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

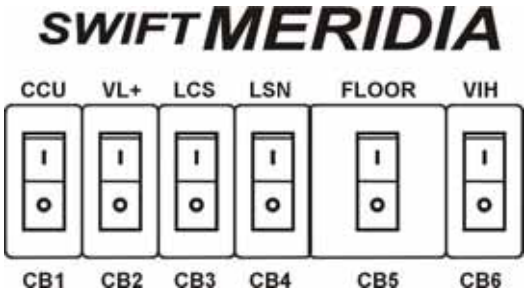


Figure 2-1

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

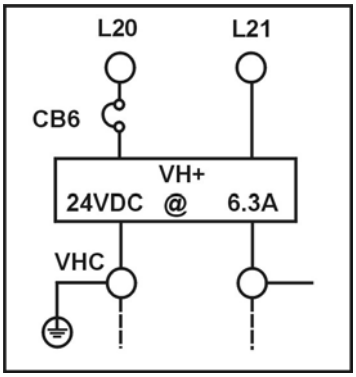


Figure 2-2

      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

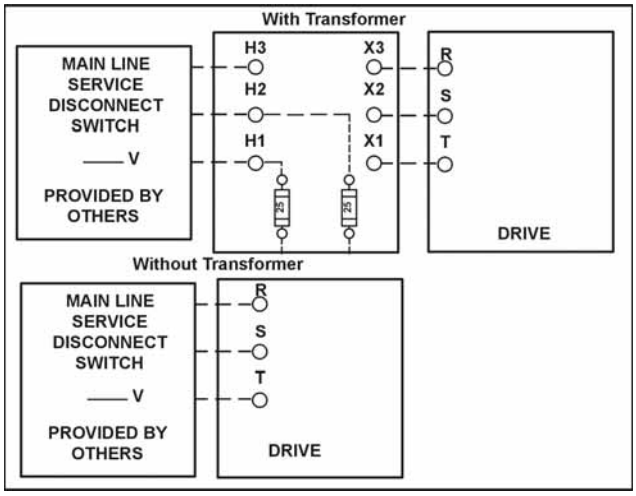


Figure 2-3

Warning!

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

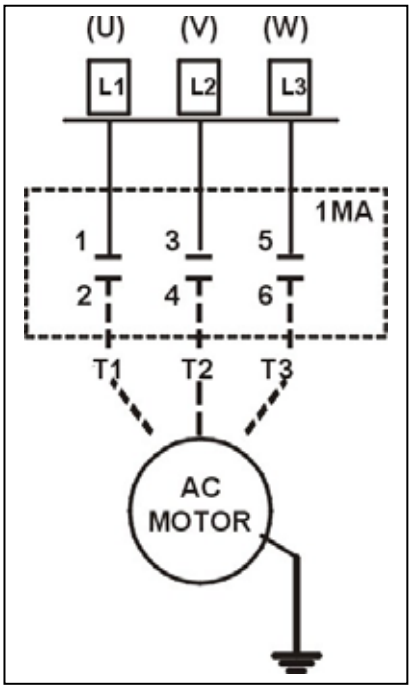
Warning!

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

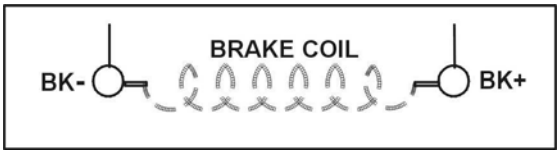


Figure 2-5

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:

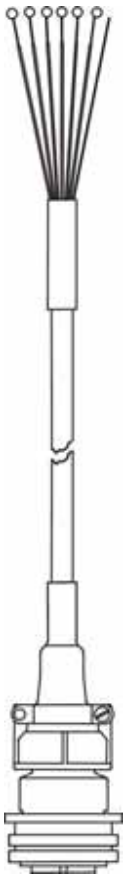
A. Disconnect the brake coil leads (BK- & BK+).

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

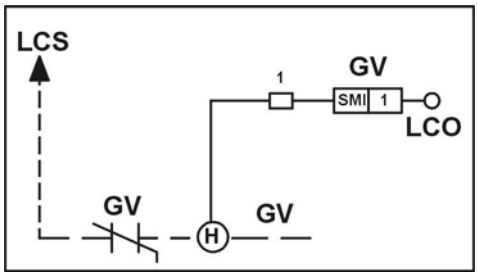


Figure 2-7

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

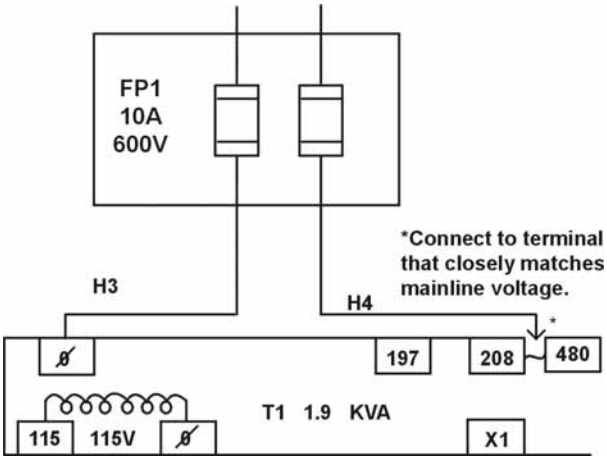


Figure 2-8

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)

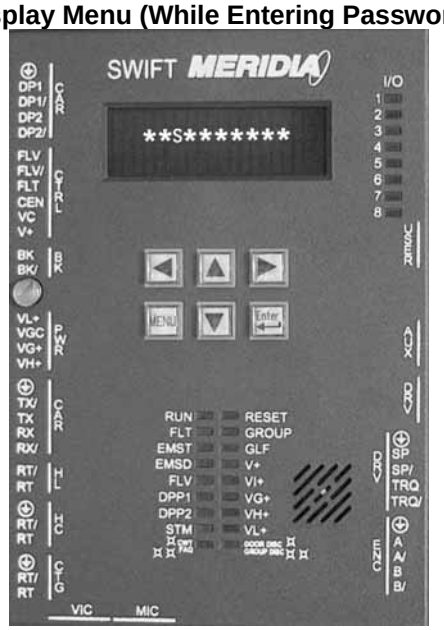


Figure 2-10

SETUP MODE AND WRT COMMAND

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

Meridia CCU (While on Main Menu Screen)

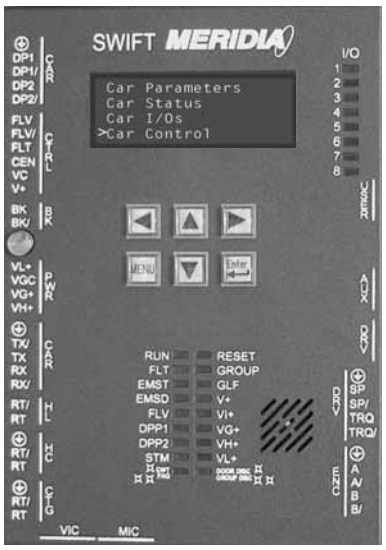


Figure 2-11

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)

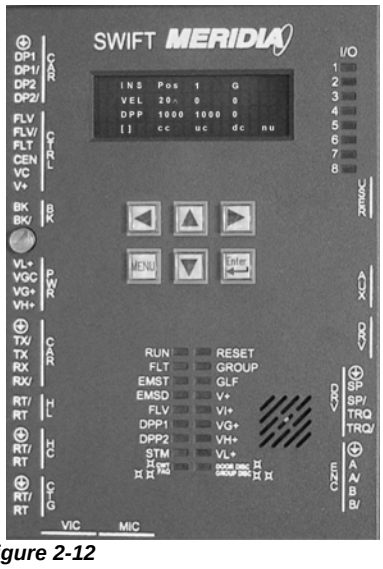


Figure 2-12

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

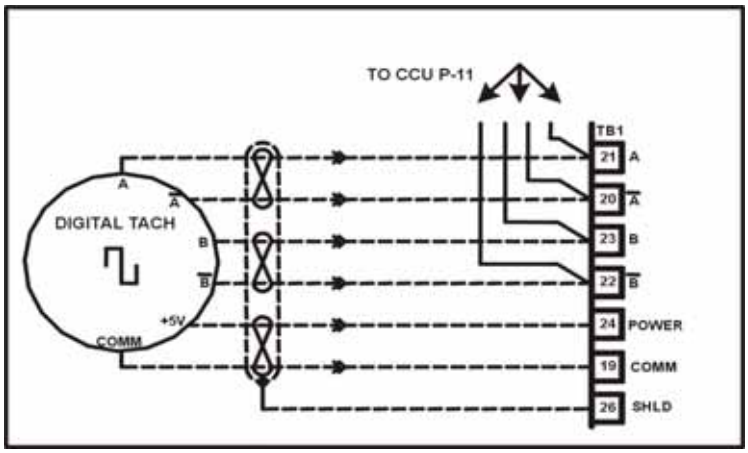


Figure 2-13

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

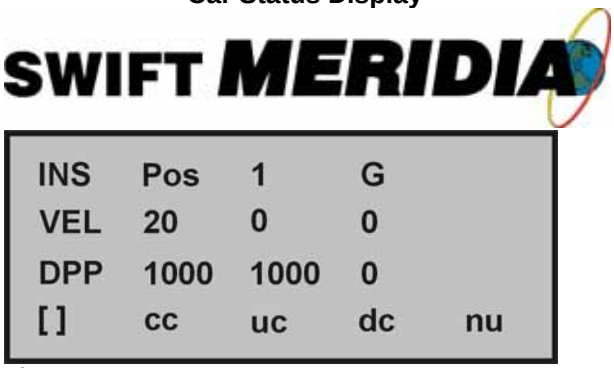


Figure 2-14

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

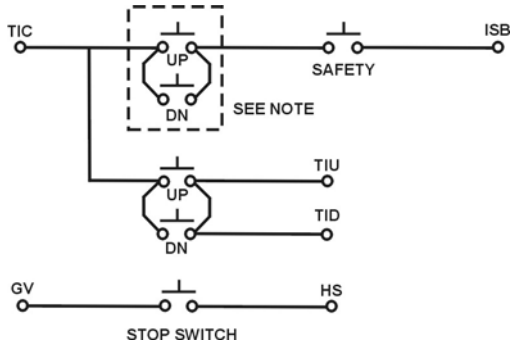


Figure 2-16

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