



## SECTION 4 - FUTURA STARTUP PROCEDURES Swift Drive

### 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 4-1.]

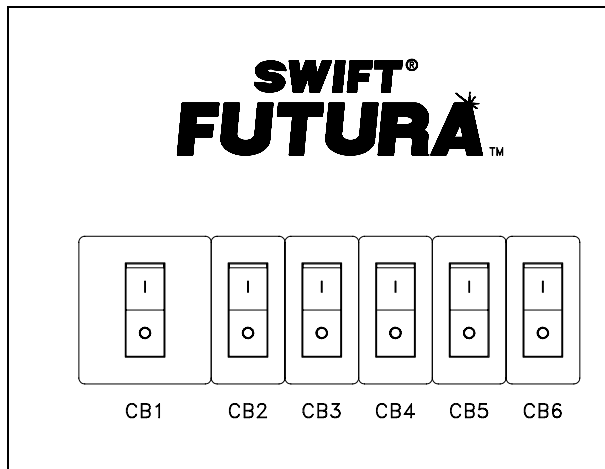


Figure 42-1

3. Turn the AUTO/TEST switch to the **TEST** position.
4. Verify that the following building wiring is connected as described in the Installation portion of this manual.
  - A. Cab Lighting Power: 120 VAC connects to LLP and LLN terminals located in the bottom of the controller.

#### Cab Lighting Circuit

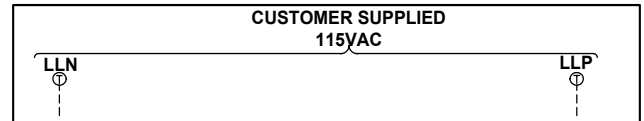


Figure 4-2

**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. 3 Phase Power: Connects from main line disconnect to the AC contactor terminals 1 – 2 – 3 or the isolation transformer if provided. [See Figure 4-3]

#### 3 Phase Power Circuit

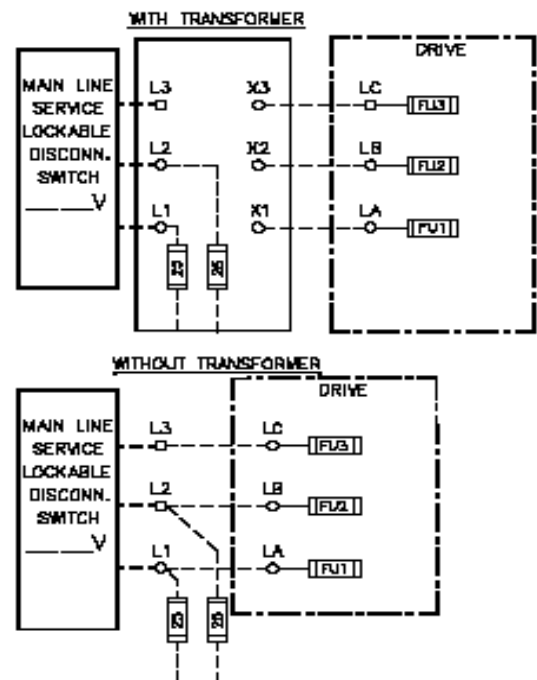
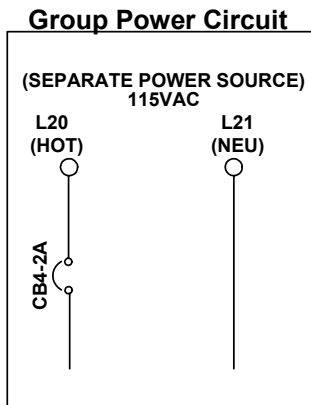


Figure 4-3



**STARTUP PROCEDURE Swift Drive**

- C. Group Power Source: 115 VAC connects to L20 and L21 terminals located in car 1.



**Note:** This power source should be emergency backed.

Figure 4-4

**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.

- 5. Verify that the following field wiring is connected as described in the installation section of this manual.

- A. Motor wiring: connects from motor leads to 1MA contactor terminals 2 – 4 – 6.

**Motor Wiring (AC Application)**

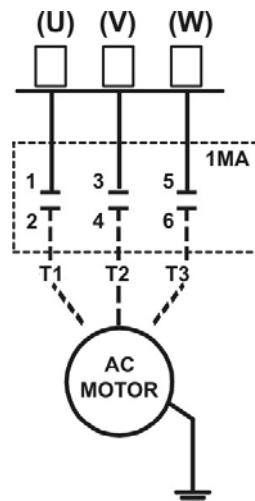


Figure 42-5

- B. Brake coil: connects from brake coil leads to BK+ and BK- on terminal strips located in bottom of controller. [See Figure 4-6.]

**Brake Wiring**

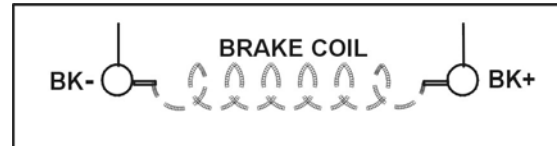


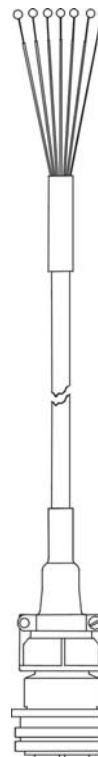
Figure 4-6

- C. Motor Encoder: connects from motor encoder to drive terminals. Use cable provided by CEC. [See Figure 4-7 and Table A.]

- D. Brake Switch: connects from brake switch to BDC board terminals and common supply see drawing 40 for details.

**Note:** Do Not run brake switch wiring with any high voltage wiring.

**Motor Encoder**



	ENCODER TYPE				TERMINAL		
	SOLID SHAFT ALL	HOLLOW SHAFT 1024			DSD 412	HPV 900	SWIFT 10K
	DYNAPAR 7 PIN	DYNAPAR 10 PIN	KUBLER 5 PIN	REILAND 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
A̅	C	H	3	6	3	20	27
B	B	B	4	4	4	23	28
B̅	E	I	5	7	5	22	29
SHLD					6	26	GND

Table A

Figure 4-7

- E. Governor Switch: connects from governor switch to terminals LCS and GV located in bottom of controller.



**STARTUP PROCEDURE Swift Drive**

**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 (wiring diagram) power distribution page (DWG 20).
  - 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 can be done at the 1MA contactor.

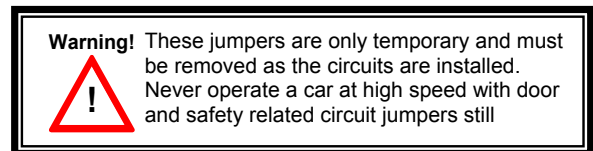
**Transformer(s) Configuration**

1. Verify all transformer taps are connected for proper voltage according to the Power Distribution page (DWG 20) 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 (DWG 20) 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 (DWG 20) 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 Jumper Installation**

- 1) Verify the mainline disconnect is in the **OFF** position.
- 2) Install the following **temporary** jumper. [See Table B.]



Temporary Jumpers		
Circuit	From	To
Governor	LCS	GV&OSD*
Hoistway Safeties	GV	HS
Car Safeties	HS	ICS
<b>Motor Room Insp. Switches</b> <i>(NOT FOR TEMPORARY SWITCH)</i>	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 B**

\* if applicable

## Do not use Bypass Switch



**STARTUP PROCEDURE Swift Drive**

**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.** Start the Wizard program.
3. At the SPU Connection Screen, click on the Terminal button.
4. Cycle off CB2 then back on and check terminal for Confidence test. [See Figure 4-8.]

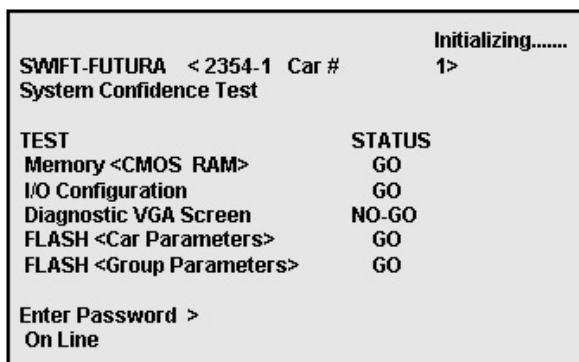


Figure 4-8

5. Verify all tests are a "GO". Should there be a "NO-GO" in the Flash tests; go to System Initialization in section 4-5.

**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.*

6. Enter the password – "INSTALL."
7. Verify the prompt returned on the screen matches the car number. [i.e. C# 1=> is car 1 of this group.]
8. Enter IVE=50. (Inspection Velocity)
9. Set the following Brake Parameters:

**Initial Brake Parameters**

Parameter	Description
BMV =	Brake Max Voltage. Set to match AC incoming to Brake board. (Normally 145 or 290 VAC)
BLV =	Brake Lift Voltage. Set to desired Brake Pick voltage.
BHV =	Brake Hold Voltage. Set to desired Brake Hold voltage.
BCL =	Brake Control Lift timer. Set to 16.
BLT =	Brake Lift Time. Set at 1 for fast Brake Pick on Inspection.
BMA =	Brake Max Amps. Set at 1 for Non-serial Brake board. Match jumper configuration of brake board if using serial brake board.
BDD =	Set to 64 (when using BCD Parameter)

Table C

10. Enter WRT.
11. Click the close button and return to the SPU Connection Screen.
12. Click on the Run Wizard button to connect to the Wizard Main Menu.
13. Click on the car # to monitor. This should be the car you are connected to. This will take you to the Car Main Menu.
14. Click the Diagnostics Button to display the diagnostics window.





**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 and the jumper configuration of the drive

**Note 2:** Refer to the Swift Drive Manual for directions to navigate the drive using the User Interface Tool.

**Drive Parameters**

Parameter	Sub-menu	Adjustment Description	Value
MDC	Drive	Motor Drive Current	See Table E.
MFC	Drive	Motor Field Current	See Table F.
RSF	Drive	Motor Slip Frequency	See Table F.
MTP	Drive	Motor Poles	Motor Name Plate
MNC	Drive	Motor Current	Motor Name Plate
MNV	Drive	Motor Voltage	Motor Name Plate
MNF	Drive	Motor Frequency	Motor Name Plate
NRRM	Drive	Motor RPM	Motor Name Plate
UTL	Drive	Upper I <sub>d</sub> Torque Limit	75
VEP	Drive	Motor Encoder Pulse	Encoder Name Plate
CTS	Speed Loop	Contract Top Speed	Job Specification
RPM	Speed Loop	Motor RPM @ Top speed	Job Specification
AFS	Speed Loop	Analog Full Scale	9.75
KVI	Speed Loop	Velocity Integral Gain	300 / 150 / 100 Geared / 2:1 / 1:1
KFP	Speed Loop	Feedback Proportional Gain	45 / 22.5 / 15 Geared / 2:1 / 1:1
DCN	System	Drive Configuration	See Table G.
MAL	System	Menu Access Level	2

**TableD**



6. Verify the drive parameters listed in table D are set correctly. Refer to tables E, F, and G as necessary.

Parameter	HP	Recommended/ Initial Setting	
		230VAC Input	460VAC Input
MDC	10	66.0	33.0
	15	99.0	50.0
	20	129.0	67.0
	30	198.0	99.0
	40	258.0	129.0
	60	400.0	198.0
	80	-	258.0
	120	-	400.0

Table E

Parameter Name	Method Used to Determine Setting
KFF	0
MFC	Set for the NO Load Data, (Balanced Load), on the motor nameplate: Or 35% of the Full Load Nameplate Rating. (Value entered in Amps.)
MTP	Set to the number of stator poles per phase in the machine motor.
RSF	Set per Formula below: $\frac{(\text{Synchronous Motor RPM} - \text{Rated Load RPM})}{\text{Rated Load RPM}} \times 60$

Table F

Parameter Name	Method Used to Determine Setting
DCN	<b>Note:</b> Add only the numbers that match your actual known job conditions to determine the number (nn) for the DCN parameter.
	DC Drive = +1
	AC Drive = +0
	230V Drive = +2
	460V Drive = +0
	Analog Speed Reference = +4
	Digital Speed Reference = +0
	Regenerative Drive = +8
	Non-Regenerative Drive = +0
	Motion Direction = +16
	No Motion Direction = +0
	Low Frequency (AC Gearless) = +32
High Frequency (AC Geared) = +0	
DCN*	Total = nn (DCN Setting)
	<p><b>Example:</b> 460V DC drive with analog speed reference for a non-regenerative drive with motion direction  <b>Add:</b> 1 + 0 + 4 + 0 + 16 = 21  DCN Parameter setting</p> <p><b>Example:</b> 230V DC drive with analog speed reference for a regenerative drive with motion direction  <b>Add:</b> 0 + 2 + 0 + 8 + 16 = 26  DCN Parameter setting</p>
MAL	1
FRS	0

Table G

\*DCN definitions can vary with model



7. Verify the jumper configuration on the DCR board using the following chart.

HP	230V		460V	
	AC	DC	AC	DC
7.5	NA	NA	J1 & J2 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	NA
10	J5 & J6 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J5 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2	J1 & J2 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J1 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2
15	J7 & J8 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J7 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2	J3 & J4 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J3 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2
20	J9 & J10 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J9 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2	J5 & J6 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J5 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2
30	J7 & J18 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J7 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2	J7 & J8 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J7 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2
40	J9 & J10 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J9 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2	J9 & J10 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J9 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2
60	J11 & J12 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J11 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2	J7 & J8 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	J7 & J2 – On J13 – On J15 - 1 & 2 J16 – 1 & 2
80	NA	NA	J9 & J10 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	NA
100	NA	NA	J11 & J12 – On J13 – Off J15 - 1 & 2 J16 – 1 & 2	NA

**Table H**

**Note:** When using the 6300LR3 Current Regulator Card with 460V drives with AC Geared Motor connect J19 Pin 1 & 2, J20 Pin 1 & 2.

**Note:** When using the 6300LR3 Current Regulator Card with 460V drives with AC Gearless Motor connect J19 Pin 2 & 3, J20 Pin 2 & 3. (Remember to add 32 to the DCN parameter for AC Gearless – Refer to table G.)



**Establishing Correct Encoder Direction**

1. Uncouple the Encoder so it can be spun by hand.
2. Set the drive to display feedback Velocity in the Speed Loop sub-menu.
3. Rotate the encoder in the up direction and verify that the feedback signal is positive. Rotate the encoder in the down direction and verify the signal is negative.
4. If the signals are reversed swap the B and B/ encoder inputs to the drive, and repeat step 3.
5. Re-couple the motor encoder.

**Establishing Correct Motor Direction and Speed**

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.

<b>CG (RCG)</b>	<b>DL (RDL)</b>	<b>CEN</b>
THC*	CGL	FLT
CGDLA (2Kcode)		*if applicable

6. Press the up or down button and verify the direction of the drive sheave matches the direction pushed.

**Note:** *Should drive sheave turn in the opposite direction, or the same for both buttons swap any two motor leads at the 1MA contactor*

7. With a handheld Tachometer, verify the car speed is +/- 2 FPM from SR. If not, increase or decrease the RPM in the Speed Loop sub-menu until proper speed is achieved.

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.*



### Running on Temporary from a Run Box

1. Remove jumper II to CS.
2. Remove jumper TIC to TIA.
3. Wire temporary run box as per Figure 4-10.

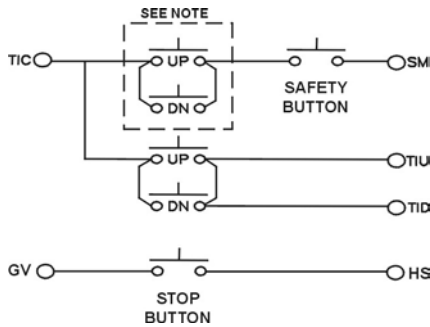


Figure 4-10

**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

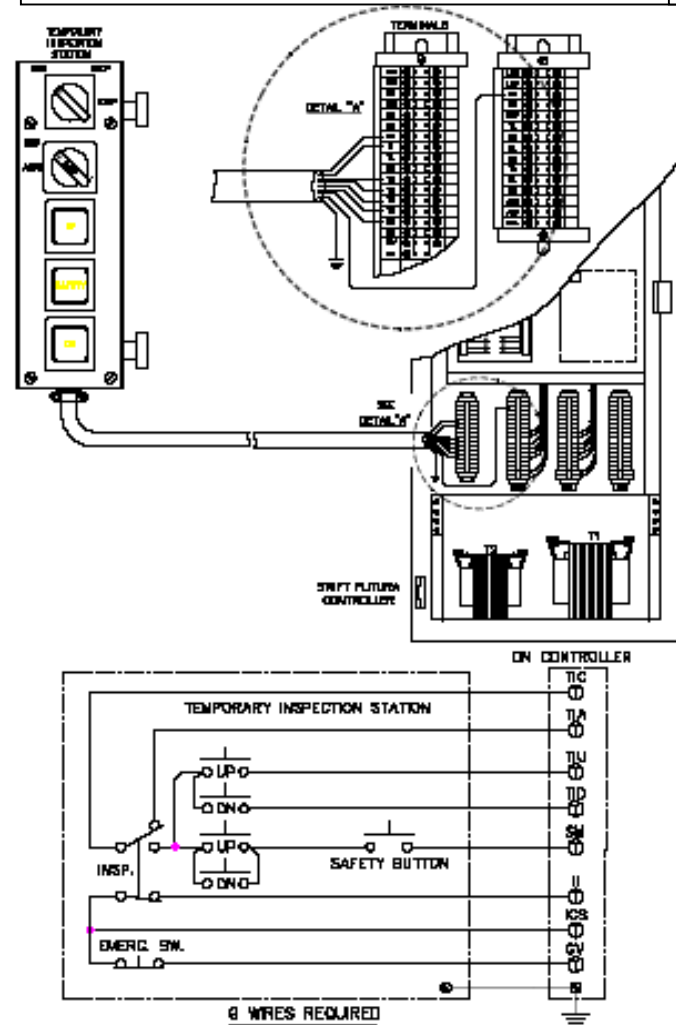


Figure 4-11

