT	0-320	16	1/64 SEC	**B**rake **D**rop **T**ime. The rate at which the brake voltage is dropped from the Brake Hold Voltage to zero volts.
BED	1-65535	JOB	NUM.	**B**uilding **E**levator **D**esignation number (Shown on Car Diagnostic screen.)
BHD	0-320	128	1/64 SEC	**B**rake **H**old **D**elay. Time delay before dropping to Hold voltage. During delay time the brake voltage is set to the brake lift voltage.
BHV	0-500	JOB	VOLTS	**B**rake **H**old **V**oltage.
BLD	0-65535 SEC	16	1/64 SEC	**B**rake **L**ift **D**elay: Brake lift delay after a start sequence is initiated.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
BLT	0-320	1	1/64 SEC	**B**rake **L**ift **T**ime. Rate in which brake voltage is changed starting from Brake Start Lift voltage to Brake Lift Voltage.
BLV	10-500	JOB	VOLTS	**B**rake **L**ift **V**oltage. This voltage value must be less than 90% of the Brake Maximum Voltage (BMV) parameter.
BMA	1-20	JOB	AMPS	**B**rake **M**aximum **A**mps. This value should match the board's DC current configuration jumper setting.
BMV	20-500	JOB	VOLTS	**B**rake **M**aximum Line **V**oltage. AC line voltage supplied to brake board. Value of this voltage parameter times 0.9 must be > Brake Lift Voltage (BLV parameter) .
BRR	0-65535	JOB	NUMERIC	**B**rake **R**egulator **R**esistance configuration. Brake Board scaling factor.
BRS	0-500	JOB	VOLTS	**B**rake **R**e-level **S**tart lift Voltage. This brake voltage value is immediately output to the brake when a re-level is initiated.
BRT	0-320	4	1/64 SEC	**B**rake **R**e-level lift **T**ime. The rate in which the brake voltage is increased from the Brake Re-level Start voltage to the Brake Re-level Lift Voltage.
BRV	1-500	JOB	VOLTS	**B**rake **R**e-level **V**oltage. Lift voltage during a re-level.
BSL	0-100	JOB	VOLTS	**B**rake **S**tart **L**ift Voltage. This brake voltage value is immediately output to the brake when a run is initiated.
CCD	1-128	3	# CALLS	**C**ar **C**all **D**umping: Number of Car Calls that a car will answer without the Electric Eye (EE input) activated (before canceling the remaining Car Calls) .
CCN	1-15	JOB	NUMERIC	**C**ar **C**ommunications **N**umber. This parameter identifies the car for Car To Group communications.
CDH	1000-65535	1000	DPP	**C**ounter-weight **D**erailment **H**igh collision zone: The Counter-weight derailment collision zone must be established at the job site. When traveling up in inspection mode, the CDL parameter (Counter-weight Derailment Low) point is when the Top of the Car meets the bottom of the counter-weight. The CDH point is when the Bottom of the Car meets the Top of the counter-weight. These two points must be established and the Digital Position Count (DPC or DPP) must be entered with the CDL and CDH parameters. The CDH point can be approximated by measuring the total length of the Car and the Counter-weight. This length can then be translated into Digital Position Count (or DPP). This length Value can be added to CDL in order to determine the CDH point.
CDL	1000-65535	1000	DPP	**C**ounter-weight **D**erailment **L**ow collision zone. Refer to CDH parameter for definition.
CDT	16-200	5	SEC	**D**oor Open (Standing) Time (1 to 12.5 seconds) for a **C**ar Call Stop (no hall calls) .
CIT	0-65535	48	SYS TIME	**C**PU **I**nterrupt **T**est. Individual bits are set to display system timing. BITS **0** - Real time clock interrupt **1** - Sequence clock interrupt **2** - Group to Car communications timer
CKT	0-128	80	1/16 SEC	**C**oded Call **K**eypad entry **T**ime (Use with optional keypad security) Entry time-limit to press the four push-button codes required during security mode. If this time elapses without completing the code, process is aborted & you must restart.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
COT	1-16777215	SCAN	DPP	**C**enter **O**f **T**arget: This value is the DPP position for where the center of the floor target is located. COT parameters are set during auto-setup. See FOF for adjusting to place the car level to the door sill. C# 1=> COT

FLOOR #	COT	FOF	FCP
1	1000	-6	994
2	1400	0	1400
3	1800	0	1800
4	2200	0	2200
5	2600	-2	2598
6	3000	0	3000
7	3400	0	3400
8	3800	+4	3804
9	4200	0	4200
10	4600	0	4600
11	5000	0	5000
12	5400	0	5400
13	5800	0	5800
14	6200	0	6200
15	6600	0	6600

CS1	0-65535			**C**ontrol **S**tatus **W**ord (Car) **1** (See CSW Bit Commands p.7-19, not FLTXn param.)
CS2	0-65535			**C**ontrol **S**tatus **W**ord (Car) **2** (See CSW Bit Commands p.7-20, not FLTXn param.)
CS3	0-65535			**C**ontrol **S**tatus **W**ord (Car) **3** (See CSW Bit Commands p.7-21, not FLTXn param.)
CS4	0-65535			**C**ontrol **S**tatus **W**ord (Car) **4** (See CSW Bit Commands p.7-21, not FLTXn param.)
CS5	0-65535			**C**ontrol **S**tatus **W**ord (Car) **5** (See CSW Bit Commands p.7-22, not FLTXn param.)
CS6	0-65535			**C**ontrol **S**tatus **W**ord (Car) **6** (See CSW Bit Commands p.7-22, not FLTXn param.)
CS7	0-65535			**C**ontrol **S**tatus **W**ord (Car) **7** (See CSW Bit Commands p.7-23, not FLTXn param.)
CS8	0-65535			**C**ontrol **S**tatus **W**ord (Car) **8** (See CSW Bit Commands p.7-23, not FLTXn param.)
CS9	0-65535			**C**ontrol **S**tatus **W**ord (Car) **9** (See CSW Bit Commands p.7-23, not FLTXn param.)
CS10	0-65535			**C**ontrol **S**tatus **W**ord (Car) **10** (See CSW Bit Commands p.7-23, not FLTXn param.)
CS11	0-65535			**C**ontrol **S**tatus **W**ord (Car) **11** (See CSW Bit Commands p.7-23, not FLTXn param.)
CS12	0-65535			**C**ontrol **S**tatus **W**ord (Car) **12** (See CSW Bit Commands p.7-23, not FLTXn param.)
CS13	0-65535			**C**ontrol **S**tatus **W**ord (Car) **13** (See CSW Bit Commands p.7-23, not FLTXn param.)
CSW	0-65535			**C**ontrol **S**tatus **W**ord (Car) **0** (See CSW Bit Commands p.7-19, not FLTXn param.)
CTD	0-1000	5	SEC	**C**ar call **T**est **D**elay time: Delay before re-entering all car calls during car call test routine.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
DRR	1-480	250	Fpm/s^2	**D**ecel **R**oll **R**ate: The rate in which the car rolls into Constant Deceleration from Top Speed.
DCT	1-128	10	1/16 SEC	**D**rive Run **C**ontrol **T**ime: Time in which the drive stays energized after the car stops at the floor.
DCC	0-20	6	DOOR CYCLES	**D**oor **C**ycle Protection **C**ounter: Number of time the Doors cycle without getting the Door close limit or the Door locks.
DCP	5-20	12	SEC	**D**oor **C**lose **P**rotective time: The amount of time the doors are given to close before taken out of service on Door Protect.
DDT	0-80	8	1/16 SEC	**D**oor Open **T**ime after activation of **D**OB (Door Open Buzzer) input.
DER	80-300	150	Feet/ min/ sec	**DE**celeration **R**ate: The rate of Constant Deceleration of the car to the transfer to leveling. Divide DER by 60 to convert to feet per second.(or multiply DER by 0.00508 to convert to m/s^2).
DHT	0-64	15	1/16 SEC	**D**oor **H**old **T**ime: Delay time before high speed door opening. Only used on Dover OHS door operator circuits.
DIT	0-16	1	1/16 SEC	Door Interlock Time: Time delay between switching from door close to door open.
DLR	0-65535	JOB	DPP	**D**own **L**imit position count **R**eference: The position (p) associated with the limit (n) -- (n) must be entered and has a range of 1 through 5; (p) is the absolute position in DPP of the limit (n). The value of (p) must increase at the bottom floor with (n=1) to (n=5), and for the top floor with (n=5) to (n=1). Note the Up limit (1) is further away from the bottom floor than the Up limit (5).
DMD	Calculated			**D**igital **M**ultiplier for **D**own direction. **NON-Serial Interfaced Drives Only.** The top speed can also be individually fine tuned. The programmed value for 'DMD' is (512,000 /Top-Speed for 12 bit DAC) or 1024 for a 500 fpm job. The adjustment range is +/- 24 bits from this calculated value. For a 16 bit DAC, the programmed value for 'DMD' is (4,096,000/Top-Speed) or 8192 for a 500 fpm job and a range of +/- 196 bits from the calculated value.
DMU	Calculated			Digital Multiplier for Up direction. **NON-Serial Interfaced Drives Only.** The top speed can also be individually fine tuned. The programmed value for 'DMU' is: (512,000 /Top-Speed for 12 bit DAC) or 1024 for a 500 fpm job. The adjustment range is +/- 24 bits from this calculated value. For a 16 bit DAC, the programmed value for 'DMU' is (4,096,000/Top-Speed) or 8192 for a 500 fpm job and a range of +/- 196 bits from the calculated value.
DOD	0-32	12	1/16 SEC	**D**oor **O**pen **D**elay time: Only used on OTIS 6970 operators
DOH	0-360	15	SEC	Extra **D**oor **O**pen button **H**old time: Only used with Door Hold buttons.
DOP	5-20	18	SEC	**D**oor **O**pen **P**rotective time: Amount of time allowed to open the doors before taken out of service on Door Protect.
DOT	0-60	15	SEC	**D**oor **O**pen Button **T**ime-out: Maximum amount of time doors are allowed to remain open from the Door open button input.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
DPD	0-20	0	DPP	**D**igital **P**osition A**D**justment: DPP (Digital Position Pulse) adjustment at the 12 inch (30 cm) and at the 6 inch (15 cm) leveling zone. If there is an error from the DPP at the 12" or at the 6" target, DPD parameter is the correction adjustment. If no correction is desired, such as during set-up, set DPD to zero.
DPF	160-960	JOB	DPP	Dpp Per Foot (dpp x 10) . The number of dpp counts per foot that the controller is expecting to count. Set to 320 for 32.0 dpp per foot on standard jobs.
DPL	0-40	32	DPP	**D**igital **P**osition at 12 inch **L**eveling: Digital Position is calculated from floor position reference that should be at the 12 inch (30 cm) target. It is normally set to 31 or 32. (12" / 0.375") = 32 (or 30 cm/ 0.95 cm)
DPZ	0-20	16	DPP	**D**igital **P**osition at 6 inch **Z**one: Digital position, calculated from floor position reference, that should be at the 6 inch (15 cm) target. It is normally set to 15 or 16. (6"/ 0.375") = 16 (or 15 cm/ 0.95 cm)
DRV	0-80	0	SEC	**D**oor **R**e**V**ersal (Optional) used with a Door Reversal Limit switch and operates at 1/2 the Door Reversal time. Prevents the door from fully opening during Electric Eye (EE input) reopening when the DRV parameter time expires. The doors will continue to operate until Door Open Limit (DOL) input deactivated.
DZO	CALCULATED			Digital Zero Offset. **NON-Serial Interfaced Drives Only.** True zero speed is 2048 for a 12 bit DAC and 32768 for a 16 bit DAC. To compensate for low velocity error (leveling speed) , the zero offset can be adjusted by +/- 40 bits OR +/- 640 bits for 12 and 16 bit DACs respectively.
EDR	0-65535	JOB	DPPs	Distance in DPPs that the Down Emergency Terminal Switch opens.
EDS	NO RANGE			**E**mergency **D**ispatch floor **S**etting: If car communication is lost with dispatcher, car will stop at floors set with this command. **Setup in the Black Terminal mode of Wizard only. Note that the direction in which stops are made can also be set. When prompted, answer `Y' or `N' if a stop is desired for that floor, and `U', `D' or `B' for Up, Down or Both Up and Down respectively, for the direction of stop**.
EPF	1- # FLs	1	FLOOR #	**E**mergency **P**ower recall **F**loor: The default recall floor for automatic emergency power sequence.
ESV	0-65535	JOB	FPM	**E**mergency **S**lowdown **V**elocity: Maximum speed reference output at the (n)th slowdown limit switch. If car velocity exceeds limit velocity, speed reference will be clamped to ESV parameter setting.
ETV	0-65535	JOB	FPM	**E**mergency **T**erminal slowdown **V**elocity: Maximum velocity allowed at ETS limit switch.
EUR	0-65535	JOB	DPPs	Distance in DPPs that the UP Emergency Terminal Switch opens.
FAL	1- # FLs	2	FLOOR #	**F**ire Recall **A**lternate **F**loor: The alternate floor to which cars recall when main default fire floor sensors are activated (See FIR param).
FBC	0-400	30	AMPS	**F**ield **B**oard **C**urrent rating. Amperage for which the motor field board is jumpered.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
FBT	1-65535	1	1/64 SEC	**F**ire **B**ypass **T**imer for fire GSA standard.
FDZ	1-32	5	DPP	**F**loor **D**ead **Z**one: The number of counts the car must go out of dead level to cause the car to re-level. (In DPP counts)
FEV	0-2000	0	FPM	Feed forward End Velocity. When the car is slowing down and the car velocity is less than this parameter value, the controller will signal the drive to remove the speed reference feed forward. The drive must be setup for this feature and CS9 BIT 2 must also be set in the controller.
FIR	1- # FLs	1	FLOOR #	**FIR**e Recall Floor: The main fire floor default for phase 1 recall mode.
FLV (MG Only)	0-480	290	VOLTS	**F**ield **L**ine **V**oltage: The nominal single phase AC line voltage that is input to the field power circuit.
FOF(n)	-31-+31	0	DPP	**F**loor **Of**fset: This is the number of counts to adjust the floor's dead level position. The count is in DPP and is entered as a positive number for up and a negative number for down. "n" selects a particular floor. The car stops from the FCP count, which is the center of target plus or minus the floor offset. The floor offset can be adjusted up or down up to 1 inch. FCP = COT +/- FOF. C# 1=> FOF FLOOR # COT FOF FCP 1 1000 -6 994 2 1400 0 1400 3 1800 0 1800 4 2200 0 2200 5 2600 -2 2598 6 3000 0 3000 7 3400 0 3400 8 3800 0 3800 9 4200 0 4200 10 4600 0 4600 11 5000 0 5000 12 5400 0 5400 13 5800 0 5800 14 6200 0 6600 15 6600 0 6600 C# 1=> FOF1=0-6 FLOOR # COT FOF FCP 1 1000 - 6 994 FOF5 = 0-2 Moves the dead level position for floor 5 down by 2. FOF8 = 4 Moves the dead level position for floor 8 up by 4. **Note:** *0 must be entered before a negative number, i.e., -8 would be entered as 0 - 8.*
FRC	1-8	3	RESETS	Fault Retry Count. The number of times the controller will try to recover from a motion fault and return to automatic service before shutting down.
FSD	0-24	0	1/64 SEC	Final Stop Damping. Velocity Damping during the final stop. The damping time represents the number of samples that

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
				are averaged every 1/64 second. On final stop, the demand velocity is changed from the leveling velocity to zero instantly. Having a damping of 8 would cause the velocity to slope down from the leveling velocity to zero in 1/8 second (8/64).
FSO	0-26	3	DPP	**F**loor **S**top **O**ffset: Number of counts prior to reaching the floor dead level position that a stop sequence begins for a normal run. (In DPP counts)
FSR (MG Only)	0-128	8	1/16 SEC	**F**ield **S**trength **R**ate. Rate at which Weak Field Voltage (WFV) parameter increased to Run Field Voltage (RFV) parameter.
FSS (MG Only)	10-2000	2000	FPM	**F**ield **S**trength **S**peed: The car speed (fpm) at which the field regulator begins to strengthen the motor field voltage during deceleration.
FSV	0-2000	0	FPM	Feed forward Start Velocity (fpm). Upon the start of a run when the car velocity is greater than this parameter value, the controller will signal the drive to use some amount of speed reference feed forward. The drive must be setup for this feature and CS9 BIT 2 must also be set in the controller.
FWR (MG Only)	0-128	8	1/16 SEC	**F**ield **W**eaken **R**ate: The time in which Motor Field Voltage will decrease from Run (full) Field Voltage (RFV) to Weak Field Voltage (WFV) parameter value.
FWS (MG Only)	10-2000	2000	FPM	**F**ield **W**eakening **S**peed: The car speed (fpm) at which the field regulator begins to weaken the motor field voltage during acceleration.
GCT	0-32	12	1/16 SEC	**G**ong **C**ycle **T**ime: Total On & Off time for the Down Lantern signal (1/16 sec).
GDB	4-64	4	1/64 SEC	**G**ate and lock **D**e**B**ounce time: Time to debounce the gate and lock signals to prevent a false start caused by the gate or lock bouncing.
GLV	0-200	160	FPM	**G**ate and **L**ock **V**elocity limit. Maximum car velocity allowed by VFC board when GL1 input is deactivated.
GOT	0-32	7	1/16 SEC	**G**ong **O**ff **T**ime: On time = GCT - GOT; Off time = GOT
GP1	0-65535 (Software Specific)			**G**eneral **P**urpose parameter
GP2	0-65535 (Software Specific)			**G**eneral **P**urpose parameter
GP4	0-65535 (Software Specific)			**G**eneral **P**urpose parameter
GP5	0-65535 (Software Specific)			**G**eneral **P**urpose parameter
GRT	20-360	180	SEC	**G**enerator **R**un **T**ime: This is time period that Motor Generator (MG) will be ON after the last call.
HBT	0-32	8	1/16 SEC	**H**andicap **B**uzzer **Ti**me (HBZ output) Floor Passing Tone. OnTime (pulse function of Handicap Buzzer)
HDT	0-60	15	SEC	Car **H**oming **D**oor open **T**ime
HLD	0-60	0	SEC	**H**all **L**antern **D**elay: Delay from slowdown initiation to send lantern output signal (ULT & DLT parameters) .
HM1	1- # FLs	1	FLOOR #	Car **H**o**M**ing floor **designation 1**: A maximum of four (4) floors can be designated for Homing. The HM1 through HM4 parameters match the HM1 through HM4 input names. The floor designation does not have to be sequential.
HM2	1- # FLs	1	FLOOR #	Car **H**o**M**ing floor **designation 2**
HM3	1- # FLs	1	FLOOR #	Car **H**o**M**ing floor **designation 3**
HM4	1- # FLs	1	FLOOR #	Car **H**o**M**ing floor **designation 4**
HTT	0-65535	35	FLOOR #	**H**igh Speed **T**ravel **T**imer: Maximum time the car is allowed to run at high speed.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
IFT	0-301	15	SEC	**I**ndependent to **F**ire **T**ime: Time system takes to override independent service during Fire Phase I operation.
IRV	0-150	150	FPM	**I**nspection **R**un **V**elocity limit. VFC board velocity limit when car is running on inspection mode.
IVE	0-100	35	FPM	**I**nspection **VE**locity: The Inspection velocity is set at 50 FPM (0.25 m/s) when the controller is shipped.
LAG	1-320	0	1/64 SEC	Car **LAG** compensation
LBY	1- # FLs	1	FLOOR #	**L**ob**BY** Floor: Default recall floor during regular zoning services.
LDC	0-65535	0	NUM.	**L**e**D** **C**ontrol variable: This parameter changes what data is output to the front cover LEDs. Bits — Description 0 — 0=Display input, 1=Display outputs (for i/o data display) 1 — 0=Display i/o data, 1=Display trace data 2 — 0=Display trace low byte, 1=Display trace high byte
LDD	0-9	0	NUM.	**L**e**D** **D**iagnostic trace selection variable: Selects which trace variable data is displayed on the front panel LEDs. The trace locations are setup from the TRA and TRB commands.
LDN	0-7	3	I/O #	**L**e**D** I2C i/o board **N**umber. Each I2C port handles 8 input boards and 8 output boards. This variable selects the board number for the i/o data to be displayed on the front cover LEDs.
LDP	0-16	0	PORT #	**L**e**D** **P**ort variable: Selects which i/o port data to output to the front cover LEDs.
LDT	32-200	48	1/16 sec	**L**ong **D**oor Open (Standing) **T**ime (2 to 12.5 seconds) for a hall call.
LFT	0-600	60	sec	**L**ight and **F**an **T**ime: Special time out (in seconds) to turn off lights and fan inside car when car is parked. (Optional. The normal time is the same as GRT)

Port #	IIC Device Controller	
0	VIC	Velocity Interface Controller
1	MIC	Motor Room Interface Controller
2	MPC1	Motor Room Port Controller 1
3	MPC2	Motor Room Port Controller 2
4	MPC3	Motor Room Port Controller 3
5	MPC4	Motor Room Port Controller 4
6	MPC5	Motor Room Port Controller 5
7	MPC6	Motor Room Port Controller 6
8	TOC	Top of Car
9	COP	Car Operating Panel
10	RCOP	Rear Car Operating Panel
11	CPC1	Car Port Controller 1
12	CPC2	Car Port Controller 2
13	CPC3	Car Port Controller 3
14	CPC4	Car Port Controller 4
15	CPC5	Car Port Controller 5
16	CPC6	Car Port Controller 6

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
LIC	16-25	20	msec	Low Intensity Cycle time (msec). Used to pulse the car call lights so they glow slightly while the call is not selected. Once the call is energized, the car call light turns on bright. This parameter controls the total on-off time (how fast the car call light is pulsed) . A cycle time set to 16 would be 62.5 Hz.
LIO	2-9	4	msec	Low Intensity On time (msec). The amount of time that car call light is on during each cycle time. If LIC is set to 16 milliseconds and LIO is set to 4 milliseconds, then the light will be pulsed with a 25% duty cycle.
LND	0-65535	0	1/16 sec	**L**ocal **N**ext-Up **D**oor time: Only used for simplex car when Lobby Recall feature enabled
LPE	1-65535	50	DPP	Terminal **L**imit switch **P**osition **E**rror: Position error that will result in an emergency slow-down. When car approaches a terminal landing, the instantaneous position when the limit switch opens is compared with the Limit Position Reference (see ULR and DLR parameters). If this differential value is larger than LPE parameter values, the car will go into emergency slowdown.
LRR	1-480	250	Fpm/s^2	**L**eveling **R**oll **R**ate into leveling speed.
LTR	0-1000	300	Fpm/s	Linear Time Rate (feet/min/sec). Maximum change in demand velocity while the SM contactor is energized.
LVE	1-20	8	fpm	**L**eveling **VE**locity (feet per minute).
LWT	0-32	4	1/16 sec	Load Weighing de-bounce. The number of samples that are averaged each 1/16 second from the load weigher input. A value of 16 would give 16 samples continuously averaged over 1 second.
MAR	75-300	150	Fpm/s	**A**cceleration **R**ate when using **MMS** parameter for setting top speed. (MAR then replaces ACR parameter for setting Acceleration Rate).
MBT	0-65535	1	sec	**M**otor **B**lower **T**imer. Drop out timer for motor blower output.
MDR	80-3	150	Fpm/s	**D**eceleration **R**ate when using **MMS** parameter for setting top speed (MDR then replaces DER parameter for setting Deceleration Rate).
MFC	0-400	30	1/10 amp	**M**inimum **F**ield **C**urrent. The minimum current required for the motor field board to detect that there is no field loss. This parameter is set in 1/10 amp increments.
MLG	1-320	0	1/64 SEC	Car **LAG** compensation using Deceleration using **M**VC operation.
MLV	0-65535	160	Fpm	**M**aximum **L**evel **V**elocity: When leveling, maximum velocity at which the car can run with doors open.
MMS	0 - top speed	Top speed	Fpm	**M**aximu**M** Car **S**peed. Sets top speed of car. Only functional when bit 5 on Control Status Word 7 (CS7) is set. **Note:** *IF MMS IS USED*, then the following parameters must be substituted also: Use MAR vs. ACR; Use MDR vs. DER; Use MDT vs. DTA; Use MMS vs. SST; Use MTL vs. TLM.
MRA	1-480	250	Fpm/s^2	**A**cceleration **R**oll **R**ate into top speed using **M**VC operation.
MRD	1-480	250	Fpm/s^2	**D**eceleration **R**oll **R**ate into top speed using **M**VC operation.
MRL	1-480	250	Fpm/s^2	**L**eveling **R**oll **R**ate into leveling speed using **M**VC operation.
MRS	1-480	250	Fpm/s^2	**S**tart **R**oll **R**ate into acceleration using **M**VC operation.
MRT	0-65535			**M**aximum **R**un **T**imer: Maximum time the car is allowed to run per trip.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
MRV	0-65535	160	Fpm	**M**aximum **R**e-level **V**elocity: Maximum velocity the car can run with the doors open when re-leveling.
MVD	0-24	5	1/64 sec	**M**inimum **V**elocity **D**amping Time period: Minimum time value for filtering out step value in the speed reference. The filtering time begins decreasing from VDT parameter value to MVD value when the speed reference is in deceleration mode.
NCF	0-12	0	Num	**N**umber of **C**oded calls per **F**loor (Use with optional keypad security) Number of codes available per floor for keypad security. This number (*n) multiplied by the number of floors +1 must be less than the maximum of 300 code storage allocation. **Note:** If this value is changed, all new codes must be re-entered.
NDT	5-120	15	sec	**N**udging **D**oor **T**ime
OST	0-65535	0	1/16 sec	Overlay Slowdown Timer. Used to control NS output.
PDT	0-128	0	1/64 sec	Preconditioning Delay Time. Used for both torque compensation and preconditioning. With torque compensation, this is the amount of time the torque compensation value is held for the drive. With preconditioning, this is the time delay before the speed reference soft start begins. The preconditioning offset of the speed reference starts immediately during the preconditioning delay time.
PPR	5-10000	job	PPR	**P**ulses **P**er **R**evolution: The motor encoder number of pulses per revolution. This is used by the VIC processor to calculate the velocity and direction of the car.
PPS	0-128	0	1/64 sec	**P**reconditioning **P**hase-out **S**tart time. Delay time before starting the preconditioning speed reference offset.
PPT	0-196	0	1/64 sec	**P**reconditioning **P**hase-out **T**ime. The duration to fade out the preconditioning speed reference offset.
PTF	0-160	16	Num	**P**ost **T**rigger **F**rames: Number of diagnostic display frames saved after triggering.
RFV (MG Only)	1-600	120	volts	**R**ated **F**ield **V**oltage: This is the Rated Field Voltage per the motor nameplate.
RLC	0-12	10	Re-level count	Number of times car will continuously re-**l**evel before being **r**emoved from service.
RPM	1-3600	job	Num	**R**evolutions **P**er **M**inute: The RPM of the motor. This parameter is used by the VIC processor to calculate the velocity and direction of the car.
RSO	0-20	4	DPP	Floor **R**e-level **S**top **O**ffset: Number of counts prior to reaching the floor dead level position that a stop sequence begins for a re-level. (In DPP counts)
RVE	1-24	9	FPM	**R**e-leveling **VE**locity (feet per minute)
SCT	2-18	18	1/16 sec	**S**ystem Master **C**ontrol **T**imer. Delay timer for SMC output that controls the SM contactor. This timer uses increments of 1/16 second to delay SMC input.
SDT	4-80	8	1/16 sec	**S**hort **D**oor **T**ime (0.5 to 5 seconds) after Electric Eye (EE input) or Safety Edge (SE input) activation
SFV (MG Only)	10-300	60	VOLTS	**S**tandby **F**ield **V**oltage. Motor field voltage maintained when car not running.
SPC	0-20	6	cycles	**S**tart Sequence **P**rotection **C**ounter: Normally adjusted for 6 cycles to try starting motion. Refer to Error code 18.
SRR	1-480	250	Fpm/s^2	**S**tart **R**oll **R**ate from zero speed.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
SSD	2-64	2	1/16 sec	Stop Sequence Delay (1/16 second) . Minimum time required for the car to stop and test for BK, SM and MC contacts to drop out before attempting another run.
SSV	0-36	0	FPM	Soft Start Velocity (fpm). This parameter offsets the initial starting velocity. Typically set to 0. This parameter does not account for load changes in the car.
TDF	0-16	8	1/16 sec	**T**ime **D**amping before **F**ault: Fault damping time causes the car to shut-down when an out of sequence Tach signal or an out of sequence direction occurs. The greater the number, the more fault detection time necessary to cause the car to shutdown. (See Control Status Word Bit settings CS2 and CS3 - p.8-20,21)
TDT	0-7	3		**T**ach **D**amping **T**ime (from Top of Car Transducer) : Digital tach damping time period. (Filtering)
TLV	0-10	5	DPP	**T**ransfer to **L**eveling **V**ane (DPP): Distance from floor level at which the constant leveling velocity takes effect. **NOTE:** When car enters the 2 inch Leveling Zone (5 cm), a constant leveling velocity is introduced.
TRC	0-10,000	0		**T**o**R**que **C**ompensation (units). For drive torque compensation, with 100% load, a value of 10,000 will dictate 100% motor torque. For speed reference preconditioning, with 100% load, a value of 10,000 will dictate a 10% offset in the speed reference.
TSV	1-65535	JOB	FPM	**T**erminal **S**lowdown limit **V**elocity: Maximum velocity reference (v) at the (n)th terminal slowdown limit switch. If the car velocity exceeds the Limit velocity, the computer will initiate an emergency slow-down. (n) must be entered and has a range of 1 through 5; (v) is the velocity associated with the terminal limit (n). The value of (v) must be increasing with (n=1) to (n=5).
TZO	2008-2088 32128-33408			Torque Zero Offset. DAC offset for an analog torque compensation output. True zero is set to 2048 for a 12 bit DAC and 32768 for a 16 bit DAC. This parameter allows a +/- 40 bit OR +/- 640 bit offset to compensate for a voltage offset error in the analog voltage amplifier.
ULR	1-65535	JOB	DPP	**U**p **L**imit position count **R**eference: The position (p) associated with the limit (n): (n) must be entered and has a range of 1 through 5; (p) is the absolute position in DPP of the limit (n). The value of (p) must increase at the bottom floor with (n=1) to (n=5), and for the top floor with (n=5) to (n=1) . Note the Up limit (1) is further away from the bottom floor than the Up limit (5).
VDD	0-24	12	1/64 sec	**V**elocity **D**amping **D**ecrement. During deceleration, the VDT filtering time will decrement by the VDD value until the filtering time has reached the MVD parameter value.
VDF	0-20	16	1/16 sec	**V**elocity error for **D**rive **F**ault: Value of fault filtering or damping time causing the car to shut-down via panic motion fault when the velocity error is excessive. The greater the number, the more time is necessary to detect the fault causing the car shutdown. (See CS2, bits 2, 3 - p. 8-20, 21)
VDT	4-31	6	1/64 sec	**V**elocity **D**amping **T**ime Period: The filtering or damping time period needed to remove any step values introduced during speed reference calculations..

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
VEE	50-350	150	FPM	**V**elocity **E**rror for **E**mergency slow-down: Velocity error that will result in an emergency timed slow-down. If the velocity difference between the digital demand and the digital velocity computed by DPP exceeds this value, the car will go into emergency slowdown. When the demand reaches top speed, this value is replaced by a percentage of top speed.
VPP	1-255	64	Num	**V**IC **P**osition **P**re-scale: Divider to make the number of pulses per foot for the VIC using the motor encoder to be close to the number of pulses per foot for the car encoder.
WFV (MG Only)	0-500	100	volts	**W**eak **F**ield **V**oltage: Voltage value for Weak Motor Field Voltage.
XDT	0-200	16	1/64	E**X**tra **D**oor open (Standing) **T**ime (0-3 seconds): During a car/hall call stop, XDT parameter adds “door open” time to the Short Door Time (SDT parameter) once the Electronic Eye (EE device) is activated. Permits extra transfer time.

SECTION 14 - CONTROL STATUS WORD BIT COMMANDS (CAR)

The *Meridia*™ operating system provides Control Status Words for customizing the operation of the elevator. An example would be the ability to enable or disable pre-opening of the doors. Each Control Status Word is made up of 16 bits labeled 0-15. Each bit controls a specific operation of the elevator or one of its devices. Each bit can be set (1) or reset (0) and the operation which each bit controls is affected by the state (set or reset) of the bit.

The following command <BIT> is used to set or reset the individual control flags (bits) of the control status word parameters. Each bit of a control status word is used to activate or deactivate a particular service or function. These control status words are found both in the individual car controllers and in the group controller.

- ✓ Set designates that a bit is a logic 1 (True).
- ✓ Reset designates that a bit is a logic 0 (False).
- ✓ There are 16 bits per control status word, referenced 0-15
- ✓ Control status words (CAR) available: CSW (CS0), CS1, CS2, CS3, CS4, CS5, CS6, CS7, CS8.

Note: *The number of Control Status Words used on a particular job depends on the job itself. Your particular job may not contain all the Control Status Words.*

<COMMAND>	FUNCTION
BITRx,n <ENTER ↵>	Resets bit n of Csx (where x = 0-8, n = 0-15).
BITSx,n, <ENTER ↵>	Sets bit n of Csx (where x = 0-8, n = 0-15).
BITD <ENTER ↵>	Displays the current bit status of all control status words in tabular form.

Table A

CSW Car (Control Status Word 0)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	EDS	R	When set, prevents Emergency Dispatching (EDS parameter) from enabling when a Dispatch Loss occurs, even if EDS is activated.
1	DPP	S	When set, permits presetting the Digital Position Pulse (DPP) at start sequence. **Note: must always be set in normal operation**.
2	DRIVE	S	When set, permits Fault Reset of an internal Drive Fault after car stops.
3			**Not used on *Meridia*™.**
4	CALL	S	Dumps all calls after consecutive car calls answered per Car Call Dump (CCD parameter) number order with no Electronic Eye (EE device) break.
5			**Not use on *Meridia*™.**
6	DOOR	R	Set to allow doors to reverse before reaching Door Open Limit (DOL input): Presently used only with an extra Door Reversal Limit (DLR input) switch.
7	LOBBY	R	When set, car will return to lobby floor after the last call (Lobby Recall).
8	EMP	R	During Manual Emergency power selection, setting this bit causes the car NOT to recall to the main floor if car loses communication with the dispatcher.
9	IND	R	When set and on Independent Service mode, calls are accepted only when the doors are closed.

BIT	AFFECT	DEFAULT	DESCRIPTION
10	IND	R	When set and on Independent Service mode, car calls are canceled when a slowdown is initiated.
11	DRIVE	R	When set, if Motor Generator (MG) switch input is deactivated, car will be returned to the main lobby floor and no calls will be accepted.
12	DRIVE	R	When set, doors remain open when MG switch is deactivated.
13	DOOR	R	When set and on Independent Service, the doors will close automatically when a car call is registered.
14	GONG	R	When set, no double gong occurs with the down hall lantern.
15			**Not used on *Meridia*™.**

Table B

CS1 Car (Control Status Word 1)

BIT	AFFECT	DEFAULT	DESCRIPTION
0			**Not used on *Meridia*™.**
1			**Not used on *Meridia*™.**
2	DOOR	R	When set, pre-opening is disabled for the rear door operation.
3	DOOR	R	When set, rear door pre-opening will occur at the 2" (5cm) leveling zone.
4	DOOR	R	When set, pre-opening is disabled for the front door operation.
5	DOOR	R	When set, front door pre-opening will occur at the 2" (5 cm) leveling zone.
6	HOMING	R	When set, all calls are answered. When reset, calls are canceled immediately if a homing recall occurs.
7	DOOR	R	When set, rear door operation disabled. (Similar to door disconnect switch.)
8	FIRE	R	When set, the fire buzzer is pulsed.
9	FIRE	R	When set, the fire emergency light is pulsed.
10	FIRE	R	When set, the stop switch is not bypassed. When reset, it is bypassed according to bit 11.
11	FIRE	R	When set, is bypassed all the time. When reset, the stop switch is bypassed according to ANSI code standard.
12	FIRE	R	When set and on Fire Phase II, the doors will open automatically when the car returns to the designated floor. If reset, the fireman must open doors.
13	FIRE	R	When set, the in-car Fire Service light also operates during Phase II.
14	FIRE	R	When set, the doors will close when a car call is registered. If reset the door must be closed with the Door Close Button (DCB input).
15	FIRE	R	If set, car is not a designated car. If reset, car is a designated car: **Under Fire Phase II (New York City only)**

Table C

CS2 Car (Control Status Word 2)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	DOOR	R	If set, wait for the generator to be running before opening the doors.
1	DOOR	R	If set, pressing the Door Close Button (DCB input) shortens the door open time (transfer time). If reset DCB has no effect on door open time.
2	FAULT	R	If set, allows a reset of a panic motion fault. **Note that if the fault keeps recurring, the processor will not continue to reset the fault.**

BIT	AFFECT	DEFAULT	DESCRIPTION
3	FAULT	S	**Function always enabled on *Meridia™*.** Set to activate the panic motion fault feature. (See VDF & TDF parameters and bit 2 of this status word.) When a panic fault is detected, an error 9 is registered and the processor immediately begins to shutdown the car by removing the SYSTEM MASTER (SM output) and the direction signals. The brake will apply immediately.
4	IND	R	If set, Independent Service mode will be disabled after IFT parameter time when a Fire Recall is initiated.
5	BRAKE	R	If set, applies brake on Run time-out.
6	DOOR	R	Allows short rear door reversal. Allows doors to reverse before reaching Rear Door Open Limit.
7	BUZZER	R	If set and car door is closing on Nudging Mode, nudging buzzer activates only when a Door Open Device is activated. If reset, nudging buzzer sounds while doors are nudging closed.
8	DOOR	R	Does not allow reopening of doors with the Safety-edge (SE input) or the Electric-Eye (EE input) during nudging.
9	DOOR	R	If set, simultaneous front and rear door operation instead of selective.
10	MG	R	If set, Motor Generator (MG) always remains on when doors are open.
11		R	Reserved.
12	VIP	R	If set, enables buzzer to sound during VIP mode to alert passenger that car is in VIP operation mode.
13	VIP	R	If set, enables the buzzer to sound at VIP floor.
14	SEC	R	If set, a special buzzer sounds during security with push-button keypad operation. A brief sound indicates acceptance of security code and registration of call while extended sound indicates rejection of security code. (Per contract basis.)
15	LANT	R	Must be set for software version that utilizes a Lantern Master I/O module for controlling the lantern's power supply.

Table D

CS3 Car (Control Status Word 3)

BIT	AFFECT	DEFAULT	DESCRIPTION
0			**Not used on *Meridia™*.**
1	DOOR	R	If set, allows call pilots to be accepted when on door protection mode.
2	DOOR	R	If set, allows Door Open Delay (DOD output) to operate every time door opens.
3	FIRE	R	If set, allows car to shut door automatically after Phase II key switch is set to "OFF" and Phase I condition exists.
4	INDEP	R	Independent Service: If reset, Independent Service mode overridden by Fire Service after Independent/Fire Service override time (IFT parameter) expires.
5	FIRE	R	When set, the door open button is disabled during Phase I Fire Service.
6		R	Reserved.
7	MOTION	R	Enables preconditioning operation.
8	CALL	R	If set, no slowdown for hall calls and the floor is secured by the <**SFL>** command from the Human Interface.
9	ZONE	R	If set, no ZONE slowdown at floors secured by <**SFL>** command from Human Interface.
10	LOBBY	R	If set, car can be removed from Lobby Independent Service at any floor when the key switch is turned off. If reset, the car must be at lobby floor.

BIT	AFFECT	DEFAULT	DESCRIPTION
11	LOBBY	R	If set, Short Door Timer (SDT parameter) disabled when car at lobby floor.
12		R	Reserved.
13	DOOR	R	If set, door nudging operation is disabled.
14	FIRE	R	If set, door nudging operation is activated during Phase I Fire Service operation while door is closing. This bit will override Bit 13 (Disable nudging).
15	DOOR	R	If set, the Electric Eye (EE) time-out feature (nudging) is disabled.

Table E

CS4 Car (Control Status Word 4)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	FIRE	R	If reset, car will open front door automatically when it reaches the fire floor during Phase I.
1	FIRE	R	If reset, car will open rear door automatically when it reaches fire floor during Phase I.
2	CALL	R	If set, Car Calls are latched internally.
3	CALL	R	If set, Hall Calls are latched internally for a simplex car.
4	LANT	R	If set, cab lantern is triggered when door reaches Door Open Limit switch (DOL input).
5	DOOR	R	If set, front door pre-opening will occur when car levels into mid level zone.
6	DOOR	R	If set, rear door pre-opening will occur when car levels into mid level zone.
7	INDEP	R	If set, a car on Independent Service mode will answer car calls secured from the secure floor <**SFL>** command with the human interface.
8	POSIT	R	If set, the position output is disabled when the car is out of service.
9	POSIT	R	If set, the position output will flash when the car is out of service.
10	CALL	R	If set, Car Calls will not be canceled when the car has a reversal slowdown.
11	CALL	R	If set, cancel car calls for positions above the car when the car is moving down and cancel car calls below the car when the car is moving up.
12	LOBBY	R	When set, car will stop at lobby if it is above lobby and calls are placed below lobby or if car is below lobby and calls are placed above lobby.
13	VIDEO	R	If set, do not blink the car symbol in the video display.
14		R	**Not used on *Meridia*™.**
15		R	Reserved

Table F

CS5 Car (Control Status Word 5)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	DOOR	R	If set, the Electric Eye (EE device) is disabled when the door is closing.
1	DOOR	R	If set, then full door reversal after the Safety Edge (SE device) is activated when the door is on nudging operation.
2	MG	R	If set, system checks (using SUF input) to ensure voltage is not building across hoist motor armature when generator in suiciding operation (only used for European standard EN81). (also called MG suicide fault check)
3	DOOR	R	If set, car will shutdown if car goes out of level zone and doors are

BIT	AFFECT	DEFAULT	DESCRIPTION
			open.
4	LOBBY	R	Set to use Lobby Independent Service as Lobby Recall Service.
5	LOBBY	R	Set to open the rear door when car is on Lobby Recall Service.
6	LOBBY	R	Set to take car out of group svc. when car is returning on lobby recall svc.
7	HOMING	R	Set to allow door to close & Motor Generator (MG) to deactivate when car in Homing Service mode.
8			**Not used on *Meridia*™.**
9	ERROR	R	Set to disable interrupt error display.
10			**Not used on *Meridia*™.**
11			**Not used on *Meridia*™.**
12			**Not used on *Meridia*™.**
13	ELD	R	If set, no lines are displayed on the ELD screen.
14	ELD	R	If set, ELD screen remains on all the time.
15	DOOR	R	If set, drops Door Close (DC) module output after car in motion for 0.5 seconds.

Table G

CS6 Car (Control Status Word 6)

BIT	AFFECT	DEFAULT	DESCRIPTION
0			**Not used on *Meridia*™.**
1			**Not used on *Meridia*™.**
2			**Not used on *Meridia*™.**
3	DOOR	R	Set to disable electronic Detector Edge time out.
4	DOOR	R	Set to enable electronic Detector Edge operation vs. mechanical Safety Edge (SE).
5	DOOR	R	Set to enable electronic Proximity Edge operation vs. mechanical Safety Edge (SE).
6	BUZZER	R	Set to enable handicap buzzer all the time. If reset, the Audible Service Button (ASB input) must be pressed on each run to enable the handicap buzzer.
7	DRIVE	R	Set to disable Auto Fault Reset for the Drive unit.
8	DRIVE	R	Set to enable Analog Speed Reference.
9	DRIVE	R	Set to disable drive communications check (must have bit 8 set).
10	DRIVE	R	Set for direction from DPP pulses instead of from 703 drive.
11	INSP	R	Set to allow hydro controller to run high speed on inspection mode.
12	DOOR	R	Set to disable Door Open Buzzer (DOB input) when front door is secured with lockout switches.
13	DOOR	R	Set to disable Rear Door Open Buzzer (RDOB input) when rear door is secured with lockout switches.
14	DOOR	R	Set to enable drive fault GLR (Gate & Lock input) error. (Both GLR input and DOL input active while level at the floor).

Table H

CS7 Car (Control Status Word 7)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	FAULT	R	Set to cause motion fault when tach direction error occurs with DRIVE unit, CCU board, or VIC controller.
1	FAULT	R	Set to disable deceleration check in emergency mode.
2	FAULT	R	Set to disable ESV and ETS velocity limit at slowdown limit switches.
3	MOTION	R	Set to disable linear time (max change in speed ref) parameter.
4	DPP	R	Set to disable updating position count when error is detected (more than 5 counts off).
5	MOTION	R	Set to adjust cars maximum velocity from MMS parameter.
6	LW	R	Set to have load anti-nuisance service enabled.
7	LW	R	Set to have load bypass service enabled.
8	LW	R	Set to have load dispatch service enabled.
9	LW	R	Set to have load weight overload enabled.
10	DOOR	R	Set to invert detector edge input.
11	DOOR	R	Set to enable door close button to latch during Attendant Service.
12	BUZZER	R	Set to enable Attendant Buzzer at every floor (adj ABT for buzz duration).
13	ATT	R	Set to enable AUB/ADB inputs (attendant Up/Down buzzer) to latch.
14	FAULT	R	Set to cause motion fault when CCU or VIC controllers emit velocity error.
15	CALL	R	Set to pulse car call output for low intensity light.

Table I

CS8 Car (Control Status Word 8)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	Unused.
1	FAULT	R	Set to disable DPP velocity window check. Velocity window is a difference (tolerance) of ± 100 fpm from previous velocity calculation per CPU. If difference > ± 100 fpm, error 119 occurs. Refer to Error Code List p.8-32.
2	DPP	R	Set to use tach direction from Drive Unit to count DPP instead of using DPP quadrature to count DPP.
3	BRAKE	R	Set to disable Brake Lift Switch feature.
4	BRAKE	R	Set to invert the Brake Lift Switch input.
5	CWD	R	Set to invert the Counter Weight Derailment (CWD parameter) input.
6	MOTION	R	Set for PEK parameter compensation instead of RVT parameter compensation.
7		R	Unused.
8	LW	R	Set to disable analog load weighing.
9	MOTION	R	Set to enable torque compensation.
10	MOTION	R	Set to have analog reference show speed reference and pre-conditioning offset. This is used with a digital drive to see an analog speed reference with the pre-conditioning offset for debugging. CS6 bit 8 must also be set.
11	MOTION	R	Set for pre-conditioning during re-leveling.
12	MOTION	R	Set to reset VCD-703 drive integral gain during slowdown.
13	MOTION	R	Set to enable quicker communications packets to the VCD-703 drive.
14		R	Unused.
15	MOTION	R	Set to enable timed leveling mode. Should only be used for test.

Table J

CS9 Car (Control Status Word 9)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	GROUP	R	Set for slave car to execute group commands. Note that parameters will be overwritten by whichever car is the master (i.e. the group).
1	DOOR	R	Set to disable SRU or SRD inspection door close option.
2	DRIVE	R	Set to use speed reference feed forward for DSD-412 drive.
3	DOOR	R	Set to disable door field economy voltage on door close.
4	MOTION	R	Set to zero speed reference quickly on stop.
5	DOOR	R	Set to require DCL on (with GL1 and GL) to start the car.
6	LW	R	Set to disable automatic load weighing calibration.
7	MOTION	R	Set to disable pre-start. Pre-start allows the controller to prepare to run when the DCL6 limit is made.
8	BUZZER	R	Set to disable nudging buzzer with EESW in OFF position.
9	DOOR	R	Set to disable Door Closing if door is open in SAFETIES.
10	DOOR	R	Set to enable hall call door re-open.
11	MOTION	R	Set to delay start during pre-conditioning for PDT parameter time.
12	FAULT	R	Set to disable software ETS limits.
13		R	Set for PI and HBZ to activate for floor levels when the car passes the mid-point between floor (DPP position).
14	MOTION	R	Set to run down @TSV2 velocity out of the blind hoistway.
15	MOTION	R	Set to disable decel rate check during emergency decel.

Table K

C10 Car (Control Status Word 10)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	**Not used on *Meridia*™.**
1		R	**Not used on *Meridia*™.**
2		R	**Not used on *Meridia*™.**
3		R	**Not used on *Meridia*™.**
4		R	**Not used on *Meridia*™.**
5		R	**Not used on *Meridia*™.**
6		R	**Not used on *Meridia*™.**
7		R	**Not used on *Meridia*™.**
8		R	**Not used on *Meridia*™.**
9		R	**Not used on *Meridia*™.**
10	MOTION	R	If set ULZ & DLZ are used for final stop tape application only.
11	MOTION	R	If set then update DPP count when passing door zone 2” point at high speed.
12	CNTRL	R	If set then invert the MA input.
13		R	Unused.
14	DISPLAY	R	Set when LCD contrast has been initialized.
15	DISPLAY	R	IF set then LCD/VF display cursor location blinks when changing parameters.

Table L

C11 Car (Control Status Word 11)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	DOOR	R	If Set then enable front DHB time out.
1	DOOR	R	If Set then enable front DOB time out.
2	DOOR	R	If Set then enable rear DHB time out.
3	DOOR	R	If Set then enable rear DOB time out.
4	FIRE	R	UK only, If set to assign the car as the fire fighting car.
5	FIRE	R	Set for fire service security override output.
6		R	Unused.
7	KDI	R	Set to extend password timeout to 12 hours on KDI.
8	LIGHT	R	Service Lamp. If set = IN USE, if reset = out of service.
9	INSPECT	R	If set then disable door close output on inspection button.
10	OLF	R	Set to invert the logic of the OLF input.
11	Position Indicator	R	Sets for motor room binary PI to match group floor position.
12	Position Indicator	R	Set for car COP binary PI to match group floor position.
13	FIRE	R	If sets then disable PI on fire service when binary PI's are used in hall.
14	FIRE	R	If set then disable PI on fire service when discrete PI's used in hall.
15	ACCESS	R	If set then recall car to access floor when ACU or ACD is activated.

Table M

C12 Car (Control Status Word 12)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	Unused.
1		R	Unused.
2		R	Unused.
3		R	Unused.
4		R	Unused.
5		R	Unused.
6		R	Unused.
7		R	Unused.
8		R	Unused.
9		R	Unused.
10		R	Unused.
11		R	Unused.
12		R	Unused.
13		R	Unused.
14		R	Unused.
15		R	Unused.

Table N

C13 Car (Control Status Word 13)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	Unused.
1		R	Unused.
2		R	Unused.
3		R	Unused.
4		R	Unused.
5		R	Unused.
6		R	Unused.
7		R	Unused.
8		R	Unused.
9		R	Unused.
10		R	Unused.
11		R	Unused.
12		R	Unused.
13		R	Unused.
14		R	Unused.
15		R	Unused.

Table O

NOTES

SECTION 15 - CONTROLLER ERROR CODE DEFINITIONS

The following sequential list of error codes indicates various fault conditions on the controller and elevator.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
1	Division by zero.
2	Program Sequencing error
3	Real Time Clock program processing error: Indicates that insufficient time was available to process the control information.
4	Invalid internal car position (such as zero): The position of car was internally set to zero in program.
5	**Not used on *Meridia*™.**
6	Invalid Motion Control sequence or control parameter: This is related to the Digital drive system.
7	Calculated slowdown target to floor was negative during Deceleration or Leveling modes.
8	Velocity of the car is 25% in excess of contract speed. Verify Car top encoder alignment and associated wiring. Digital encoder feedback from digitizer was under 9 fpm (0.046 m/s) while demand velocity exceeded VEE parameter setting.
9	Panic motion fault error: This error occurs when: a) There is an opposite direction between demand and velocity. b) There is a demand direction but no velocity. c) There is a velocity direction but no demand.
10	Digital Tach error: Indicates excessive differential between the "Demand" velocity (digital speed pattern) and the Digital speed reference (from encoder DPP). Possible problems: a) Improper setting of the Regulator on the drive. Check response and inertia settings. b) Verify the connections to DPP from encoder and the encoder alignment on the rail. c) The drive system motor field response (Make sure that motor field is producing proper torque).
11	Limit position reference error: When a terminal slowdown limit switch first opens, the switch's actual position count is compared against its reference position count (ULR or DLR parameter settings), check ULB and DLB. If the difference between the actual position and the reference position is greater than the LPE parameter setting, an emergency slowdown will occur. Remedy this problem by adjusting ULR and DLR accordingly. **Note that LPE should be adjusted to a maximum of 20 when setup is completed**.
12	**Not used on *Meridia*™.**
13	Invalid Direction error: Mismatch between Up or Down direction signal & encoder. Check Motor encoder coupling for tightness.
14	Terminal limit position error: The position of the car was invalid at the bottom most or top most limit switch (SD1 or SU1). Check to see if there were preset errors prior to this. (See error 15.)
15	Position preset error: Error 12 is a parity error from input signals. Position of car is not altered. When a preset position error occurs, the car position **is** altered and the DPP will be reset to floor position reference when car leaves the floor. Run the car floor to floor to ascertain that floor preset signals are valid. This error is more likely to occur after an emergency stop, or from Inspection to Auto operation. It is also possible for DPP to go "off" but that is not usually the source of problem.
16	Dispatch communication time-out: Verify serial communication link connections to each controller. This error usually occurs if the dispatch controller or car #1 for duplex installation is operational.
17	Motion time-out: This error occurs when too much time elapses during a run sequence.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
18	Control response time-out: Occurs when a start sequence is initiated from computer and the BK relay fails to energize. Verify connections to the Up and Down output modules, the SM and MC circuitry, and connections to the BK input module. Check hoistway doors for any bounce when final close occurs. Check door interlock time parameter DIT and increase if necessary.
19	Up Pilot and Down Pilot signal wire on at the same time. Check wiring.
20	Digital Encoder loss time-out: No DPP input signal. This will initiate an emergency slowdown. Check operation and alignment of car top encoder.
21	FLASH EPROM Read/Write error: This error will prevent the car from operating. Verify the settings of PAR, FCP, ULR, DLR, TSV and ESV parameters with the terminal.
22	Terminal limit switch emergency slowdown: Velocity of car > TSV adjustment at terminal landing. Verify car velocity when terminal limit switches open with <**ULB**> and <**DLB**> commands.
23	**Not used on *Meridia*™**
24	Drive fault: Indicates an encoder fault from the drive. This error occurs when there is excessive variance between the analog demand velocity and the analog tach reference velocity on non serial drives and M.G.'s.
25	Start Sequence Error: A start sequence was initiated, in auto or inspection, during a drive fault. Reset and/or correct fault trip condition on drive. Also, verify associated wiring. Check CCU display.
26	Motion Fault Error: If doors were closed, there was an Up or Down signal without Delta (M.G.), ICS, or GLR input modules. Check CCU display. If doors were already open, either of the following occurred: a) an up or down signal without Delta, ICS, GV, HS, CS, Normal Power or Auto input modules; or b) an up or down signal without LVE output.
27	BK or MC control failure: If either BK or MC controls are closed when no directional relays are energized, the processor prevents a start sequence from occurring. Check aux. contacts that are connected to the related input.
28	The brake switch did not function. (This error is valid only for jobs with a brake switch.) Check brake to ensure it is picking fast enough to open the brake contacts when car starts.
29	Slowdown Terminal Limit Switch Error: Occurs when start sequence is in up direction with an up slowdown limit open and position count indicates that car is not at that limit switch. The reverse is true for a start sequence in down direction with a bottom limit switch incorrectly open.
30	Car is moving without a demand velocity from CCU, meaning that SM, MC, BK and Up or Down relays were on.
31	Car was on Next-Up (dispatch mode) and went into service protect mode. Check AST parameter.
32	Reserved
33	Reserved
34	Reserved
35	Look-ahead distance calculated too short. Decel Roll Time is set too long (DRT); or Distance Look Ahead Multiplier (DLM), Performance Constant (PEK) or Top Speed Travel Distance (TFD) are set too small.
36	Variable has wrong value
37	**Not used on *Meridia*™**
38	**Not used on *Meridia*™**
39	**Not used on *Meridia*™**
40	Level velocity too high when car reached final leveling. Velocity of car was greater than 70 fpm (0.36 m/s) at 2 inch (5 cm) point. Check DER, TLM, Drive response.
41	Trying to re-level in level mode. Indicates software error. Should not occur - Call CEC.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
42	Doing a final stop in wrong digitizer mode. Indicates software error. Should not occur - Call CEC.
43	Gate and Lock switch opened when car velocity was greater than maximum level (MLV parameter) setting when doors are open. Check DER, Drive response.
44	The Gate and Lock (GLR) input was not activated when the doors were fully closed. Check interlock clearance.
45	The Door Closed Limit (DCL) input was not activated when the doors closed. Check limit switch for proper operation.
46	The Door Open Limit (DOL) input was not activated when the doors open. Check limit switch for proper operation.
47	Reserved
48	Reserved
49	Reserved
50	The generator voltage increased without demand from CCU. The SUF input was activated while car was not trying to move. Car CCU must be powered off and then on to allow car to run.
51	The SUF input did not occur during a run. On cars with Motor Generator (MG) sets, the SUF relay must pick up each run to indicate that the relay functions properly.
52	Car out of mid level zone with gate and lock input modules not activated (GLR); Car not moving. Car CCU must be powered off and then on to allow the car to run. Check brake re-level setting.
53	Car out of mid level zone with gate and lock input modules not activated; Car still moving without demand from the CCU. Check Brake.
54	Up or Down encoder motion detected 1.5 seconds after the brake dropped.
55	SCR temperature overload activated.
56	Max run timer timed-out during a run: Run sequence of elevator exceeded the Maximum Run Timer (MRT parameter) adjustment.
57	**Not Used on *Meridia***
58	An auto fault reset occurred. A fault condition (Drive/MG or Trip/SCR) caused by drive system has been reset by CCU. If fault occurs more than 3 times within 1 hour, CPU will not reset automatically. After the 3rd time, the fault must be reset manually.
59	Up or Down motion but no Up or Down signal.
60	Up or Down signal but no Up or Down motion.
61	Car did not decelerate during a drive fault.
62	Drive had a frequency overspeed.
63	Drive went into Base Block during a run.
64	Rope Gripper fault error.
65	Gripper time trip expires
66	Both ACU & ACD input modules on simultaneously, or, AUTO input module was on with either ACU or ACD input module on. Check module and wiring.
67	Both PTU & PTD input modules on simultaneously, or, AUTO input module was on with either PTU or PTD input module on. Check module and wiring.
68	Both TIU & TID input modules on simultaneously, or, AUTO input module was on with either TIU or TID input module on. Check Module and wiring.
69	Top slowdown limit switch open while in Bottom Access Mode. Check switch and wiring.
70	Bottom slowdown limit switch open while in Top Access Mode. Check switch and wiring.
71	VIC device error has occurred.
72	Brake device error has occurred.
73	Motor field device error has occurred.
74	Communication packets were lost on local COMM port (VIC, BK, MF or MIC devices) while the car was moving.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
75	Communication packets were lost on car COMM port (TOC or COP devices) while car was moving.
76	Communication packets to the CTC board were lost while the car was moving.
77	Motor field device error. Verify motor field current jumper configuration is set to correct current setting.
78	Lost the GV (Governor) input while the car was moving.
79	Lost the HS (Hatch Safety) input while the car was moving.
80	Lost the CS (Car Safety) input while the car was moving.
81	Lost the ICS (In-Car Stop Switch) input while the car was moving.
82	Lost the DRV (Drive) module input while the car was moving.
83	Lost the RDY (Ready) module input while the car was moving.
84	Lost the SM (System Master) module input while the car was moving.
85	Lost the MA (Master Contactor) input while the car was moving.
86	Lost the BK (Brake Contactor) input while the car was moving.
87	Car cannot be a Master (Dispatcher). GRPO was asserted but the GRPI input was not activated.
88	Real time clock control interrupt failed. Detected by secondary watch dog timer.
89	Dispatch sequencer clock interrupt failed. Detected by secondary watch dog timer.
90	Second interrupt timer failed.
91	In Car Inspection input module on while car was on auto or while both top and bottom car calls on. Check wiring.
92	GL, DLS, or CGS input modules on when door reached full open (DOL switch input) at the floor.
93	Intelligent device powered up reset after previous initialization.
94	EMSD was lost unexpectedly: lost FLT, BK(FLT), EMST, or DF.
95	Drive encoder not in UP direction when car running up. Check encoder wiring.
96	CCU board encoder signal not in UP direction when car running up. Check encoder wiring.
97	VIC device encoder signal not in UP direction when car running up. Check encoder wiring.
98	Drive encoder signal not in DOWN direction when car running down. Check encoder wiring.
99	CCU board encoder signal not in DOWN direction when car running down. Check encoder wiring.
100	VIC board encoder signal not in DOWN direction when car running down. Check encoder wiring.
101	Car did not decelerate as expected in an emergency stop.
102	**Not used on *Meridia*™**
103	**Not used on *Meridia*™**
104	DZ in the motor room not on when expected (on from the CTC). Check wiring.
105	**Not used on *Meridia*™**
106	DPP count off by more than 5 counts when car is level at floor. Check car top encoder alignment.
107	Both UP and DOWN motion true during DPP interrupt. DPP count not updated.
108	No UP or DOWN motion during DPP interrupt. DPP count not updated.
109	DZ signal from MIC board & TOC board is on despite an absence of command from CPT board.
110	Car tried to re-level 25 consecutive times. Check Brake and RVE parameter.
111	CCU velocity feedback zero when demand > 40 fpm. (0.2 m/s)
112	VIC velocity feedback zero when demand > 40 fpm. (0.2 m/s)
113	**Not used on *Meridia*™**
114	GL lost during a start sequence. Check DZ aux. contacts in GL circuit.
115	CGS or DLS lost during a start sequence.
116	LVE not dropped during a start sequence. Check module and wiring.
117	Multiple cars Master at the same time. Check CTG cross connect wiring.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
118	Too many Hall Call (HC) devices selected.
119	Encoder velocity greater than window.
120	Brake did not lift when expected: no Brake Lift Switch (BLS) input was generated when Brake Contactor (BKC) output was generated and/or no Brake Relay (BKR).
121	Brake did not drop when expected: no Brake Lift Switch (BLS) input was generated when Brake Contactor (BKC) output was generated and/or no Brake Relay (BKR).
122	Deceleration roll error: roll target velocity higher than demand velocity.
123	Car was placed on gate and lock bypass while the car is on inspection.
124	BKC output was turned on but SM and MC did not turn on in a maximum time allowed. Check BK input signal.
125	Car EEPROM checksum error.
126	Car battery RAM checksum error.
127	Car EEPROM and battery RAM checksum error.
128	Group EEPROM checksum error.
129	Group battery RAM checksum error.
130	Group EEPROM and battery RAM checksum error.
131	Invalid access code EEPROM byte write.
132	Invalid access code EEPROM word write.
133	Selector up advance error (Overlay's only).
134	Selector down advance error (Overlay's only).
135	Load weigher offset error. Load weigher must be re-adjusted.
136	CCU thermal switch fault. The CCU temperature is too high.
137	**Not used on *Meridia*™**
138	**Not used on *Meridia*™**
139	**Not used on *Meridia*™**
140	ETS Up limit error: The switch did not activate when expected from the position count reference. Check switch activation from cam and EUR parameter.
141	ETS Up Software limit error: The switch activated but it did not match the position count reference. Check switch activation from cam and EUR parameter.
142	ETS Down limit error: The switch did not activate when expected from the position count reference. Check switch activation from cam and EDR parameter.
143	ETS Down Software limit error: The switch activated but it did not match the position count reference. Check switch activation from cam and EDR parameter.
144	Low Battery Voltage on CCU. Replace battery.
145	LTR parameter rate set too low during emergency deceleration at terminal limit.
146	Comm port error. Extra error byte 1 gives port num. This error code is used for software debugging.
147	Diagnostic buffer overflow error: buffer size exceeded max. This error code is used for software debugging.
148	CPE position count is incorrect according to CCU. Check car top encoder alignment.
149	DPP count off more than 2 ft passing door zone, emergency slowdown executed. Check car top encoder alignment.
150	DZ relay failed on. Check DZ contacts.
151	CEN string did not drop when expected. Check connections to CEN.
152	Communication lost while car was moving.
153	Inspection switch failed on
154	No up or down slowdown limit opened when the position count expected a limit should have broken.
155	CPE battery error; no battery or battery charge fault.

NOTES

SECTION 16 – GROUP COMMANDS

Type <**GRP>** to establish communication with group functions. The Group Human Interface mode's prompt is: **Group =>**

GROUP DIAGNOSTIC COMMANDS

<COMMAND>	DESCRIPTION OF GROUP DIAGNOSTIC COMMAND
CAR	Enter the **CAR** Human Interface (Prompt: **C# 1=>**)
FLTn	Displays last four **F**au**LT**s starting at position (**n**). `n' equal to 0 is the most recent fault. **Note:** *REE parameter must be set accordingly*.
GET	**GET**/Load all the parameters from EEPROM. This command restores the parameters from EEPROM - All Parameters (PAR) and the Scan Table (SCA).
IOCn	**I/O C**ontroller that controls I2C input/output boards. Displays the I/O status for each I/O board controlled by an intelligent device. "n" represents the device comm port number as listed table at the bottom of this entry. C# 1=> IOC3 HC IOC 1 2 3 4 5 6 7 8 — Input 1 0 0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 0 4 0 0 0 0 0 0 0 0 5 0 0 0 0 0 0 0 0 6 0 0 0 0 0 0 0 0 7 0 0 0 0 0 0 0 0 8 0 0 0 0 0 0 0 0 1 2 3 4 5 6 7 8 — Output 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 **Note:** *HC is the I2C device controller (IOC***).** Port # — IIC device controller 0 GPIO1 Group I/O 1 1 GPIO2 Group I/O 2 2 GSEC Group Security 3 HC Hall Call 4 RHC Rear Hall Call 5 IR Inconspicuous Riser 6 RIR Rear Inconspicuous Riser 7 CB Code Blue Riser 8 VIP VIP Riser
NCU	Display the car number of the **N**ext-**U**p **C**ar
PAR	Review all the **PAR**ameters
PARA	**A**lter/Load all the **PAR**ameters with prompting. Each parameter is listed with its value. Pressing <ENTER ↵> will leave it unchanged. Entering a value and then pressing <ENTER ↵> will alter this parameter with the new value displayed.
PARI	**I**nitialize the **PAR**ameters as per factory default (as shipped)
PMI	Display the **PMI** Bit status in Hex
RCB	**R**eset all **C**ode **B**lue calls

<COMMAND>	DESCRIPTION OF GROUP DIAGNOSTIC COMMAND
RDC	**R**eset all **D**own **C**alls
REE	Set the **RE**ference **E**levator. Many commands require that REE is set to either the System (REE = 0) or to a car (REE = 1 through 8) for cars 1 through 8.
RFL	**R**eset the System (REE = 0) or car related **F**au**L**ts REE = 1 through 8
RTC	**R**eal **T**ime **Cl**ock time (day-hour:minute:second) since last power-up or reset
RUC	**R**eset all **U**p **C**alls
SCA	Review the floor **SCA**n assignment table for Car <**REE**> command.
SCAA	**A**lter/Load the floor **SCA**n assignment Table for Car REE
SCAI	**I**nitialize the floor **SCA**n Assignment for Car REE as per factory default (as shipped). The following values with their designations can be entered with the <SCA> command: Value Definition 0 Do not accept Up or Down Hall Calls for that floor 1 Accept only Up Hall Calls for that floor 2 Accept only Down Hall Calls for that floor 3 Accept both Up and Down Hall Calls for that floor
SCBf	**S**et a **C**ode **B**lue call at floor (**f**)
SCT	**S**creen for Motor Room **C**R**T** display monitor. Rotates CRT display from Dispatch to Diagnostics. Type <E> to determine the type of display. e = 0 is for the Dispatch Screen e = 1 through 8 is for the car diagnostic screen
SDCf	**S**et **D**own **C**all at floor (**f**)
SUCf	**S**et **U**p **C**all at floor (**f**)
TES	**T**ype of **E**levator **S**ervice in HEX Value Definition 1 Out of service from Car Controller 2 Loss of Communication 4 Timed-Out service protection (AST) from Group 8 Code Blue Service 10H(16) Emergency Power Recall Service 20H(32) Loss of Hall Call Power Service
WRT	Write/Store the parameters to EEPROM - All Parameters (PAR) and the Scan Table (SCA)

SECTION 17 - GROUP ADJUSTMENT PARAMETERS

The ***MERIDIA***™ operating system provides a series of adjustment parameters which allow the user to fine tune the operation of the elevator as well as control the operation of some of the devices associated with the elevator. For example, the parameter ACR controls the acceleration rate of the car while the parameter DOD controls door timing.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
ALR	0-# cars	1	#cars	**A**lternate **L**obby minimum car **R**equest
ALY	1 - # Fl.	2	Fl. #	**A**lternate **L**obb**Y** floor.
AST	0-1600	640	Sec.	**A**utomatic **S**ervice protection **T**ime: This "Group" parameter is similar to the car controller AST parameter. Group AST must always be set higher than the Car AST by a minimum of 15 seconds (n=240).
BDP	0-720	0	1/16 sec	**B**lind-crossing **D**ispatch **P**enalty time: Valid only for an express hoistway. This prevents assigning calls across express hoistway when cars are available.
BEx	0-65535			**B**uilding **E**levator number One through Eight: Sets the building designation number for car number x. Similar to BED for the Car controller.
BGC	0-7			**B**ack**G**round **C**olor for video display
BLK	1-2			1= **BL**in**K**s the text on the group screen. 2= Blinks the background of text on the group screen.
CBH	0-120	15	Sec.	**C**ode **B**lue door **H**old time: Amount of time doors will remain open at Code Blue designated floor. If after this time the Hospital service switch has not been activated, doors will close and car will return to normal operation.
CBR	0-5	0	0 - 5	**C**ommunication **B**aud **R**ate: 0=1200, 1=300, 2=600, 3=2400, 4=4800, 5=9600
CBx	0-# cars			**C**ode **B**lue car pre-selection order: It is possible to establish which cars are better able to respond to a Code-Blue Call and prioritize these cars per CB1 through CB8 order. When there is a Code-Blue Call, car designated by CB1 will be evaluated first, then CB2 car if first one was not available. **Note: Car number must use *MERIDIA*™ group car numbering (i.e. #1-8)**
COx	0-# cars			**C**ar **O**rder: The order in which car number x is displayed on Video Screen. These parameters can change the left-to-right relationship of cars 1 through 8 respectively. This is for the Dispatch screen.
CS1	0-65535			**C**ontrol **S**tatus **W**ord (Group) **1** (See CSW Bits p.7-36)
CS2	0-65535			**C**ontrol **S**tatus **W**ord (Group) **2** (See CSW Bits p.7-36)
CS3	0-65535			**C**ontrol **S**tatus **W**ord (Group) **3** (See CSW Bits p.7-37)
CS4	0-65535			**C**ontrol **S**tatus **W**ord (Group) **4** (See CSW Bits p.7-37)
CS5	0-65535			**C**ontrol **S**tatus **W**ord (Group) **5** (See CSW Bits p.7-37)
CS6	0-65535			**C**ontrol **S**tatus **W**ord (Group) **6** (See CSW Bits p.7-37)

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
CS7	0-65535			**C**ontrol **S**tatus **W**ord (Group) **7** (See CSW Bits p.7-37)
CS8	0-65535			**C**ontrol **S**tatus **W**ord (Group) **8** (See CSW Bits p.7-37)
CS9	0-65535			**C**ontrol **S**tatus **W**ord (Group) **9** (See CSW Bits p.7-37)
CSW	0-65535			**C**ontrol **S**tatus **W**ord (Group) **0** (See CSW Bits p.7-35, not FLTXn param.): Used to manipulate all 16 bits of CSW simultaneously. Number to be entered **must** be hexadecimal equivalent of the 16 bits.
DCC	1 - 8	4	# calls	**D**own **C**all **C**ount trigger
DDT	10-255	20	Sec.	**D**own-**P**eak **D**uration **T**ime: Minimum duration of Down Peak after being triggered.
DLB	1 – # Fl.	2	Fl. #	**D**ual **L**o**B**by floor
DLR	0-# cars	1	# cars	**D**ual **L**obby number of car **R**equests
DTT	10-960	800	Sec.	**D**own-Peak **T**rigger **T**ime: If the average forecast Down Call ETA exceeds this value, Down Peak operation will occur.
DWT	0-65535	20	Sec.	**D**own Call long **W**ait **T**ime trigger
EPF	1 - # Fl.	1	Fl.#	**E**mergency **P**ower **F**loor: Floor to which cars will return if emergency condition occurs.
EPx	0-# cars			**E**mergency **P**ower car selection order: During an Emergency power automatic recall operation, all the cars must be returned to the designated floor. The car at EP1 will be the first car to be returned, followed by EP2 through EP8.
FAL	1 – # Fl.	2	Fl.#	**F**ire **A**lternate **F**loor
FBT	1-65535	1	Sec.	**F**ire **B**ypass **T**imer
FIR	1 - # Fl.	1	Fl.#	**F**ire **R**ecall **F**loor
GP0	0-65535			**G**eneral **P**urpose Reserved variable used on a per job basis. Documentation on the use of this parameter (if implemented) provided with the job.
GP1	0-65535			**G**eneral **P**urpose Reserved variable used on a per job basis. Documentation on the use of this parameter (if implemented) provided with the job.
GP2	0-65535			**G**eneral **P**urpose Reserved variable used on a per job basis. Documentation on the use of this parameter (if implemented) provided with the job.
GP3	0-65535			**G**eneral **P**urpose Reserved variable used on a per job basis. Documentation on the use of this parameter (if implemented) provided with the job.
IRC	0-# cars	0	Car #	Must be set to select which car will be the **I**nconspicuous **R**iser **C**ar when the IR switch is activated. If set to 0, no IR Car will be selected.
LBY	1 - # Fl.	1	Fl.#	**L**o**B**b**Y** Floor: Main lobby designation
LER	0-#cars	1	# Cars	**L**obby **E**levator **R**equest: Number of cars that must be at lobby floor is equal to ‘n’.
LRP	0-960	8	1/16 Sec.	**L**obby **R**equest **P**enalty time
MEP	1-# Cars	1	# cars	**M**aximum cars for **E**mergency **P**ower: Maximum number of car which can operate simultaneously under emergency power.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
MID	2-40	18	1/16 Sec.	**MI**nimum ETA **D**ifferential: Min differential ETA during call SCAN to prevent reassignment. For example, if MID is set at 3/4 sec (12), no calls will be reassigned when the Minimum ETA is less than MID.
MIE	0-65535			**MI**nimum **E**ta compare. Used with job specific software to set a minimum limit on the ETA to execute a specific function.
MTT	0-960	300	1/16 Sec.	**M**ax allowed **T**ravel **T**ime: Maximum (ETA) to lobby in order to consider a car in a good position to become next-up or to be dispatched to the lobby floor.
MXD	2-36	12	Sec.	**MaX**imum ETA **D**ifferential: Max differential ETA during call SCAN to force a reassignment. For example, if MXD is set for 2 seconds (32), another car must be in a better position by more than MXD to force a reassignment to that car.
MXE	0-65535			**M**a**X**imum **E**TA compare. Used with job specific software to set a maximum limit on the ETA to execute a specific function.
NCF	1-12	0	# Codes	**N**umber of **C**odes available per **F**loor for keypad security. This number multiplied by number of floors must be 299 or less. **NOTE: If this value is changed, all new codes must be entered**.
NDH	5-480	220	1/16 Sec.	**N**ext-Up **D**oor **H**old time: Door hold time at lobby terminal. **Note: when calls are registered, this value becomes smaller in order to release the car faster**.
NDP	10-1440	350	Sec.	**N**ext-Up **D**ispatch **P**enalty time: When a car is Next-Up, a call's ETA must be greater than NDP parameter. For better traffic handling, this value should be smaller in a Duplex operation to enable lobby car to be more responsive.
NZN	0-6	0	# Zones	**N**umber of **Z**o**N**e floor pointers (ZN1 through ZN6).
PFT	0-60	8	2 Sec.	**T**ime the car must be **F**ree to **P**ark
RLB	1-# floors	2	Rear Fl.#	**R**ear **L**o**B**by floor
RLR	0-# cars	1	# Cars	**R**ear **L**obby number of car **R**equests
RRT	0-65535	20	Sec.	**R**emote car Travel **T**ime. Time allowed for remote car to travel to emergency power floor during **R**ecall operation.
RST	0-65535	5	Sec.	**R**emote car **S**equence **T**ime. Time delay to select next remote car during emergency power recall operation.
RTO	0-65535	25	Sec.	**R**emote car **T**ime-**O**ut during emergency power recall operation. Time delay for remote car to give drive running signal after group has given a drive enable signal.
S5C	0-FFFF			Special **C**ommunications between a **SWIFT®-5**000 car and **SWIFT® *MERIDIA*™** car/group. Bits 0-7 are set for the corresponding **SWIFT®**-5000 cars 1-8. Special software and hardware is required for this option.
TXC	0-7			**T**e**X**t **C**olor
UCC	1-20	6	# Trips	**U**p-Peak Car-**C**all **C**ount trigger: Number of trips from Lobby registering more than 2 Car Calls will trigger Up Peak operation mode.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
UDP	10-960	60	1/16 Sec.	**U**p-Peak **D**ispatch **P**enalty time.
UDT	10-255	15	Sec.	**U**p-Peak **D**uration **T**ime: The minimum duration of Up Peak after being triggered.
ULC	1-20	5	# Trips	**U**p-Peak **L**oad Switch **C**ount trigger: Number of trips (in a time interval) from the lobby floor which will trigger Up Peak operation.
VP1	1-# floors	0		Selects the floor at which the **VIP1** input is used. i.e. if set to 4 then floor 4 would be the VIP floor when VIP1 input is activated.
VP2	1-# floors	0		Selects the floor at which the **VIP2** input is used. i.e. if set to 4 then floor 4 would be the VIP floor when VIP2 input is activated
ZN1	1-# floors	1	Fl.#	**Z**o**N**e One **(1)** floor pointer The car remains at the last floor served for normal operation.
ZN2		1	Fl.#	**Z**o**N**e Two **(2)** floor pointer
ZN3		1	Fl.#	**Z**o**N**e Three **(3)** floor pointer
ZN4		1	Fl.#	**Z**o**N**e Four **(4)** floor pointer
ZN5		1	Fl.#	**Z**o**N**e Five **(5)** floor pointer
ZN6		1	Fl.#	**Z**o**N**e Six **(6)** floor pointer

GROUP RELATED CAR ETA PARAMETERS

Note: <REE> *command must be equal to the car number to access these parameters.*

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
ACC	16-255	30	1/16 Sec.	Average **ACC**eleration Time: Average time car needs to Accelerate to top speed.
ATT	8-160	60	1/16 Sec.	**A**verage (passengers) **T**ransfer **T**ime: The average time the doors are fully opened. A value of 64 (4 seconds) is about normal.
BTT	0-720	0	1/16 Sec.	**B**lind **T**ravel **T**ime: The time it takes to travel through blind shaft at top speed. See SPE for calculation. Multiply SPE by number of floors covered by blind shaft.
DCT	16-160	40	1/16 Sec.	**D**oor **C**losing **T**ime. Average time car needs to close its doors.
DEC	16-255	30	1/16 Sec.	**DEC**eleration Time: Average time it takes car to decelerate from top speed.
DOT	16-160	30	1/16 Sec.	**D**oor **O**pening **T**ime. Average time car needs to open its doors.
GPT	0-720	240	1/16 Sec.	**G**enerator Start **P**enalty **T**ime: GPT is the penalty used in the ETA calculation to assign a call to a car with its Motor Generator (MG) set off. This is a potential energy-saving feature.
SPE	4-48	12	Calc.	**SP**eed of **E**levator in Time Units: One typical floor travel time. If the average floor height (H) is 12 feet, and the speed (S) of the car is 500 FPM then one floor travel time in “tu”, or “time units” (16 “tu” in one second) is: (h / (s / 60)) * 16 (12/ (500/60)) * 16 = 23 tu or {H in meters*3.28} / {(S in m/s)/0.3048}*16=tu

NOTES

SECTION 18 - CONTROL STATUS WORD BIT COMMANDS (GROUP)

The ***Meridia***™ operating system provides Control Status Words for customizing the operation of the elevator. An example would be the ability to enable or disable pre-opening of the doors. Each Control Status Word is made up of 16 bits labeled 0-15. Each bit controls a specific operation of the elevator or one of its devices. Each bit can be set (1) or reset (0) and the operation which each bit controls is affected by the state (set or reset) of the bit.

The command <BIT> is used to set or reset the individual control flags (bits) of the control status word parameters. Each bit of a control status word is used to activate or deactivate a particular service or function. These control status words are found both in the individual car controllers and in the group controller.

- ✓ Set designates that a bit is a logic 1 (True)
- ✓ Reset designates that a bit is a logic 0 (False)
- ✓ There are 16 bits per control status word, referenced 0-15
- ✓ Control Status Words (GROUP) available: CSW (CS0), CS1, CS2, CS3, CS4, CS5, CS6, CS7, CS8, CS9.

Note: *The number of Control Status Words used on a particular job depends on the job itself. Your particular job may not contain all the Control Status Words.*

<COMMAND>	FUNCTION
BITRx,n **<enter ↵>**	Resets bit n of Csx (where x = 0-4, n = 0-15)
BITSx,n, **<enter ↵>**	Sets bit n of Csx (where x = 0-4, n = 0-15)
BITD **<enter ↵>**	Displays the current bit status of all control status words in tabular form.

Table A

CSW Group (Control Status Word 0)

BIT	AFFECT	DEF	DESCRIPTION
0	CALL	R	Hall Call Latching (Reset) or Canceling (Set) mode of operation: When set, allows cross-cancellation of hall calls with existing dispatch controller. (Useful during installation)
1	NEXTUP	R	When set, doors close on Next-Up car after initial Next-up courtesy time expires as set by NDH. When reset, doors remain open till Motor Generator (MG) set shuts-down.
2	NEXTUP	R	When set, doors close after Motor Generator (MG) time out.
3	NEXTUP	R	When set, rear doors close on Next-Up car after initial Next-Up courtesy time expires per NDH. When Reset, rear doors remain open till Motor Generator (MG) set shuts-down.
4	ZONING	R	If set, free (available) cars are parked at zone floors (ZN1 through ZN5).
5	ZONING	R	If set, free (available) cars are parked at specific floors by priority.
6	ZONING	R	If set, cars not required at lobby floor park at zone floors (ZN1 through ZN5).
7			**Not used on *Meridia*™**
8	BLUE	R	Controls assignment of a Code Blue call. When reset, a Code Blue call is assigned to the closest car that can respond. When Set, a Code Blue call is assigned in a pre-established order as defined by commands CB1 through CB8.

BIT	AFFECT	DEF	DESCRIPTION
9	LOBBY	R	If set, use alternate lobby Next-Up floor (ALY) parameter instead of normal lobby floor (LBY).
10	LOBBY	R	When set, initiates DUAL lobby next-up mode.
11	LOBBY	R	When set any cars with rear lobby doors go into rear lobby Next-Up mode.
12		R	Reserved
13		R	Reserved
14		R	Reserved
15	CALL	R	Rear Hall Call Latching (Reset) or Canceling (Set) mode of operation. When set, allows cross-cancellation of REAR hall calls with existing dispatch controller. (Useful during installation.)

Table B

CS1 Group (Control Status Word 1)

BIT	AFFECT	DEF	DESCRIPTION
0			**Not used on *Meridia*™**
1			**Not used on *Meridia*™**
2		R	Reserved
3		R	Reserved
4		R	Reserved
5		R	Reserved
6		R	Reserved
7	FIRE	R	Fire Operation: When set, the Fire Light for hallway will flash On and Off.
8	CALL	R	If set, no hall call latching if the call cannot be assigned. (On certain jobs only.)
9	BLUE	R	If set, no Code Blue call latching if call cannot be assigned to an automatic operation car.
10	RCALL	R	If set, no Rear hall call latching if call cannot be assigned (On certain jobs only.)
11	VIP	R	If set, the VIP call is self latching. (Configured on certain jobs only. The job must be purchased with VIP call option.)
12	VIP	R	If set, the VIP call is self latching.
13		R	Reserved
14		R	Reserved
15	UPPEAK	R	If set, all cars requested to lobby during Up Peak.

Table C

CS2 Group (Control Status Word 2)

BIT	AFFECT	DEF	DESCRIPTION
0	VIP	R	This bit must be set to allow car # 1 to answer a VIP call.
1	VIP	R	This bit must be set to allow car # 2 to answer a VIP call.
2	VIP	R	This bit must be set to allow car # 3 to answer a VIP call.
3	VIP	R	This bit must be set to allow car # 4 to answer a VIP call.
4	VIP	R	This bit must be set to allow car # 5 to answer a VIP call.
5	VIP	R	This bit must be set to allow car # 6 to answer a VIP call.
6	VIP	R	This bit must be set to allow car # 7 to answer a VIP call.
7	VIP	R	This bit must be set to allow car # 8 to answer a VIP call.
8		R	Reserved
9		R	Reserved

BIT	AFFECT	DEF	DESCRIPTION
10		R	Reserved
11		R	Reserved
12	VIDEO	R	**Not used on *Meridia*™**
13	VIDEO	R	**Not used on *Meridia*™**
14	VIDEO	R	Set to display car status on group screen.
15	VIDEO	R	If set, do not blink car on lobby screen.

Table D

CS3 Group (Control Status Word 3)

BIT	AFFECT	DEF	DESCRIPTION
0			**Not used on *Meridia*™**
1	CALL	R	If set, then front Hall Call inputs will internally latch.
2	CALL	R	If set, then rear Hall Call inputs will internally latch.
3	CALL	R	If set, then Hall Call will only latch if a car is available.
4	DNPEAK	R	If set, down peak zoning is active even if there is no blind shaft.
5	ZONE	R	If set, zone to floor with most calls, else zone to floor with the longest wait.
6	ZONE	R	If set, zone car with a pilot.
7	ZONE	R	If set, remove zone as soon as call is assigned.
8	ZONE	R	If set, disables up peak zoning with a pilot on up peak.
9	ZONE	R	If set, will not zone a car to lobby on up peak if ETA to lobby is too great.
10	NEXTUP	R	Reset to allow multiple Next Up cars.
11	BLUE	R	If set, then Code Blue call inputs will internally latch.
12		R	Reserved
13		R	Reserved
14		R	Reserved
15		R	Reserved

Table E

CS4 Group (Control Status Word 4)

BIT	AFFECT	DEF	DESCRIPTION
0	COMM	R	**Not used on *Meridia*™**
1	COMM	R	**Not used on *Meridia*™**
2	COMM	R	**Not used on *Meridia*™**
3		R	Set to disable EDS with loss of HPU comm.
4	CALL	R	Enable cross cancellation operation.
5	CALL	R	Set to use I^2C for Hall Calls else HPUs
6	COMM	R	**Not used on *Meridia*™**
7		R	Reserved
8	COMM	R	**Not used on *Meridia*™**
9	ERROR	R	Set to disable interrupt error display.
10	EMP	R	Set to activate inter-group emergency power.
11		R	Reserved
12		R	Reserved
13	CALL	R	Set to enable front auxiliary riser.
14	CALL	R	Set to enable rear auxiliary riser.
15		R	Reserved

Table F

CS5 Group (Control Status Word 5)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	Unused.
1		R	Unused.
2		R	Unused.
3		R	Unused.
4		R	Unused.
5		R	Unused.
6		R	Unused.
7		R	Unused.
8		R	Unused.
9		R	Unused.
10		R	Unused.
11		R	Unused.
12		R	Unused.
13		R	Unused.
14		R	Unused.
15		R	Unused.

Table G

CS6 Group (Control Status Word 6)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	Unused.
1		R	Unused.
2		R	Unused.
3		R	Unused.
4		R	Unused.
5		R	Unused.
6		R	Unused.
7		R	Unused.
8		R	Unused.
9		R	Unused.
10		R	Unused.
11		R	Unused.
12		R	Unused.
13		R	Unused.
14		R	Unused.
15		R	Unused.

Table H

CS7 Group (Control Status Word 7)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	Unused.
1		R	Unused.
2		R	Unused.
3		R	Unused.
4		R	Unused.
5		R	Unused.
6		R	Unused.
7		R	Unused.
8		R	Unused.
9		R	Unused.

BIT	AFFECT	DEFAULT	DESCRIPTION
10		R	Unused.
11		R	Unused.
12		R	Unused.
13		R	Unused.
14		R	Unused.
15		R	Unused.

Table I

CS8 Group (Control Status Word 8)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	Unused.
1		R	Unused.
2		R	Unused.
3		R	Unused.
4		R	Unused.
5		R	Unused.
6		R	Unused.
7		R	Unused.
8		R	Unused.
9		R	Unused.
10		R	Unused.
11		R	Unused.
12		R	Unused.
13		R	Unused.
14		R	Unused.
15		R	Unused.

Table J

CS9 Group (Control Status Word 9)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	Unused.
1		R	Unused.
2		R	Unused.
3		R	Unused.
4		R	Unused.
5		R	Unused.
6		R	Unused.
7		R	Unused.
8		R	Unused.
9		R	Unused.
10		R	Unused.
11		R	Unused.
12		R	Unused.
13		R	Unused.
14		R	Unused.
15		R	Unused.

Table K

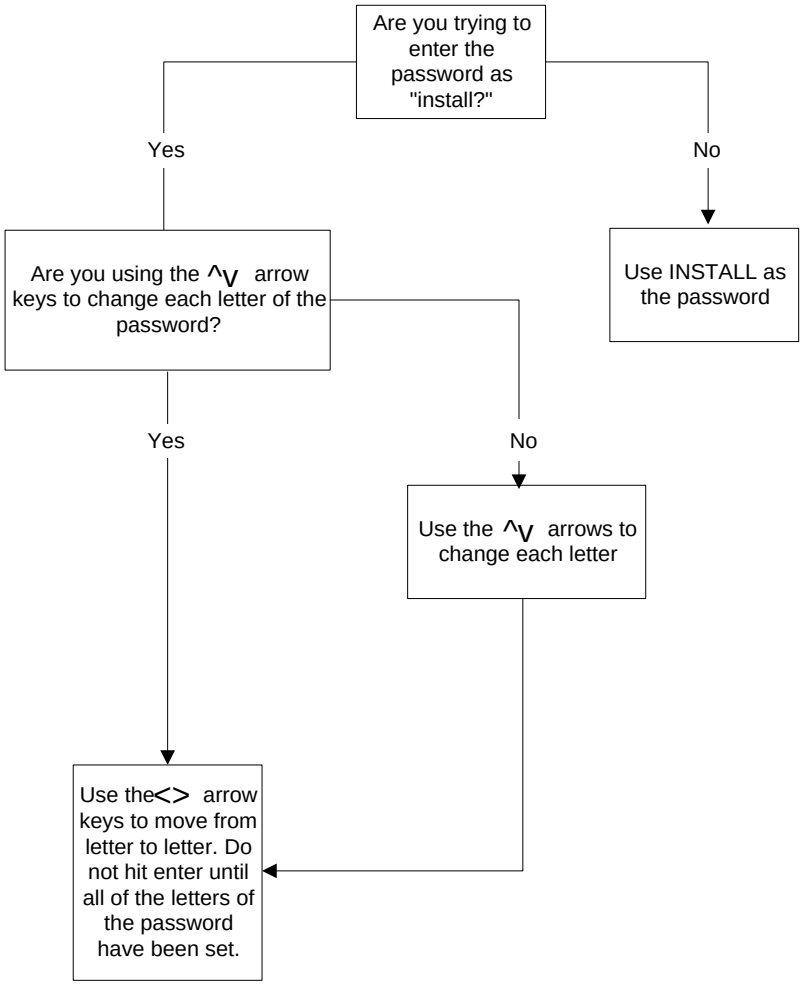
NOTES

SECTION 19 - TROUBLESHOOTING

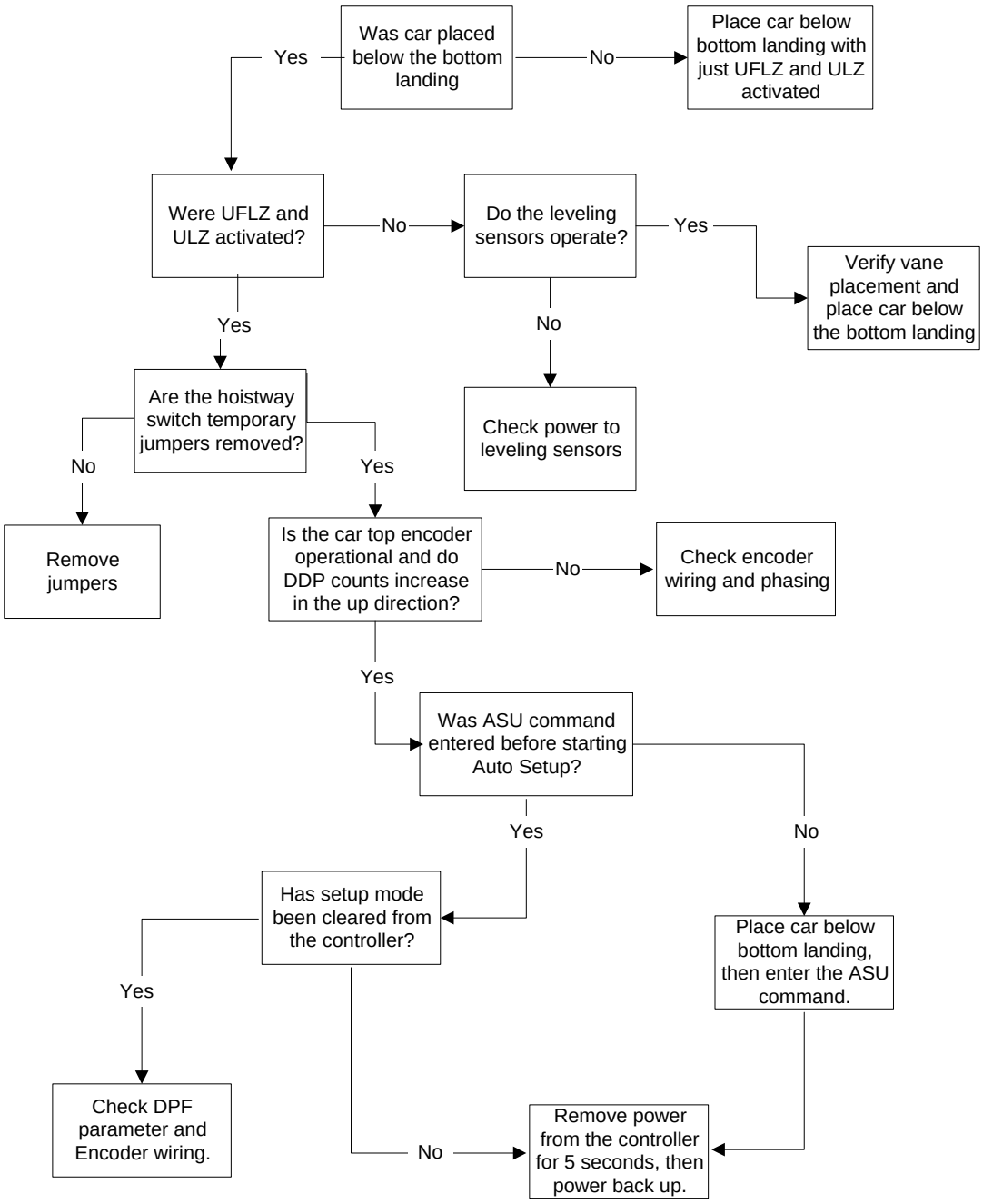
Troubleshooting Flowcharts

CCU Display Sub-menu Reference Charts

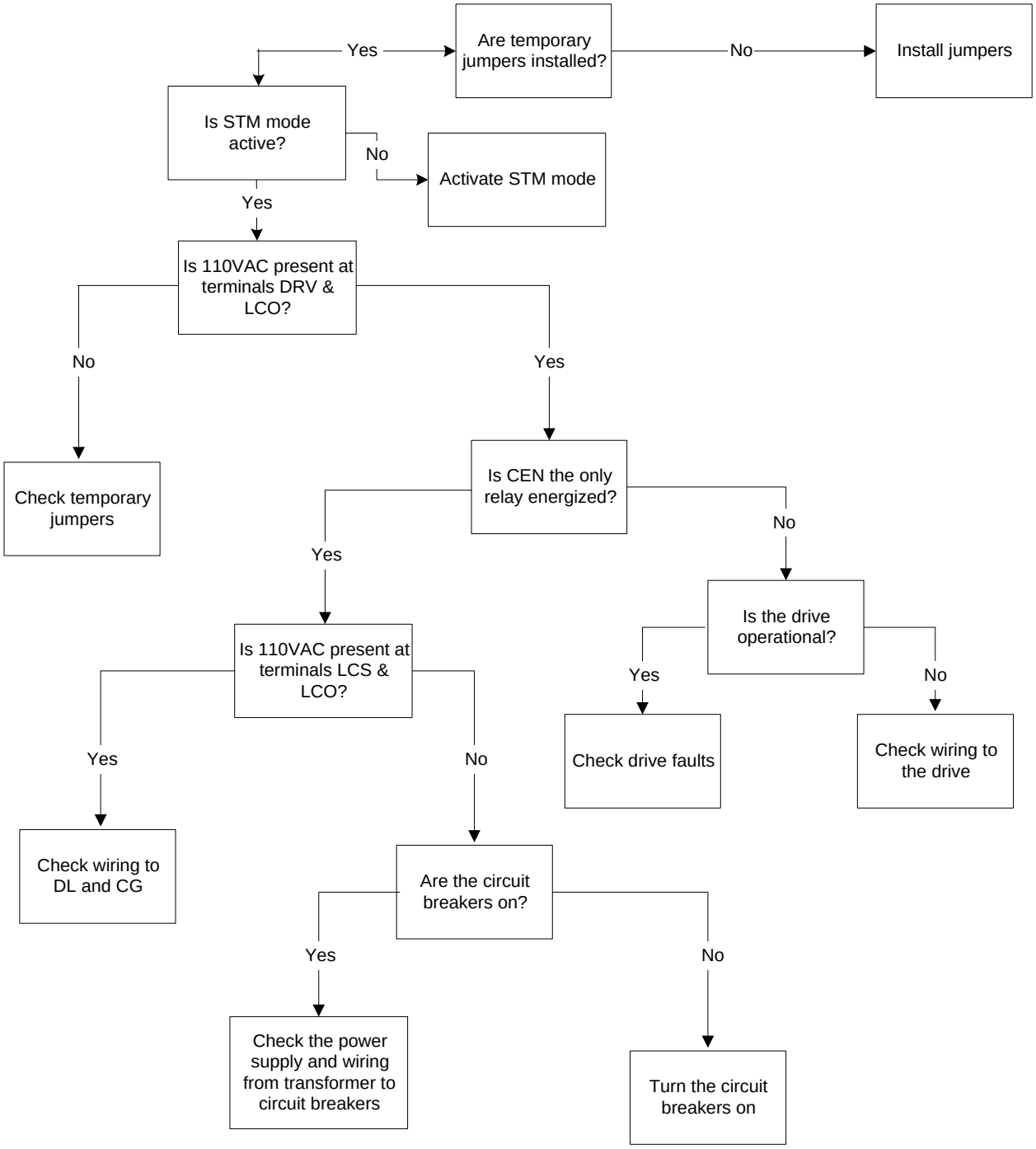
CCU will not take password



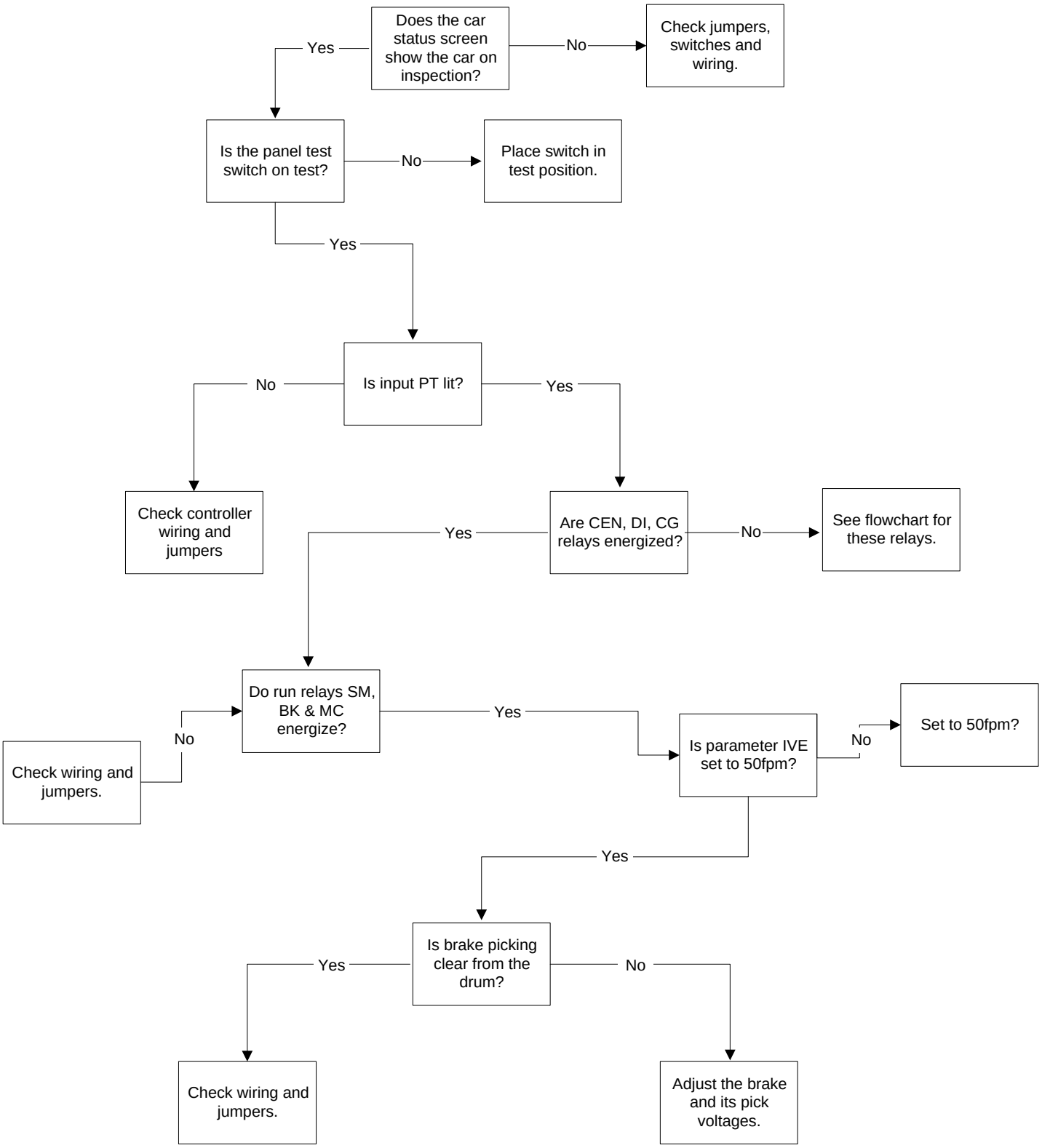
Auto Setup Failed



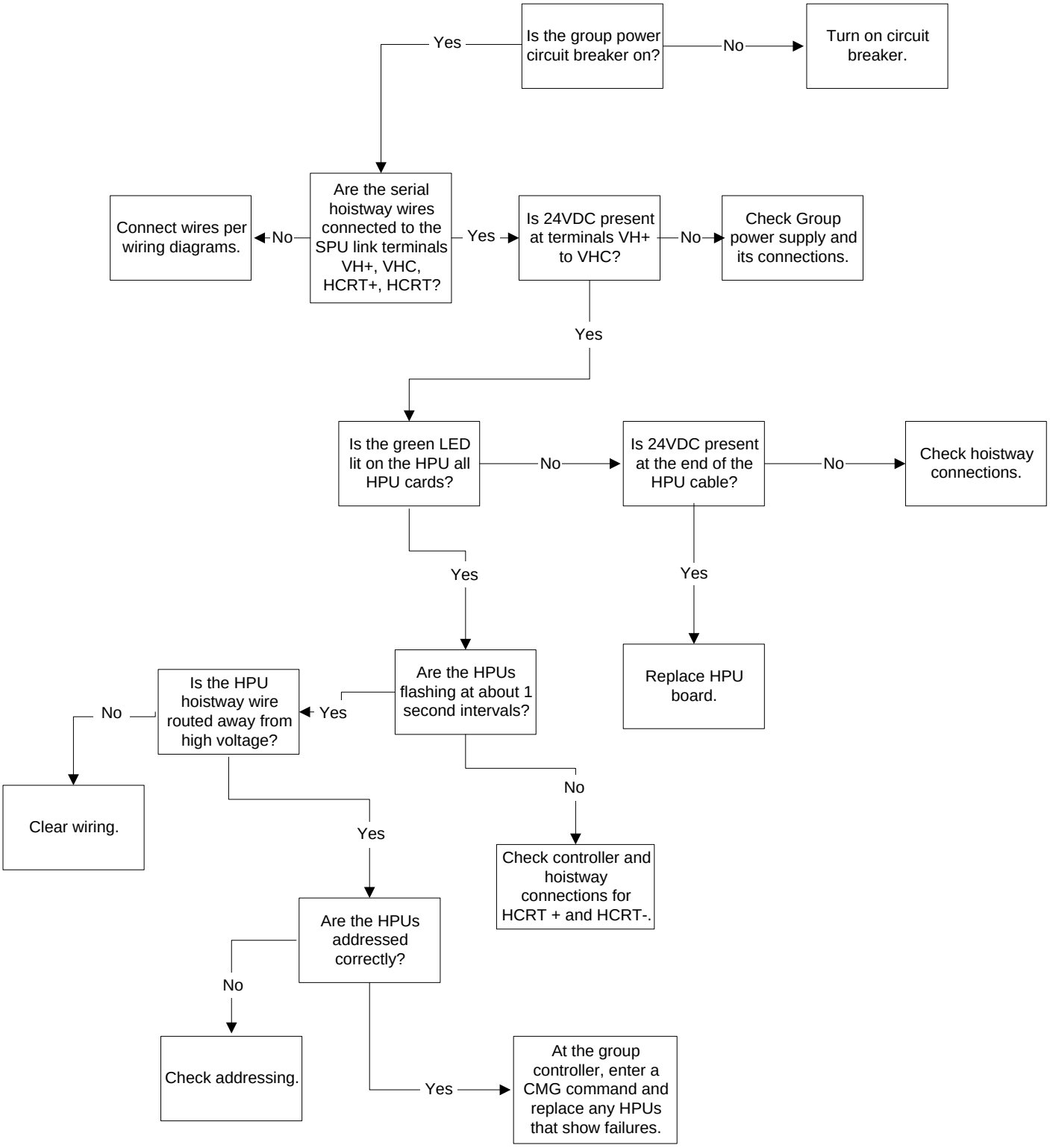
CEN DL CG relays not energized



Car will not move on inspection.

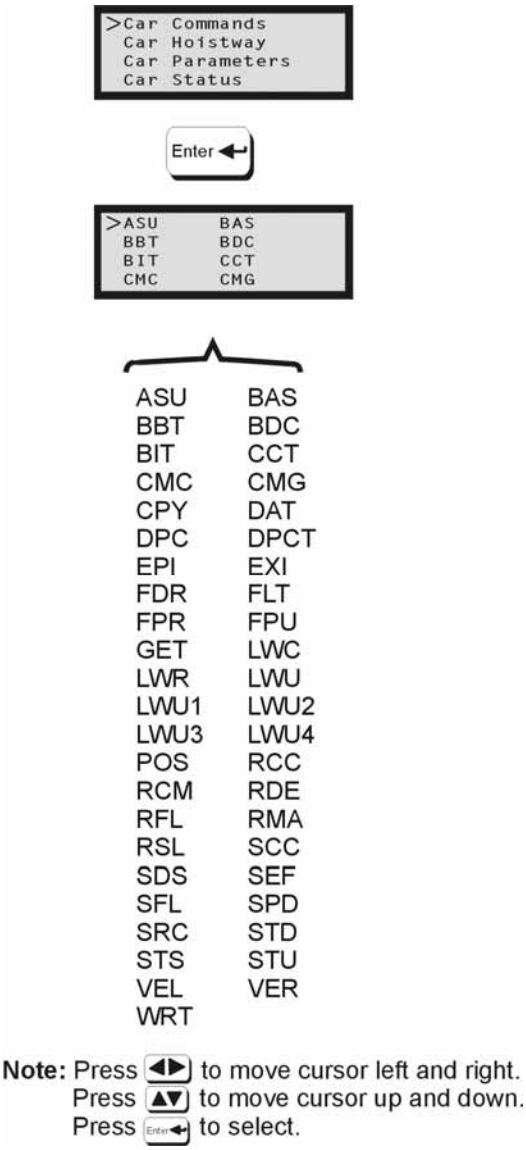


HPU not operational

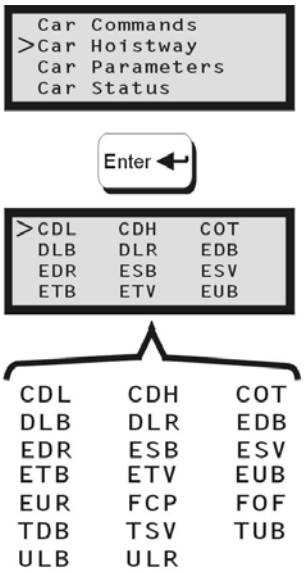


CCU Display Sub-menu Reference Charts

<u>Car Commands:</u> Each Command is activated when selected.

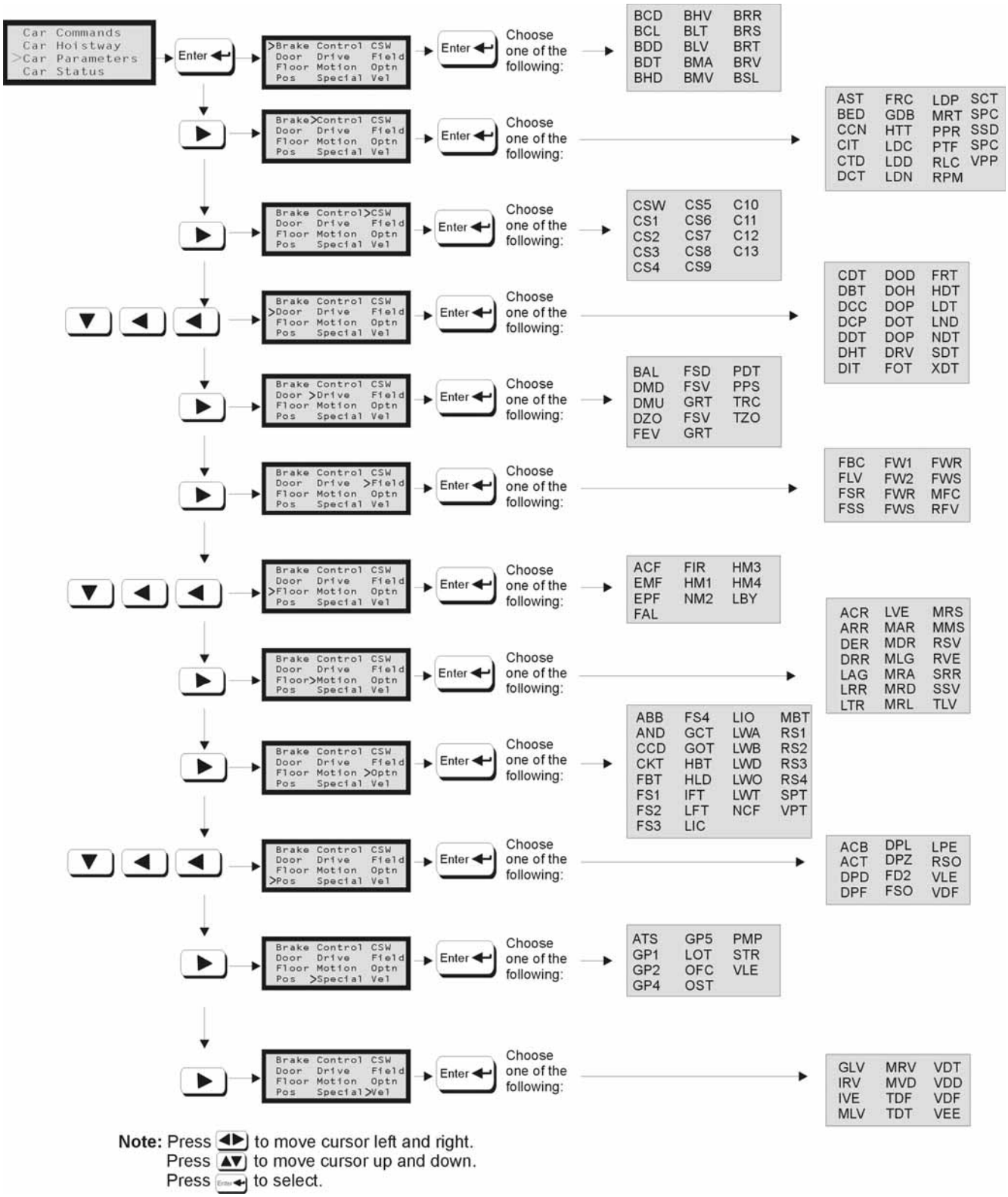


<u>Car Hoistway</u>: Data is displayed at each selection.



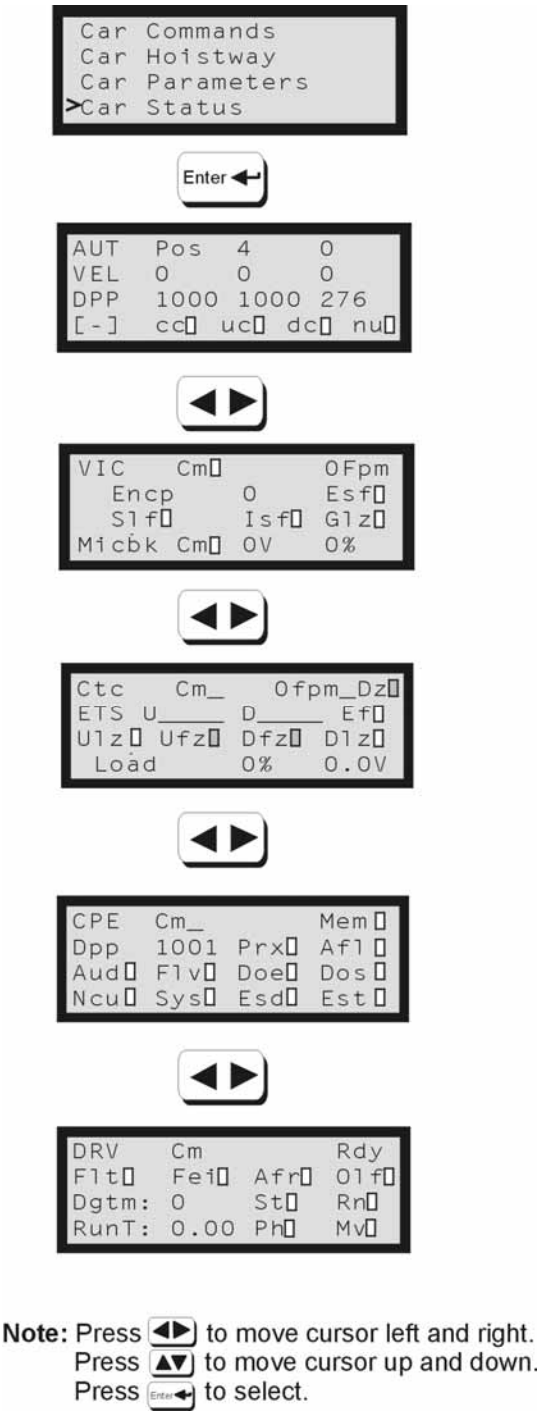
Note: Press ◀▶ to move cursor left and right.
Press ▲▼ to move cursor up and down.
Press Enter to select.

<u>Car Parameters</u>: Data is displayed at each parameter when selected.



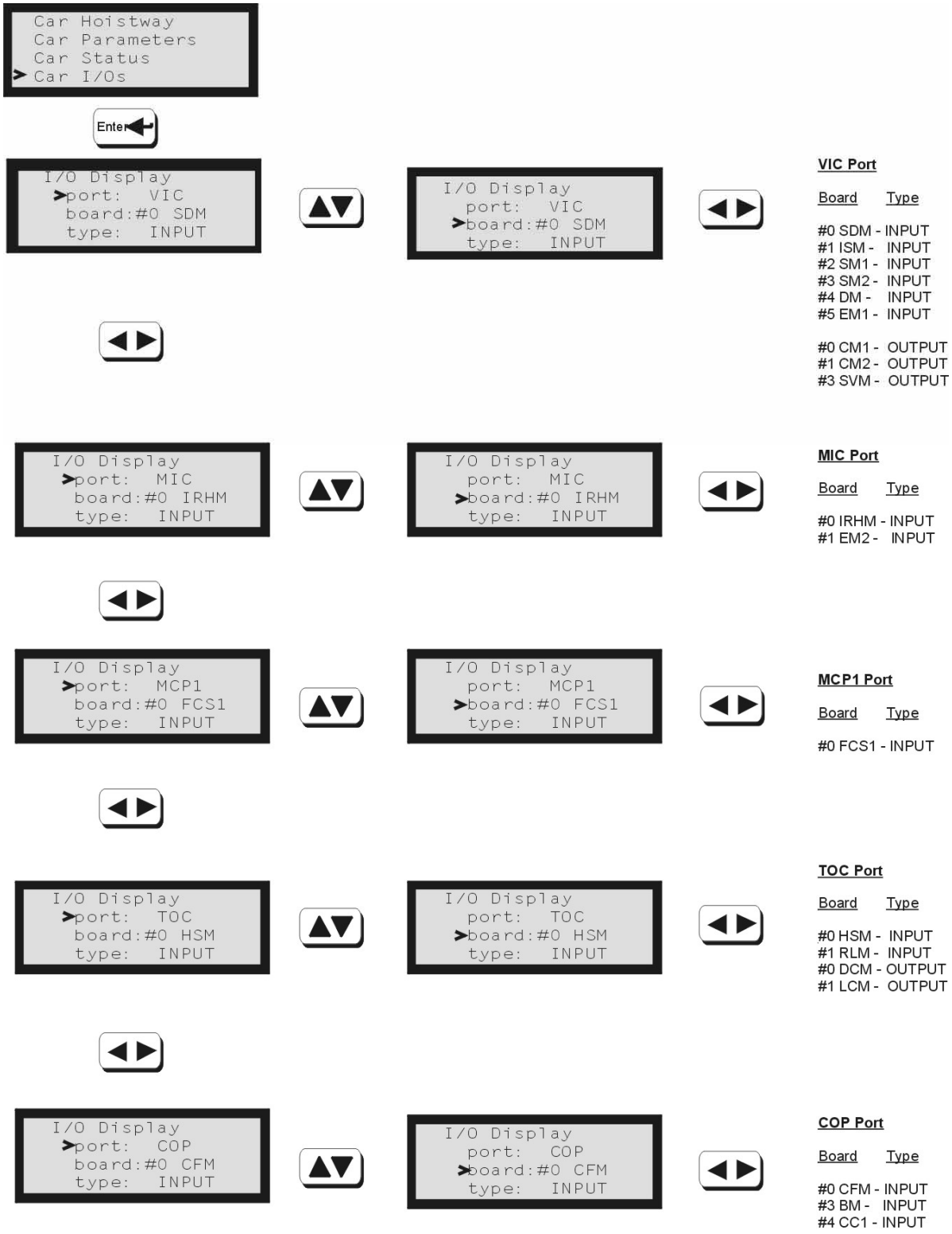
Note: Press ◀▶ to move cursor left and right.
Press ▲▼ to move cursor up and down.
Press Enter to select.

Car Status: Data is displayed at each selection.



Note: Press ◀▶ to move cursor left and right.
Press ▲▼ to move cursor up and down.
Press Enter to select.

Car I/Os: This sets the module that is displayed on the CPU I/O display LEDs.



VIC Port

Board	Type
#0 SDM -	INPUT
#1 ISM -	INPUT
#2 SM1 -	INPUT
#3 SM2 -	INPUT
#4 DM -	INPUT
#5 EM1 -	INPUT
#0 CM1 -	OUTPUT
#1 CM2 -	OUTPUT
#3 SVM -	OUTPUT

MIC Port

Board	Type
#0 IRHM -	INPUT
#1 EM2 -	INPUT

MCP1 Port

Board	Type
#0 FCS1 -	INPUT

TOC Port

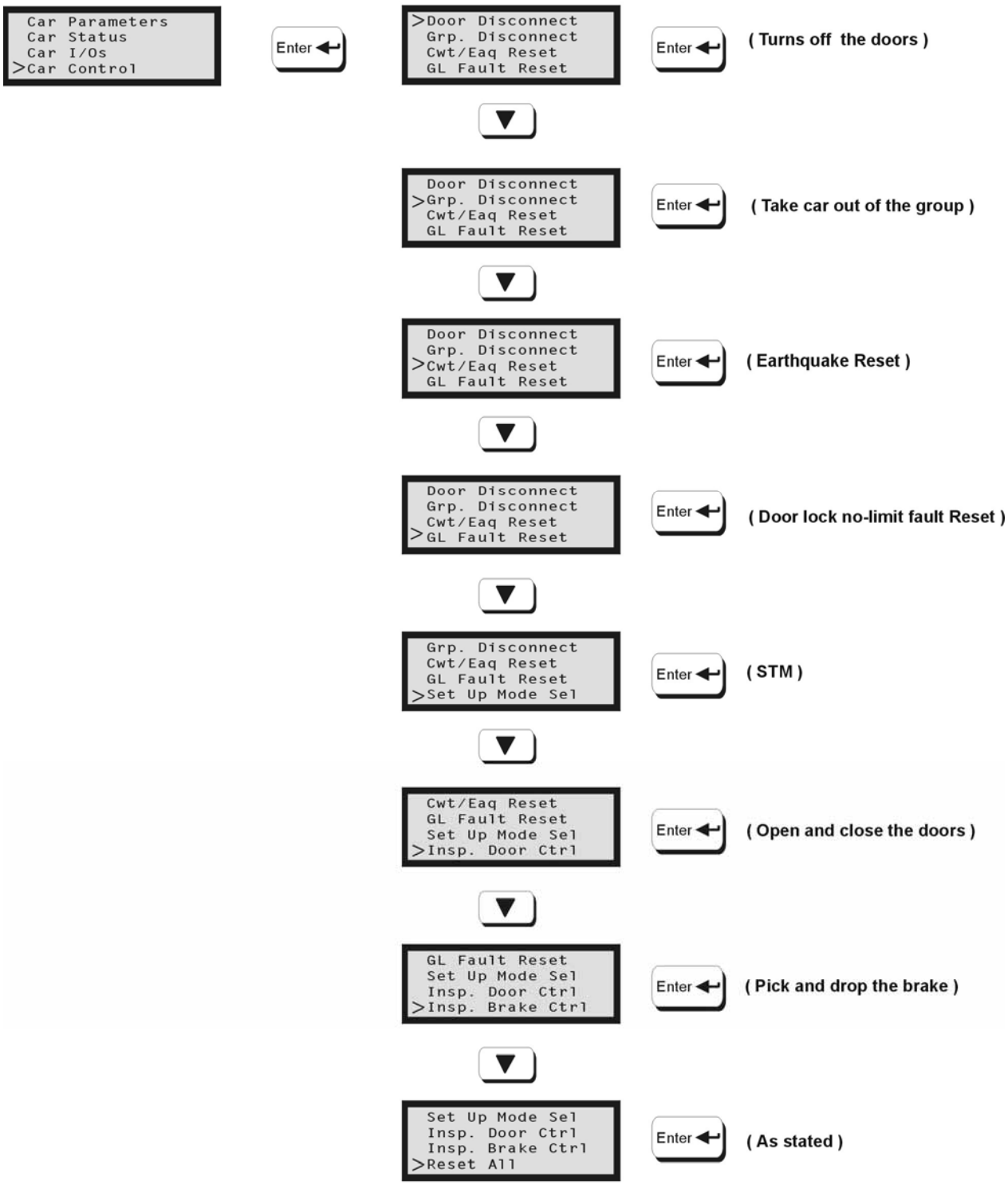
Board	Type
#0 HSM -	INPUT
#1 RLM -	INPUT
#0 DCM -	OUTPUT
#1 LCM -	OUTPUT

COP Port

Board	Type
#0 CFM -	INPUT
#3 BM -	INPUT
#4 CC1 -	INPUT

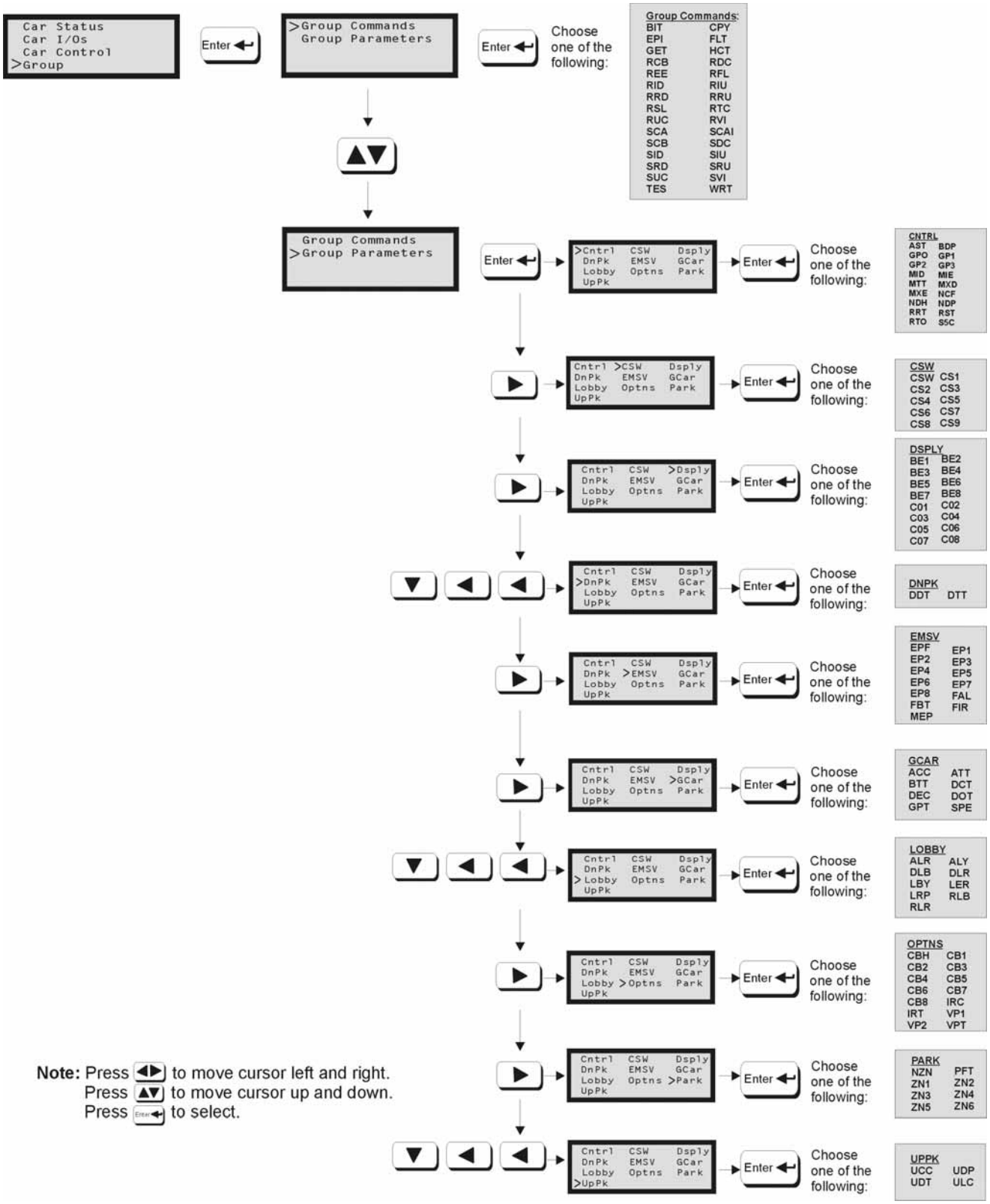
Note: Press ◀▶ to move cursor left and right.
Press ▲▼ to move cursor up and down.
Press Enter to select.

Car Control: The function is activated when selected.



Note: Press ◀▶ to move cursor left and right.
Press ▲▼ to move cursor up and down.
Press Enter to select.

Group: Data is displayed at each selection.



NOTES

SECTION 20 – GLOSSARY OF TERMS

Below is list of commonly used terms that you will find throughout this manual. This section is developed to assist in understanding the meanings of these terms.

TERM	Description of Term
Address	A communication location given to a device usually using header jumpers.
Binary	A mathematical way to count using only 1 and 0 used in Digital communications.
Bit	A variable setting, which determines enabling, or disabling of specific features in the system.
Bite	A digital word that consists of 1 and 0.
Brake	An electro/mechanical device used to prevent the elevator from moving when the car is at rest and no power applied to the hoist motor.
Brake Coil	The wiring coil in the brake assembly that when energized allows the car to move.
CC1	The first Car Call board on the elevator car. Mostly mounted in the Car Operating Panel.
CCU	Central Control Unit
Choke	An inductor/capacitor network used to help smooth out the ripple voltage in a rectified direct current circuit (SCR Drives).
Circuit Breakers	A resettable device designed to open a circuit when excessive current flows in that circuit.
Commands	A request entered by the user, which orders the controller to perform a specific function.
Confidence Test	A self test displayed in the terminal mode of a laptop during startup of the CCU.
Control Status Words	A series of Digital words that consists of bits that are field changeable.
COP	A car operating board where the ar key switches and buzzers wire to
CPC	The car port controller
CPE	Car position encoder board
CPT	Car position transducer board (tape Selector assembly)
CTC	Car top controller
Device	A physical/mechanical component monitored by and used to execute/trigger input and output signals.
Discrete device	An external device that only accepts an output from the Microprocessor.
Download	A process of taking information from the controller and storing it on the laptop.
Emergency Terminal Slowdown Vanes	Vanes located at the top and bottom of the hoistway that monitor the speed of the elevator in those regions.
Encoder	A device used to change motion into a digital signal.
Eprom	Erasable programmable read-only memory.
Error Codes	A failure status indicator, which is returned by the system in order to locate the source/resolution of a problem occurrence.
Fault Code	See Error Codes.

TERM	Description of Term
Feedback	The transmission of current or voltage from the output of a circuit or device back to the input, where it interacts with the input signal to modify the operation of the circuit or device.
Final Limits	Mechanical switches wired into the safety circuit located a specified distance beyond normal travel at the top and bottom of the hoistway.
Flash	
Full Load	Rated capacity of the elevator
Fuses	A non-resettable device that opens when its current rating is exceeded.
Generator	An electro/mechanical device that converts AC current to DC current.
Governor	A mechanical speed control mechanism.
Group	A system that controls 2 or more elevators by governing assignments in response to hall calls.
Hall Lantern	A corridor mounted signal light indicating that an elevator car is approaching that landing and the direction in which the car is to travel.
Header Jumper	A small jumper assembly made to slip over pins in order to complete a circuit.
Hoist Machine	The machine used in hoisting the elevator.
HPU	Hall processing unit used to convert or invert the push button or hall lantern signal to serial communication.
HPU Term	A termination board located at the bottom of the serial riser to load the voltage and communication signal.
I2C	The type of communications used by the VIC and MIC.
Input	Data entered by the user or from external mechanical devices, which is necessary for the system to process information and execute commands.
Leveling Vanes	Vanes located at each floor at a specific height from the floor that is used to tell the system where exact floor level is located.
Load Weigher	A device used to determine the weight on the car by means of using electro/mechanical switches or a proximity sensor.
Log On	A process where the user enters a command that will allow access to the microprocessors information.
Loop Circuit	A continuous circuit connecting the motor and generator armatures in series with each other.
Loop Filter	See Choke.
Magnatek DSD 412	The brand and model of DC drive used to send control voltage to the DC motor.
Magnatek HPV 900	The brand and model of the AC drive used to send control voltage to the AC motor.
Mainline	The mechanically operated switch in the machine room that applies or removes power to the elevator system.
MIC	Machine room interface controller.
Motor Field	The portion of a DC motor which produces the magnetic field for the armature.
MPC	Machine room port controller
MPE	Machine room port expander
Normal Limits	Mechanical switches at each end of the hoistway that is wired to the direction circuits.
NVRAM	Non-volatile Ram memory used in the Magnetek drives.
Optical Leveling Unit	A car device consisting of emitters and detectors that provide signal to the controller as they pass hoistway vanes.

TERM	Description of Term
Output	Data (signals) sent from the Controller to the mechanical devices to (de) activate.
Parameters	Field adjustable settings that allow the user to program the system.
Response	(Gain) Refers to how closely the motor control systems responds to system changes.
Rollback	Refers to when the car slightly moves at the start of a run in the opposite direction for a short period of time.
RVU	Remote Video Unit found in the machine room that accesses the controller information.
S Curve	An adjustable speed pattern profile used to accelerate/decelerate and stop the car at the desired floor.
SCR	Silicon Controlled Rectifier used in the DC drives of Magnetek.
Serial communication	Information transmission in which the characters of a word are transferred in sequence over a single line.
Shunt Field	The primary magnetic field of a DC generator connected in parallel with the armature.
Single Phase	An AC voltage source consisting of 2 wires where only one wire is energized.
Slowdown Limits	Mechanical switches at the top and bottom of the hoistway that are used as backups to slow the car down should the main S-curve pattern fail.
System Intertia	The time it takes to accelerate at rated torque to motor base speed.
Tach	A small DC generator used in proving speed feedback to the controller in a generator drive system.
Temporary Jumpers	Short pieces of wire filed connected to temporarily bypass critical circuit.
Terminal Mode	A process of connecting to the microprocessor where information is exchanged back and forth by the use of characters.
Three Phase	An AC voltage source consisting of 3 wires each energized with 3 different power sources that are displaced 120 degrees apart in their AC sine wave.
TOC	Top of Car controller
Transformer	A static electrical device that uses electro/magnetic induction to transfer electrical energy between 2 circuits.
Upload	A process of taking information stored in the laptop and transferring it to the controller.
VIC	Velocity interface controller
Volt Ohm Meter	A hand held device that allows the user to measure voltage or resistance in a circuit.
VVVF	Variable Voltage Variable Frequency is a way of controlling an AC motor.
Wizard	The windows based program provided by CEC to communicate with the controller.
Zones	Field programmable areas of a hoistway consisting of a certain group of floors that when instructed will have an unassigned elevator park at

Diagram Terminology

Below is a list of acronyms and their meanings used throughout this manual.

Acronym	Meaning
_C	Car Call Input
ACB	Access Bottom Switch
ACD	Access Down Button
ACT	Access Top Switch
ACU	Access Up Button
AFR	Auto Fault Reset
ALF	Auto Light Fan
ASB	Audible Signal Button
AU	Automatic Operation
BK	Brake Relay and Brake Relay Input
BKC	Brake Control
BLS	Brake Lift Switch
CDL	Cab Down Lantern
CEN	Controller Enable Relay
CFCF	Car Fire Switch Off
CFON	Car Fire Switch On
CGS	Car Gate Sensing
CS	Car Safety Circuit
CTL	Car To Lobby
CUL	Cab Up Lantern
DC	Door Close Relay and Door Close Output
DCB	Door Close Button
DCL	Door Close Limit Switch
DET	Detector Edge
DFLZ	Down Floor Level Zone
DL6	Door Close Limit Switch @ 6"
DLS	Door Lock Sensing
DLZ	Down Level Zone
DNL	Down Normal Limit Switch
DO	Door Open Relay and Door Open Output
DOB	Door Open Button
DOL	Door Open Limit Switch
DP1	Digital Pulse Line 1 from Selector or Encoder
DP2	Digital Pulse Line 2 from Selector or Encoder
DRV	Drive Ready Verification
DRVS	Drive Shutdown Switch
DZ	Door Zone
DZS	Door Zone Sensor
EMSD	Emergency Stop Indicator
EMST	Emergency Stop Output from CCU
EPA	Emergency Power Automatic Lower

Acronym	Meaning
EPL	Emergency Power Light
EPX	Emergency Power car select
ESP	Emergency Power Sequence Transfer
ETSD	Emergency Terminal Stop UP
ETSU	Emergency Terminal Stop Down
FAL	Fire Recall Alternate
FBP1	Fire Bypass (Stop Switch)
FBP2	Hall Fire Bypass Aux (Stop Switch)
FLT	Fault Output from VIC
FLV	Floor Level Indicator
FR	Fire Recall Phase I
FSL	Fire Service Light
FSLH	Fire Service Light Hall
GL	Gate Lock Relay
GLB	Gate Lock Bypass
GLT	Gate Lock Enable
GRP	Group
GV	Governor
HFBP	Lobby Fire Bypass Switch
HFON	Lobby Fire Switch On
HS	Hoistway Safety Circuit
IC	Independent Service Car
ICA	In Car Access
ICAM	Access Monitor
ICI	In Car Inspection
ICS	In car Stop Switch
IL	Independent Service Lobby
ISB	Inspection Test Button
LBE	Lock Bypass Enable
LBM	Lock Bypass I/O Monitor
LVE	Leveling Enable
LVE1	Leveling Enable 1
MA	Main Armature Contactor
MACC	Master Access Enable
NP	Normal Power
NR	Nudging Relay and Nudging Output
OLF	Overload Fault
PT	Panel Test
PTB	Panel Test Button
PTD	Panel Test Down
PTU	Panel Test Up
RDY	Ready To Run
RSB	Car Call Reset Button for Fire and Independent
RX+/-	Receive Lines of Communication
SD1	Down Slowdown Switch 1
SD2	Down Slowdown Switch 2

Acronym	Meaning
SM	Start Master
SMC	Start Master Control
SU1	Up Slowdown Switch 1
SU2	Up Slowdown Switch 2
TCI	Top Car Inspection
TID	Top Car Inspection Down
TIU	Top Car Inspection Up
TX+/-	Transmit Lines of Communication
UFLZ	Up Floor Level Zone
ULZ	Up Level Zone
UNL	Up Normal Limit Switch

Drive Case Charts

Use Case 1 – Case 4 columns to record any changes and results when diagnosing the drive.

	Case 1	Case 2	Case 3	Case 4
Drive A1				
Contract car speed				
Contract motor speed				
Response				
Inertia				
Inner loop x-over				
Gain reduce mult				
Gain change level				
Tach rate gain				
Encoder pulses				
Mtr torque limit				
Reen torque limit				
Flux weaken factor				
Drive A5				
Motor ID				
Rated motor power				
Rated motor volts				
Rated excitation freq				
Rated motor current				
Motor poles				
Rated motor speed				
%no load current				
Stator leak. X				
Rotor leak X				
Stator resistance				
Motor iron losses				
Motor mech. Loss				
Ovld start level				
Ovld time out				
Flux sat. break				
flux sat slope 1				
flux sat slope 2				
Elevator Data D1				
speed command				
speed reference				
speed feed back				
speed error				
speed reg. Torque cmd				
est inertia				
	Case 1	**Case 2**	**Case 3**	**Case 4**
Power Data D2				
Torque ref				
motor current				
% motor current				
Motor voltage				
motor frequency				

	Case 1	Case 2	Case 3	Case 4
motor torque				
Power o/p				
Dc bus voltage				
Flux ref				
Flux o/p				
slip				
motor ovld				
drive ovld				
Flux current				
Torque current				
Flux voltage				
torque voltage				
Base impedance				
Est no load current				
Est rated RPM				

Table A

Terminal Backup Case Charts

Referenced by Section 6 page 6-14 through 6-15

Command		Pos Count	COTn	Count Distance	Distance (inches)
ULB	Uplimit Pos 1 (ULR1)				
	Uplimit Pos 2 * (ULR2)				
EUB	ETS Up Pos (EUR)				

Table B

Note: Count Distance =COT of Top Floor – Pos Count

Distance In = Count distance $\div\left(\frac{DPF}{10} \div 12\right)$

Command		Pos Count	1000	Count Distance	Distance (inches)
DLB	Dn Limit Pos 1 (DLR1)				
	Dn Limit Pos 2 * (DLR2)				
EDB	ETS Dn Pos (EDR)				

Table C

Command		Up Velocity	Down Velocity	
TUB/TDB	Lim Vel 1			TSV1 = Avg. + 15
TUB/TDB	Lim Vel 2 *			TSV2 = Avg. + 15
ETB	ETS VEL 1			ETV1 = Avg. + 20
ETB	ETS VEL 2			ETV2 = Avg. + 20
ETB	ETS VEL 3*			ETV3 = Avg. + 20
ETB	ETS VEL 4*			ETV4 = Avg. + 20
ESB	VIC VEL 1			ESV1 = Avg. + 15
ESB	VIC VEL 2*			

Table D

* = If required.

TVS1 = Avg. UP and DN Vel + 15fpm