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SECTION 3 - ADJUSTMENT PROCEDURES

SPU Communication Verification

1. Verify all components are connected to the SPU Link.
2. Verify the elevator is on Panel Test (Inspection).
3. Place the Wizard into Terminal Mode.
4. Turn off the mainline disconnect for 10 seconds then back on.
5. Verify the Wizard Terminal Screen confidence test does not list any errors. Verify the CPU LED is flashing along with the green LEDs on the SMIC boards.
6. At the Wizard Terminal, type in the password "INSTALL" and press enter.
7. At the Wizard Terminal window, type in "CMC" and press enter. (See Car Commands for details.)
8. Verify that all the devices are communicating with the SPU.

Note: Depending on job configuration, there may be more CAR address location than shown. Check job folder for details.

9. Access the Wizard Diagnostic screen.
10. Run the car on inspection in the Up direction by using the controller UP test button and verify VEL is equal to SR (Speed Reference). Also verify both SR and VEL have green arrows. Run the car in the Down Direction by using the controller DOWN test button and verify speed. Then verify the SR and VEL green arrows change to red.

Magnet and Switch Placement

1. Verify the car in on Inspection.
2. Verify All Temporary Jumpers have been removed and all circuits are operational.
3. Verify that the floor magnets have been placed at the proper height at each landing so that when the car is floor level only the UFLZ, DFLZ and MLZ inputs are active.
4. Verify the proper floor preset magnet locations by running the car to each floor and comparing the seen locations with the locations as specified in Section 1.
5. Verify that the Terminal Slowdown Switches are at the required distance from the terminal floors for the required contract speed and the TSV values are also correct for that speed. TSV values can be viewed and modified under the Wizard program sub-menu "Limits." [See Table 1.]

Slowdown Limit Mounting Distances

FPM (m/s)	SLD1/TSV1
50 (0.25)	10" (25cm) / 50
75 (0.37)	15" (38cm) / 75
100 (0.50)	20" (51cm) / 100
125 (0.63)	25" (64cm) / 125
150 (0.75)	30" (76cm) / 150
175 (0.88)	35" (89cm) / 175

Table 1

6. Verify that the Up and Down normal limits stop the car in the appropriate direction.

Preliminary Slowdown Settings

1. Set the up slowdown distance by setting parameter DTA as follows:

FPM (m/s)	DTA (inches)
50 (0.25)	32 (12")
75 (0.38)	48 (18")
100 (0.51)	64 (24")
125 (0.63)	80 (30")
150 (0.76)	96 (36")
175 (0.89)	112 (40")

Table 2

2. Set the down slow down distance by setting parameter DT2 to the same setting as DTA was set to in the previous step.

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 DPP1+ and DPP1- on SPU-Link board.
2. Run the car Up and Down on Inspection at 12 fpm.
3. Adjust the meter settings to monitor the Pulsed voltage. The reading should be 2.7 VAC \pm 0.5 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 for both DPP1 & 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+, DPP1- and the other channel to DPP2+, DPP2- on the SPU-Link board.
2. Run the car Up and Down on Inspection at 12 FPM.
3. Verify the proper waveforms and amplitude of the square waves are correct.

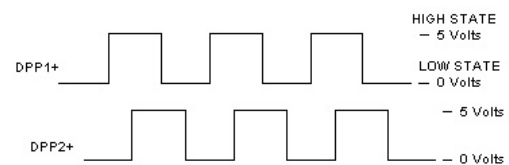


Figure 3-1

4. 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.)

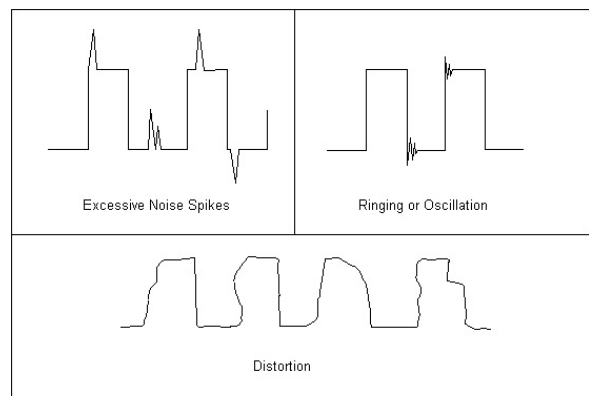


Figure 3-2

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.



Auto-Setup

1. Verify BIT 6,11 is reset so car runs at leveling speed only while on inspection.
2. Temporarily adjust the Valve Up Leveling speed to 20 FPM.
3. Place temporary jumpers from UNL to DNL. This will disable these direction limit switches.
4. Place the elevator below the bottom floor with just the ULZ and UFLZ inputs activated.
5. Activate the Wizard Terminal window (black screen).
6. Type in “**ASU**” and press Enter.
7. The DPC count will change to 100 to ensure the auto setup mode is in effect.
8. Press and hold the up button on the controller.

Note: *Should car stop before the top floor, setup will be invalid.*

9. While elevator is running up observe the LCD Display or the Wizard Car Diagnostics window.

Note: *DPC value will change from 100 to 1000 upon passing the lowest landing floor magnet and will confirm proper starting of the Auto Setup Operation.*

10. Verify the DPP count is increasing in value and the DPP LEDs are flashing on the front of the SPU-Link.
11. Once car has stopped on its own, above the top floor, return to the Wizard Terminal window. The prompt should display “Normal”.

12. Type **FCP** command and press Enter.

Note: *Once a successful scan is completed, the FCPs will change from their default values, i.e. 1000, 1400, 18000, to the actual floor counts, i.e. 1000, 1420, 1881, etc.*

13. Once the FCPs are verified that the scan was successful, type **WRT** and press Enter.
14. Select Door Disconnect from the panel buttons. Pressing the Door Disconnect Button once will place the controller in Door Disconnect Operation. This will cause the Door Disconnect Button to flash on and off once per second.

15. Place the Panel Test switch to Auto and verify the car re-levels down to the top floor.

Running High Speed

1. Once the elevator has re-leveled to the top floor, enter **STD** and verify the car runs on automatic to the next floor below.
2. Continue to enter **STD** and verify the car stops at every floor. Once the car reaches the bottom floor, type **STU** and press Enter. This will run the car to next floor in the up direction.
3. Continue to enter **STU** and verify the car stops at every floor.
4. Once the elevator reaches the top floor, type **STD** and monitor the SR and confirm it displays the elevators contract speed. Also monitor VEL and adjust the valve down high speed adjustment to obtain full contract speed.
5. Once at the bottom landing, type **STU** and monitor the VEL in the Up direction. Confirm the elevators speed in the up direction is the required contract speed.

Note: *UP Direction speed is controlled by the amount of oil the pump can transfer. On a submersible (direct coupled motor and pump) this is non adjustable. On a dry (belt drive) pump unit the pump speed and output can be adjusted by reconfiguring the pump and motor pulley ratio. Any variance in the actual car speed and the contract speed in the up direction should be reported to your supervisor as soon as possible.*

“Speed Curve” and Floor Accuracy Adjustments

1. Display the Car Diagnostics Window.
2. Run the elevator on multi-floor runs up and down into the same mid hatch floor.
3. Adjust the valve to provide smooth acceleration away from and to obtain full speed within 36”. Adjust the deceleration to provide 2 to 4 inches of stabilized leveling speed prior to floor level stop.
4. Follow the valve manufactures adjustment procedures to obtain proper ride quality, performance and leveling accuracy.



Hydro Speed Profile

The following parameters are non adjustable and only present to allow monitoring of the “S” curve

based on an internal speed profile. These will not affect the actual running profile of a Hydraulic Elevator. All performance adjustments are to be made via the Hydraulic Valve adjustments.

Parameter	Range	Default	Units	Description of Car Adjustment Parameters
TLV	Non Adjustable	5	DPP	T ransfer to L eveling V ane (DPP): Minimum distance from floor level at which the constant leveling velocity should take effect.
SST	Non Adjustable	16	1-64 SEC	S oft S tart T ime: The time it takes from the start of up valve sequence until the car starts to move.
TFD	Non Adjustable	1	Number	T op speed F lat top travel D istance:
DER	Non Adjustable	100	Feet/ min/ sec	D Eceleration R ate This is the rate of deceleration in the speed profile.
ACR	Non Adjustable	100	Feet/ min/ sec	A Cceleration R ate This is the rate of acceleration in the speed profile.

Table 3



Miscellaneous Safety Parameter Adjustments

- Using the Terminal Window set the following parameters. See Table 4.

VEE	Highest difference between Speed Reference and Velocity during Acceleration plus 30.
MLV	160
MRV	60

Table 4

Terminal and Emergency Slowdown Limit Adjustments

- Perform multiple types of floor runs (1, 2, 3 and high speed) into the top terminal landing.
- Type in “**ULB**” and press Enter after each run into the Up terminal landing. Record the **Up Slowdown Limit** position lowest **DPP** count and speed.
- Type in “**ELB**” and press Enter after each run into the Up terminal landing. Record the **Emergency Up Limit** position lowest **DPP** count and speed
- Repeat for the bottom terminal landing using “**DLB**” command and record the **Down Slowdown Limit** position highest **DPP** count.
- Compare the **ULB** and the **DLB** limit positions recorded in step 2 and 3. They should be within 3 DPP counts of each other. If not adjust either **ULR** or **DLR** values for each switch, i.e. **ULR1** for **SU1**, **DLR1** for **SD1**, etc.
- Set the corresponding **TSV** speed (**TSV1** is for **SU1** and **SD1**, etc.) value 15 fpm higher than what was recorded from using the **ULB** and **DLB** commands in the previous steps.
- Set parameter **LPE** to a value between 20 to 30.

- Make multiple runs into the terminal landings and verify that fault 11 does not occur. If an 11 error occurs, the **LPE** value may have to be higher.
- Set the **ESV** parameters to 25 fpm higher than the corresponding **ELB** values, **ESV1** higher than **TSV1**, etc.
- Run the car at high speed into the top and bottom landings and verify no errors are recorded.

Miscellaneous Adjustments

Setting the Hoistway Access

- Place the car at the top floor on Inspection/Access operation (**ICA**).
- Set parameters **ACT** to a value to stop the car at a level to allow safe access to the car top.

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

- Access the car down from the top floor verifying the car stops where desired. Readjust **ACT** as needed to obtain proper stopping point.
- Repeat at bottom floor setting **ACB** to stop the car in the up direction at a point to allow safe access to the Pit Area.

NOTE: If top access is located other than top floor, set **ACF** to the Top Access Floor.

Setting Pump Motor Running Timers

- Set Car Parameter **PMP** to allow pump to continue to run after up leveling valve de-energizes to ensure soft final stop in up direction. This is normally set for 5 seconds.
- Set Car Parameter **LOT** to allow car to fully travel from bottom landing to top landing running at Inspection/leveling speed. Record run time and add 10 seconds to recorded time and enter into **LOT** parameter.



Various Door, Fire Parameters and Control Status Word Settings

Door Operational Bits			
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	S	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	S	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.
6	3	S	Set to disable electronic detector edge time out.
6	4	S	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.

Door Operation Parameters			
PAR	RANGE	UNIT	DESCRIPTION
CDT	16-200	1/16 Second	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	Seconds	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	Seconds	Door open Delay Time after activation of DOB input.
DHT	0-64	1/16 Second	Door Hold Time: Delay time before high-speed door opening. Only used on Dover OHS door operator circuits.
DOH	0-360	Seconds	Extra Door Open button Hold time: Only used with door hold buttons.
DOP	5-20	Seconds	Door Open Protective time: Amount of time allowed to open the doors before taken out of service on door protects
DOT	0-60	Seconds	Door Open button Time-out: Maximum amount of time doors are allowed to remain open form the door open input.
LDT	32-200	1/16 Second	Long Door open Time: Time used when car answers a hall call.
NDT	5-120	Seconds	Nudging Door Time: Time doors are allowed to be held open before nudging goes into effect.
SDT	4-48	1/16 Second	Short Door Time: Door time after electric eye or safety edge has been activated.



Fire Service Operation Parameters			
PAR	RANGE	UNIT	DESCRIPTION
FAL	1-# FLs	Unit	Fire recall Alternate Floor: The alternate floor to which car recalls when main fire floor smoke sensor (FAL) is activated.
FBT	1-65535	1/64 Second	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 Service Operational Bits			
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	S	When set, the in-car fire service light also operates during phase II.
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	S	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	S	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.

Car Call Operational Bits			
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.

