SECTION 2 - FUTURA STARTUP PROCEDURES HPV

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.]

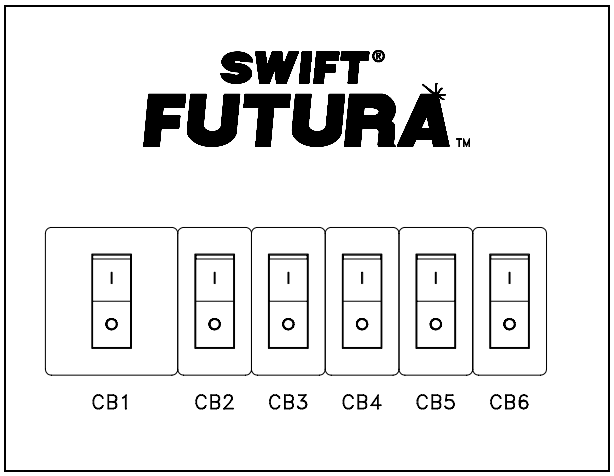


Figure 2-1

3. Turn the AUTO/TEST switch to the **TEST** position.

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

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

A. The first circuit common to all drive types is an independent single phase supply for the cab lighting circuit. Usually 120 VAC for North America and 230 VAC for the remainder of the world. This circuit should be a 15 amp fused circuit. [See Figure 2-2.]

Cab Circuit Lighting

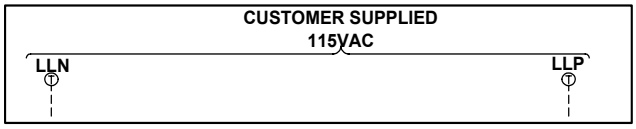


Figure 2-2

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

B. The second circuit required common to all drive types **(for the 1st controller of each group only)** is a separate independent emergency backed single phase 120 VAC circuit for North America and 230 VAC circuit for the remainder of the world to supply power for the hall call circuitry. This circuit should also be a 15 amp fused circuit. [See Figure 2-3.]

Group Power Circuit

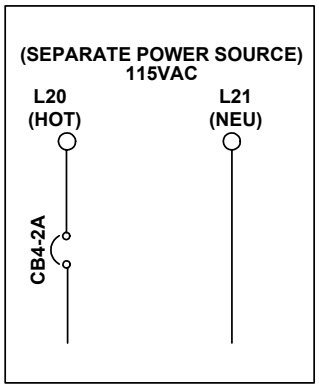


Figure 2-3

C. The third circuit required common to all drive types is 3 phase Main Line power. This 3 phase power will either connect directly into a fuse block in the drive side of the controller or to the primary side of an Isolation, Step Up or Step Down power transformer. If a power transformer is used the secondary side will be wired to the fuse block in the drive side of the controller. [See Figure 2-4.]

Three-Phase Power Circuit

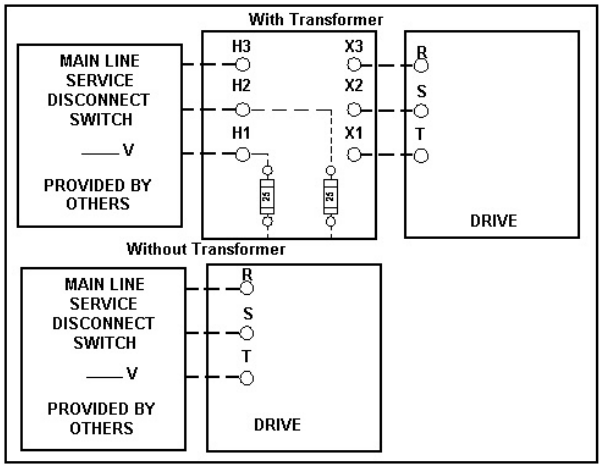


Figure 2-4

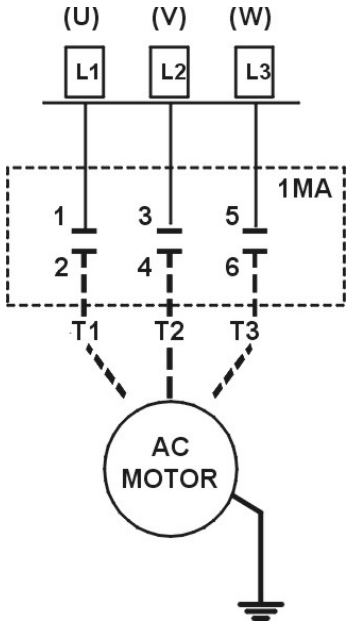
Warning! All wire sizes are to be in accordance to the National Electrical Code.

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.

D. **Power wiring to the hoist machine:** There will be 2 to 3 circuits required to the elevator hoist machine.

1) The first is to the motor that consists of current conductors wired from the drive output to the motor and a ground wire to the grounding lug at the drive side of the controller. [See Figure 2-5.]

Motor Wiring



AC Application

Figure 2-5

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

Brake Wiring

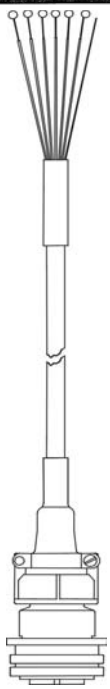
Figure 2-6

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

E. Motor Encoder wiring: The encoder wiring uses 3 twisted shielded pairs. This cable is provided from CEC on most applications. It is imperative that this wiring be run separately from the encoder to the drive side of the encoder. [See Figure 2-7.]

Motor Encoder

	ENCODER TYPE				TERMINAL		
	SOLID SHAFT ALL	HOLLOW SHAFT 1024			DSD 412	HPV 900	SWIFT 10K
	DYNAPAR 7 PIN	DYNAPAR 10 PIN	KUBLER 9 PIN	REULAND 9 PIN	TB1	TB1	CONN 2
5V	D	D	2	2	1	25	30
COM	F	F	7	1	43	19	31
A	A	A	1	3	2	21	26
$\overline{A}$	C	H	3	6	3	20	27
B	B	B	4	4	4	23	28
$\overline{B}$	E	I	5	7	5	22	29
SHLD					6	26	GND



SCR & VVVF Application

Figure 2-7

F. Governor wiring: Two 18 Gauge wires are required from the electrical safety switch on the governor to the controller.

Brake and Motor Check

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 straight-line diagram power distribution page.

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

2. With an ohmmeter measure the motor leads at the main contactor to ensure the motor is not grounded. This would be the at the 1MA contactor for VVVF job.

Transformer(s) Configuration

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

2. 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.

      1) 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.

      2) Turn on CB1 and verify there is 115 VAC between terminals LD1 and LD2.

      3) Turn off CB1 and turn on CB3 and verify there is 115 VAC present between LH and LCO terminals.

      4) Turn off CB3 and turn on CB5 and verify there is 115 VAC present between LSN and LCO.

      5) Turn off CB5. CB4 will be tested during group startup.

TEMPORARY Wiring Installation

1. Verify the mainline disconnect is in the **OFF** position.

2. Install the following ***temporary*** jumper. [See Table 1.]

Temporary Jumpers		
Circuit	**From**	**To**
Governor	LCS	GV&OSD*
Hoistway Safeties	GV	HS
Car Safeties	HS	ICS
Motor Room Insp. Switches *(NOT FOR TEMPORARY SWITCH)*	ICS TIC	II TIA
Group Power	V+	VG+
Normal Power	VG+	NP
Earth-quake	V+	EQA*
Drive Switch	V+	DRVS
Car Gate	DRV or GLT	RCG*& CG
Door Locks	DRV or GLT	RDL*& DL##
Secondary Locks	DRV or GLT	DI*&DI1*
Rope Gripper	RG5	RG7*
Landing By-Pass	LCS	LBP*
Car Door By-Pass	LCS	CDP*
Landing Door By-Pass	LCS	LDP*
Down Slowdown Limits	LCS	SDx
Up Slowdown Limits	LCS	SUx
Emergency Terminal Limits	LCS	ETSU&ETSD
Normal Limits	LCS	UNL&DNL

Table 1

*** if applicable**
Do not use Bypass Switch

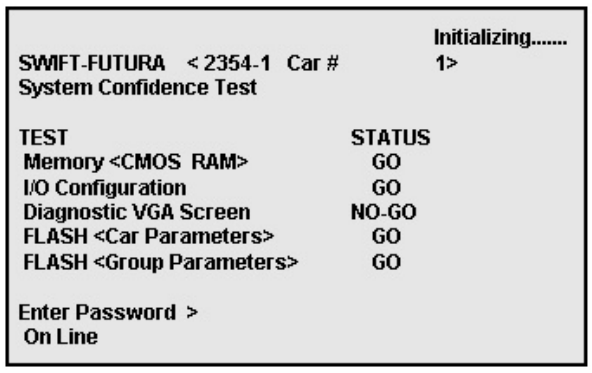


Figure 2-8

AC Voltage and Switch Test

1. Turn on the mainline disconnect.

2. Turn on CB2 and CB6 and verify the following:

   - The SPU front panel LED should flash red and then stay lit constant green.
   - 115 VAC voltage is present between LCS and LCO.
   - Verify that there is 24 VDC across V+ and VC on the SPU link board.
   - Verify the drive is operating and relay CEN is energized.

SPU Power-up, Initialization and Wizard Operation

SPU Power-Up and Wizard Connection

1. Verify the mainline disconnect switch and verify CB2 and CB6 are in the **ON** position.

2. **Connect a PC or Lap-Top 9 pin Serial Port to the 9 pin port on the SPU Link using a 9 pin RS-232 cable**.

3. Start the Wizard program.

4. At opening screen click on the Terminal button.

5. Cycle off CB2 then back on and check terminal for Confidence test. [See Figure 2-8.]

6. Verify all tests are a “GO”. Should there be a “NO-GO” in the Flash tests, go to System Initialization on page 2-5.

Note: *If the load weigher or VGA Card is not present at this time a “NO-GO” will appear at the Diagnostic Screen test. Disregard unless items are present.*

7. Enter the password – “INSTALL.”

8. Verify the prompt returned on the screen matches the car number. [i.e. C# 1=> is car 1 of this group.]

9. Enter IVE=50. (Inspection Velocity)

10. Set the following Brake Parameters:

Initial Brake Parameters

Parameter	Description
BMV =	Max brake voltage shown on the wiring diagrams
BLV =	Brake lift voltage shown on the wiring diagrams.
BHV =	Brake hold voltage shown on the wiring diagrams.
BCL =	16
BLT =	1
BMA =	Max. Brake Amps. shown on the wiring diagrams.
BDD =	64 (when using BCD Parameter)

11. Enter WRT.

12. Click the close button and return to the Wizard start menu.

13. Click on the Run Wizard button to connect to the Wizard Main Menu.

14. Click on the car to monitor. This should be the car you are connected to. This will take you to the Car Menu.

15. Click the Diagnostics Button to display the diagnostics window.

System Initialization (For No-Go Tests)

Note: *These procedures are to be used only if the confidence test shows a NO-GO in the FLASH TEST ONLY. [See Figure 2-9.]*

1. At the password prompt enter the following password – **HUDSON.BAY**

2. Enter the following command – **EPI2374,** wait for "EPI ok", than power down SPU at this point. *(note: default parameters will be loaded. Call CEC if you do not wish to lose adjustments)*

3. Power up SPU. Enter Password.

4. Enter the "GET" command and note the parameter that is returned. A value must be entered for this parameter in order for the test to be successful. See parameter listing for the proper default value. (i.e. DZD=2048 ENTER). Enter WRT after every change.

5. Repeat step 3 until an "OK" is received after the "GET" command. Enter WRT.

6. Enter the GRP command and repeat steps 2 and 3 for clearing a NO-GO Group Flash test.

7. Enter "CAR" command to return to the car prompt.

8. Return to step 6 of the SPU Power-Up and Wizard connection.

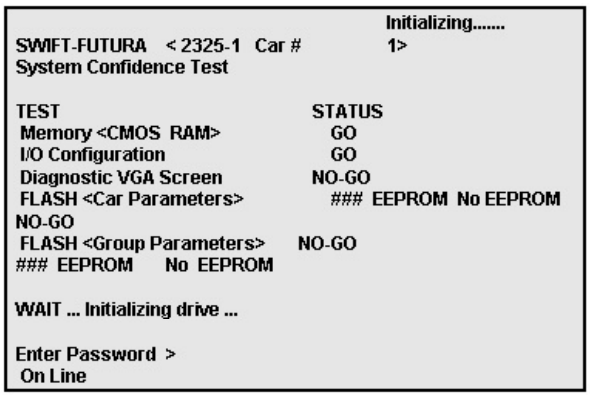


Figure 2-9

Establishing Correct Direction and Speed

Drive Setup

The drive is shipped pre-configured to suit the motor required for this application.

Note: *In order to successfully configure the drive, the motor details must be provided to CEC upon placing the controller order.*

Note: ***If any problems are suspected with the drive unit, refer to Table 1 for generic setting of the drive.***

The HPV 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.

1. Verify Drive Parameters per Drive table.

2. Connect the encoder cable appropriately and ensure that the cable is routed through a separate metal conduit.

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

3. Measure three-phase voltage and store in menu A4 (INPUT L-L Volts).

4. Use "STM" command if top of car is not wired.

5. Ensure that the cab is away from a terminal floor if possible. Use inspection switch to move the car UP.

6. If direction is correct but speed is excessive, reverse the encoder connections as follows:
   - Interchange the wires in terminals TB1-20 and TB1-22.
   - Interchange the wires in terminals TB1-21 and TB1-23.

7. If direction is incorrect and speed is stable, reverse the encoder connections as above but also interchange any two motor leads.

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

9. If the car runs slowly and the motor current is high then interchange the A – $\overline{A}$ wires connected to TB1-20 and TB1-21.

10. 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 may be needed. Adjust the drive parameter (CONTRACT MOTOR SPEED in the A1 menu).

HPV Drive Menus

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
UP/DN Threshold	0.6%
S-Curves A2	
Accel Rate 0	7.9
Decel Rate 0	7.9
All Jerk Rates 0	0
All Lev Jerk Rates 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	line 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
Pre-torque Src	EXT TB1
Pre-Torque latched	None
Pre-Torque latch src	None
Fault reset src	Serial

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	CONTACT CONFIRMED

Logic Outputs C3	
Log Out 1	RUN UP
Log Out 2	RUN DN
Log Out 3	N/A
Log Out 4	N/A
Relay Coil 1	READY
Relay Coil 2	RUN CONFIRMED

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 2)
Stator leakage X	9 (see note 3)
Rotor leakage X	9 (see note 3)
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

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

Note 2: This is the nameplate ***rotor*** rpm of the motor which is used to calculate the vector currents and has no bearing on the contract speed. If nameplate indicates ***field*** RPM (900, 1200, 1800, ect.), lower value by 2%

Note 3: 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 both STATOR and ROTOR LEAKAGE should remain at 9%.

Running the Car on Inspection

1. Place the controller in ***setup mode*** by doing the following steps.

   Note: *This function can be activated using terminal window and entering "STM" (setup mode).*

   Note: *This procedure will have to be done every time the power is cycled*.

   Setup enables operation without the car top unit. If the car top unit is installed and operational this will not be required.

   A. Press and hold the SPU button on the circuit breaker panel at the top of the controller until the **DISPLAY** buttons lights (about 5 seconds).

   B. Release the SPU button and press the Display button once.

   C. The Display button will now flash red and green. This will indicate you are in the setup mode.

   On the Diagnostics Screen in the wizard or the RVU screen, verify that the elevator is on inspection.

2. Verify the following inputs are activated for panel test (motor room) run.

SDx	LBP*	CG
SUx	(R) DL	(R) GL
ETSU	ETSD	GL1
DRV	DI&DI1*	GV
UNL	DNL	NP
DRVS	PT	EAQ *
HS #	*CS* #	*ICS* #

with Top of Car
* if available

3. For 2000 compliant controllers the following additional inputs must be activated

LDP	CPI	CDP
OSD	RPI	GTS

4. When there are rear doors on 2000 compliant controllers, the following inputs are needed

RCDP	RLDP	RCG
RDL		

5. Verify the following relays and modules are activated.

CG (RCG)	DL (RDL)	CEN
THC	CGL	FLT
CGDLA (2Kcode)		

6. Momentarily press the up button and verify the SM and the MC relay energize.

7. Press the up button and verify the direction of the drive sheave matches the direction pushed.

8. Run elevator up and down hoistway verifying the brake is clear from the brake drum.

Note: *If brake is rubbing the brake drum refer to manufacturer's manual for brake setup. Also refer to Brake section of the wizard program for proper brake voltage.*

9. Run the elevator in both directions verifying it runs without vibrations. See Drive information for eliminating vibrations.

10. Run the elevator both down and up verifying that when elevator is stopped, the brake holds the car from moving.

Note: *If the elevator keeps moving when stopped, refer to the manufacturer's manual on brake setup.*

Running From A Temporary Run Box

1. Remove jumper II to ICS.
2. Remove jumper TIC to TIA.
3. Wire temporary run box as per Figure 2-10.

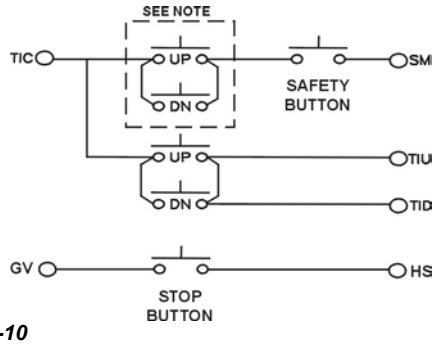


Figure 2-10

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

4. Verify the elevator runs in the proper direction from the temporary run box.
5. Verify that a stop switch is wired in the safety circuit and opens the safety circuit when activated.
6. Set IVE value for a safe working speed for the elevator.
7. Verify the car is on STM mode.

Using the Swift Station

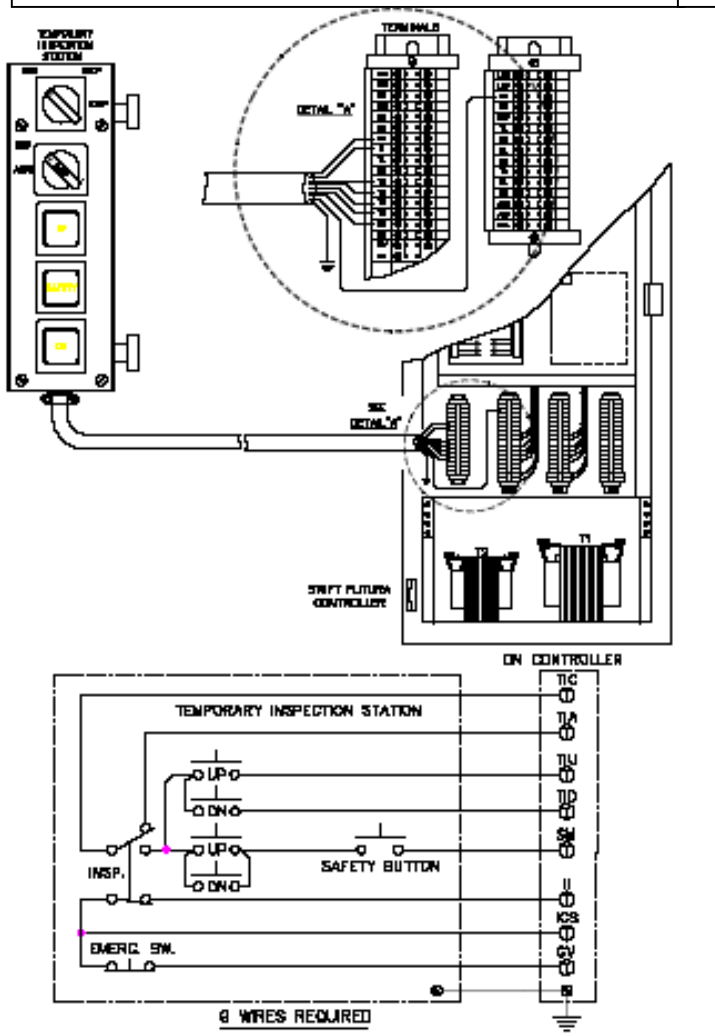


Figure 2-11

NOTES

