INCLINATOR COMPANY OF AMERICA

ELEVETTE
CABLE DRUM, OVERHEAD CABLE DRUM MRL GEARED, or HYDRAULIC ELEVATOR WITH UC601 CONTROL SYSTEM

ELECTRICAL MANUAL

ELEVATOR INSTALLERS MUST INSTALL THIS ELEVATOR AND ALL ITS COMBINED EQUIPMENT TO COMPLY WITH ASME A17.1, N.E.C., AND ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES

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67209922 Rev K

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This version of the UC601 ELECTRICAL INSTALLATION DIRECTIONS is associated with CPU firmware version 3.20.

Some features, functions, attributes, etc. may or may not be available with earlier versions of CPU firmware.

IMPORTANT – FAMILIARIZE YOURSELF WITH THESE INSTRUCTIONS

Personal Safety:

1. Installers are cautioned that there are many potential hazards involved in the installation of elevators. Since any accident cannot only be disabling but could be fatal, installers are reminded of the hazards involved.
2. Installers should never work alone. It is true that there is safety in numbers. The elevator installer should be always aware of his fellow installer's presence and the area in which he is working.
3. Installers should be properly clothed before starting the installation. Wearing of loose clothing should be avoided. Keep all buttons, particularly the ones on cuffs, buttoned.
4. Installers should always be aware of the fact objects may fall in a hoistway at any time, and proper head protection should be worn.
5. Shaft doors should be locked or nailed shut any time an area is left unattended, and door interlocks are not installed and operating correctly.
6. Extreme caution must be taken when working overhead, in the pit, or around an elevator or platform when power is applied.
7. Power should be removed from the controller and operating systems when any electrical work is being performed.
8. Installers should never enter an elevator pit when it contains water, or work in a machine room that has a wet floor. Accidents from electric shock have occurred under these conditions, sometimes fatal.
9. All installers should read and familiarize themselves with a current elevator safety handbook prior to installation (available through Elevator World).
10. Turn power off at the 208/240 VAC disconnect, the 110-120 VAC disconnect, and turn off the UPS inside the CPU control enclosure prior to making any adjustments on the elevator.
11. Installers should never place themselves in a position where they may be harmed; such as between shear points, under heavy objects, etc.
12. Consult the manufacturer when repairing equipment, you do not understand or are not familiar with.

***NOTE**: All statements, technical information, and recommendations contained herein are based on data believed to be reliable, but the accuracy or completeness thereof is not guaranteed.*

Introduction:

This control is a giant leap forward for Inclinator. It possesses features that are currently unmatched in the residential elevator industry. During the design of this control considerable emphasis was put on safety, ease of installation and maintenance. Installations are far easier than anything Inclinator has previously offered since the vast majority of the wiring is plug-n-play.

This control is constantly analyzing all operations and thus has the ability to detect and report problems and possible problems via the LCD on the main CPU board.

If any part of the safety circuit is broken, not only will the elevator stop and be inoperable, but the CPU LCD will display the offending open switch in the safety chain. This drastically reduces the time associated with diagnosing the problem as well as the overall repair time.

This control has the ability to detect overridden car gate or shaft door safety switches and shut down the elevator if an attempt is made to override these safety switches.

The control is constantly logging errors which can be beneficial in diagnosing problems and even intermittent problems. The CPU board in the main control logs up to 200 time stamped errors.

Car position is obtained from a car mounted tape reader. The tape reader is electrically connected to the top of car board (TOC). The tape reader data is routed to the main control via serial communication from TOC using a shielded pair of wires in the travelling cable. The TOC board also generates an "At Lowest Floor Signal" from tape reader data. This is signal is sent via a wire in the traveling cable which then illuminates an LED on the CPU board. The top and bottom overrun limit switches are also mounted on the car and their signals are routed to the main control via the traveling cable to eliminate all hoist way wiring.

*PLEASE NOTE: *The installation of this elevator must follow the National Electric Code (N.E.C.) and the code within ASME 17.1 for residential elevators.*

Wiring Instructions

Wiring Overview:

The wiring of this elevator is not much different than other elevator installations with one exception. The main difference with the Inclinator UC601 control is that it is a plug-n-play package with very few actual wire-to-screw terminal connections. The plug-n-play package should allow the installer to do this in a timely manner while minimizing errors.

Mounting Location of CPU & Motor Control Enclosures (Cable Drum & MRL Geared)

The machine room for the UC601 CPU & Motor Control Enclosures for Cable Drum or MRL Geared elevator can be located in the attic or at the bottom floor, within reasonable proximity of the hoistway. Note: the CPU setup configuration must be set accordingly as to the location of the main control. E.g. Attic or Standard.

Mount the Motor Control Enclosure inside the machine room and within **10 wiring feet** (standard length, other lengths available) of the motor.

Mount the Main (CPU) Controller Enclosure within **10 wiring feet** (standard length, other lengths available) of the Motor Control Enclosure. The CPU enclosure must be oriented so that the hinge is at the top of the enclosure.

Mounting Location of CPU & Pump Control Enclosures (Hydraulic)

The machine room for the UC601 CPU & Pump Control Enclosures for the Hydraulic elevator can be located in the attic or at the bottom floor, within reasonable proximity of the hoistway. Note: the CPU setup configuration must be set accordingly as to the location of the main control. E.g. Attic or Standard.

The Pump Control Enclosure has been attached to the cover plate of the Hydraulic Power unit at the factory.

Mount the Main (CPU) Controller Enclosure within **5 wiring feet** (standard length, other lengths available) of the Pump Control Enclosure. The CPU enclosure must be oriented so that the hinge is at the top of the enclosure.

System Interconnect Wiring

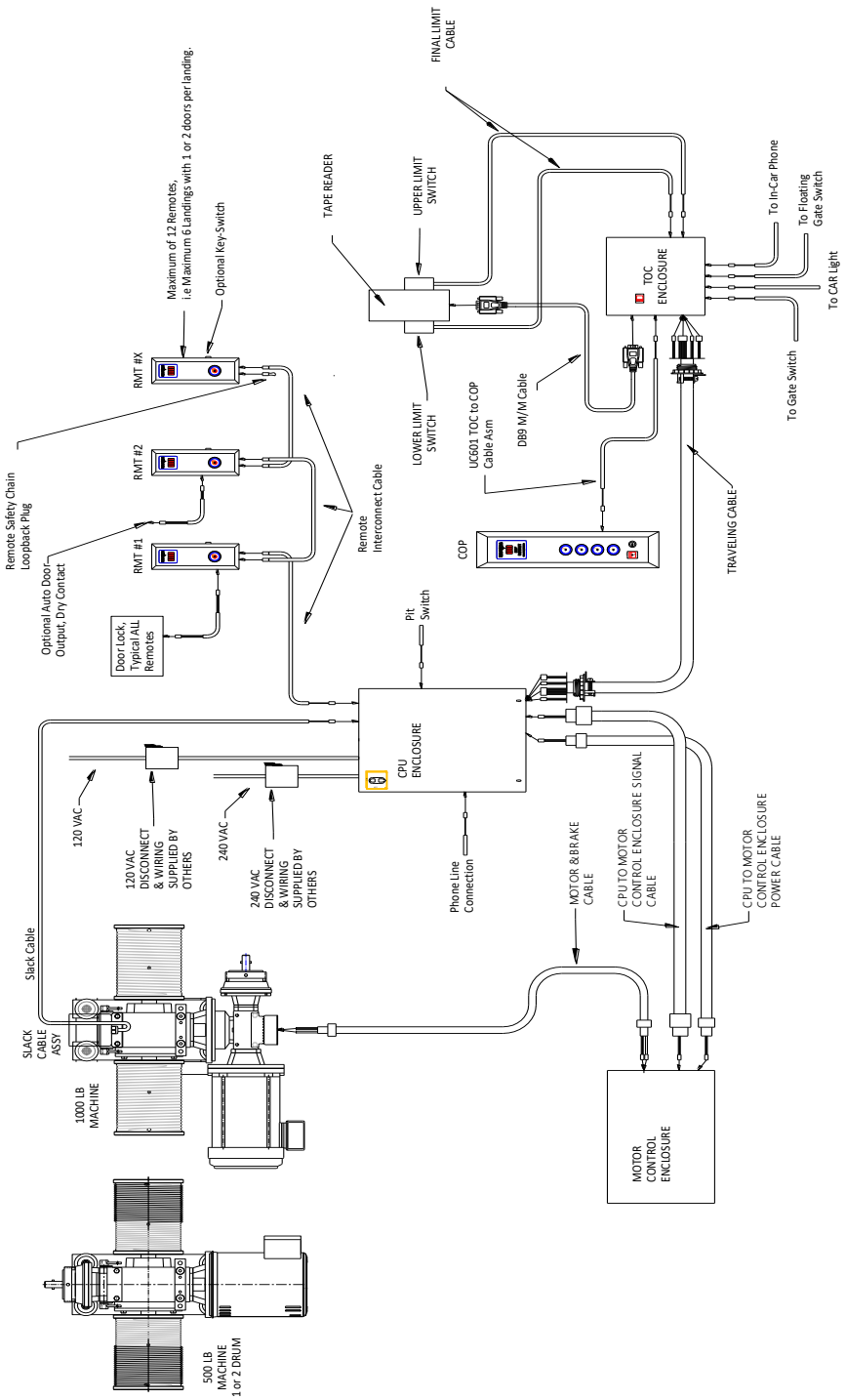


Figure 1 -- Cable Drum Electrical Connection Diagram

IMPORTANT INFO:

THE MOTOR CONTROL ENCLOSURE PORTION OF THIS CONTROL SHOULD BE MOUNTED IN A LOCATION WHERE THE AMBIENT TEMPERATURE ***DOES NOT EXCEED 120° F****.*

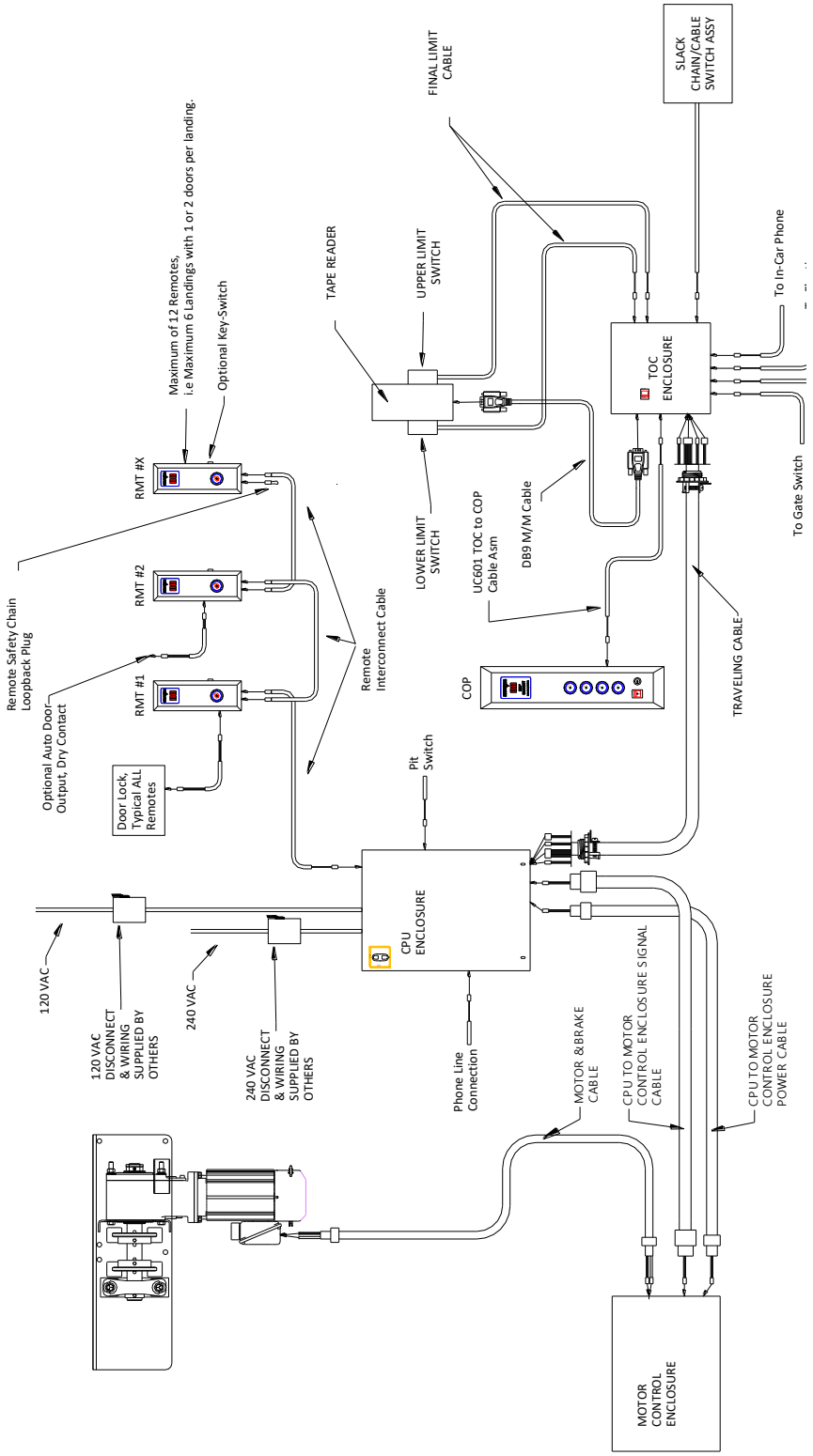


Figure 2 -- MRL-Geared or Overhead Cable Drum Electrical Connection Diagram

IMPORTANT INFO:

THE MOTOR CONTROL ENCLOSURE PORTION OF THIS CONTROL SHOULD BE MOUNTED IN A LOCATION WHERE THE AMBIENT TEMPERATURE ***DOES NOT EXCEED 120° F****.*

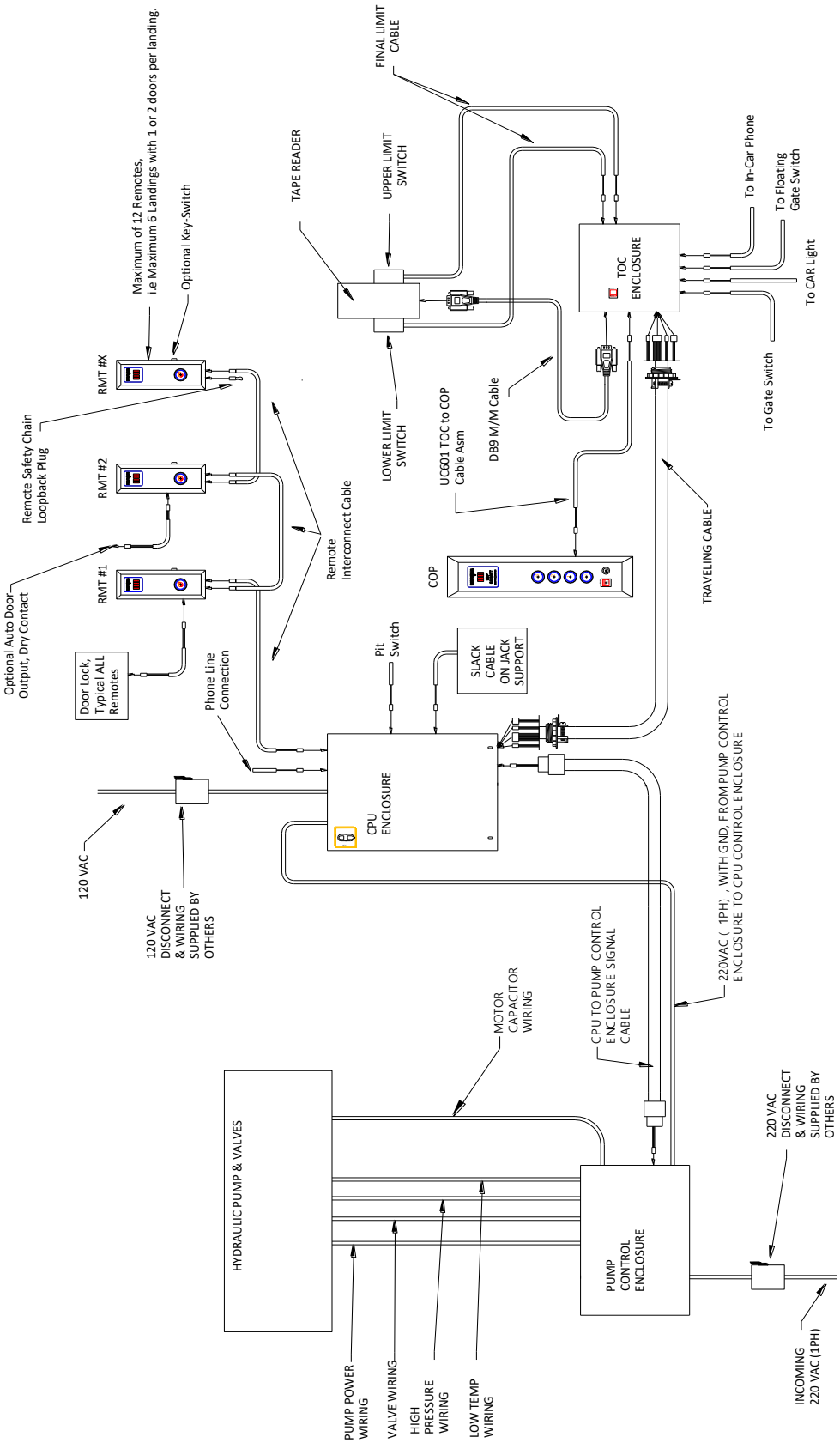


Figure 3 Hydraulic System Electrical Connection Diagram

Traveling Cable Installation

Install the traveling cable between the CPU enclosure and the Top of Car box. Two (2) mesh grips are provided for supporting the cable. A short section of steel strutting with an eyebolt is supplied for supporting the traveling cable at the top of the car. To prevent possible slippage of the grip, it is recommended that the tail end be secured to the cable jacket using vinyl electrician's tape.
In order for the traveling cable to perform trouble-free, certain installation procedures must be followed.

1. The cable should be inspected before installing to be sure it has not been damaged in shipment.

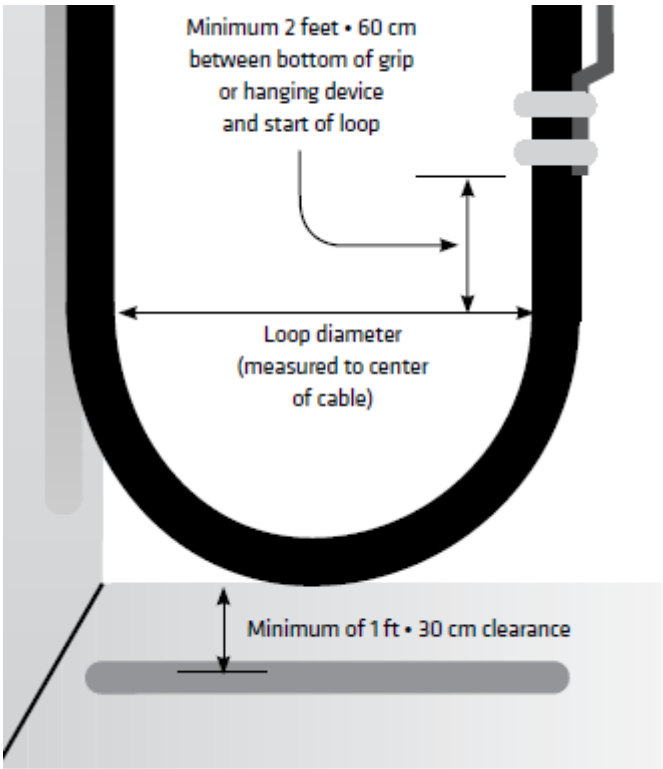
2. Pre-hanging of the cable can relieve any internal stress or torsion that may have developed. The idea in pre-hanging is to hold the upper end of the cable firmly while the lower end is free to rotate.

3. After the cable has been pre-hung, it is suggested that chalk or some other means be used to mark the exact orientation of the cable before forming the loop and attaching to the car hanger. This will prevent torsion as the loop is formed by giving the installer a reference mark to indicate if the cable is being twisted.

4. The manufacturer of the traveling cable recommends loop dimension below.

   For optimum performance, sides of the cable loop should remain parallel during the elevator operation. Loop curvature should be smooth and free of kinks and pivot points. Loop diameters are determined by the formula Cable OD x 30. The loop diameter should be ±10% of this calculation.

   0.94 inches X 30 = 28.2 inches
   ±10% of 28.2 inches
   = 25.4 inches to 31 inches.



CPU Enclosure Wiring

Power Wiring (Cable Drum & MRL Geared)

1. Connect the supply wires from the LOAD side terminals of 120 VAC disconnect switch as follows:

    a. Connect the black Hot wire into terminal block "H".
    b. Connect the white Neutral wire into terminal block "N".
    c. Connect the green GND wire into the terminal block "GND" located between the terminal block positions "H" & "N".

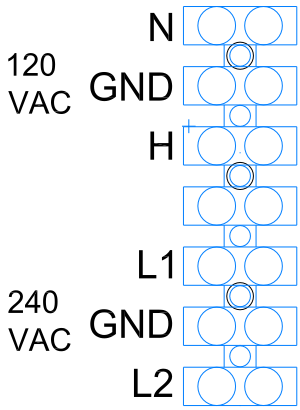


Figure 4 - CPU Enclosure VAC Terminal Block

2. Connect the supply wires from the LOAD side terminals of 240 VAC disconnect switch as follows:

    a. Connect the L1 Hot wire into terminal block "L1".
    b. Connect the L2 Hot wire into terminal block "L2".
    c. Connect the green GND wire into the terminal block "GND" located between the terminal block positions "L1" & "L2".

    DO NOT USE THE NEUTRAL CONDUCTOR IF AVAILABLE IN THE 208/240VAC SUPPLY WIRES. THIS SYSTEM DOES NOT USE A 208/240VAC NEUTRAL. ELECTRICALLY INSULATE THE NEUTRAL CONDUCTOR AND POSITION AWAY FROM OTHER WIRING.

Power Wiring (Hydraulic)

1. Connect the supply wires from the LOAD side terminals of 120 VAC disconnect switch as follows:

    a. Connect the black Hot wire into terminal block "H".
    b. Connect the white Neutral wire into terminal block "N".
    c. Connect the green GND wire into the terminal block "GND" located between the terminal block positions "H" & "N".

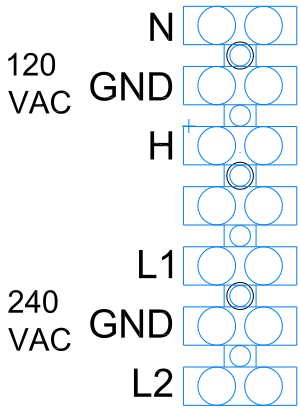


Figure 5 - CPU Enclosure VAC Terminal Block

2. Identify the CPU end of the Pump Control Enclosure Power Cable Assembly (P/N 27310811) with approximately 10" of wiring outside of the conduit. Using the identified end of the cable, install cable through a conduit opening above the VAC terminal block.

3. Connect the 27310811 power wiring as follows:
    a. Connect one of Red wires into terminal block "L1".
    b. Connect the other Red wire into terminal block "L2".
    c. Connect the green GND wire into the terminal block "GND" located between the terminal block positions "L1" & "L2".

4. Remove the blanking plate from the Pump Control Enclosure Power Cable Assembly (27310811) and attach as shown in Figure 8 using four (4) 8-32x 3/8" machine screws

Telephone Wiring

1. If the elevator car is equipped with a telephone, connect a standard telephone cable from the house telephone junction box to CPU board J21 "Phone Jack".

Safety Chain Wiring

1. Route the *Pit Safety* switch cable between the pit safety switch and the CPU enclosure. Connect the 2 cable conductors to the pit safety switch. Insert the pit safety switch cable clamp into an appropriate hole in the CPU enclosure and connect the plug-in connector to J10 "Pit Safety".

2. If required, route the *Slack Cable* between the slack cable switch assembly, located on the motor assembly (on the jack support stand for hydraulic), and the CPU enclosure. Connect the 2 cable conductors to the slack cable assembly. Insert the slack cable clamp into an appropriate hole in the CPU enclosure and connect the plug-in connector to "Slack Cable". See Figure 7. Also, see the "Verify Safety Chain Switches" section to check wiring.

3. If required, route the *Pit Float* switch cable between the pit switch and the CPU enclosure. Insert the pit float switch cable clamp into an appropriate hole in the CPU enclosure and connect the plug-in connector to "SPARE INPUT" connector. DO NOT CONNECT TO THE PIT FLOAT INPUT!!! See Figure 7. Also, see the "Verify Safety Chain Switches" section to check wiring.

4. If required, route the cable from the *Access Panel* switch to the CPU enclosure. Insert access panel switch cable clamp into an appropriate hole in the CPU enclosure and connect the plug-in connector to "Hard Stop" connector. See Figure 7. Also, see the "Verify Safety Chain Switches" section to check wiring.

5. Insure that a jumper any unused safety input as shown in the following figures.

Figure 6 - Safety Chain Jumper

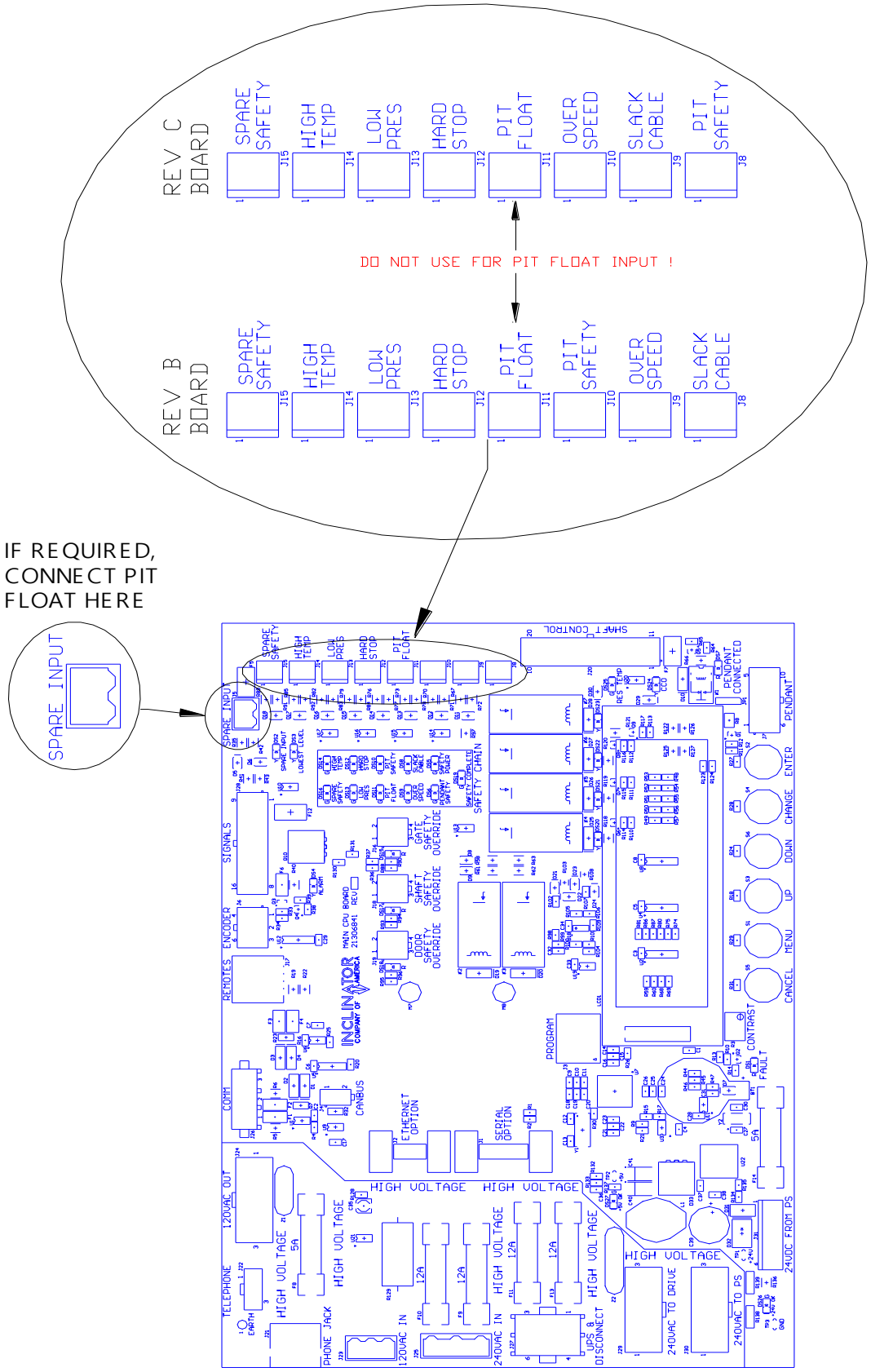


Figure 7 - CPU Control Enclosure - Safety Chain Inputs

Traveling Cable Wiring

1. Identify the end of the Traveling Cable that has the much longer length of the outer cable jacket removed. Using the identified end of the cable, remove the nut from cable clamp and then install cable through indicated opening as shown in Figure 8.

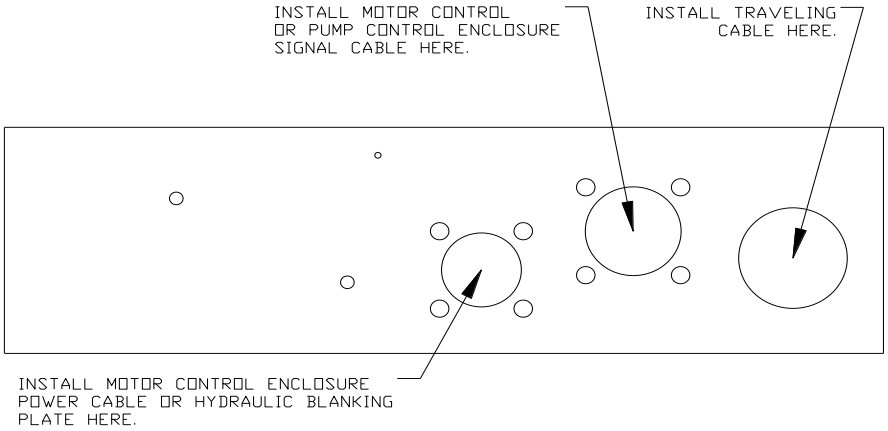


Figure 8 - CPU CONTROL ENCLOSURE, BOTTOM VIEW

2. Route the wires up the right side of the enclosure as shown in Figure 9.

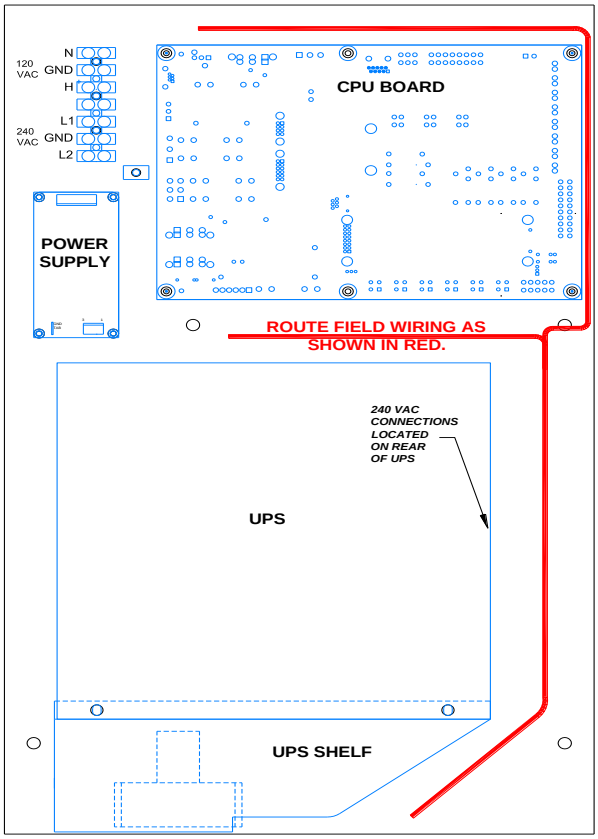


Figure 9 - CPU Enclosure Field Wiring

3. Connect the Traveling Cable connectors to J22-"Telephone", J24-"120VAC Out", J26-"Comm", & J28-"Signals" on the CPU board. See Figure 10.

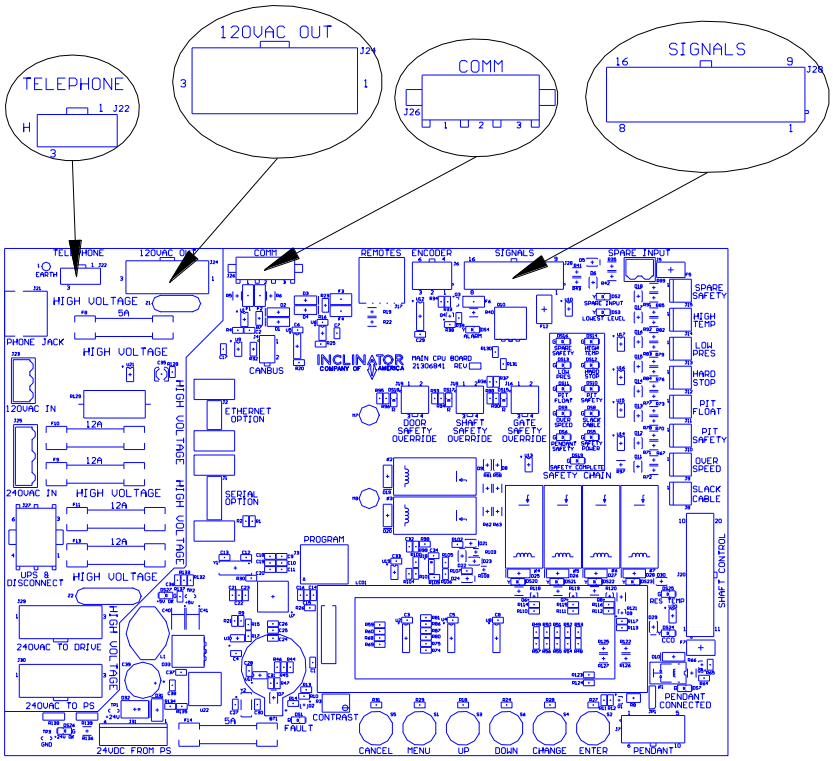


Figure 10 - CPU Board, Traveling Cable Connections

Prefab Conduit Cables Installation (Cable Drum & MRL Geared)

1. Identify the end of the Motor Control Signal Cable Assembly (21307533) with the longest length of wiring outside of the conduit. Using the identified end of the cable, install cable through indicated opening as shown in Figure 8 using four (4) 8-32x 3/8" machine screws.

2. Route the wires up the right side of the enclosure as shown in Figure 9.

3. Connect the Motor Control Signal Cable connector to J20-"Shaft Control on the CPU board. See Figure 11.

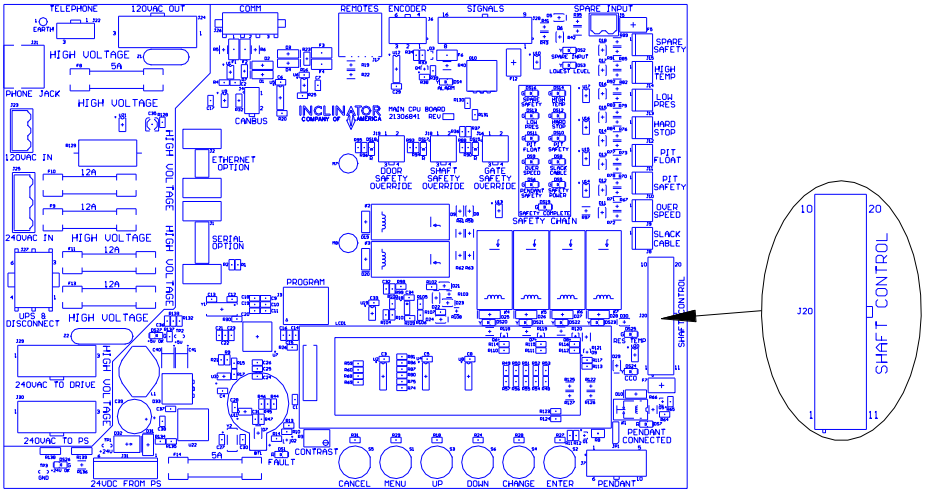


Figure 11 - CPU Board, Motor Control Enclosure Signal Cable Connections

4. Identify the end of the Motor Control Enclosure Power Cable Assembly (21307648) with approximately 35" of wiring outside of the conduit. Using the identified end of the cable, install cable through indicated opening as shown in Figure 8 using four (4) 8-32x 3/8" machine screws.

5. Route the wires up the right side of the enclosure and over the top of the UPS as shown in Figure 11.

6. Connect the Motor Control Enclosure Power Cable connector to J29-"240VAC To Drive" on the CPU board. See Figure 12.

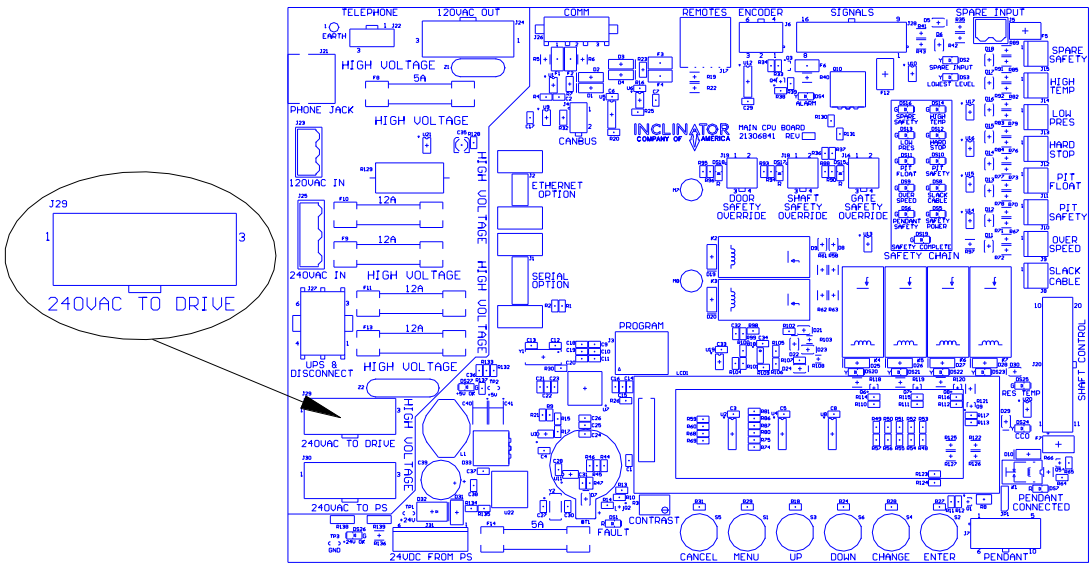


Figure 12 - CPU Board, Motor Control Enclosure Power Cable Connections

Prefab Conduit Cables Installation (Hydraulic)

1. Identify the end of the Pump Control Signal Cable Assembly (27310695) with the longest length of wiring outside of the conduit. Using the identified end of the cable, install cable through indicated opening as shown in Figure 8 using four (4) 8-32x 3/8" machine screws.

2. Route the wires up the right side of the enclosure as shown in Figure 9.

3. Connect the Pump Control Signal Cable 20 Position connector to J20- "Shaft Control" connector on the CPU board. See Figure 13.

4. Connect the Pump Control Signal Cable 2 Position connector labeled 'T' to J14- "High Temp" connector on the CPU board. See Figure 13.

5. Connect the Pump Control Signal Cable 2 Position connector labeled 'P' to J13- "Low Pres" connector on the CPU board. See Figure 13.

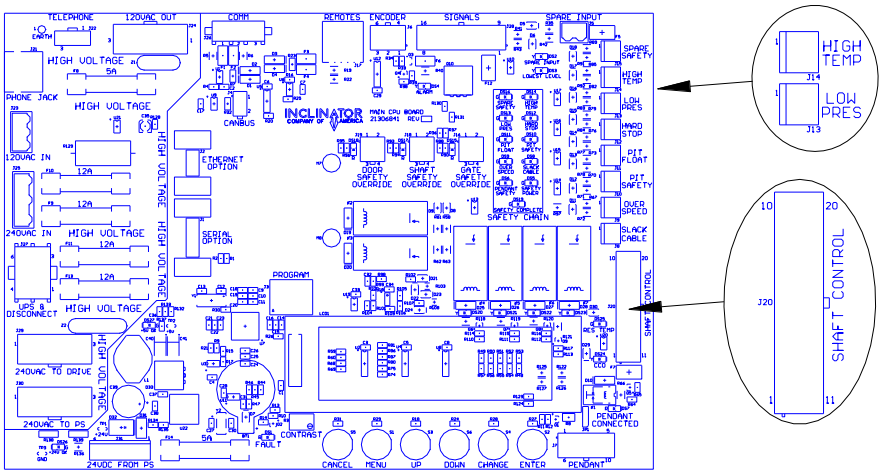


Figure 13 - CPU Board, Pump Control Enclosure Signal Cable Connections

UPS Wiring

1. Locate the UPS. ***Assemble and connect the battery*** per the manufacturer's instructions!

   DO NOT TURN ON or ACTIVATE the UPS at This Time!

2. Place the UPS in the CPU control enclosure with the cable connection area on the right side of the enclosure. Connect the power cables to the UPS as shown in Figure 14.

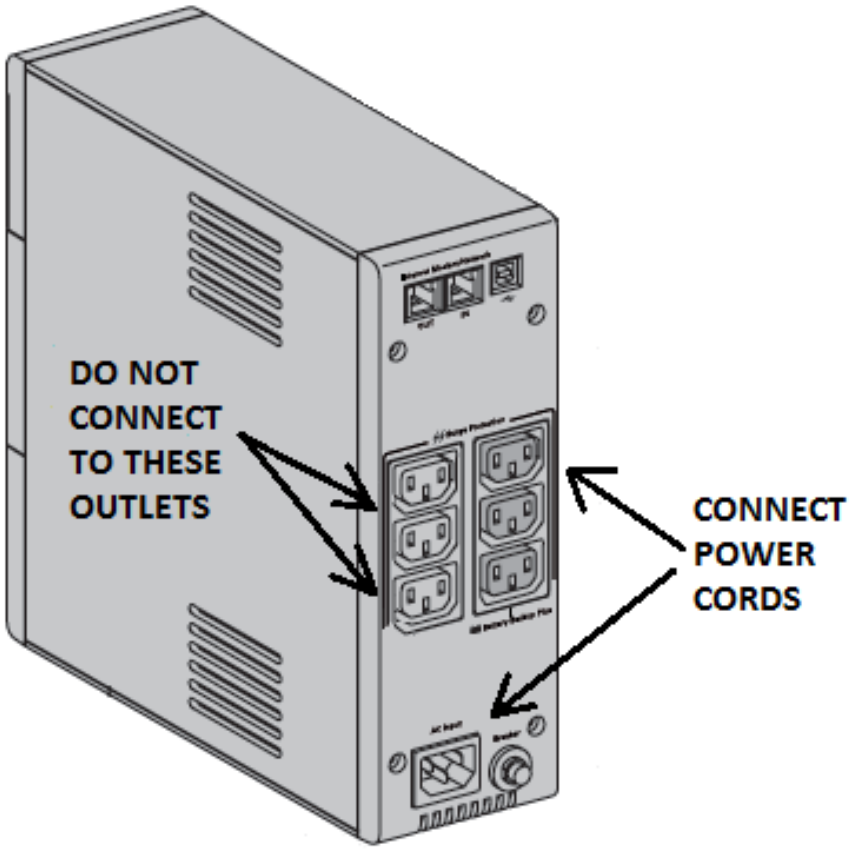


Figure 14 - UPS Power Cable Connections

Motor Control Enclosure Wiring (Cable Drum & MRL Geared)

1. Insert the
   Motor Control Enclosure Power Cable Assembly (21307648),
   Motor Control Signal Cable Assembly (21307533),
   Motor Power & Brake Power Cable Assembly (21307649),
   through the indicated openings shown in Figure 15. Attach the cables to the enclosure using 8-32x 3/8" machine screws.

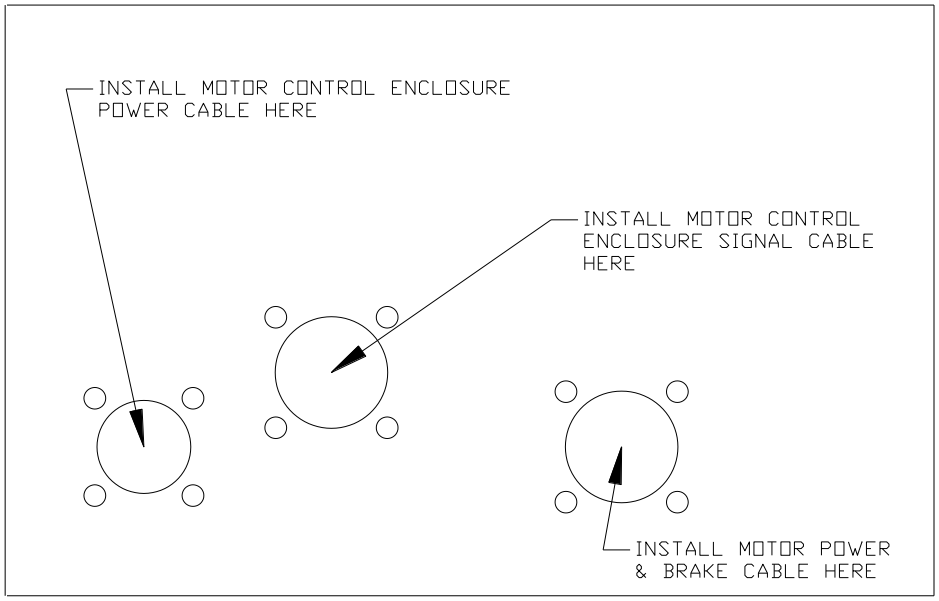


Figure 15 - MOTOR CONTROL ENCLOSURE, BOTTOM VIEW

2. Plug each cable into the appropriate mating connector inside the Motor Control Enclosure.

3. Remove the nut and the cable clamp from the stud on the inner panel of the Motor Control Enclosure. This stud is located directly below the 4-pin motor power connector.

4. The motor cable and the brake wires are located inside the Motor Power & Brake Power Cable Assembly (21307649)

5. Install the cable clamp on the exposed shield of the motor power cable. Next, slide the cable clamp, with attached motor power cable, on the panel stud. Finally, affix & tighten nut.

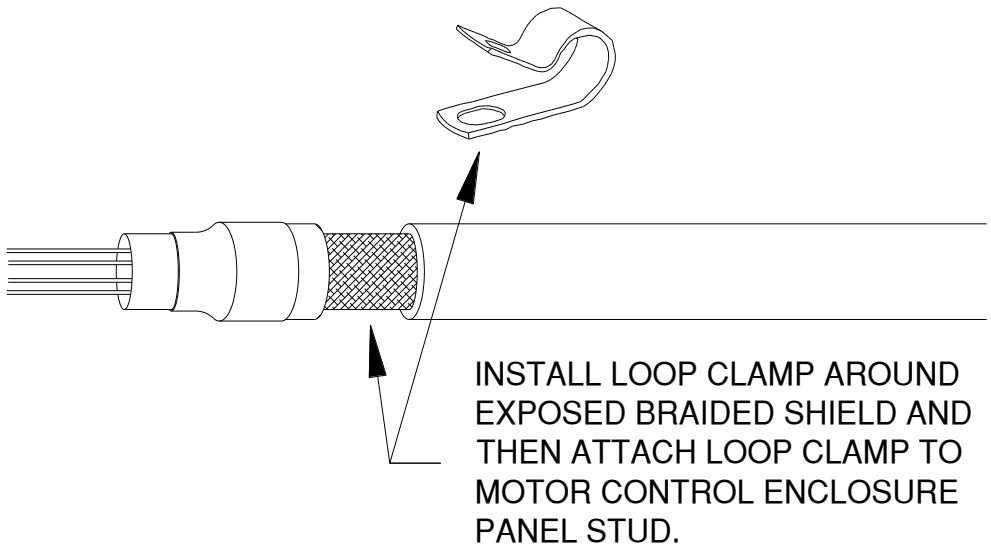


Figure 16 - MOTOR POWER CABLE SHIELD TERMINATION

Motor Wiring (Cable Drum & MRL Geared)

1. Prepare the end of the motor power cable as shown in Figure 17.

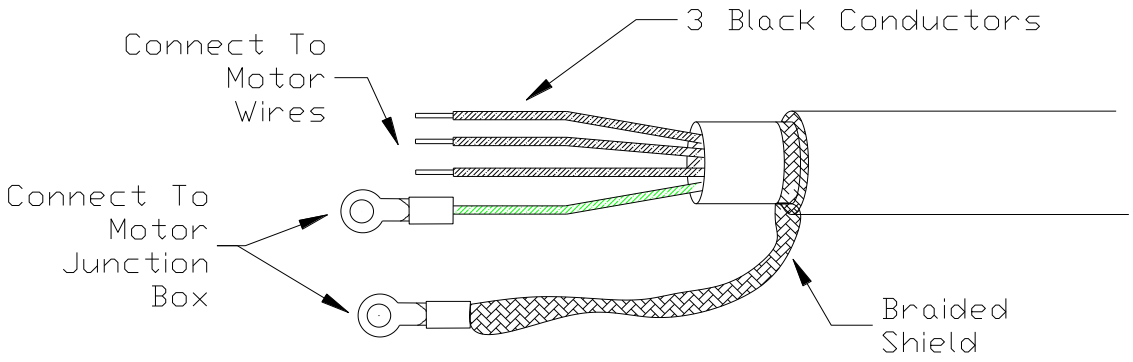


Figure 17 - Motor Power Cable

2. Install the Motor Power & Brake Power Cable Assembly (21307649) into the electrical junction box located on the motor or machine.

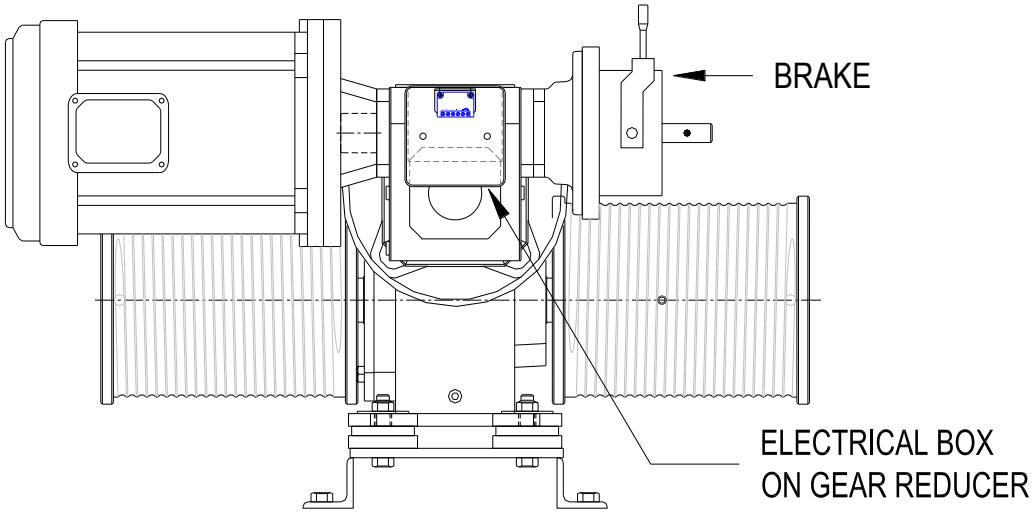


Figure 18 - 1000 lb Cable Drum Motor

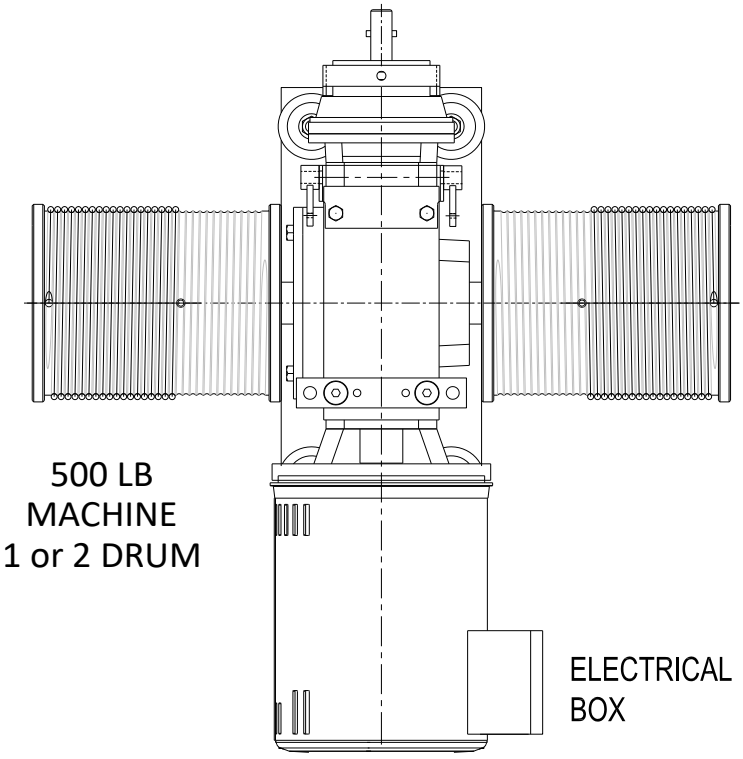


Figure 19 -- 500 lb Cable Drum

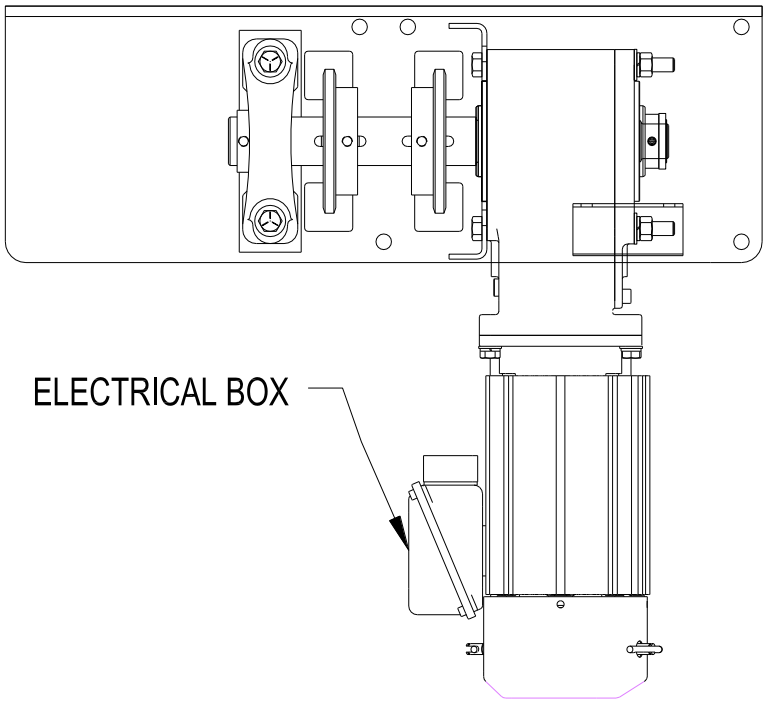


Figure 20 -- MRL-Geared Motor

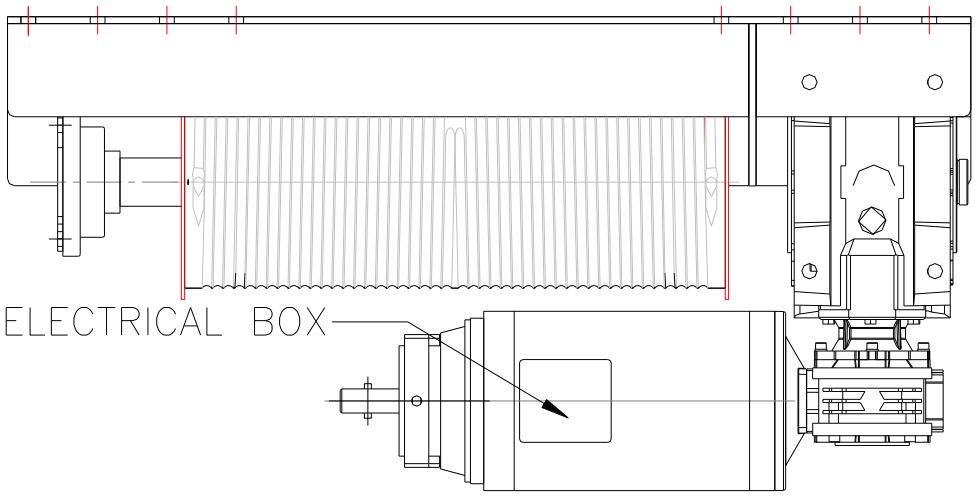


Figure 21 – Overhead Cable Drum, Leeson Motor

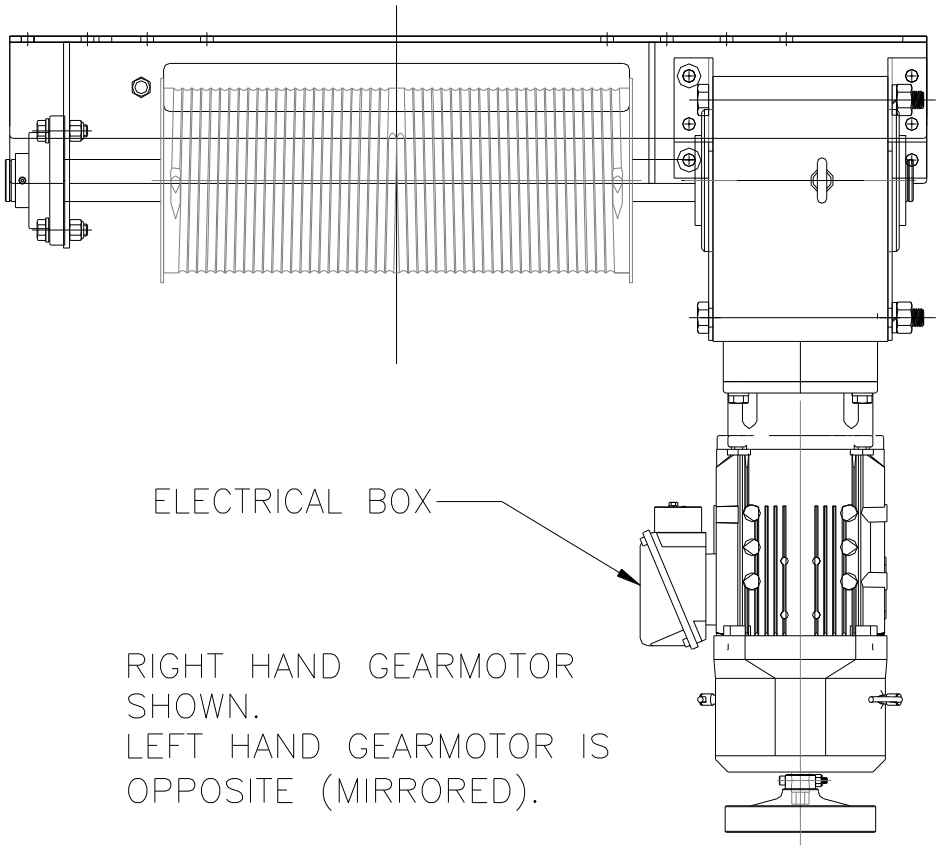


Figure 22 Overhead Cable Drum, Sumitomo Gearmotor

3. Standard Cable Drum elevator motors, MRL Geared elevator motors, and *MRL Overhead Cable Drum elevators using a Sumitomo* motor must have the 9 leads of the motor connected for the low voltage configuration as shown in Figure 23. Connect the three (3) black wires in the motor power cable to the 3 motor wire *pairs* inside the electrical junction box.

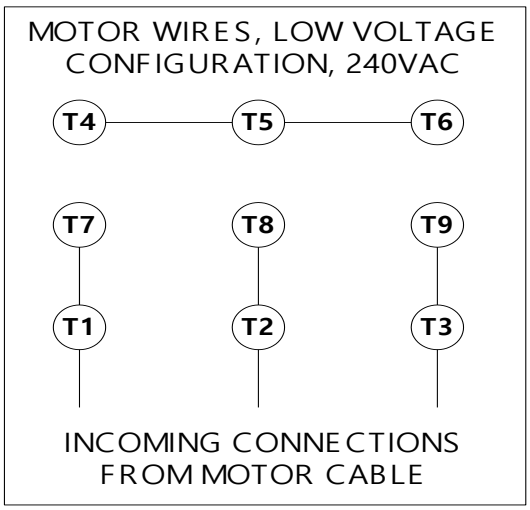


Figure 23 – Motor Lead Wiring

4. *MRL Overhead Cable Drum elevators using Lesson* motors have only 3 motor wires. Connect the three (3) black wires in the motor power cable to the 3 motor wires inside the electrical junction box.

5. Brake wiring for Standard Cable Drum elevators, MRL Geared elevators, and *MRL Overhead Cable Drum elevators using Lesson* motors is shown in figure 23. Connect the two (2) brown brake wires from the controller to the rectifier in the electrical junction box as shown in Figure 24.

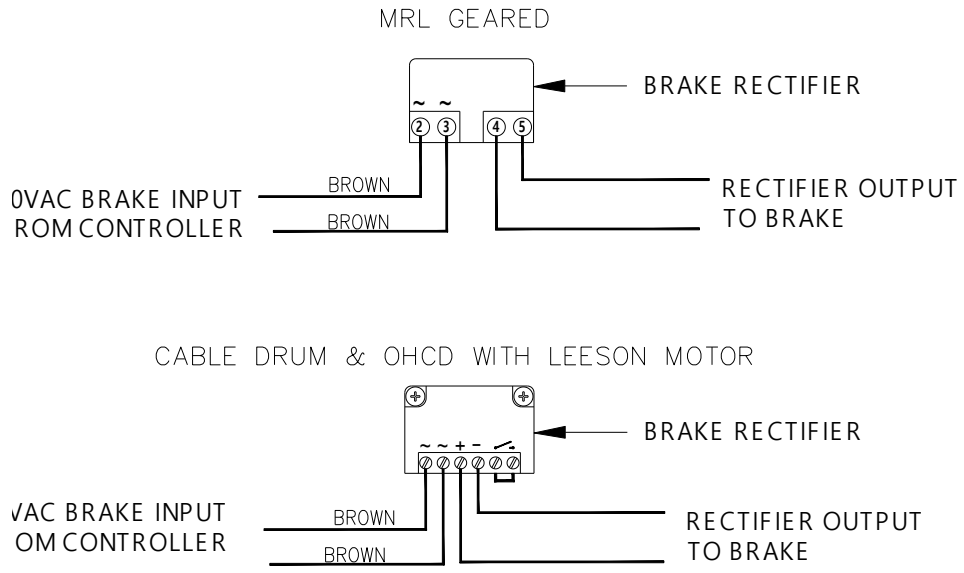
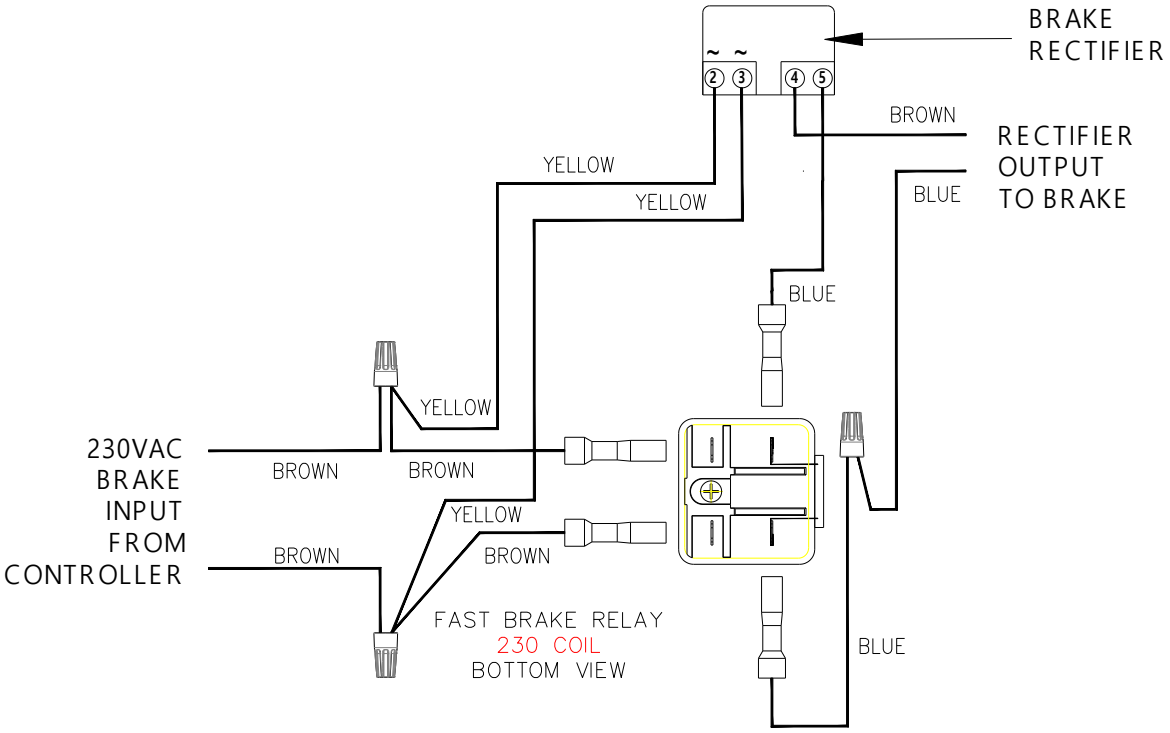


Figure 24 - Standard Brake Wiring

6. Brake wiring for *MRL Overhead Cable Drum elevators using a Sumitomo* motor is shown in Figure 25. This brake circuit is a fast-acting circuit which requires a relay as well as the brake rectifier. The brake rectifier and relay are located the motor electrical junction box. Connect the two (2) brown brake wires from the controller to the brown and yellow wires in the electrical junction box as shown below.



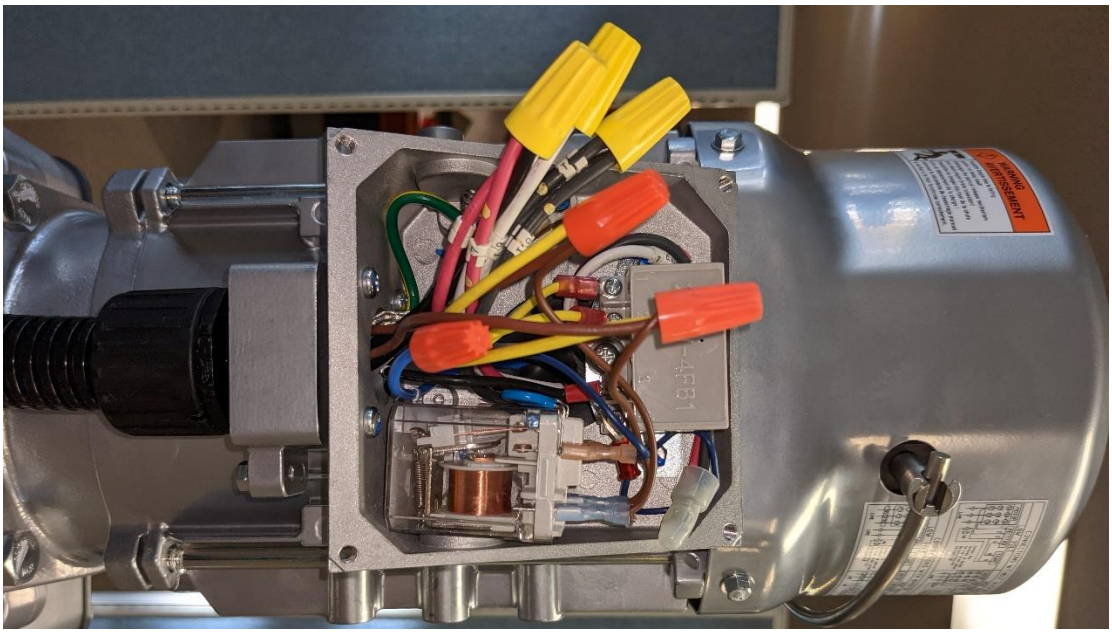


Figure 25 - Fast Brake Wiring

Pump Control Enclosure Wiring (Hydraulic)

1. Identify the Pump Control end of the Pump Control Enclosure Power Cable Assembly (27310811) with approximately 8” of wiring outside of the conduit. Using the identified end of the cable, install cable through the conduit opening shown in Figure 26.

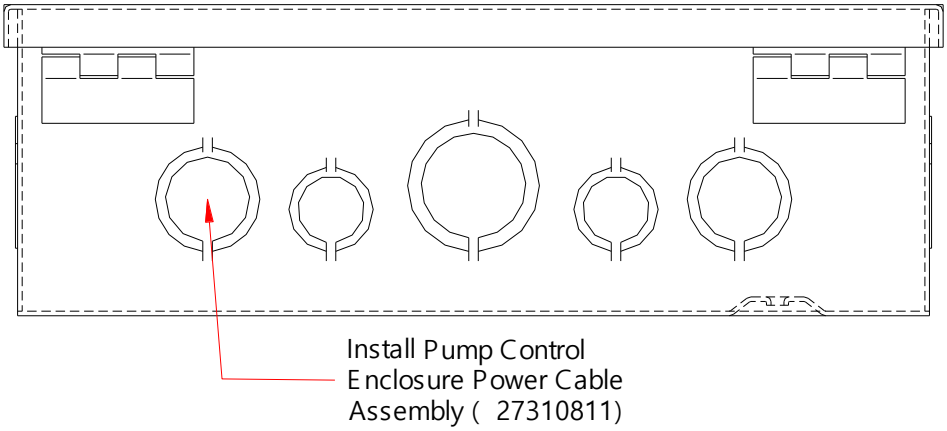


Figure 26 - Pump Control Power Wiring To CPU.

2. Connect the 220 VAC power supply wires from Pump Control Enclosure Power Cable Assembly (27310811) as follows:
   a. Connect one of the Red wires into the OUT terminal block “L1”.
   b. Connect the other Red wire into the OUT terminal block “L2”.
   c. Connect the green GND wire into the terminal block “FG”

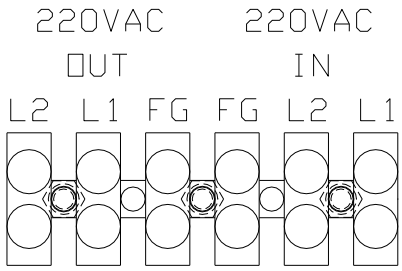


Figure 27 – Pump Control Enclosure Power Terminal Block

3. Using a conduit opening above the terminal block, connect the supply wires from the LOAD side terminals of 220 VAC disconnect switch as follows:
    a. Connect the L1 Hot wire into the IN-terminal block "L1".
    b. Connect the L2 Hot wire into the IN-terminal block "L2".
    c. Connect the green GND wire into the terminal block "FG"

    DO NOT USE THE NEUTRAL CONDUCTOR IF AVAILABLE IN THE 208/240VAC SUPPLY WIRES. THIS SYSTEM DOES NOT USE A 208/240VAC NEUTRAL. ELECTRICALLY INSULATE THE NEUTRAL CONDUCTOR AND POSITION AWAY FROM OTHER WIRING.

4. Identify the Pump Control end of the Pump Control Enclosure Signal Cable Assembly (27310695) with approximately 5" of wiring outside of the conduit. Using the identified end of the cable, install cable through the conduit opening shown in Figure 28.

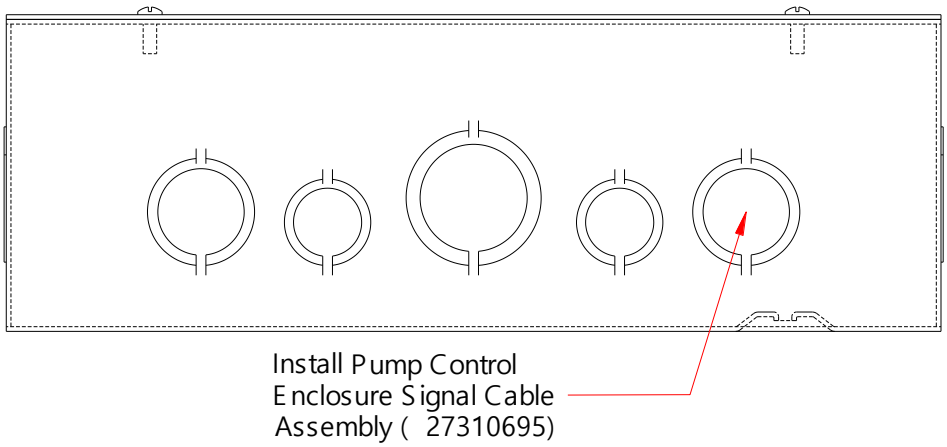


Figure 28 - Pump Control Signal Wiring From CPU.

5. Connect the Pump Control Enclosure Signal Cable Assembly (27310695) to the Control Signals connector inside the enclosure as shown in Figure 28 & Figure 29.

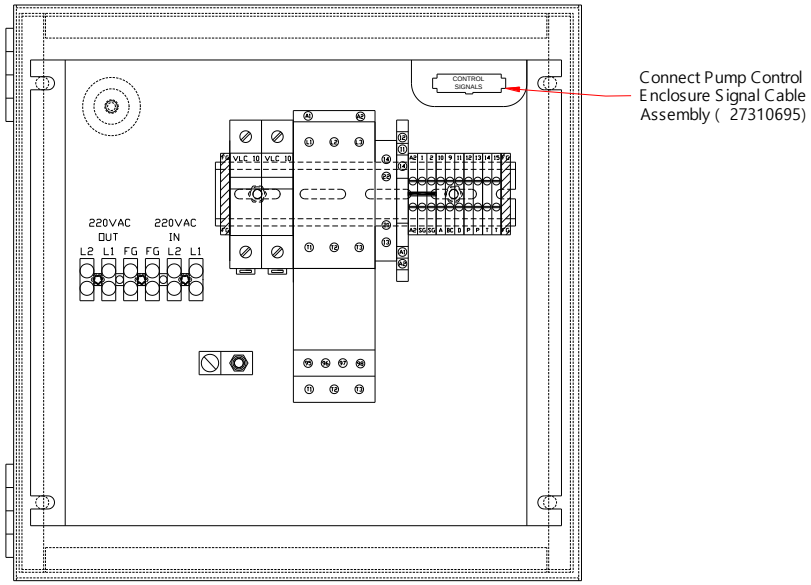


Figure 29 - Pump Control Enclosure Layout.

Top of Car (TOC) Enclosure Wiring

Traveling Cable Wiring

1. Remove the nut from the traveling cable clamp and install cable through appropriate opening in TOC enclosure.

2. Connect the Traveling Cable connectors to J14- “Telephone”, J7- “120VAC Out”, J22- “Comm”, & J19- “Signals" on the CPU board. See Figure 30.

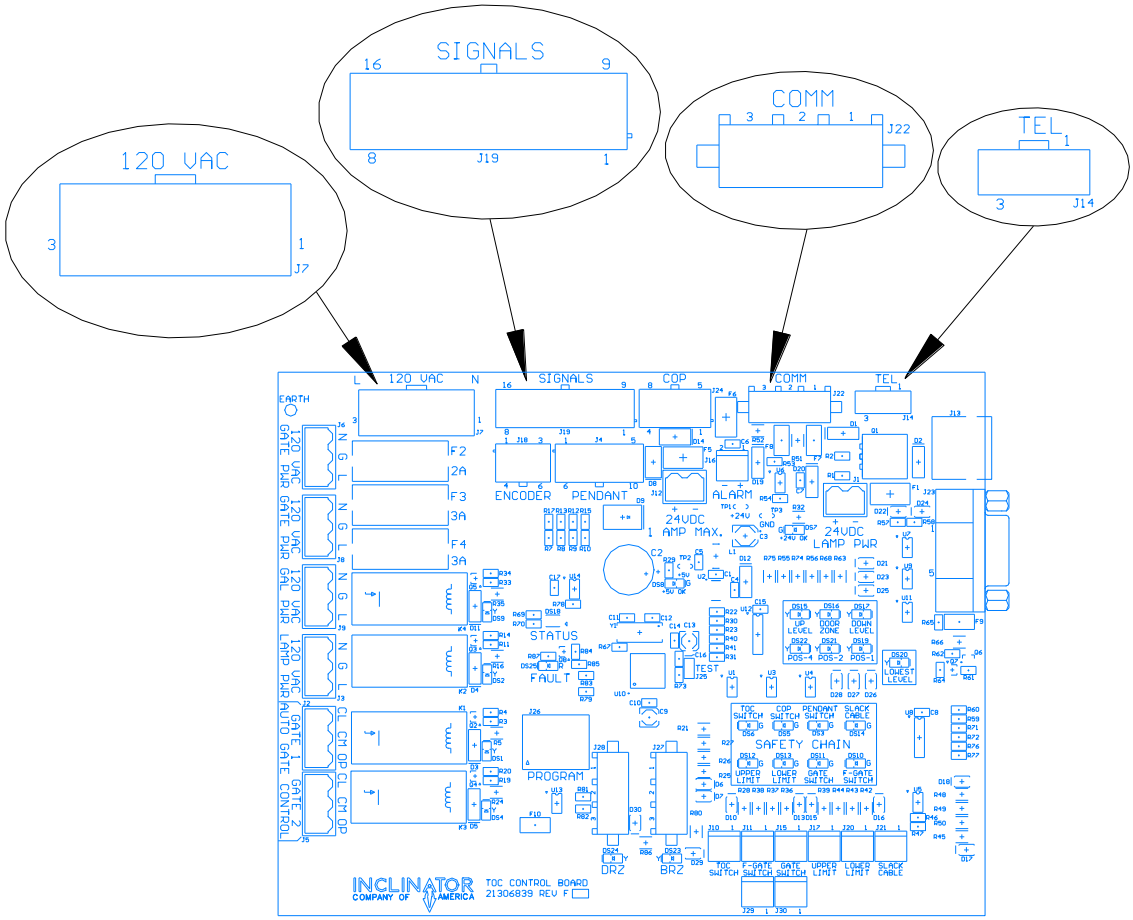


Figure 30 - TOC Traveling Cable Connections

Telephone Wiring

If the elevator car is equipped with a telephone, connect a standard telephone cable to J13 and to the car telephone.

Upper & Lower Limit Switch Wiring

The upper & lower limit switch wiring consists of two, two conductor SJO type cables routed through one conduit cable clamp. Insert & fasten the cables and cable clamp into an appropriate conduit opening in the TOC enclosure. Connect the upper limit connector to J17 "Upper Limit" and the lower limit connector to J20 "Lower Limit". See Figure 31 - TOC Safety Chain Connections.

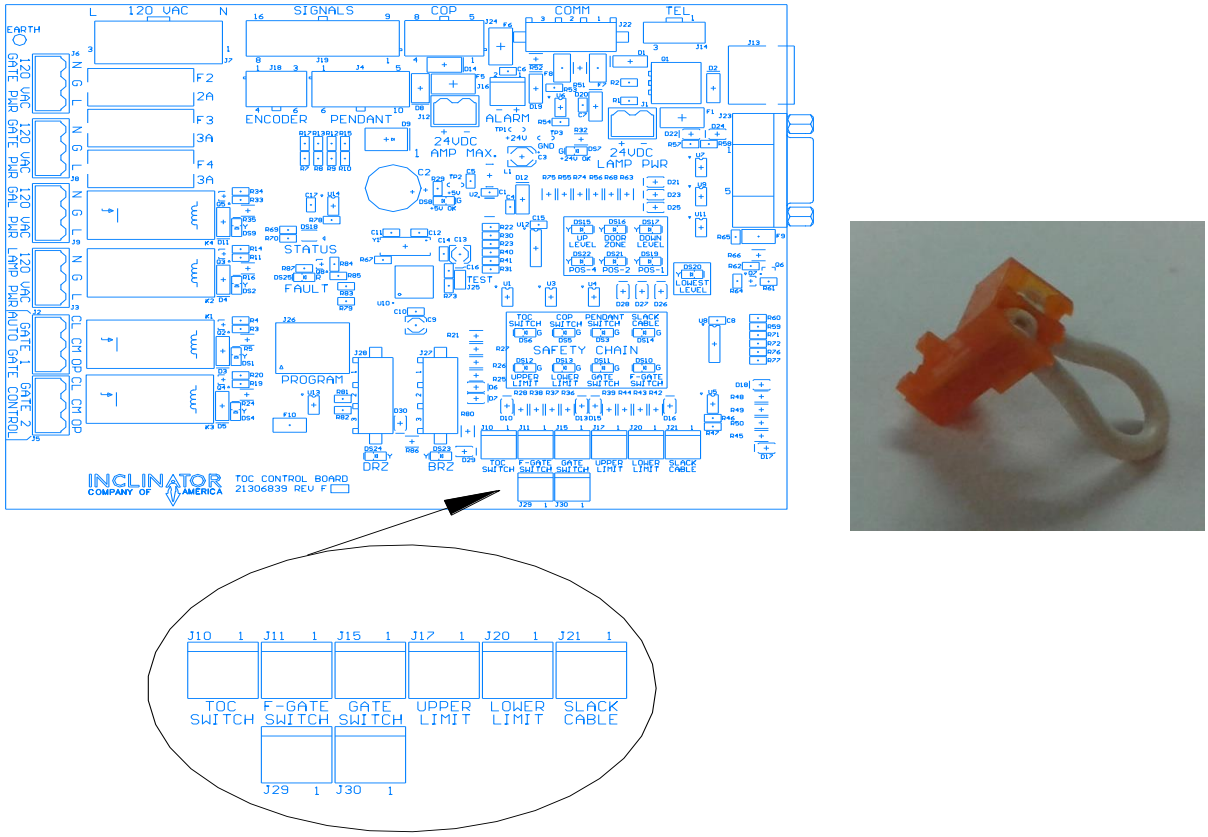


Figure 31 - TOC Safety Chain Connections

Gate Switch Wiring

Route the 2-conductor cable between the gate switch and the TOC enclosure. Connect the 2 cable conductors to the gate switch. Insert & fasten the cable and cable clamp into an appropriate hole in the TOC enclosure and connect the plug-in connector to J15 "Gate Switch". Use J30 if the car incorporates a 2nd gate. *If using auto gates, refer to the Auto Gate instructions manual for further details on gate switch wiring.* See Figure 31 - TOC Safety Chain Connections.

Safety Switch Wiring

If the TOC cover has previously been removed, insure that the TOC safety switch plug-in connector is attached to J10 "TOC Switch". See Figure 31 - TOC Safety Chain Connections.

Floating Gate Switch or Light Curtain Wiring

If required, route the 2-conductor cable between the floating gate switch / light curtain and the TOC enclosure. Connect the 2 cable conductors to the floating gate switch or the light curtain NC contact. Insert & fasten the cable and cable clamp into an appropriate hole in the TOC enclosure and connect the plug-in connector to J11 "F-Gate Switch". Use J29 if the car incorporates a 2nd floating gate switch / light curtain. See Figure 32 - Light Curtain Wiring Connections for wiring details & Figure 31 - TOC Safety Chain Connections.

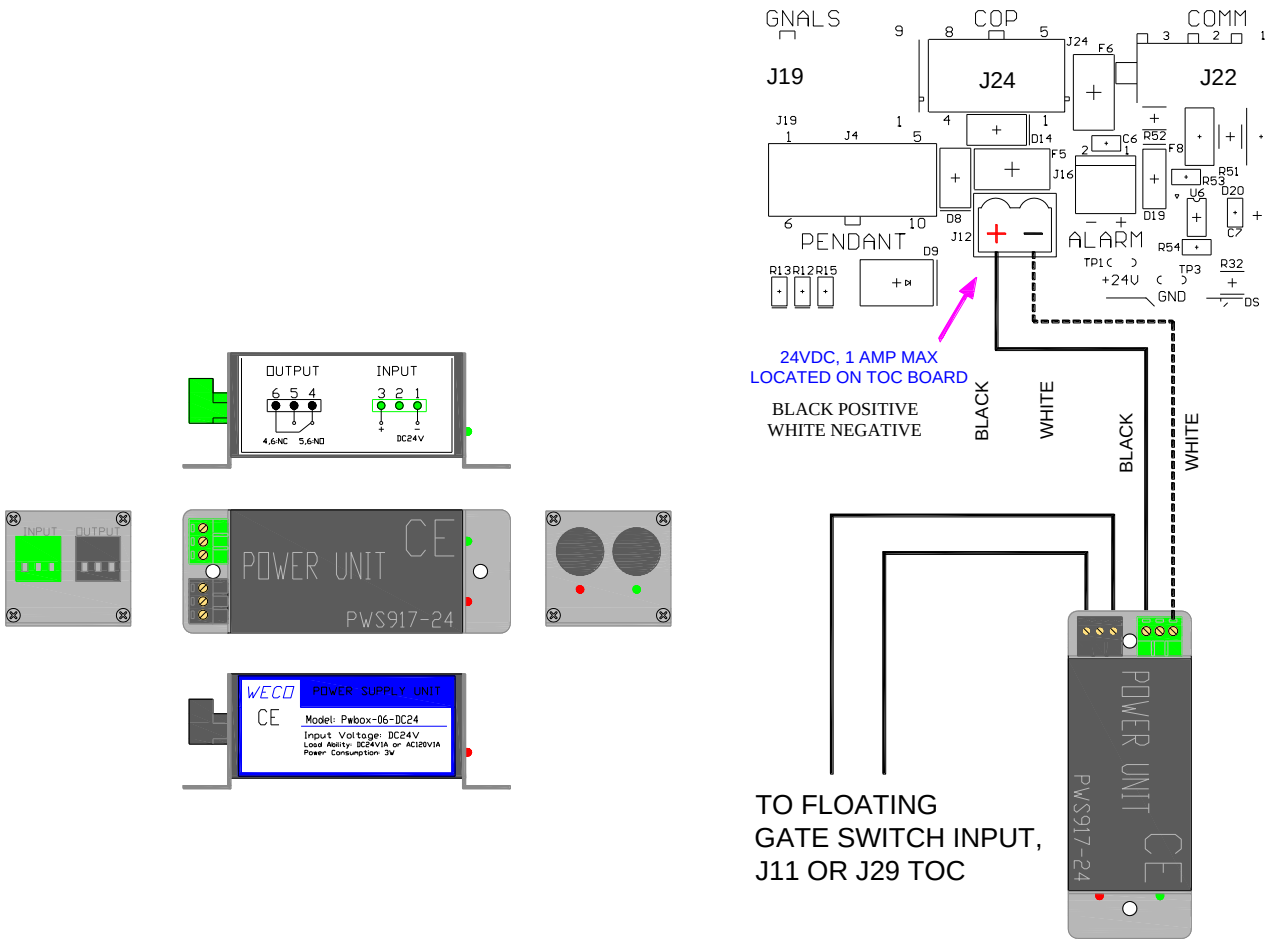


Figure 32 - Light Curtain Wiring Connections

Slack Cable/Chain Switch Wiring

If required, route the slack cable between the slack cable switch assembly, located on the motor assembly, and the TOC enclosure. Connect the 2 cable conductors to the slack cable assembly. Insert the slack cable clamp into an appropriate hole in the TOC enclosure and connect the plug-in connector to J21 "Slack Cable". See Figure 31 - TOC Safety Chain Connections. Also, see the "Verify Safety Chain Switches" section to check wiring.

Unused Switch Wiring

The remaining safety chain inputs on the TOC board must be jumpered for proper operation of the safety chain. Insure that a jumper is installed across any unused safety chain input. See Figure 31 - TOC Safety Chain Connections.

COP and Tape Reader Cables

1. Remove rubber grommet from TOC enclosure. If there is no slit in grommet, slice from inside to outside at one location only. Insert DB9 cable into grommet and slide grommet and cable into slot in TOC enclosure. Connect DB9 cable to TOC board and finger tighten the retaining screws.

2. Using the end of the cable with the 8-position connector, insert and attach the COP cable, ICOA PN 21307420, into the TOC enclosure. Plug the 8-pin connector into the connector labeled "COP" (J24) on the TOC board.

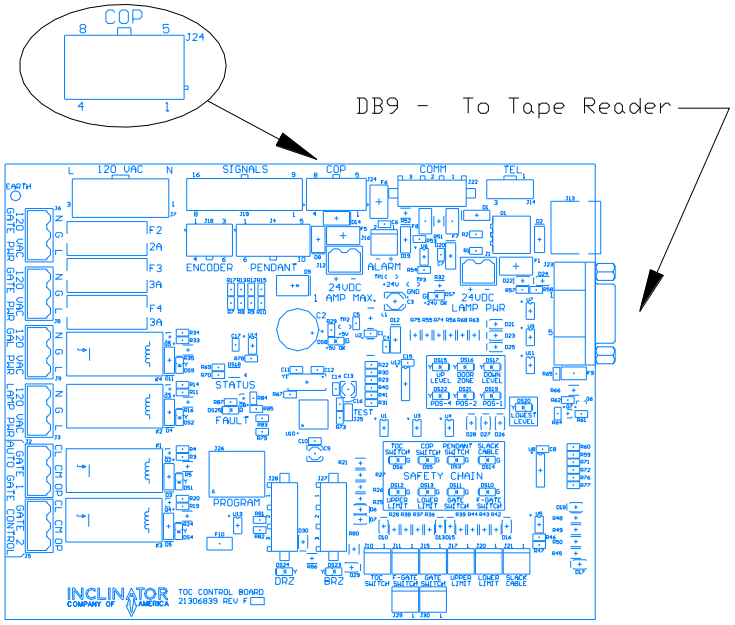


Figure 33 - TOC, Tape Reader & COP Connections

Auto Gate Wiring

1. The connectors J6 & J8 labeled "120 VAC GATE PWR", provides 120VAC power for up to 2 automatic gates on the car. Either connector, J6 or J8, can be wired into either automatic gate system on the car. Connect 3 conductor wiring/cable into the terminal block supplied for J6 & J8 as required. Route and connect remaining end of wiring/cable to power input of the automatic gate system. J6 & J8 are protected by a 3 Amp time delay fuse, F3.

2. *Remove the wires, normally yellow & brown, from B+ and B- on the gate operator board. The B+ & B- connections are not used in the UC601 system and damage to the gate operator board will occur if electrical connections are made to B+ & B- terminals.*

3. Connectors J3 & J5, labeled "GATE 1" or "GATE 2" "AUTO GATE CONTROL", are the dry contact outputs used to control opening and closing of the gates. The contact between "OP" & "CM" will be closed when the gate is to be in an open state. The contact between "CL" & "CM" will be closed when the gate is to be in a closed state. Connect 3 conductor wiring/cable into the terminal block supplied for J3 & J5 as required. Route and connect remaining end of wiring/cable to open/close inputs of automatic gate system.

4. *Be sure to configure Auto Gate(s) in the UC601 setup menu. But most importantly, the Auto Gate itself must be configured for manual operation through its open & close dry contact inputs. Do not enable auto-close on the gate operator. See the Auto Gate manual for further details. See Figure 35 - Typical Auto Gate Power & Control Wiring*

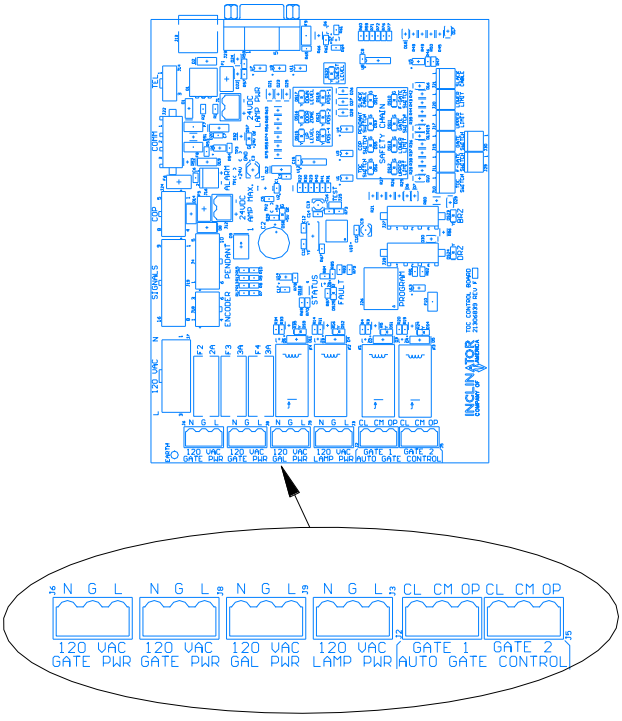


Figure 34 - TOC 120VAC Connections & Gate Control

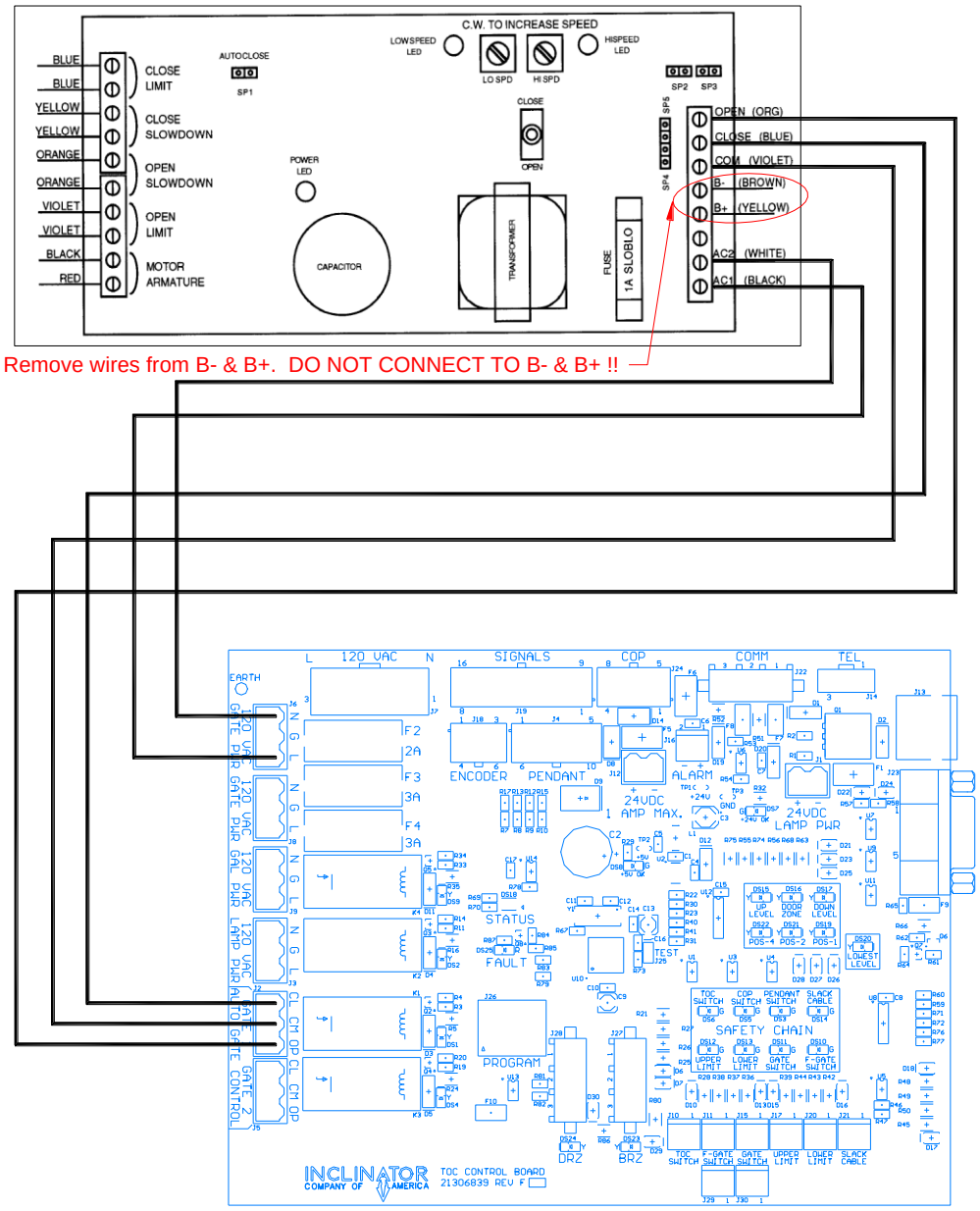


Figure 35 - Typical Auto Gate Power & Control Wiring

Car Lighting Wiring (Standard)

The LED car lamp wiring inside the TOC enclosure is complete as wired from the factory. The only car lamp task remaining is to route the cables to the LED car lamps. Locate the 2 black and red cables with the 2-position connector. Route theses 2 cables out through the TOC enclosure, in conduit, to the LED cab light junction boxes. Insert the cables into the lamp junction box and attach the 2-position connector to the LED lamp connector.

The LED drivers are connected to J3 at the factory. J3 is protected by a 2 Amp fuse, F2.

Car Lighting Wiring (Lights by Others)

Inclinator supplies a 24VDC emergency light when the normal cab lighting will be installed by the dealer or home owner. In this case 24VDC emergency light wiring must be connected to J1 LAMP PWR terminal block as indicated below. J1 is protected by a 1 Amp non serviceable resettable fuse, F6. For the Inclinator emergency light, connect the white wire to J1 position +, and connect the black wire to J1 position -.

The user supplied standard cab lighting will be connected to J3 120 VAC LAMP PWR terminal block. J3 is protected by a 2 Amp fuse, F2. Using the car lighting wires; connect the hot/line wire to J3 position L, the neutral wire to J3 position N, and the ground wire to J3 position G.

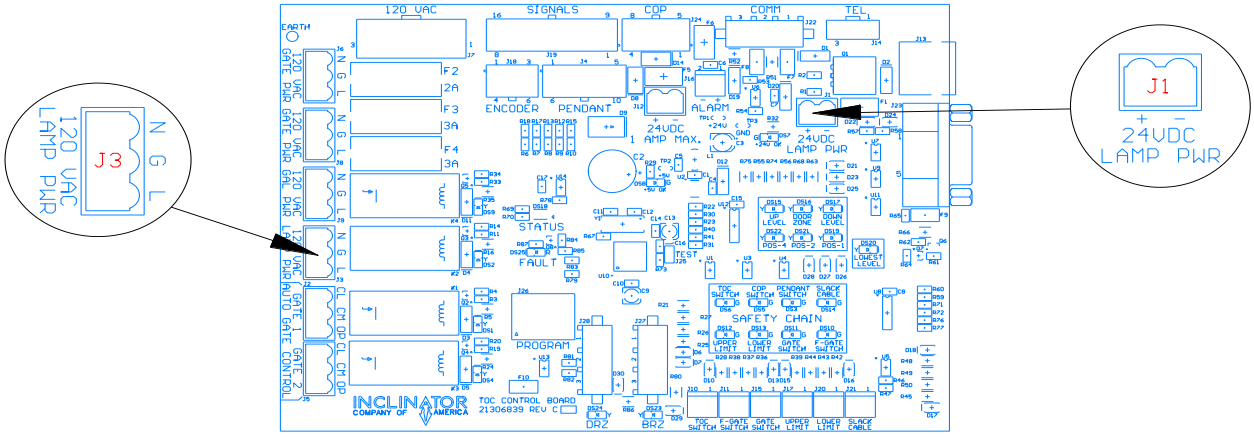


Figure 36

GAL Wiring

The connector J9 "120 VAC GAL PWR" is used for 120VAC power to the retiring cam on a GAL type lock. Connect a 3-conductor wiring into the terminal block supplied for J9. Route and connect remaining end of wiring to retiring cam device. J9 is protected by a 3 Amp fuse, F4.

Remote Wiring

Remote: Also called Call Station or Hall Station

A Remote is required at each landing requiring access to the elevator car. A *maximum of two* remotes is possible at each floor.

Every Remote has provisions for electrical connections to the main CPU, the door locks, and optional automatic door controls.

To/From CPU

The wiring connecting each Remote to the CPU is arranged in daisy chain or series string arrangement. This wiring is a 10 pin/10 conductor flat cable which contains the serial communication to/from CPU, DC power, and door lock status signals.

NOTE: Although this wiring may appear similar to CAT5 wiring,
THIS WIRING IS NOT CAT5 WIRING!!!!

The Remote wiring string always originates from the CPU board connector J17 "Remotes". However, as the string progresses, the wiring order of Remote panels varies depending on if the CPU Enclosures' location is standard mounted or attic mounted. The last Remote in the string requires a loopback plug, ICOA PN 21307618. See Figure 38 through Figure 41.

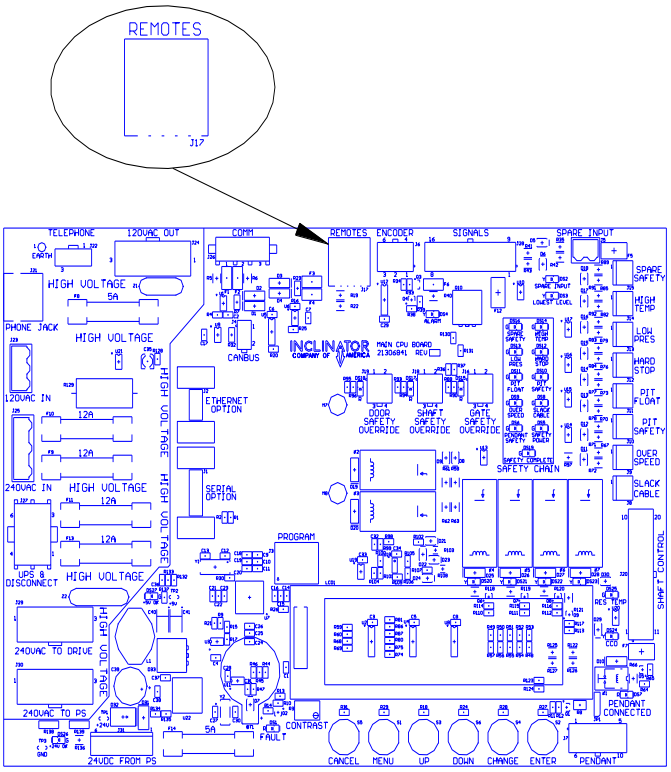


Figure 37 - CPU Board, Remote Connection

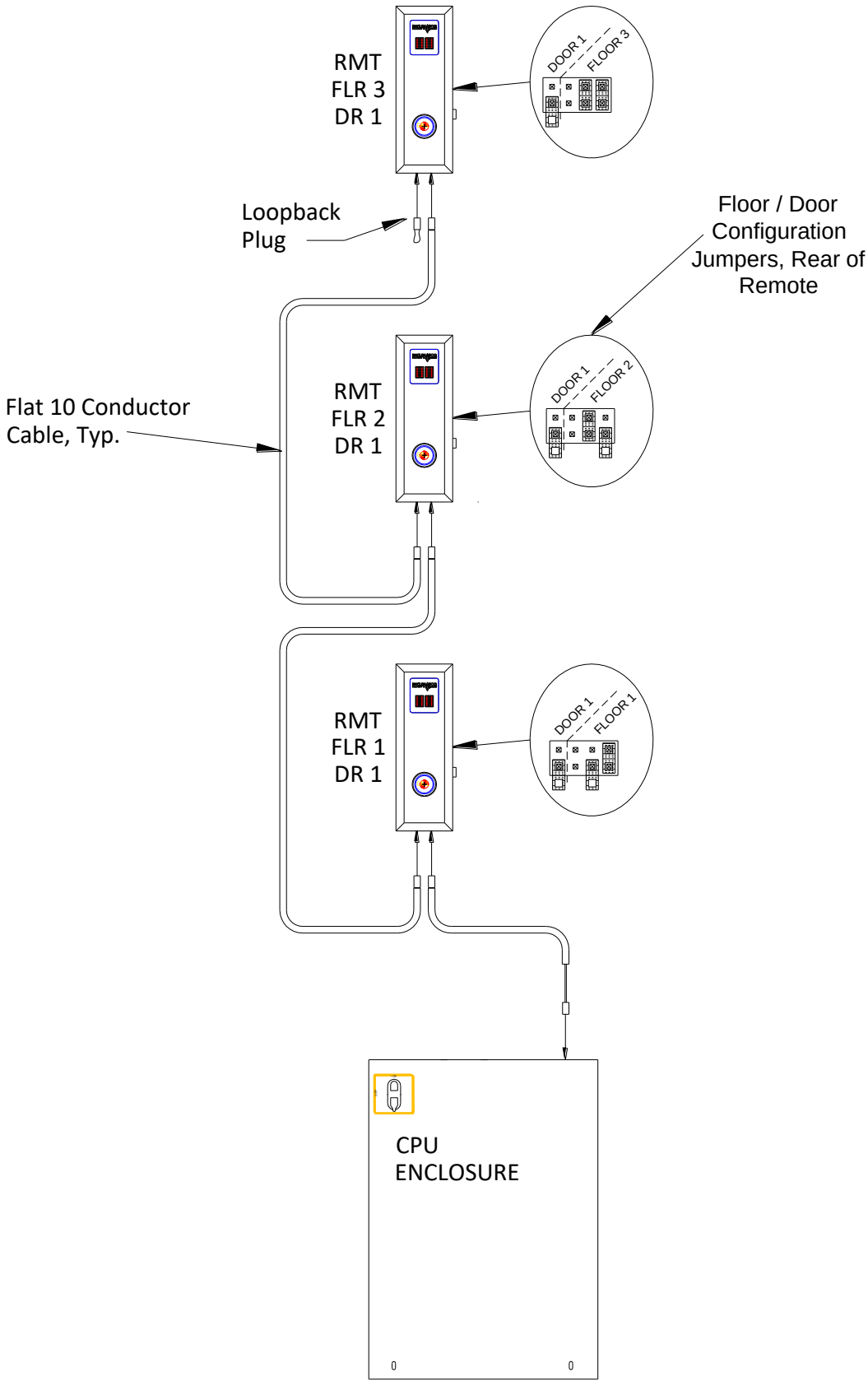


Figure 38 - CPU ENCLOSURE, STANDARD MOUNT, 3 FLOORS, 1 DOOR

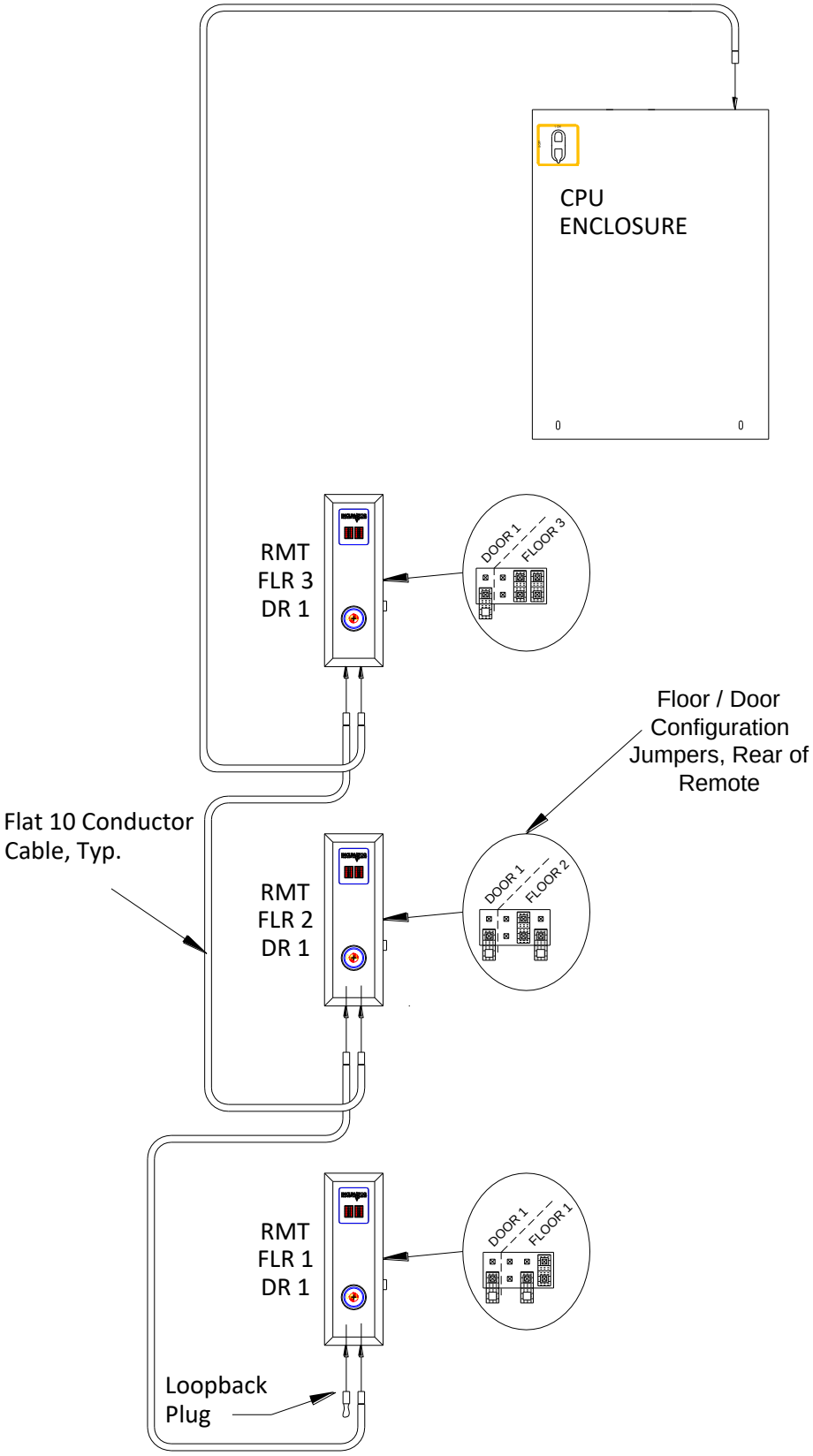


Figure 39 - CPU ENCLOSURE - ATTIC MOUNT, 3 FLOORS, 1 DOOR

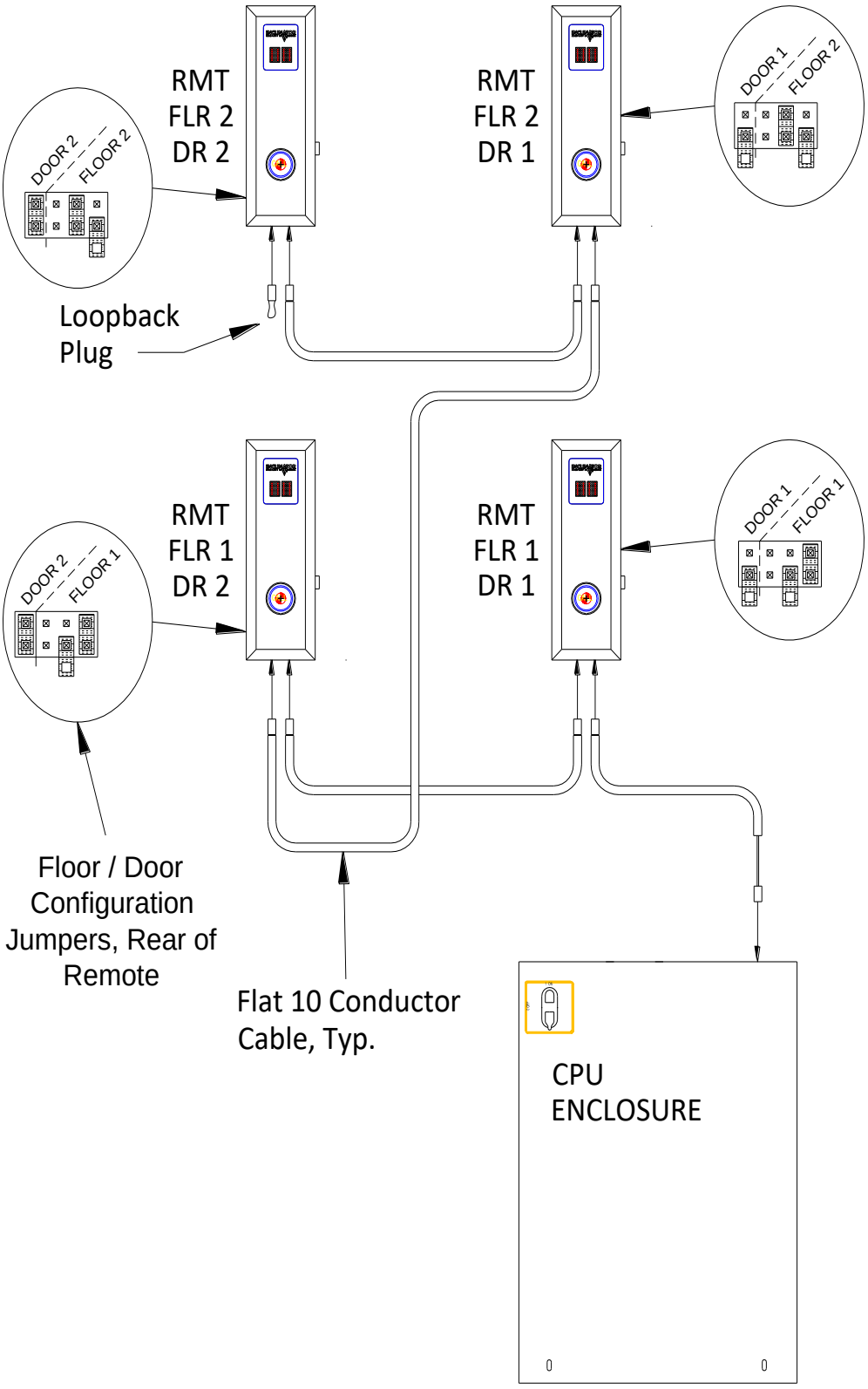


Figure 40 - CPU ENCLOSURE - STANDARD MOUNT, 2 FLOORS, 2 DOORS

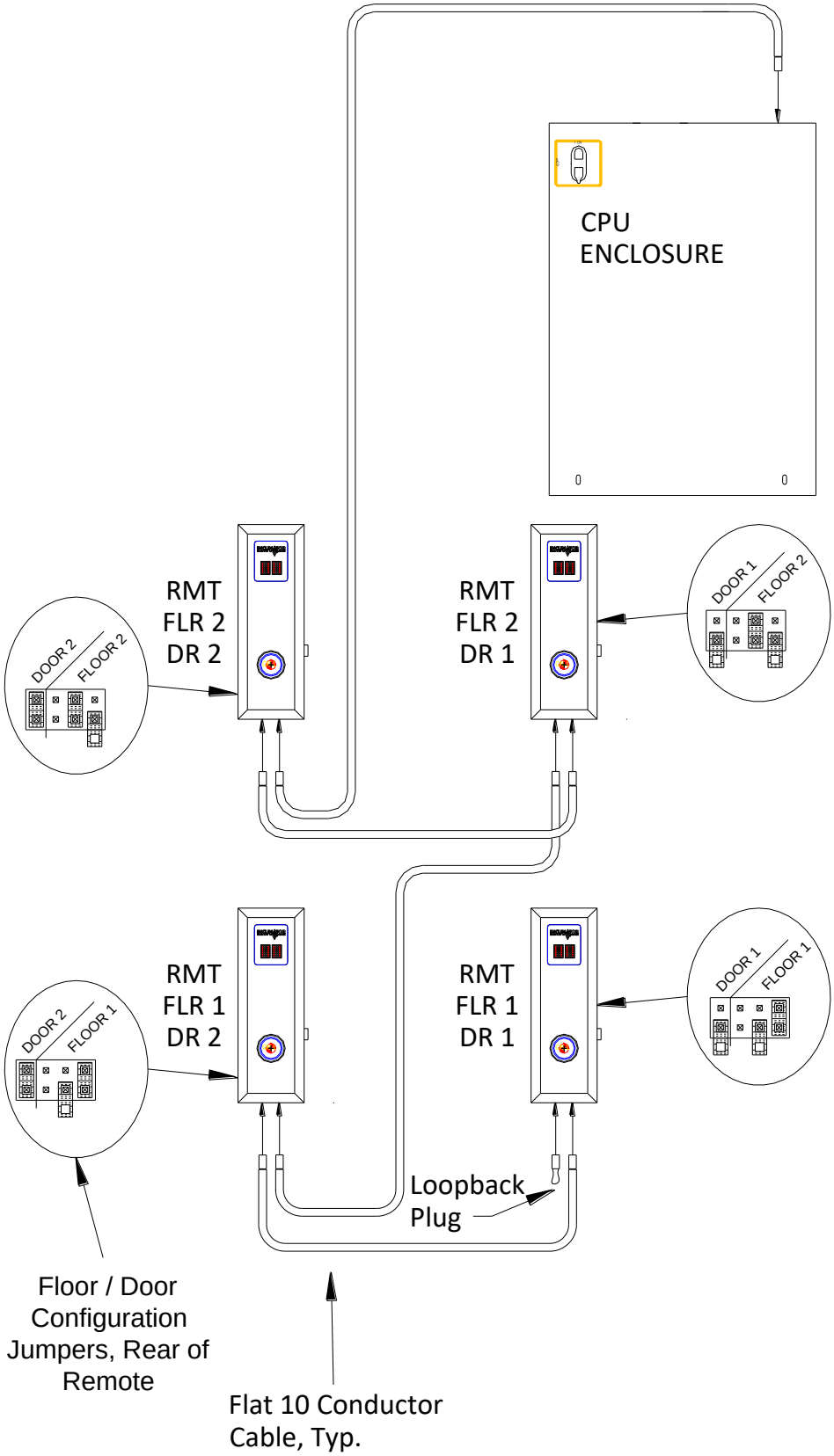


Figure 41 - CPU ENCLOSURE - ATTIC MOUNT, 2 FLOORS, 2 DOORS

Door Lock Wiring

Connector J4 "Door Lock" on the rear of the RMT assembly, see Figure 47, is used to interface to the following lock types:

- Inclinator EM5 DC
- Inclinator EM7 DC
- Inclinator Honeywell Locks
- Suns Interlocks
- GAL Door Interlock Switches

The cabling between the RMT J4 connector and the door lock is keyed at both ends and is available in 60 inch & 15-foot lengths. The cables are capable of connecting together which allows for extending the required wiring length beyond the two available lengths.

Lock cable ICOA P/Ns are:

21310669	Door Lock Cable Assembly, 60"
21310669-1	Door Lock Cable Assembly, 15'

Em-7 / Em-5 Interlock Wiring

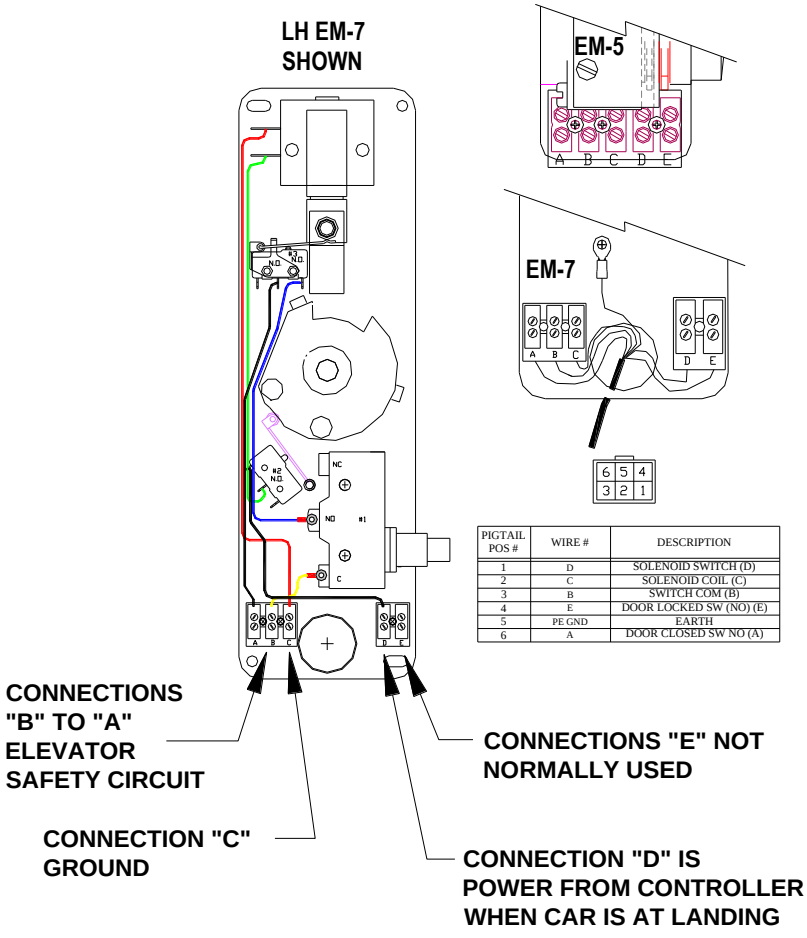


Figure 42 - Em-7 / Em-5 Wiring

Inclinator-Honeywell Wiring

The Inclinator-Honeywell interlock will be assembled with a wire harness designed to plug directly into the lock cable. If you need to disconnect the wire harness, use the following instruction and diagrams to reconnect the harness.

1. Remove the cover by unscrewing the cover screw(s).
2. Unscrew the terminal screws. Connect wires per the schematic provided below. Torque all terminal screws with a tightening torque of 0.5 Nm to 0.7 Nm.
3. Reinstall the cover and securely tighten the screw(s). Recommended tightening torque for the cover screw(s) is 1.5 Nm max.

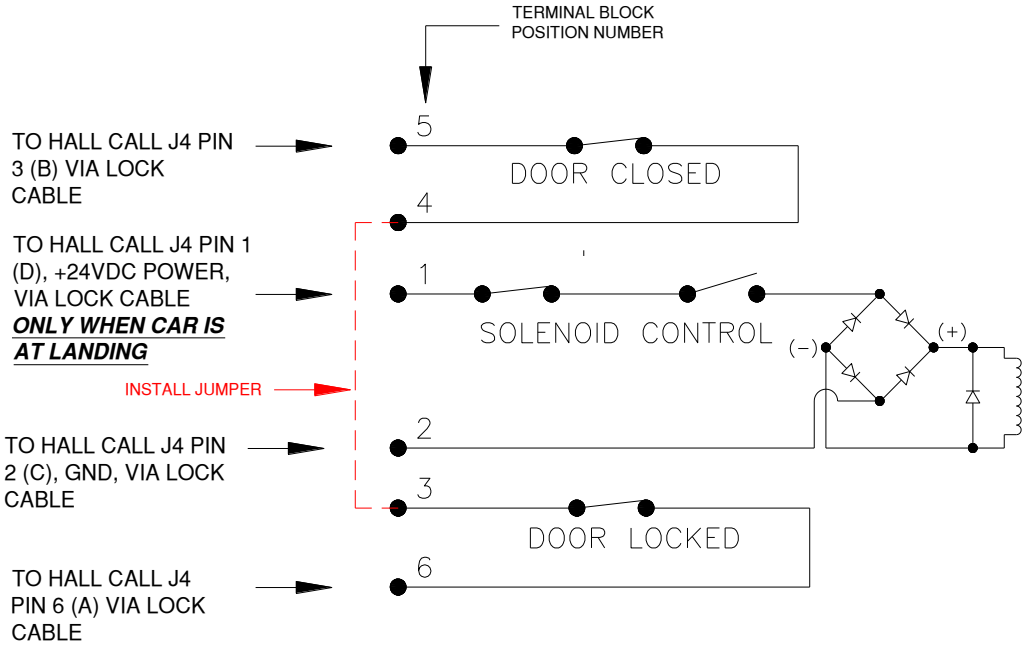


Figure 43 - Inclinator-Honeywell Wiring Diagram #1

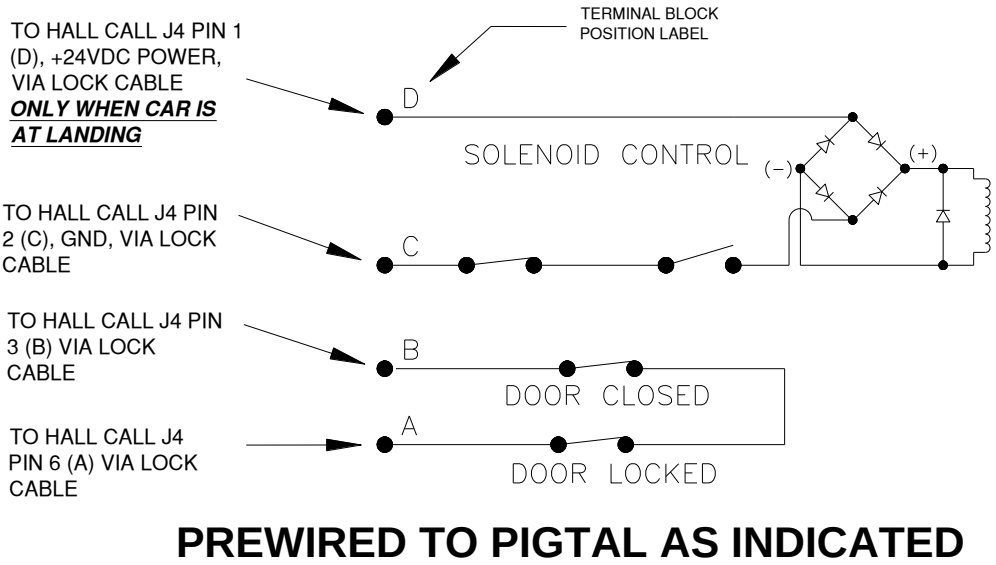


Figure 44 - Inclinator-Honeywell Wiring Diagram #2

Suns Interlock

The Suns interlock will be assembled with a wire harness designed to plug directly into the lock cable. If you need to disconnect the wire harness or wire directly into the lock internal terminal block, use the following instruction and diagrams to reconnect the harness.

1. Remove the cover by unscrewing the cover screw(s).
2. Unscrew the terminal screws. Connect wires per the schematic provided below. NOTE THE INTERLOCKS INTERNAL TERMINAL BLOCK DESIGNATIONS (LABELS) DO NOIT MATCH INCLINATOTS WIRE DESIGNATIONS.
3. Reinstall the cover and securely tighten the screw(s).

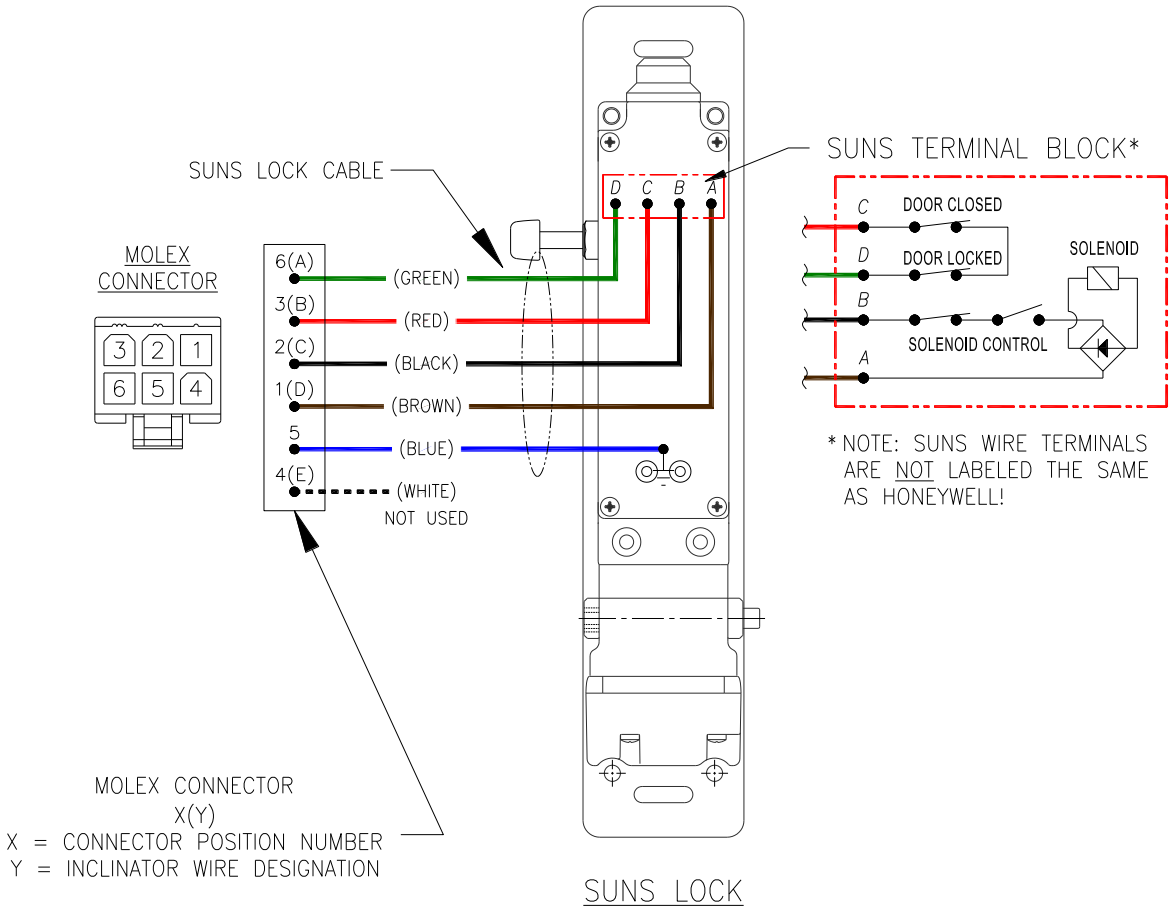
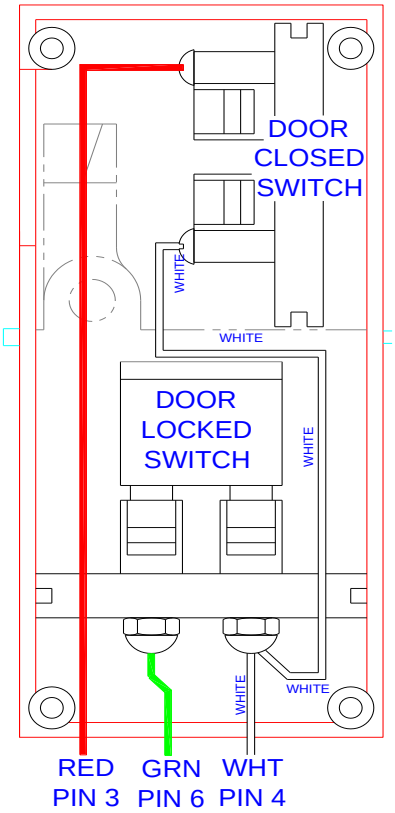
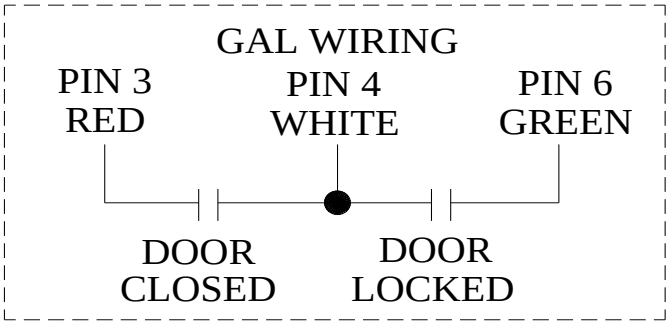


Figure 45 Suns Wiring





Inclinator does not supply GAL type locks. Therefore, a lock pigtail for each GAL floor lock will be required to connect to the lock cable.

ICOA P/N 21307674 UC601 Door Lock Pigtail

Unused wires in pigtail must be electrically insulated / capped.

Figure 46 - Gal Wiring

Automatic Door Wiring

Connector J3 "Power Door" on the rear of the RMT assembly is used for controlling an optional Automatic Door. See Figure 47. The automatic door operator must be configured for maintain contact input. The control system provides a dry contact closure to open the door via this connector. E.g. *When contact is closed, door is opened - when contact is open, door is closed.*
Use ICOA P/N 21309497 Auto-Door Control Cable, 9FT to interface to the Automatic Door operator. See Figure 48.

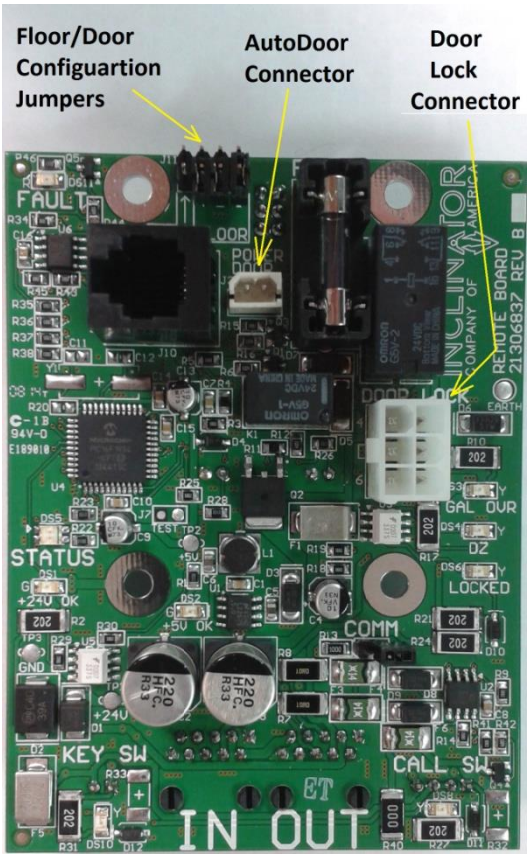


Figure 47 - RMT, Rear View

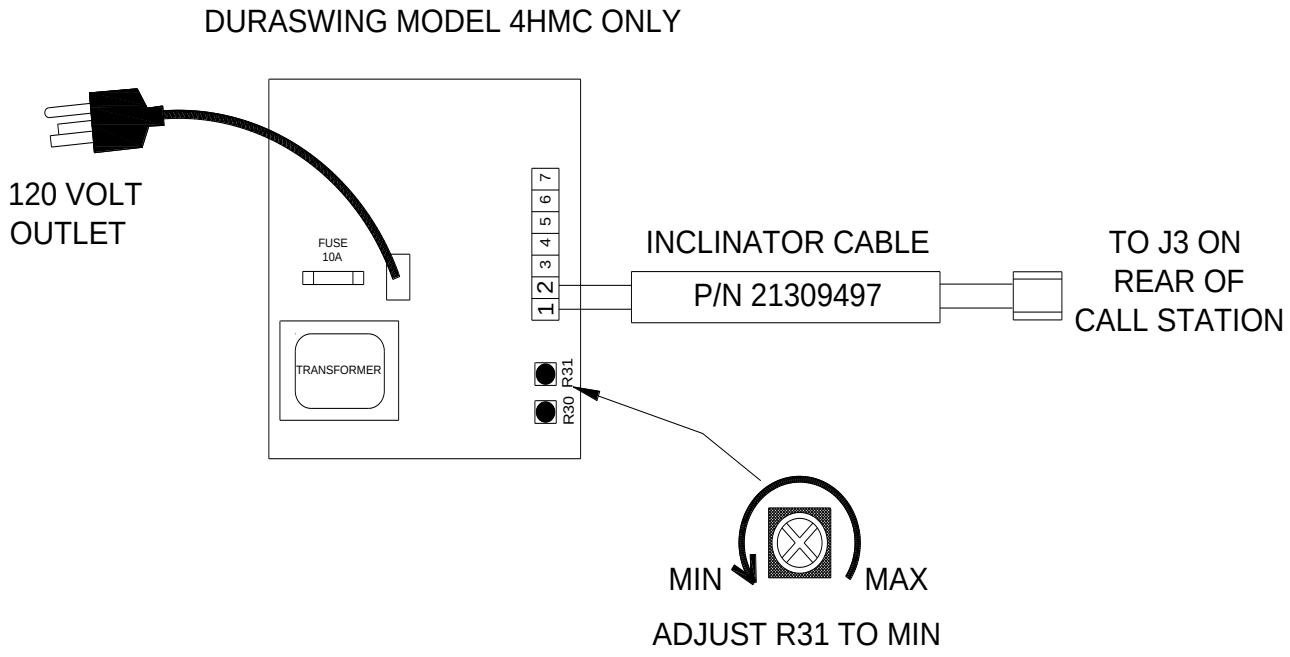


Figure 48 - DuraSwing 4HMC, Maintain Contact Input

COP Wiring

1. Route the COP cable, ICOA PN 21307420, from the TOC enclosure down an exterior car wall to the general area of the COP cutout/box. Insert the COP cable through junction box or car wall. Attach a retaining device(s) to the COP cable so that cable is somewhat taught. Insure that the cable will not interfere with devices or structures within the hoist way.

2. Connect the green wire with the ring terminal to the stud on the rear of the COP.

3. Connect the Red and White wires with the Flag Disconnects to the Run/Stop switch as follows:
    - Red wire to Tin colored terminal
    - White wire to Copper colored terminal

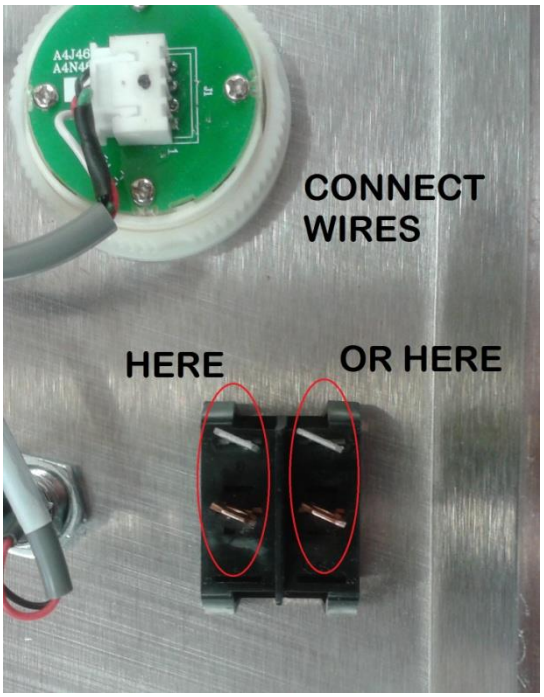


Figure 49 – COP Run/Stop Switch Wiring

4. Insert the 5-position connector on to the mating header on the COP board. Note that the COP onboard connector and the cable connector are keyed and thus can only be joined together successfully in one orientation.

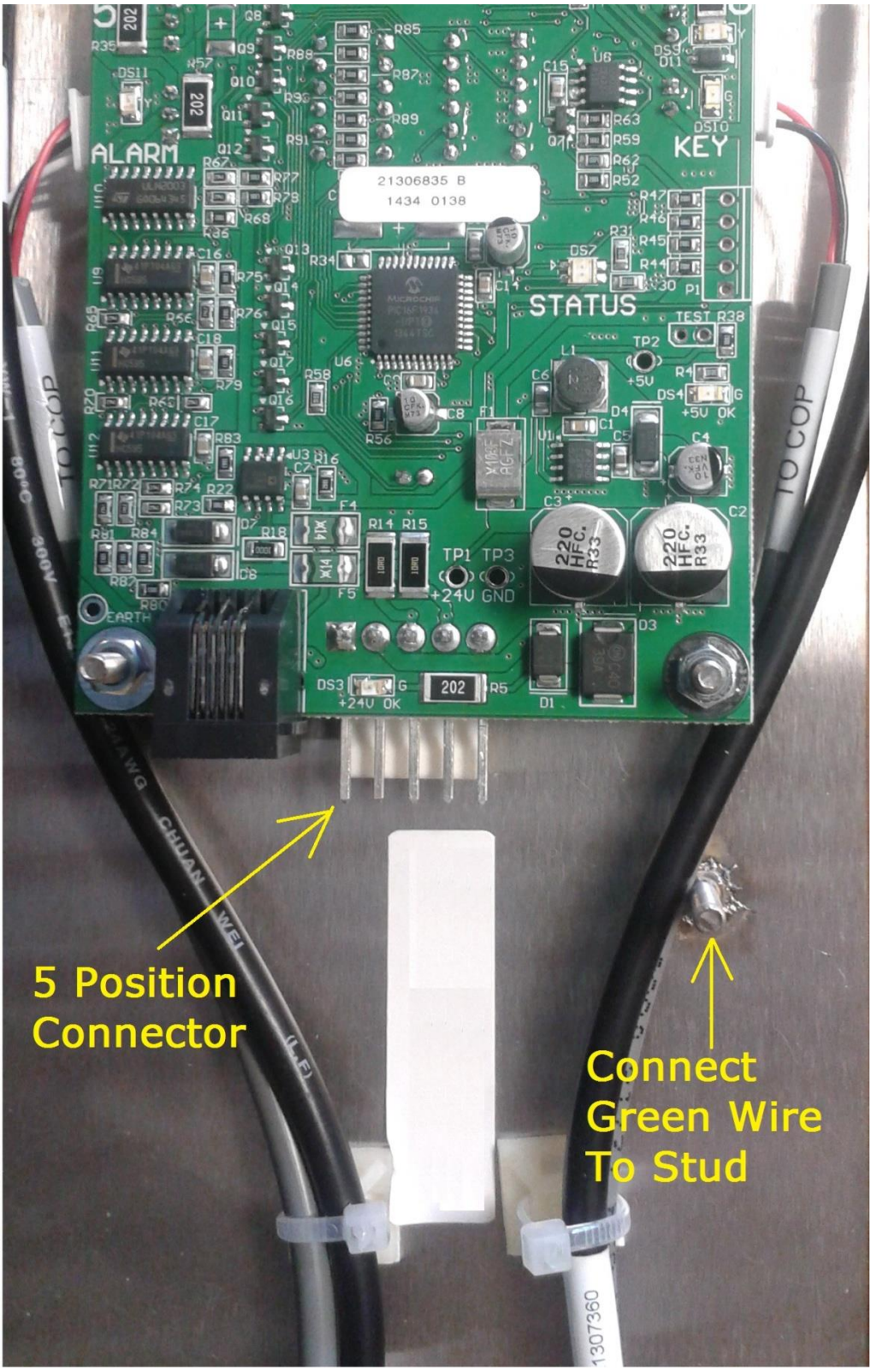
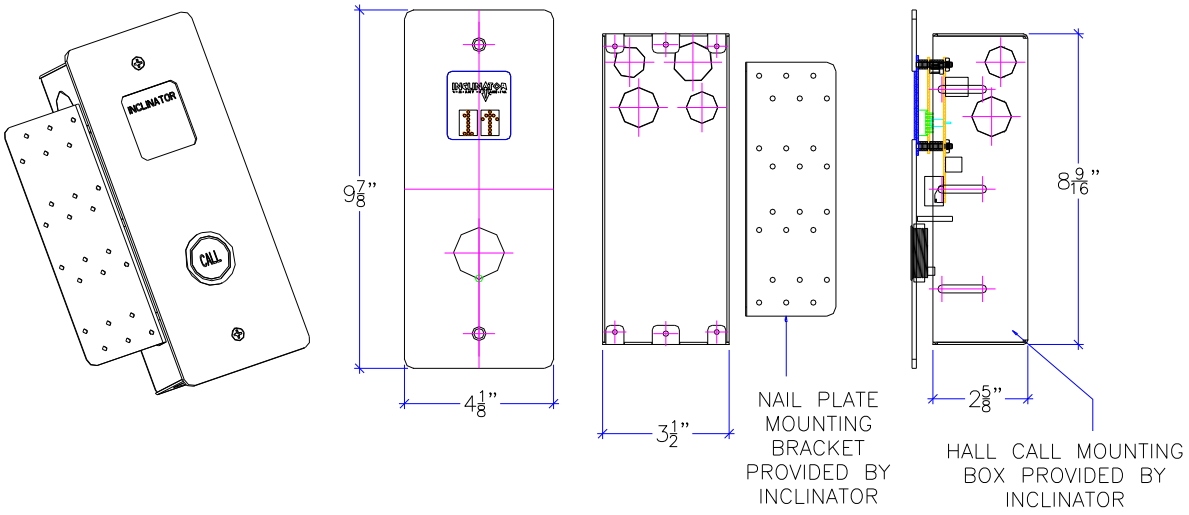


Figure 50 - COP Power, Communication, & GND Connections

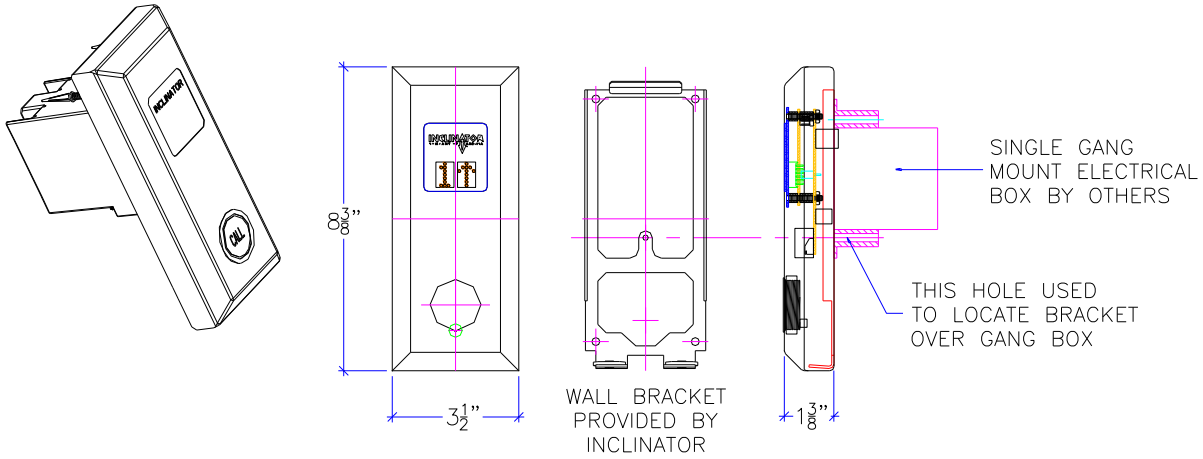
Remote Styles

Remotes are available in 2 styles. E.g. Flush Mount & Raised Mount. A flush Remote is intended to be mounted on a custom electrical box, recessed in wall, available from Inclinator. The raised Remote is intended to be mounted on a standard 1 gang electrical box, recessed in wall, not supplied by Inclinator.

FLUSH MOUNT HALL CALL STATION



RAISED MOUNT HALL CALL STATION



Remote Jumper Configuration

Each Remote has a unique jumper configuration, or code, dictated by the floor and door location where installed to allow the main CPU control to identify the location of the Remote. See Figure 51 & Figure 47.

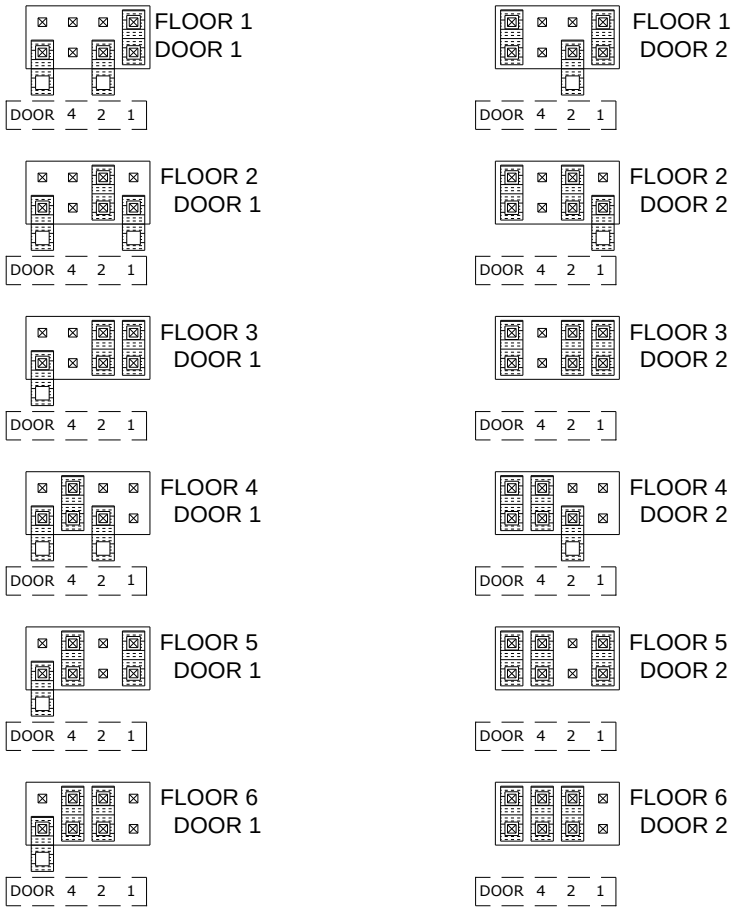


Figure 51 - FLOOR / DOOR CONFIGURATION JUMPERS

There is also a communication termination jumper on the rear of the Remote assemblies that must be set correctly. For all Remotes *except* the last Remote in the string, the communications termination jumper must be *inactive*.

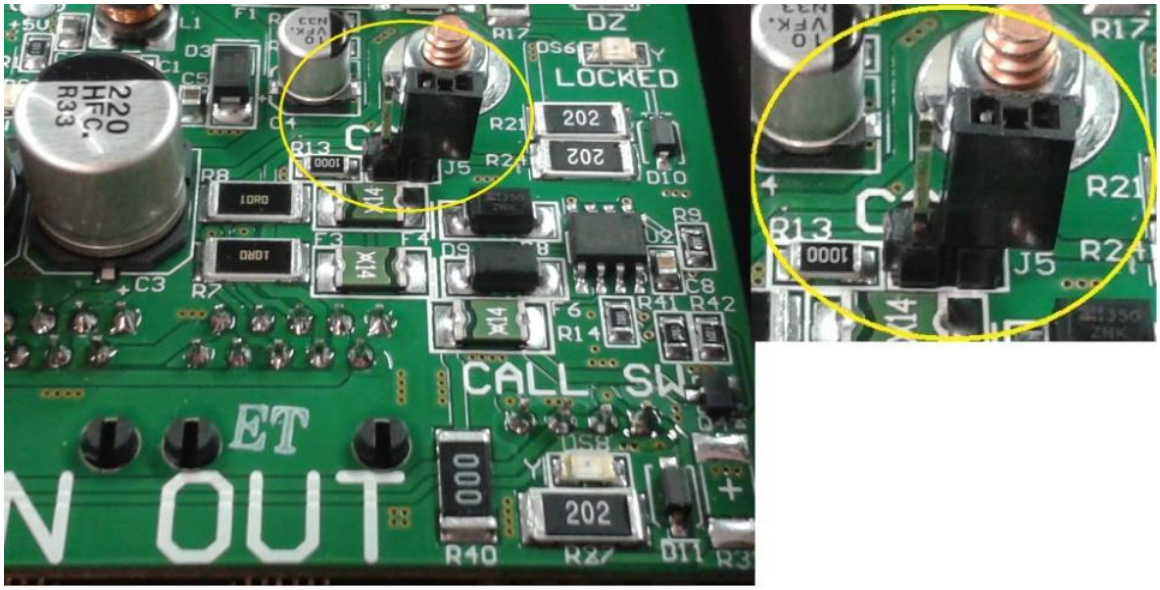


Figure 52 - Inactive Communication Termination Jumper

For the last Remote in the string, the communications termination jumper must be *active*.

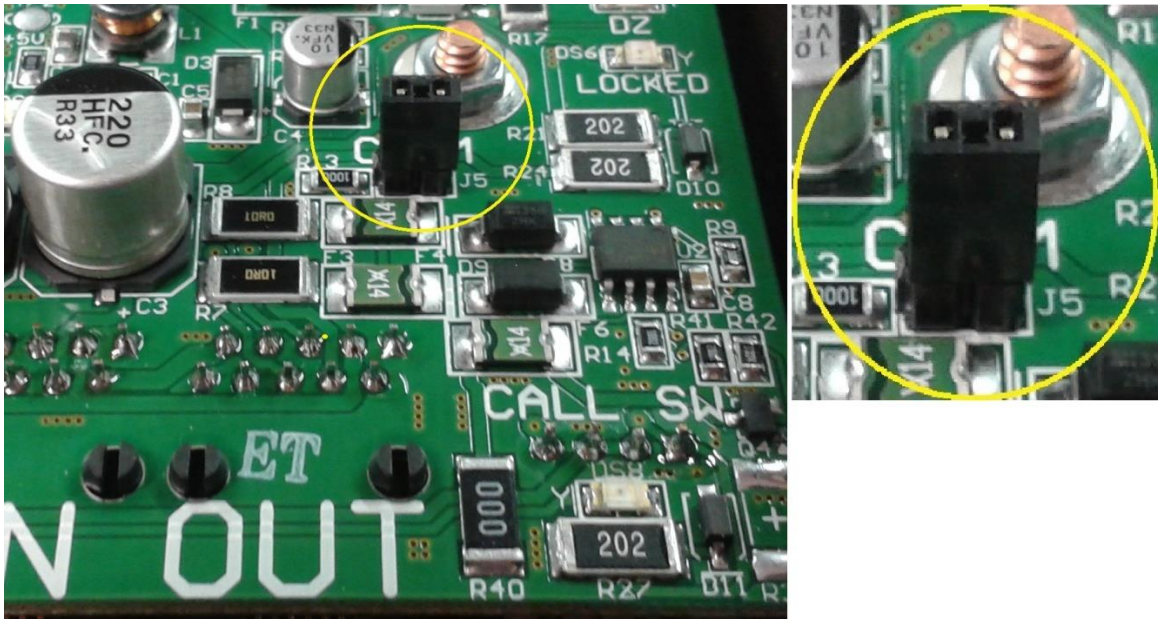


Figure 53 - Last Remote in String, Active Communication Termination Jumper

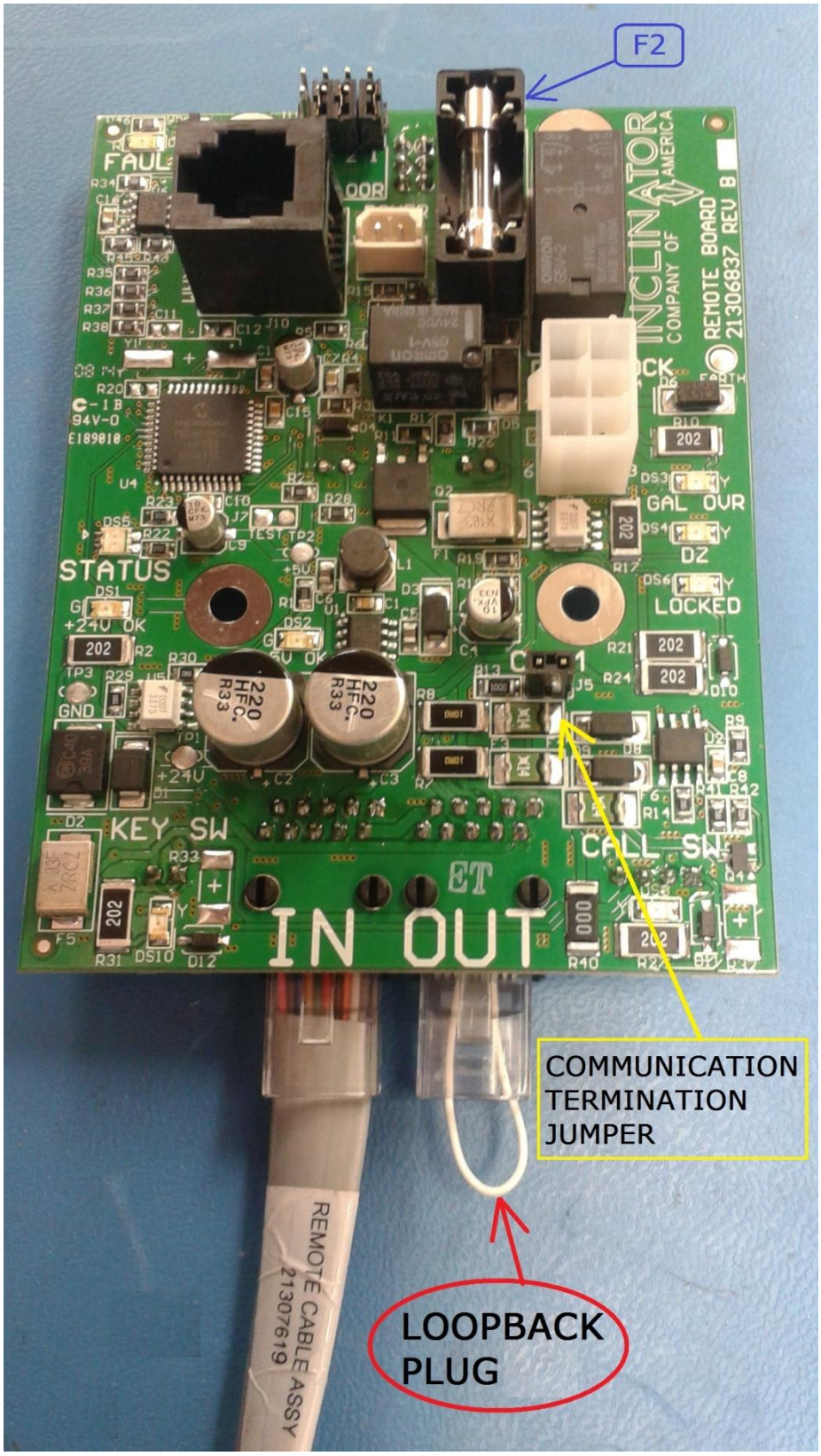


Figure 54 -- Last Remote in String, Loopback Jumper & Active Communication Termination Jumper

Initial Magnet Setup

1. Car position data is obtained from a car mounted tape reader which parallels a steel tape suspended from the top of the shaft to the bottom of the shaft. Magnets are placed on the steel tape in groupings per floor. The magnets are used for Floor / Landing identification, door zone area, as well as up & down leveling zones.

2. While facing the steel tape inside the shaft, the 8.5” magnet used for door zone, up & down level will be located on the left side of the tape. The 2” floor identification magnets are located on the right side of the tape. NOTE: WHITE IDENTIFICATION STRIPE ON MAGNET MUST BE VISIBLE AFTER PLACING MAGNETS ON TAPE.

3. See Figure 55 & Figure 56 for magnet groupings per floor along with pertinent locating dimensions.

ATTENTION

DO NOT CUT, TRIM, OR SHORTEN THE LENGTH OF ANY MAGNET UNDER ANY CIRCUMSTANCES!!!!

The UC601 control system timing is highly dependent on the length of the magnets. Any change in the length of the magnets will negatively affect the operation of the control system regarding starting, stopping, & leveling of the elevator.

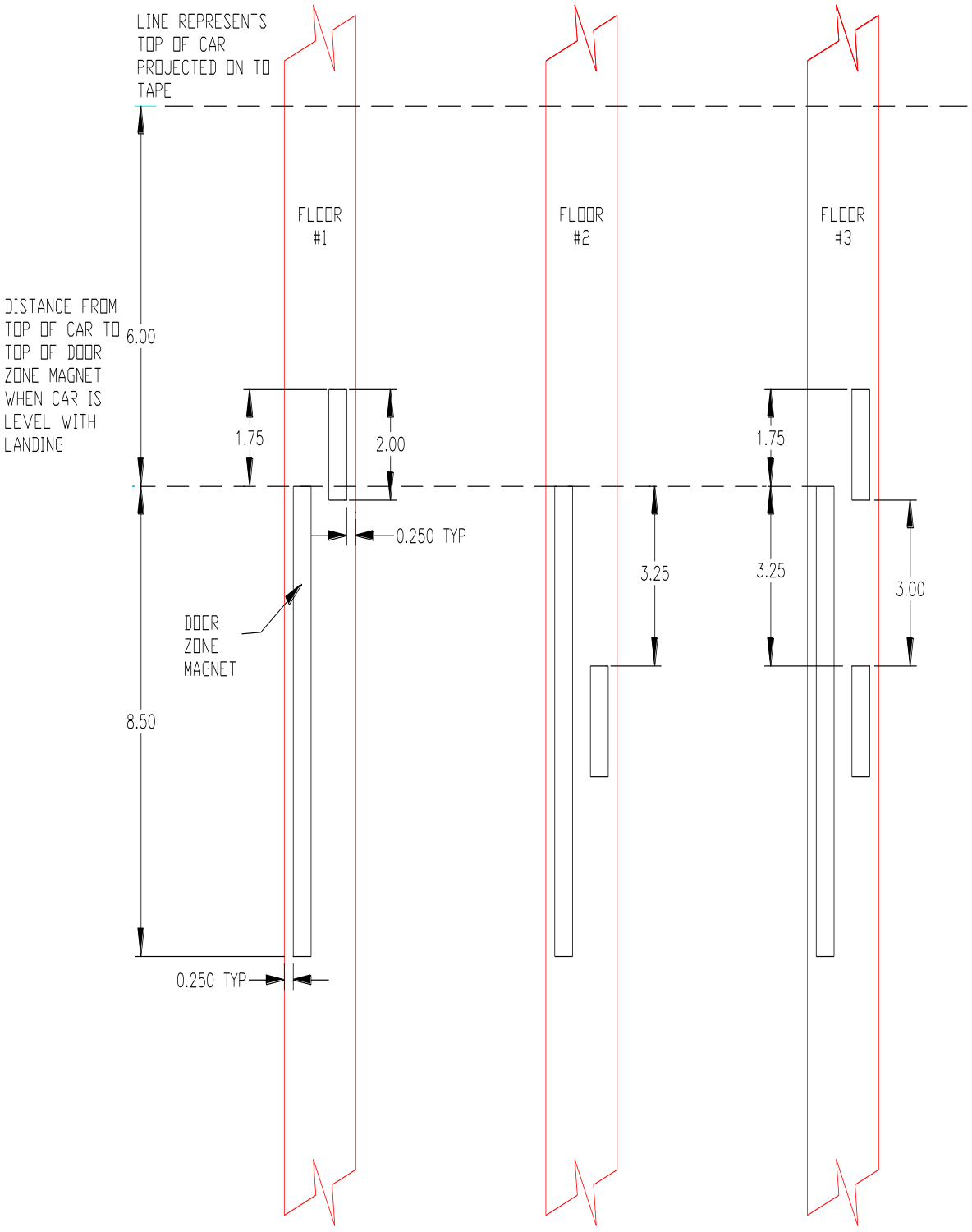


Figure 55 - Magnet Configurations Floors 1, 2, 3

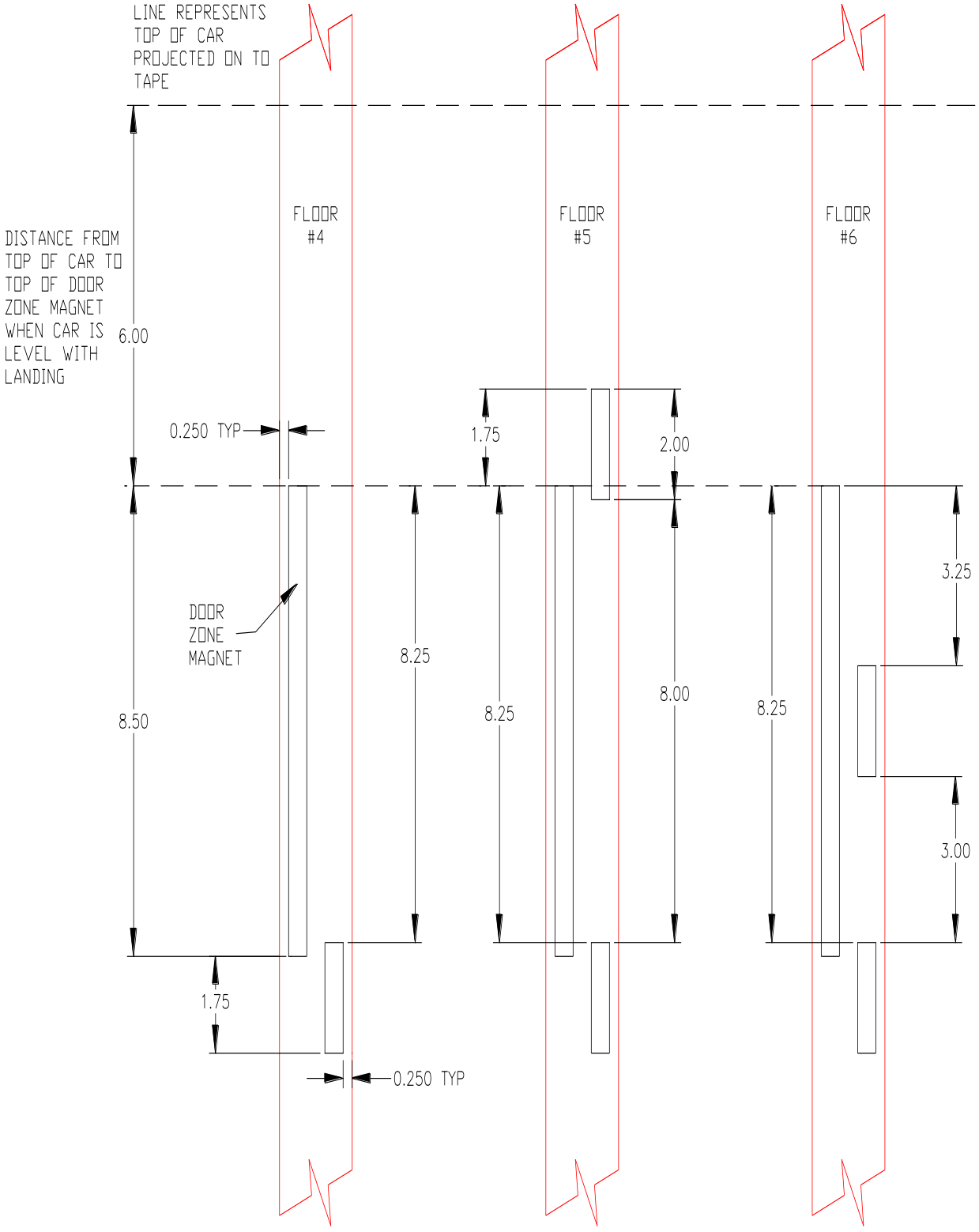


Figure 56 - Magnet Configurations Floors 4, 5, 6

4. A suggested method for locating magnets would be as follows:

    a. Level the car at a landing for an intermediate floor.
    b. From the top of the project and draw a line on the tape that represents the top of the car.
    c. Locate and install the magnets on the tape using Figure 55 & Figure 56.
    d. Locate & mark the top of the door zone magnet on floors below and floors above using the travel distance between floors. See Figure 57.

5. This magnet setup will provide initial position of all magnets. Further adjustments of magnets may be necessary during elevator setup & configuration.

ATTENTION

AFTER ALL MAGNET ADJUSTMENTS ARE COMPLETED (See Section Landing Leveling Adjustments) REMOVE ADHESIVE BACKING ON ALL MAGNETS AND SECURE MAGNETS TO STEEL TAPE*!!!!! Application of additional adhesive or sealant is recommended at the top and bottom of each magnet to aid in securing magnets to steel tape.*

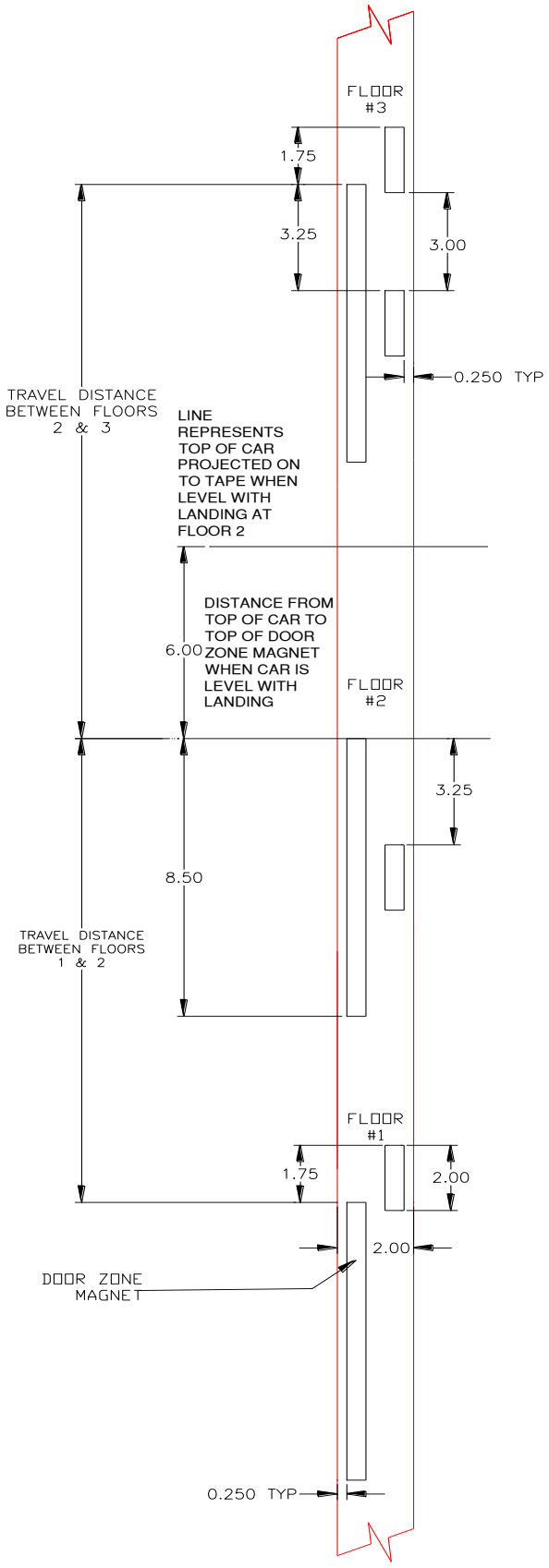


Figure 57 - Magnet Placement Using Travel Distance

Initial Application of Power

Perform the following power up test after the elevator control wiring is complete.

- Verify that both 208/240VAC & 120VAC disconnects are turned off.
- Unplug the Pendant Jumper from CPU J7. Plug in Pendant into J7 "Pendant" connector of CPU board.
- Turn on UPS inside CPU Control enclosure.
- Turn on 208/240VAC & 120VAC disconnects and turn on switch on front of CPU enclosure.
- Verify that CPU board has powered up and CPU LCD is displaying text.
- Turn off 208/240VAC & 120VAC disconnects.
- Verify that CPU board remains powered up.
- Turn on 208/240VAC & 120VAC disconnects.
- Switch Pendant selector switch from Normal to Inspection mode.
- Press the Pendant up button and verify that the car moves upward.
- Press the Pendant down button and verify that the car moves downward.
- If the direction of the elevator travel is backwards relative to Pendant buttons, remove ALL power and switch any two motor wires (U,V,W) in the motor junction box and then retest.
- Turn off switch on front of CPU enclosure and turn off 208/240VAC & 120VAC disconnect.
- Remove Pendant from CPU J7 and replace with Pendant jumper.

Verify Safety Chain Switches

It is very important that the wiring to safety chain switches be verified as functional before proceeding with the installation.

- The Pit Switch should be located somewhere near the bottom of the hoistway.
- The slack cable mechanism is attached to the winding machine for a standard cable drum elevator.
- The slack chain mechanism is attached to the car sling for an Overhead Cable drum elevator.
- The slack chain mechanism is attached to the car sling for an MRL geared elevator.
- The access panel can be located anywhere hoistway access is desired.

Pit Switch

Move the position of the pit switch to the off position. Verify that the pit switch is functional by observing an "ST" on the COP & RMT PIs. You can also verify the functionality of the pit switch by observing the "Open Safety Circuit Pit Safety Switch" message on the CPU LCD.

Slack Chain Switch

Either from the top of the car, or another convenient location, move the slack chain mechanism up. Verify that the message "Open Safety Circuit TOC Slack Cable Sw" is observed on the CPU LCD.

Slack Cable Switch

Move the slack cable mechanism so that the associated switch is activated or opened. Verify that the message "Open Safety Circuit CPU Slack/Final Sw" is observed on the CPU LCD. If the winding machine is equipped with 2 drums, repeat this procedure on the slack cable mechanism on the other drum.

Upper Limit Switch

Using the Pendant in Inspection Mode, move the cab up until the point where the upper limit is activated and the cab stops. Look for message on LCD indicating upper limit is open. Install the "Shaft Safety" jumper and move the car down with the pendant until the upper limit is no longer open. If the upper limit does not activate, move the cab down, turn off power and adjust the upper limit cam.

Lower Limit Switch

Using the Pendant in Inspection Mode, move the cab down until the point where the lower limit is activated and the cab stops. Look for message on LCD indicating lower limit is open. Install the "Shaft Safety" jumper and move the car up with the pendant until the lower limit is no longer open. If the lower limit does not activate, move the cab up, turn off power and adjust the lower limit cam.

Access Panel Switch (Optional)

Open the access panel and verify that the switch is functional by observing an "AP" on the COP & RMT PIs. You can also verify the functionality of the pit switch by observing the "Open Safety Circuit Hard Stop/Access Sw" message on the CPU LCD.

Other Safety Chain Switches

Verify all functionality of all other safety chain switches, by operating the switch and observing the COP & RMT PIs and the CPU LCD.

Landing Leveling Adjustments

Non-Hydro

2 Landing Elevator

Only the adjustment of the steel tape magnets is necessary for a 2-landing elevator.

1. Call the car to each of the floors. Measure and record the distant from the car floor to the floor landing level. Also record if the car is above or below the landing level.

2. Using the template, move the magnets on the steel tape for each floor by the measurements recorded above. Move up or down as necessary so that the car floor becomes level with the landing floor. See drawing 80209887 for placement of upper and lower limit cams on steel tape.

3, 4, 5, or 6 Landing Elevator

Choose an intermediate floor for testing landing level adjustments. For example, choose floor 2 or 3 as the test landing for a 4-landing elevator. Position the steel tape magnets so that the car stops at point where measurements from the landing to the car floor are easily obtained.

1. 1st step is to move car to a position well above the testing floor at a point where the tape reader is off all magnets. Call the car down to the testing floor and note the measurement from the landing floor to the car floor.

2. 2nd step is to move car to a position well below the testing floor at a point where the tape reader is off all magnets. Call the car up to the testing floor and note the measurement from the landing floor to the car floor.

3. Verify that the stopping position of the car traveling up to the test floor is below the stopping position of the car traveling down to the test floor. If not, reduce both the Up & Down Leveling adjustments by two (2) to five (5) points in the CPU Setup menus and repeat steps 1 & 2.

4. If both measurements are within a 1/8” of each other, proceed to next step. If greater than 1/8”, increase both the Up & Down Leveling adjustments by two (2) to five (5) points in the CPU Setup menus and repeat steps 1 & 2.

5. Measure the distance between the stopping position of the car (floor) and the landing floor.

6. Reposition the testing floor magnets on the steel tape if the car floor is not within a 1/8” of the landing floor. If the measurement is low by X inches, move the magnets up by X inches. If the measurement is high by X inches, move the magnets down by X inches.

7. Proceed to

8. Setup Remaining Floor/Landings.

Hydro

CPU Leveling Adjustments

CPU "Up Leveling" & "Down Leveling" settings in Setup Menu are not relevant when performing these landing level adjustments. Verify that CPU "Up Leveling" & "Down Leveling" settings are set to the factory default values before performing the landing level adjustment procedure.

Up Bypass

Before proceeding with the actual landing level adjustments, adjust the Up Bypass valve setting #1 as indicated in document "27210852 Valve Adjustment ".

2 Landing Elevator

1. Call the car down to the 1st floor. Observe the car acceleration, full speed, leveling speed & deceleration. Note the final car stopping position is not important at this time. Adjust valve settings 6 through 9 (see document 27210852 Valve Adjustment) until the entire travel down from start to stop is acceptable regarding car acceleration, full speed, leveling speed & deceleration. Next, using the template, move the magnets on the steel tape to set the final car position.

2. Call the car up to the 2nd floor. Observe the car acceleration, leveling speed & deceleration. Note the final car stopping position is not important at this time. Adjust valve settings 2 through 4 (see document 27210852 Valve Adjustment) until the entire travel up from start to stop is acceptable regarding car acceleration, leveling speed & deceleration. Next, using the template, move the magnets on the steel tape to set the final car position.

3, 4, 5, or 6 Landing Elevator

Choose an intermediate floor for testing landing level adjustments. For example, choose floor 2 or 3 as the test landing for a 4-landing elevator. Position the steel tape magnets so that the car stops at point where measurements from the landing to the car floor are easily obtained.

1. 1st step is to move car to a position well above the testing floor at a point where the tape reader is off all magnets. Call the car down to the intermediate floor. Observe the car acceleration, full speed, leveling speed & deceleration. Note the final car stopping position is not important at this time. Adjust valve settings 6 through 9 (see document 27210852 Valve Adjustment) until the entire travel down from start to stop is acceptable regarding car acceleration, full speed, leveling speed & deceleration. Record the measurement from the landing floor to the car floor

2. 2nd step is to move car to a position well below the testing floor at a point where the tape reader is off all magnets. Call the car up to the intermediate floor. Observe the car acceleration, leveling speed & deceleration. Note the final car stopping position is not important at this time. Adjust valve settings 2 through 4 (see document 27210852 Valve Adjustment) until the entire travel up from start to stop is acceptable regarding car acceleration, leveling speed & deceleration. Record the measurement from the landing floor to the car floor.

3. If both measurements are within a 1/8" of each other, proceed to next step. If greater than 1/8", adjust up & down valve settings 1 through 4 and 6 through 9 and repeat steps 1 & 2.

4. Next, using the template, move the magnets on the steel tape to set the final car position at the intermediate floor.

Setup Remaining Floor/Landings (3,4,5, or 6 Landing Elevator - All Types)

Now that the landing level is setup at the selected intermediate floor, all that remains is setting up leveling at the remaining floors/landings. This setup will involve only the magnets for the steel tape.

Call the car to each one of the remaining floors. Measure and record the distant from the car floor to the floor landing level. Also record if the car is above or below the landing level.

Finally, using the template, move the magnets on the steel tape for each floor by the measurements recorded above. Move up or down as necessary so that the car floor becomes level with the landing floor. See drawing 80209887 for placement of upper and lower limit cams on steel tape.

ATTENTION:

AFTER ALL MAGNET ADJUSTMENTS ARE COMPLETED, REMOVE ADHESIVE BACKING ON ALL MAGNETS AND SECURE MAGNETS TO STEEL TAPE!!!!! Application of additional adhesive or sealant is recommended at the top and bottom of each magnet to aid in securing magnets to steel tape.

WARNING:

*The magnet information is used by the control system to unlock the hall door at the landing. It is imperative that the magnet positions are correct for each landing and that the magnets are **securely** attached to the steel tape!!*

Operation:

WARNING
This elevator is equipped with a door/gate (D/G) Safety Monitor that will disable, "LOCKOUT" the elevator under certain conditions. The purpose of the D/G monitor is to detect if the homeowner has jumped out hall door and cab gate switches.

See section "Door/Gate Monitor" for additional information.

COP

The Car Operating Panel (COP) directs the activity of the elevator, via user input, while the user is inside the car. The COP incorporates a 2-character position indicator (PI) as well as the floor call buttons, alarm button, Run/Stop switch, Key Switch, and a Call for Service LED.

The Run/Stop switch will always be in Run position when the elevator is in service. When the switch is in Stop position, all PIs, COP & Remotes, will indicate "ST" meaning elevator is stopped. No calls will be accepted and the elevator will not run.

The key switch will be on when the elevator is in service. When the key switch is off, all PIs, COP, and Remotes will indicate "--" meaning the elevator is out of service. No calls will be accepted and the elevator will not run.

Pressing the Alarm button will activate the alarm buzzer located on top of the car in the TOC enclosure. The alarm will be active as long as the Alarm button is depressed.

Pressing the call button will activate the elevator to move to the called floor. The PI's right most character will display an arrow indicating direction of travel. The left character will initially indicate the current floor, followed by any intermediate traveled floors, and finally the destination floor.

The Call for Service LED will illuminate based on the setting of the day timer in the setup menu. Also, the control can illuminate the Call for Service LED when it determines there is a need for service.

REMOTES

The Remote directs the activity of the elevator, via user input, while the user is outside the car at a landing. The Remote incorporates a 2-character position indicator (PI), a call button, and an optional Key Switch.

Pressing the call button will activate the elevator to move to the called floor. The PI's right most character will display an arrow indicating direction of travel. The left character will initially indicate the current floor, followed by any intermediate traveled floors, and finally the destination floor.

The optional key switch will be on when the Remote is in service. When the key switch is off, the Remote PI will indicate "--" meaning Remote is out of service. No calls will be accepted from this Remote. *Note: The door lock connected to the Remote that is out of service will be disabled.* Other Remotes as well as the COP will function normally.

Position Indicators (PI)

The Position Indicators, or PIs, are located in the COP & Remotes. Generally, the PIs will indicate the car position and the direction of travel while the car is in motion.

While the car is stationary, the PIs will indicate the current floor. While the car is traveling, the PIs will indicate the last floor passed while traveling on the left character. The right character will indicate the direction of travel via an up arrow or down arrow.

Note: The character displayed on the left character of the PIs for each floor can be any character from 1 - 6 and A – Z. See Setup section for details.

Examples:

3 The car is currently stationary at floor 3.

2↑ The car has passed floor 2 and is traveling up.

5↓ The car has passed floor 5 and is traveling down.

Emergency Battery Lowering:

The main control enclosure is equipped with a 240VAC Uninterruptable Power Supply (UPS). Upon loss of main power, the UPS will automatically and seamlessly supply power to the control. Loss of power is indicated with an error message on the LCD display on the CPU board in the main control and by blinking the PIs on the COP and Remotes.

During a loss of main power, the control will not allow an upward movement; you can only place a downward call. If you are in the car and moving upward when the main power fails, the car will stop and you will need to place a downward call to exit the car. If you are in the car and moving downward when the power fails, you will continue down seamlessly without stopping. The only indication you will see in the car is the PI will start blinking and the car light will dim slightly. You can stop at any floor on the way down but cannot go back up.

Safety Switch Override Jumpers:

Located on the CPU board in main control enclosure are three (3) Safety Switch Override Jumper connectors. The gate switches, door switches & shaft overrun switches can be independently overridden in the main control by installing an override jumper(s).

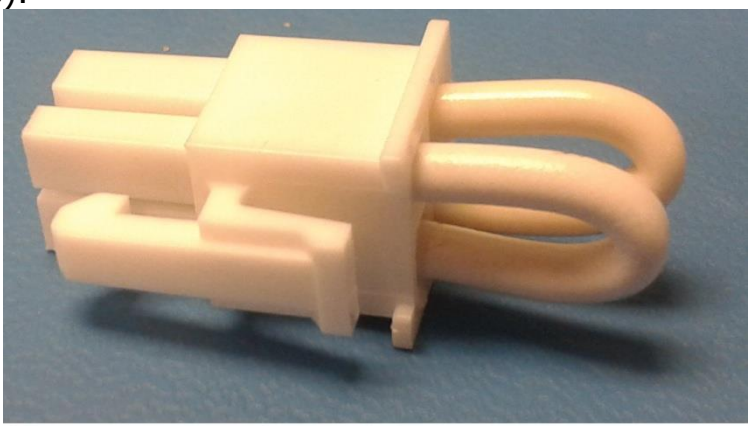


Figure 58 - Safety Switch Override Jumper

The Safety Switch Override Jumpers can only be used while in Inspection Mode.
These safety override jumpers are intended to be used as a trouble shooting aid only while in Inspection Mode. In Normal mode the CPU will not allow the elevator to operate when any of these safety switch override jumpers are installed. In Installation mode, these safety override jumpers are ignored.

Safety Chain

The safety chain is essentially an electrical series circuit made up of safety switches and wiring. All safety chain breaks, open circuits, will cause an informational message to be displayed on the CPU LCD. This message will pinpoint the location of the break in the safety chain. Generally, this message will no longer be displayed when the safety chain break has been remedied.

Slack Cable/Chain

The message for a slack cable error will remain displayed on the CPU LCD even after the slack cable issue has been repaired. The "Cancel" button on the CPU board must be pressed while the pendant is connected to the CPU board and after the slack cable issue is resolved. Pressing cancel will clear the slack cable error message on the CPU LCD.

Elevator Operating Modes

The pendant is required for both inspection and installation modes and its E-stop will always function.

NOTE: **WHEN A PENDANT IS NOT CONNECTED TO THE CPU (J7) OR THE TOC (J4) BOARDS, A PENDANT JUMPER MUST BE INSTALLED IN CPU & TOC PENDANT CONNECTORS.**

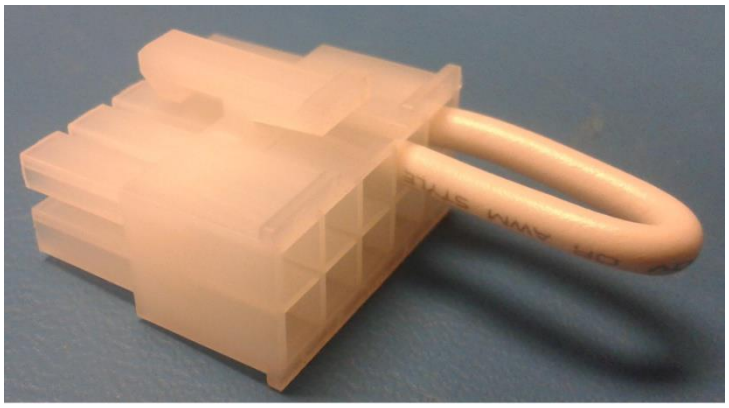


Figure 59 - Pendant Jumper

NOTICE: YOU WILL NOT DISABLE INSTALLATION MODE BY:

- Replacing the Pendant with the Pendant Jumper at the CPU board
- Moving the Pendant Selector Switch from Inspection to Normal position.

You MUST disable Installation Mode using the Maintenance Utility on the CPU board!!
See Installation Mode section for instructions on disabling installation mode.

Normal Mode

Normal mode is active when a Pendant Jumper is installed on both the CPU & TOC boards. Normal mode could also be active when the Pendant is connected to either the CPU or the TOC board with the pendant selector switch in the normal position. Installers should not leave the pendant connected after leaving the job site.

In Normal mode, if any safety override jumpers are installed, a red LED will light at the offending jumper. An error message will be displayed on the LCD indicating that the elevator will not function. *It is not possible to operate the elevator in Normal mode with any of the safety override jumpers installed.* This eliminates the possibility of accidently leaving a safety jumper on after performing elevator service.

Inspection Mode

Inspection mode is active when the Pendant is connected to either the CPU or the TOC board along with the pendant selector switch in the Inspection position. While in Inspection mode the TOC safety switch, Pit switch, and the COP Run/Stop switches are required. However, the TOC safety switch, Pit switch, and the pendant E-stop will always stop the car while in inspection mode. All other safety switches can be overridden via the safety override jumpers. If any safety override jumpers are installed, that portion of the safety circuit is overridden until the jumper or jumpers are removed. *Calls are ignored while in inspection mode.* The Pendant E-stop, Up, & Down buttons are functional. Switching the Pendant selector switch to Normal, while in Inspection mode, will immediately place the elevator into Normal mode.

Installation Mode

Installation mode has been designed to be used during the installation of ropes, car sling, etc. As such, the TOC enclosure, the COP, and the Remotes are not required while in Installation Mode. The safety override jumpers on the CPU board have no effect are not required in installation mode. *The pendant E-stop is the only functional safety switch while in Installation mode.* All other safety chain switches are ignored. *Ignore all safety chain switch LEDs except "Pendant Safety" while in installation mode.* The pendant Up & Down buttons are functional and any call is ignored while in installation mode.

To Enable Installation Mode:

- Connect the Pendant to the CPU board and move the pendant selector switch to the Inspection position.
- Press the "Menu" button on the CPU board.
- Using the "Up" or "Down" buttons, select the maintenance utility and press the "Enter" button.

- Wait until a screen indicating the In Service Since date appears.

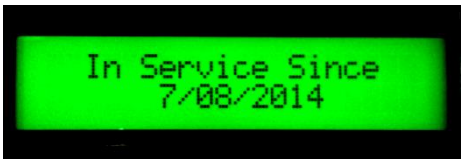
- Press the "Down" button to display the following screen.

- Press the "Change" button. Using the "Up", "Down", buttons select Installation Mode and then press the "Enter" button. The LCD screen will appear as depicted at right.

To Disable Installation Mode:

- Connect the Pendant to the CPU board and move the pendant selector switch to the Inspection position.
- Press the "Menu" button on the CPU board.
- Using the "Up" or "Down" buttons, select the maintenance utility and press the "Enter" button.

- Wait until a screen indicating the In Service Since date appears.



- Press the "Down" button to display the following screen.

- Press the "Change" button. Using the "Up", "Down", buttons select Inspection Mode and then press the "Enter" button. The LCD screen will appear as depicted at right.

Call for Service Feature (CFS)

The CFS feature is used to alert the homeowner that their elevator needs service. It will alert the homeowner to call for service by illuminating a red LED in the COP, appropriately labeled "Call for Service".

While in the maintenance the menus, the call for service feature can be disabled or the CFS interval can be set to illuminate the CFS LED anywhere between 30 and 730 days. If using the CFS, the CFS interval should be reset to the value selected for the CFS interval.

If the CFS feature is disabled, the CFS LED will always be off and none of the following applies.

When the CFS feature is enabled, the control will decrement the programmed amount of days every day at midnight until the value reaches zero. After the value has reached zero, depending on the amount of days since the value reached zero, one of the following indications will occur.

If 0 to 30 days have passed since the value reached zero, the CFS LED will illuminate steadily. The CFS LED will remain illuminated steadily until the elevator is serviced and the CFS interval is reset or the CFS feature is disabled.

If 30 to 90 days have passed since the value reached zero and the elevator has not been serviced, the CFS LED will begin to blink. The CFS LED will continue to blink until the elevator is serviced and the CFS interval is reset or the CFS feature is disabled.

If 91 to 120 days have passed since the value reached zero and the elevator has not been serviced, the CFS LED will continue blinking and the TOC alarm will sound for 3 seconds at the beginning of every call. The CFS LED will continue blinking and the alarm will sound for 3 seconds at the beginning of every call until the elevator is serviced and the CFS interval is reset or the CFS feature is disabled.

If 121 or more days have passed since the value reached zero and the elevator has not been serviced, the CFS LED will continue blinking and the TOC alarm will sound the entire trip of every call. The CFS LED will continue blinking and the alarm will sound the entire trip of every call until the elevator is serviced and the CFS interval is reset or the CFS feature is disabled.

When the CFS feature is enabled, the CFS day counter can be viewed by using the maintenance mode menus via the main control. Not only can you see how many days until the day count reaches zero but, you can also see how many days have elapsed since the CFS LED was illuminated.

Door/Gate Monitor

This elevator is equipped with a door/gate (D/G) Safety Monitor that will disable, "LOCKOUT" the elevator under certain conditions. The purpose of the D/G monitor is to detect if the homeowner has electrically jumped out hall door and/or cab gate switches.

The D/G Safety Monitor will allow you to complete X cab calls without opening a hall door before the elevator will lockout. X is equal to the number of landings in the installation plus 1. Therefore, for a 3-landing installation, 4 calls will be accepted but the elevator will lockout on the 5th call.

Also, after the cab stops at a landing, if the hall door is opened, the cab gate must be opened as well. If the hall door is opened but not the cab gate, the alarm in the top of cab enclosure will start beeping when the hall door is closed. There will be 3 short beeps every second and the position indicator (PI) will display "GT" on every beep. The purpose of the beeping is to immediately indicate that they must cycle the cab gate before the next cab call. Cycling the cab gate, while the COP Run/Stop switch is in the Run position, clears this condition. NOTE: If a call is made while the alarm is beeping, the elevator will lockout

To clear any Lockout, simply cycle the hall door and cab gate while the COP Run/Stop switch is in the Run position.

If a lockout has occurred, the PIs, COP & Remotes, alternates between "LK" and the current floor position of the cab.

Note:

- The Door/Gate Monitor is not active when the Pendant is connected to the CPU or TOC board.
- The homeowner must be made aware of the operation of the **Door/Gate Monitor.**
- If the lockout condition cannot be cleared by cycling the hall door and cab gate, there could be a problem with one of the door locks, gate switch(es), etc., or with the sequencing of the hall stations cables. (e.g. In/Out wiring).

Auto Door

ATTENTION:

The automatic door operator must be configured for a maintain contact input.

The control system provides a dry contact closure from the time the door begins to open until the door begins to close.

The Auto Door feature is enabled via the CPU setup menus. Each auto door at each landing must be configured separately. Configuring is as simple as setting the door type to auto and the door open time anywhere from 1 to 60 seconds. Note, the door open time includes the time period while the door is moving from fully closed to fully open as well as the time the door is open. The door will automatically close after the door open time has elapsed.

All Auto doors installed at a landing will open at the end of a car call (via the COP). If multiple auto doors are present at a landing, the open time of the both doors will use the highest value of door open time setting from either door. Otherwise, a single auto door will open for the time configured in the setup menu.

Pressing the call button on a remote (Hall Call) at a landing with an auto door will open the door wired to that Remote station for the door open time setting. Pressing the call button on a remote will not open other auto doors installed at that particular landing.

Additionally, moving the COP Run/Stop to the stop position while the door or doors are open will hold the door(s) open indefinitely. No Calls will be accepted while the doors are held open. Moving the COP Run/Stop switch back to the Run position will close the door(s) and return the system to normal operation.

See Automatic Door Wiring section for wiring details.

Releveling (Hydraulic)

The Inclinator Roped Hydraulic residential elevator is equipped with an automatic re-leveling feature that maintains the car at floor level. If the car drifts down approximately 3/4” below floor level, the elevator will automatically start and bring the car up to proper floor level. The A17.1 Elevator Safety Code requires that all hydraulic elevators shall be equipped with this functionality.
When the elevator is not in use, a small amount of hydraulic fluid will seep through the hydraulic valve back into the reservoir. Given enough time, the car will settle below floor level enough to activate the re-leveling circuitry.
This automatic leveling feature works independent of the hoistway door, car gate, and COP Run/Stop switch safety devices. This means the elevator can re-level when you step into the car with the gate and door still open or when the COP Run/Stop switch is in the stop position. When releveling occurs, the elevator is operating properly and should not be a cause for alarm.

Releveling (Cable Drum)

The Inclinator Cable Drum elevator is equipped with an automatic re-leveling feature, (*if enabled in CPU setup menu*) that maintains the car at floor level. If the car moves approximately 3/4” above or below floor level, the elevator will automatically start and bring the car back to proper floor level.

This automatic leveling feature works independent of the hoistway door, car gate, and COP Run/Stop switch safety devices. This means the elevator can re-level when you step into the car with the gate and door still open or when the COP Run/Stop switch is in the stop position. When releveling occurs, the elevator is operating properly and should not be a cause for alarm.

Call /Send Feature

NOTE: The following operation applies to Main Control firmware revision 2.34 or higher and Hall Call firmware 0Q or higher.

The Call/Send Feature allows the operator to send the car from the current floor to any other floor by using only the Hall call button of the current floor.
The Call/Send feature is configured from the Setup Menu. The default settings are, Call/Send enabled with a 3 second call button hold time. The Call/Send feature can be disabled and the call button hold time has a range of 2 to 5 seconds.

For the following description, assume the Call/Send feature is enabled and the call button hold time is set to 3 seconds.

Operation

The Call/Send feature is initiated by holding in the call button for 3 seconds, at which time the PI will begin to fade on and off while displaying the lowest available destination floor. If the car is on the lowest floor, the next available floor will be displayed.

To select a different destination floor, press and release the call button until the desired floor is displayed. Every time the call button is pressed and released, the next available floor will be displayed. When the highest floor is displayed, the next time the call button is pressed and released, the display will again display the lowest available floor. The current floor is always skipped.
To send the car, again hold the call button for 3 seconds and the car will move to the selected floor.

Once the Call/Send feature has begun (PI is fading on and off displaying the destination floor), if the call button is not pressed to either select a different destination floor or to send the car within 15 seconds, the Call/Send function is canceled and the elevator is returned to normal operation.

Float Switch Feature

Purpose

The Float Switch Feature *option* provides additional car protection for an elevator installed in a flood prone area.

Installation

The Float Switch Kit P/N 80211371 must be installed per the instructions included in kit and the UC601 control must be updated to firmware revision 2.40 or higher to add the Float Switch Feature.

Operation

The Float Switch Feature is always enabled. However, using the Setup Utility on the CPU board, you can enable or disable whether a service call is required to return the elevator to normal operation after the Float Switch has been tripped. If disabled, when the water level drops below the Float Switch trip point, the elevator automatically returns to normal operation. If enabled, when the level drops below the Float Switch trip point, the elevator remains inoperable until an Inclinator Dealer resets the control. The default for this setting is, service call required.

Elevator Configured to Require a Service Call to Clear Fault

Car Stopped when the Float Switch is tripped.

The car will begin to move upward to the highest available floor. The "Call for Service" LED on the COP will blink and all PIs will alternately blink between the car position with an up arrow and "FS", "FS" for Float Switch.

The LCD display on the CPU board will display:

Pit Float Sw Fault Call For Service

When the car stops at the highest floor, the "Call for Service" LED on the COP will blink and all PIs will alternately blink between the car position and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault Call For Service

The elevator is now inoperable and will remain inoperable until an Inclinator Dealer resets the control.

Car Moving Down when the Float Switch is tripped.

The car will immediately stop, and then begin to move upward to the highest available floor. The "Call for Service" LED on the COP will blink and all PIs will alternately blink between the car position with an up arrow and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault
Call For Service

When the car stops at the highest floor, the "Call for Service" LED on the COP will blink and all PIs will alternately blink between the car position and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault
Call For Service

The elevator is now inoperable and will remain inoperable until an Inclinator Dealer resets the control.

Car Moving Up when the Float Switch is tripped.

The car will continue to move upward to the requested floor, then stop and allow 10 seconds for the operator to exit the car at which time the car will begin to move upward to the highest available floor. If the gate or door is still open, the car will wait for them to close before moving. The "Call for Service" LED on the COP will blink and all PIs will alternately blink between the car position with an up arrow and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault
Call For Service

When the car stops at the highest floor, the "Call for Service" LED on the COP will blink and all PIs will alternately blink between the car position and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault
Call For Service

The elevator is now inoperable and will remain inoperable until an Inclinator Dealer resets the control.

CLEARING A FLOAT SWITCH FAULT

A Float Switch Fault can only be cleared by an Inclinator Dealer. Turning the elevator power off and back on will not clear the fault. When an Inclinator Dealer connects their pendant to the CPU board, the LCD display message will change and explain how to clear the Float Switch Fault.

Elevator Configured to Automatically Clear Fault

Car Stopped when the Float Switch is tripped.

The car will begin to move upward to the highest available floor. All PIs will alternately blink between the car position with an up arrow and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault Usage is Limited

When the car stops at the highest floor, all PIs will alternately blink between the car position and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault Usage is Limited

The elevator is now inoperable and will remain inoperable until the water recedes enough for the Float Switch to reset.

Car Moving Down when the Float Switch is tripped.

The car will immediately stop, and then begin to move upward to the highest available floor. All PIs will alternately blink between the car position with an up arrow and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault Usage is Limited

When the car stops at the highest floor, all PIs will alternately blink between the car position and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault Usage is Limited

The elevator is now inoperable and will remain inoperable until the water recedes enough for the Float Switch to reset.

Car Moving Up when the Float Switch is tripped.

The car will continue to move upward to the requested floor, then stop and allow 10 seconds for the operator to exit the car at which time the car will begin to move upward to the highest available floor. If the gate or door is still open, the car will wait for them to close before moving. All PIs will alternately blink between the car position with an up arrow and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault Usage is Limited

When the car stops at the highest floor, all PIs will alternately blink between the car position and "FS".

The LCD display on the CPU board will display:

Pit Float Sw Fault Usage is Limited

The elevator is now inoperable and will remain inoperable until the water recedes enough for the Float Switch to reset.

Access Panel Feature

Purpose

The Access Panel Feature provides an additional safety switch for the INCOA residential elevators. It does so by requiring a manual reset of the UC601 control after the Access Panel Safety Switch has been activated by opening the Access Panel.

Installation

For this feature to operate as described, the Access Panel Switch must be installed and connected to the Hard Stop Safety input on the CPU board. The control firmware must be updated to revision 2.44 or higher.

Operation

The Access Panel Feature operates as follows:
If the Access Panel is opened, all PIs will display "AP", "AP" for Access Panel. If the car was moving, it will immediately stop.

The LCD display on the CPU board will display:

Open Safety Circuit Hard Stop/Access Sw

Once an Access Panel has been opened, even after closing it, the elevator will not respond to any calls until the Access Panel Fault has been cleared by manually resetting the control.

Clearing an Access Panel Fault

To clear an Access Panel Fault, first the Access Panel must be closed.
When the Access panel is closed, the LCD display on the CPU board will display:

Push Cancel to Reset Hard-ST/Access Fault

To clear the fault, simply press the Cancel button.

Auto-Gate Cleaning Feature

NOTE: The following operation applies to Main Control firmware revision 2.48 or higher. Automatic Gates are normally fully open when the car is stopped at a floor. The Automatic Gate Cleaning Feature allows the operator to close the Automatic Gate(s) at the current floor for cleaning.

Operation

The Automatic Gate Cleaning feature is initiated by placing the COP Run/Stop toggle switch to the Stop position. Then every time the call button on the COP for the current floor or Hall Call button is pressed, the Automatic Gate will open or close.

To return the elevator to normal operation, simply return the COP Run/Stop toggle switch to the Run position.

Unlock Doors Feature

Operation

To unlock a door, connect pendant to CPU or TOC, set Normal/Inspection switch to Inspection, pull E-Stop switch then press and hold the call button of the Hall Call at the door to be unlocked. After 10 seconds, the alarm will sound, and the door will be unlocked. The alarm will turn off and the door will be relocked when the Hall Call button is released.

Lock Fault Detection

Operation

A Lock Fault is identified when Door Lock Power is sensed at any Locks other than Lock(s) on the same floor as the car. The Door Lock Crowbar circuit on the offending Hall Call board will be energized which removes Door Lock Power. All PIs will display "LF" (Lock Fault), the alarm will beep, the car will be sent to the floor of the offending Hall Call, and the elevator will be disabled.
A service call by an authorized Inclinator Dealer and a Pendant is required to clear this fault.

Note: The car will not move to the offending floor while a pendant is connected.

Lock Fault / Float Switch Fault priority structure:
A Lock Fault has top priority over Float Switch Fault on all floors except the 1st floor. If the lock fault has occurred on the 1st floor, then a Float Switch Fault has top priority over a Lock Fault. If another Lock Fault occurs on a higher floor, then the Lock Fault again has top priority over the Float Switch Fault.

Non-Sequential Car Position Detection

Operation

A non-sequential floor position error was detected during the last car trip. The elevator will be disabled, all doors will be locked and the "Call for Service" led will blink. A service call by an authorized Inclinator Dealer and a pendant is required to clear this fault.

Door Fault Detection

Operation

If enabled (See setup menus), a Door Fault is identified when a Door above or below the current landing level car position is opened or if a Door is opened and the car is not in the DZ. When a Door Fault occurs, the elevator is inoperable and “Out of Service”.

The LCD display on the CPU board will display:

```
Door Fault Interrupt
Elevator is Disabled
```

The COP & Hall Call position indicators displays will show "OS".

Clearing a Door Fault

To clear a Door Fault, first verify that all landing doors are closed both mechanically and electrically. Next, press the cancel button on the CPU board.

Note: Door Fault detection is disabled when the pendant is connected to the CPU or TOC board.

Position Indicator (PI) Codes

On occasion, the PIs, COP or RMT, will indicate a 2-character code that can be deciphered via the following table.

PI Display	Description
AP	Indicates that the Access Panel switch is or was opened.
D!	Car Position / Open Door mismatch error. The current floor position of the car does not match the currently open landing door.
DX	Landing X door safety switch is open. Landing door is not closed properly.
FS	Float Switch safety switch is open. Float switch has been activated indicating water in hoistway.
GT	Car gate safety switch is open. Car Gate is not closed properly.
LF	A Lock Fault has been detected and the elevator is disabled. See Lock Fault section for more information.
LK	The elevator has traveled without opening the gate and door. The elevator is now disabled. See Door/Gate Monitor for more information.
LL	Lower Limit safety switch is open. Lower limit switch on tape reader has been activated.
NC	Tape Reader is not connected.
NF	A non-sequential floor position error has been detected and the elevator is disabled. See Non-Sequential Car Position section for more information.
OB	Only for elevators equipped with 2/3 Speed Doors or 2/3 Speed Gates. This display will occur if the door or light curtain is obstructed for 20 seconds or more. It will not log an error and it will clear when the obstruction is removed
OS	A Door Fault has been detected and the elevator is now disabled. See Door Fault section for more information.
SC	Slack Cable safety switch is open, the elevator is now disabled. Slack cable switch at machine, jack stand, or car has been activated. See Slack Cable/Chain section for more information.
ST	COP Run/Stop switch in stop position, TOC Run/Stop switch in stop position, Pit switch in stop position, Emergency Stop switch on Pendant in stop position.
S!	An Electrical Short to GND has been detected in the safety circuit. Elevator is inoperable.
T↑	Exceeded Upward Re-Leveling Time or Travel Run Time.

PI Display	Description
UL	Upper Limit safety switch is open. Upper limit switch on tape reader has been activated.
XX	XX = any characters that are blinking. Indicates loss of main AC power. Elevator is running on battery backup power. No up calls will be accepted, only down calls permitted.
Z!	An open door has been detected but the current car position is not in a door zone.
--	"- -" displayed on All Remotes & COP. COP key switch is turned off. Elevator is disabled and thus no calls will be accepted.
??	Tape Reader cannot determine position of car or non-sequential floor has been detected.
--	"- -" displayed on Remote only. Remote (optional) key switch is turned off. Remote is disabled and thus no calls will be accepted at this remote.

CPU - System Configuration & Maintenance

Located inside the main control enclosure is the CPU (Central Processing Unit) board. The CPU board is the only electronic assembly running code that is controlling the elevator. All other electronic assemblies are essentially slaves to the CPU and are performing as instructed by the CPU. Therefore, all control system setup and maintenance settings are entered at the CPU board.

The CPU board incorporates 6 stand-alone buttons along with an LCD (Liquid Crystal Display) that are used for setting up and maintaining the system.

The function of the 6 buttons is as follows:

Menu	Press this button to: display the Utility sub-menu. Pressing this button just after entering the "Setup" or "Maintenance" sub-menus will skip the "Scroll" and/or "Edit" instruction screens. Pressing & holding this button while viewing the "Error Log" will pause the display screen.
Cancel	Press this button to: exit a setting change prior to saving, to clear a Slack Cable error message, to exit a sub-menu, to return to the first item in a utility menu.
Up	Press this button to: scroll through sub-menus, to increase a setting.
Down	Press this button to: scroll through sub-menus, to decrease a setting.
Change	Press this button to: enter edit mode for the selected setting.
Enter	Press this button to: select a sub-menu, save an edited setting.

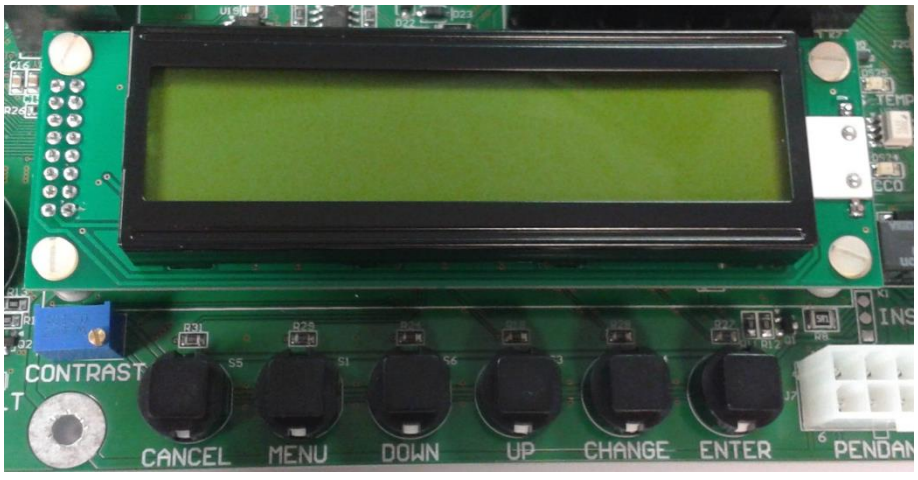


Figure 60 - CPU Board, LCD & Buttons

Accessing the Utility Menus requires that the pendant be connected to the CPU board.

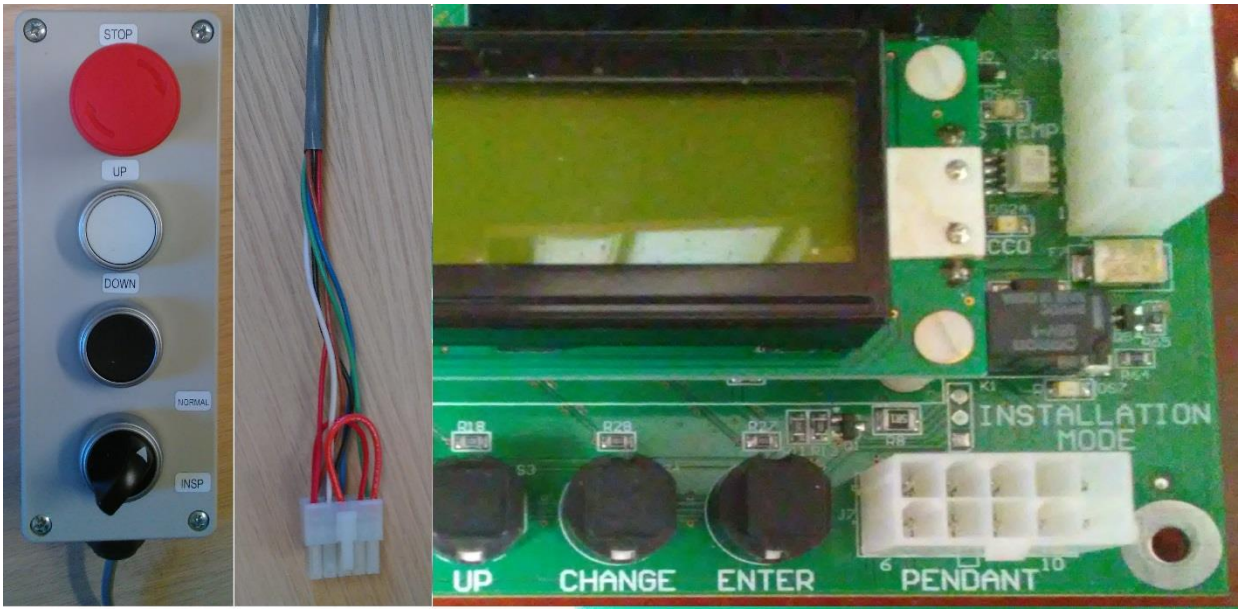


Figure 61 - UC601 Pendant, Pendant Connector, & CPU Connector.

Press the CPU Menu button to display the Utility menu selections on the LCD. Use the Up or Down buttons to select either the Setup or Maintenance sub-menus. Follow the on-screen instructions and refer to the button descriptions above to aid in performing any necessary adjustments.

The settings below are factory set to the specific configuration of the elevator system to be installed. However, there could be a few settings that will require some readjustment during the install. The installer should become familiar with navigating the menus and changing/saving settings if needed.

A description of all items contained in the Setup & Maintenance menus is shown in the tables below.

Note: A blinking field on the LCD indicates that the field can be changed. Also, changing the "Elevator Type" will load default values.

Setup Menus

Setup Menus	Description	Defaults
Set Date & Time	Use this for setting or adjusting the current date & time.	
New Jersey Compliance	When set to ***On*** the control system will determine if Gate 1 or Gate 2 is open on 2 gate cars. An additional cable assembly (INCOA P/N 21307857) must be installed in the TOC enclosure to use this feature. When this option is set to On, the PIs will still show only "GT" for either open Gate, but the LCD on the CPU Board will show which gate is open. In previous program releases, the Gate assignment setting would only appear in the Setup Utility with automatic Gates. When this Option is set to ***On***, the Gate assignment setting will appear in Setup.	Off
Door Fault Interrupt	When set to ***On*** , If a Door above or below the current landing level car position is opened or if a Door is opened and the car is not in the DZ, a Door Fault error will be detected.	Off
Set Elevator Type	Used for setting the Elevator Type: CD-500 = 500lb Cable Drum CD-1000 = 1000lb Cable Drum OHCD-1000 = 1000lb MRL Overhead Cable Drum HYDRO = Hydraulic MRL-C = MRL Geared	CD-1000
Set VFD Manufacturer (Not Displayed for Hydro)	Used for setting the Variable Frequency Drive (VFD) manufacturer located in the Motor Control Enclosure. ***Omron, Hitachi, Teco , or Mitsubishi.*** *Not displayed for Hydraulic Elevator.*	Omron
Set Gearbox (Displayed only for OHCD-1000)	Used for setting the manufacturer of the gearbox for OHCD only. ***Grove*** or ***Sumitomo***	Grove
Set Elevator Speed (Displayed only for OHCD-1000)	Used for setting the speed of the OHCD elevator only. ***30fpm*** or ***40fpm***	40fpm
Set Call for Service Days	0 and 30 - 730 Days 0 = Disable 30-730 = Number of days until the COP “Service” LED is illuminated	365 Days
Set Floor Count	Select the number of Landings or Floors. ***2,3,4,5,6***	2 Floors
Set Control Mounting	Select the location where the Control is mounted. ***Attic*** or ***Standard*** location	Standard Mount
Car Gates	Select the total number of Car Gates ***1*** or ***2***	1 Car Gate
Car Gate 1 Type	Select the type of Car Gate ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual

Setup Menus	Description	Defaults
Car Gate 2 Type *(If Installed)*	Select the type of Car Gate ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Cab Light Duration (Timeout)	Select the number of minutes the Cab Light will remain illuminated after elevator inactivity. ***1 – 60 minutes.*** This timeout does not apply if one or more safety circuit switches are open. The cab lights will remain on until the safety switch(es) are closed. However, there are 2 exceptions where the timeout will still apply. • auto-gate(s) is open • manual gate(s) is open when "Cab Light with Gate" is set to Off.	2 Minutes
Cab Light with Gate	To have cab lights timeout per "Cab Light Duration" when a manual gate(s) remains opened, select ***Off***. To have cab lights remain on while a manual gate(s) remains opened, select ***On***.	On
COP Display Intensity	Select the intensity of the COP Position Indicator (PI) ***10 - 100%***	100%
COP Halo at Idle	Set the state of the COP buttons Halos when the elevator is at idle. ***On*** = COP button Halos are illuminated when elevator is idle.	On
Homing Enable	Select to disable or enable the Homing function ***On or Off.*** *NOTE: Homing is disabled if the pendant is connected to the CPU or the TOC board.*	Off
Homing Floor (*If Enabled)*	Floor at which the elevator car will move to after the Homing Time minutes have passed. ***2,3,4,5,6***	Floor 2
Homing Time (*If Enabled)*	The number of minutes that must pass from no elevator activity until the car moves to the homing floor. ***1 - 120 Min***	10 Minutes
Constant Pressure	Set to enable or disable Call button constant pressure operation.	Off
Call/Send Enable	Select to disable or enable the Call/Send function ***On or Off***	On
Call/Send Button Hold Time (*If Call/Send Enabled)*	The number of seconds required to hold in button on call stations to enter Call/Send function. ***2 - 5 Seconds***	3
Re-Leveling Enable	Select to disable or enable the Re-leveling function on Cable Drum elevators only. ***On or Off***	Off
Handwheel Check (*If Re-Leveling Enabled)*	Is the Handwheel available or installed on the machine shaft? ***On or Off***	Off
Toe Guard Check (*If Re-Leveling Enabled)*	Is the Toe Guard installed on the elevator cab? ***On or Off***	Off

Setup Menus	Description	Defaults
Float Switch Service Call Enable	Enable (on) or disable (off) a service call requirement to reset the system after float switch activation. ***On or Off***	On
Maximum Speed	Sets the maximum speed of the elevator motor, non-hydro, as a percentage of maximum motor speed. ***25 - 100% of Contract Speed.*** *Dictated by Hydraulic system for Hydro elevators.*	100% ***N/A for HYDRO***
Minimum Speed	Sets the minimum speed of the elevator motor, non-hydro, as a percentage of maximum motor speed. ***5 - 50% of Contract Motor Speed.*** *Dictated by low speed valves for Hydro elevators.*	CD-500 = 7% CD-1000 = 5% OHCD-1000 = 5% OHCD-1000(30fpm) = 5% MRL-C = 5% ***N/A for HYDRO***
Inspection Speed	Sets the speed of the elevator motor, non-hydro, while in inspection or installation mode as a percentage of maximum motor speed. ***25 - 75% of Contract Speed.*** *Dictated by Hydraulic system for Hydro elevators.*	CD-500/1000 = 40% CD-1000 = 40% OHCD-1000 = 40% MRL-C = 40% ***N/A for HYDRO***
Down Leveling	Use this setting to raise or lower the stopping position of the car for a down call. For the Hydro, this setting applies only to re-leveling . ***1-99***	CD-500 = 50 CD-1000 = 50 OHCD-1000= 50 OHCD-1000(30fpm) = 50 MRL-C = 50 HYDRO = 50
Up Leveling	Use this setting to raise or lower the stopping position of the car for an up call. For the Hydro, this setting applies only to re-leveling . ***1-99***	CD-500 = 50 CD-1000 = 50 OHCD-1000= 50 OHCD-1000(30fpm) = 50 MRL-C = 50 HYDRO = 12

Setup Menus	Description	Defaults
Floor 1 Doors	The number of doors at floor ***1*** or ***2***	1
Gate Assignment for Flr 1 Dr 1 ***(If Auto Gate or N.J.)***	Associate Gate 1 or Gate 2 with Floor 1 Door 1	1
Floor 1 Door 1 Type	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 1 Door 1 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor 1 Door 2 Type (***If Installed)***	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 1 Door 2 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed (door open) after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor '1' PI = 'Character'	The character to display on PIs for this specific floor ***1 - 6*** and ***A - Z***	1
Fl 1 Dr 1 Intensity = 'X'	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%
Fl 1 Dr 2 Intensity = 'X' ***(If Installed)***	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%

Setup Menus	Description	Defaults
Floor 2 Doors	The number of doors at floor ***1*** or ***2***	1
Gate Assignment for Flr 2 Dr 1 ***(If Auto Gate or N.J.)***	Associate Gate 1 or Gate 2 with Floor 2 Door 1	1
Floor 2 Door 1 Type	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 2 Door 1 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor 2 Door 2 Type (***If Installed)***	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 2 Door 2 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed (door open) after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor '2' PI = 'Character'	The character to display on PIs for this specific floor ***1 - 6*** and ***A - Z***	2
Fl 2 Dr 1 Intensity = 'X'	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%
Fl 2 Dr 2 Intensity = 'X' ***(If Installed)***	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%

Setup Menus	Description	Defaults
Floor 3 Doors	The number of doors at floor ***1*** or ***2***	1
Gate Assignment for Flr 3 Dr 1 ***(If Auto Gate or N.J.)***	Associate Gate 1 or Gate 2 with Floor 3 Door 1	1
Floor 3 Door 1 Type	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 3 Door 1 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor 3 Door 2 Type (***If Installed)***	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 3 Door 2 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed (door open) after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor '3' PI = 'Character'	The character to display on PIs for this specific floor ***1 - 6*** and ***A - Z***	3
Fl 3 Dr 1 Intensity = 'X'	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%
Fl 3 Dr 2 Intensity = 'X' ***(If Installed)***	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%

Setup Menus	Description	Defaults
Floor 4 Doors	The number of doors at floor ***1*** or ***2***	1
Gate Assignment for Flr 4 Dr 1 ***(If Auto Gate or N.J.)***	Associate Gate 1 or Gate 2 with Floor 4 Door 1	1
Floor 4 Door 1 Type	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 4 Door 1 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor 4 Door 2 Type (***If Installed)***	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 4 Door 2 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed (door open) after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor '4' PI = 'Character'	The character to display on PIs for this specific floor ***1 - 6*** and ***A - Z***	4
Fl 4 Dr 1 Intensity = 'X'	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%
Fl 4 Dr 2 Intensity = 'X' ***(If Installed)***	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%

Setup Menus	Description	Defaults
Floor 5 Doors	The number of doors at floor ***1*** or ***2***	1
Gate Assignment for Flr 5 Dr 1 ***(If Auto Gate or N.J.)***	Associate Gate 1 or Gate 2 with Floor 5 Door 1	1
Floor 5 Door 1 Type	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 5 Door 1 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor 5 Door 2 Type (***If Installed)***	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 5 Door 2 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed (door open) after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor '5' PI = 'Character'	The character to display on PIs for this specific floor ***1 - 6*** and ***A - Z***	5
Fl 5 Dr 1 Intensity = 'X'	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%
Fl 5 Dr 2 Intensity = 'X' ***(If Installed)***	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%

Setup Menus	Description	Defaults
Floor 6 Doors	The number of doors at floor ***1*** or ***2***	1
Gate Assignment for Flr 6 Dr 1 ***(If Auto Gate or N.J.)***	Associate Gate 1 or Gate 2 with Floor 6 Door 1	1
Floor 6 Door 1 Type	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 6 Door 1 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed after car reaches floor. ***1*** – ***60*** Seconds	10 Seconds
Floor 6 Door 2 Type (***If Installed)***	The type of door at floor. ***Auto*** or ***Manual*** or ***2/3 Speed***	Manual
Floor 6 Door 2 Open Time (***If Auto Door)***	The length of time the Auto Door dry contact in the Remote remains closed (door open) after car reaches floor. ***1*** - ***10*** Min	10 Seconds
Floor '6' PI = 'Character'	The character to display on PIs for this specific floor ***1 - 6*** and ***A - Z***	6
Fl 6 Dr 1 Intensity = 'X'	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%
Fl 6 Dr 2 Intensity = 'X' ***(If Installed)***	The relative intensity of the PI on the remote for this Floor/Door ***10*** - ***100***%	100%

Maintenance Menus

Maintenance Menus	Description
In Service Since Date	Displays the date elevator was put in service. The "In Service" date will be stored on the 1st run, travel of the elevator car, without the Pendant connected to the CPU board.
In X Mode Press Change to edit	Will be displayed if in "Inspection" Mode or "Installation" mode. Pendant must be attached to CPU board. Offers the option of entering Installation mode from Inspection mode. *This menu selection does appear when the Elevator is in Normal Mode.* See the "Installation Mode" section for further details.
Control Has Powered Up X Times	Displays number of times control was turned on
Last Powered Up on DATE TIME	Displays last date and time elevator was turned on
Elevator Has Made X Trips	Displays number of trips elevator has made
Call from X to Y Press Change to Edit	Used to place a call from the current floor, X, to another floor, Y. Press the change button to edit the destination floor, Y.
Call for Service LED Active in X Days	Displays the number of days until or after the "Call for Service" LED will be or has been illuminated.
Push Change to Reset Call for Service LED	Used to reset "Call for Service" date
X Logged Errors Change to Display	Displays time stamped error messages (4 screens/error). Press and hold the "Enter" button to show the total number of errors and the index of the current error.
Push Change To Clear Error Log	Used to clear Error Log Press the "Change" button to clear the error log.
Tape Reader Status	Displays the status of all 6 Tape Reader sensors.

Error Log Details

The CPU board performs time stamped data logging of up to 200 errors. Errors will be recorded in the log until the log reaches 200 entries. With a full log, any subsequent errors will not be recorded in the log until the log is cleared.

To enter the error log, press the Change button while in the maintenance menus with the LCD displaying "X Logged Errors".

While viewing an entry in the error log:

- Use the Up & Down buttons to traverse the error log.
- Press the Enter button to show the currently displayed error log index number and the number of errors in the log (200 max).
- Press Cancel button to exit the error log and return to the maintenance menus.
- Press & hold the Menu button will pause the display screen.
-

While displaying an error log entry,4 screens will be shown consecutively on the LCD and then begin again. The 4 screens are as follows:

- 1st - Indicates the actual error that has been logged.
- 2nd - Indicates the time & date of the error
- 3rd - Indicates the operating mode (Normal, Inspection, Installation) of the elevator system when the error occurred.
- 4th - Indicates the last call before the error occurred.

Note: Beginning in firmware version 2.40, the first error message displayed when entering the error log is now the most recent error. The last error message in the log is now the oldest error message.

Tape Reader Status

Display #1

The status of all 6 Tape Reader sensors, can be monitored from the CPU board LCD display.

Position 4 "P4", Position 2 "P2", Position 1 "P1"
Up Level "UL", Door Zone "DZ", Down Level "DL",

Each sensor's abbreviation is followed by a "0" or a "1".
A "0" indicates the sensor is not on a magnet.
A "1" indicates the sensor is on a magnet.

Examples:

Car in Door Zone at 1st floor

```
TR:P4=0  P2=0  P1=1
   UL=0  DZ=1  DL=0
```

Car slightly above Door Zone at 3rd floor

```
TR:P4=0  P2=1  P1=1
   UL=0  DZ=1  DL=1
```

Display #2

While Tape Reader display #1 is active, hold "Enter" button to display the following information.

Tape Reader "TR", Last Tape Reader "LTR", Car Position "CP"
GAL Zone "G", Motion Flags "MF", Last Floor:New Floor "F"

Displayed as: TR=hh LTR=hh CP=hhh
G=hh MF=hhhh F=llnn

hh, hhh or hhhh indicates a Hexadecimal value, "ll" = The Last Floor before the error and "nn" = The New Floor that caused the error

```
TR=hh LTR=hh CP=hhh
G=hh MF=hhhh F=llnn
```

Error Log or CPU LCD Messages

The following table list informational and error messages that may displayed on the CPU board LCD during normal mode.

Message	What It Means	How To Resolve
Car Call Floor x to Floor y	Indicates a call has been placed inside the car for floor y from floor x. Ex: Car Call Floor 2 to Floor 4	*Informational Message, Resolution not required*
Hall Call Floor x to Floor y	Indicates a call has been placed from floor x landing to floor y. Ex: Hall Call Floor 2 to Floor 4	*Informational Message, Resolution not required*
COP x,x,x,…. Button(s) Stuck	Indicates that at least one button on the COP was stuck in a depressed state on system power up. X = detected stuck button(s).	Correct issue with depressed button(s) on COP.
Hall Flr x Dr y Call Button Stuck	Indicates that the Hall Call button on floor X door Y was stuck in a depressed state on system power up. Ex: Hall Flr 1 Dr 1 Call Button Stuck	Correct issue with depressed Hall Call button on floor X door Y.
Tape Reader is not Connected to TOC PCB	The 9 pin interconnecting cable between the tape reader and the TOC board is not connected. PIs = **NC**	Reseat or replace cable betwwen TOC board and Tape Reader, Tape Reader is missing or defective.
Open Safety Circuit 24VDC Shorted to GND	Indicates that the safety circuit power, 24VDC, is shorted to GND and thus the safety circuit is non-functional.	Check entire safety chain for shorts to GND, pinched wires, etc. Use safety circuit schematic, Figure 62, to isolate the short by **opening** safety switches starting at the end of the safety chain until the short circuit is no longer present.
Open Safety Circuit CPU Pendant Jumper	Indicates that the CPU Pendant Jumper is not installed into J7 “Pendant” connector on CPU board.	Install Pendant jumper into J7 “Pendant” on CPU board.

Message	What It Means	How To Resolve
Open Safety Circuit CPU Pendant Stop Sw	Indicates that the Stop switch on the pendant has been pressed, switch open, while the pendant is connected to the CPU board. PIs = **ST**	Rotate Stop switch on Pendant.
Open Safety Circuit TOC Pendant Jumper	Indicates that the TOC Pendant Jumper is not installed into J4 "Pendant" connector on TOC board.	Install Pendant jumper into J4 "Pendant" on TOC board.
Open Safety Circuit TOC Pendant Stop Sw	Indicates that the Stop switch on the pendant has been pressed, switch open, while the pendant is connected to the TOC board. PIs = **ST**	Rotate Stop switch on Pendant.
Open Safety Circuit COP Run/Stop Switch	Indicates that the COP Run/Stop Switch is in the Stop position. PIs = **ST**	Move COP Run/Stop switch to Run position.
Open Safety Circuit TOC Safety Switch	Indicates that the TOC Run/Stop Switch is in the Stop position. PIs = **ST**	Move TOC eneclosure Run/Stop switch to Run position.
Open Safety Circuit F-Gate/Light Curtain	Indicates that the Floating Gate switch(es) or Light Curtain relay output is(are) open. PIs = **GT**	Insure gate is closed, adjust floating gate switch, check wiring, check for obstruction in light curtain zone.
Open Safety Circuit Gate Switch	Indicates that the Gate switch(es) is(are) open. PIs = **GT**	Insure gate is closed, check wiring.
Open Safety Circuit Upper Limit Switch	Indicates that the Upper Limit switch on Tape Reader is open. Car may have traveled above top floor and has tripped upper limit switch. PIs = **UL**	Upper cam on steel tape is misaligned/misadjusted. Check wiring.
Open Safety Circuit Lower Limit Switch	Indicates that the Lower Limit switch on Tape Reader is open. Car may have traveled below bottom floor and has tripped lower limit switch. PIs = **LL**	Lower cam on steel tape is misaligned/misadjusted.; Check wiring.
Open Safety Circuit TOC Slack Cable Sw	Indicates that the Slack Cable/Chain switch mounted on car is open. Cables/Chains may have become slack & have tripped switch. PIs = **SC**	Check cables/chain for slack condition. Slack cable/chain mechanism is misaligned/misadjusted. Check wiring.

Message	What It Means	How To Resolve
Open Safety Circuit CPU Slack/Final Sw	Indicates that the Slack Cable switch mounted on gearbox or final machine limited switch, if equipped, is open. Cable Drum cables may have become slack & have tripped switch. PIs = **SC**	Check for slack cable condition. Slack cable mechanism is misaligned/misadjusted on machine. Check wiring.
Slack/Final Sw Fault Call For Service	A Slack Cable / Slack Chain fault has been detected.	Resolve slack cable/chain issue. See "Slack Cable/Chain" section for more information.
Push Cancel to Reset Slack/Final Fault	Instructional message.	Press cancel button on CPU board to clear fault. Pendant required.
Open Safety Circuit Overspeed Switch	Indicates that the Overspeed switch is open.	Check for possible prior over speed condition. Check over speed mechanism for misalignment, maladjustment. Check wiring.
Open Safety Circuit Pit Safety Switch	Indicates that the Pit Safety Switch is open, in the off position. PIs = **ST**	Indicates Pit Safety switch is, is open. Check wiring.
>>> DO NOT USE <<< This Pit Float Input	DO NOT USE THIS INPUT FOR PIT FLOAT SWITCH ! This input is no longer used for the pit float input.	See section "Float Switch Feature" for more information.
Open Safety Circuit Hard Stop/Access Sw	Indicates that the Access Panel switch is or was opened. PIs = **AP**	Check if Access Panel door is open. Check wiring. If panel is open, close Access Panel.
Push Cancel to Reset Hard-ST/Access Fault	Instructional message.	Press cancel button on CPU board to clear fault
Open Safety Circuit Low Pressure Switch	Indicates that the Low-Pressure Switch is open, has tripped.	Check system for low pressure, check switch and wiring.
Open Safety Circuit High Temperature Sw	Indicates that the High Temperature Switch is open.	Check system for high temperature, check switch and wiring.
Open Safety Circuit CPU Spare Safety Sw	Indicates that the CPU Spare Safety Switch input on CPU board is open.	Check connected switch for abnormal condition, check switch and wiring.

Message	What It Means	How To Resolve
Open Safety Circuit Floor x Door y Sw	Indicates that the landing door Y on floor X is open. PIs = **DX** Ex: Open Safety Circuit Floor 3 Door 1 Sw	Door Switch input is located on Remote. Check that landing door is closed and locked. Check wiring between lock and Remote.
Remove Door Safety Override Jumper	Indicates that a jumper is installed into connector J19 "Door Safety Override" of the CPU board while in normal mode.	Remove Jumper from CPU board connector J19 "Door Safety Override".
Remove Shaft Safety Override Jumper	Indicates that a jumper is installed into connector J18 "Shaft Safety Override" of the CPU board while in normal mode.	Remove Jumper from CPU board connector J18 "Shaft Safety Override".
Remove Gate Safety Override Jumper	Indicates that a jumper is installed into connector J16 "Gate Safety Override" of the CPU board while in normal mode.	Remove Jumper from CPU board connector J16 "Gate Safety Override".
Lost Communication COP Board	A COP Communication Failure has occurred.	Check cable & connections from TOC to COP, check traveling cable and connections between CPU and TOC, check COP.
Lost Communication TOC Board	A TOC Communication Failure has occurred.	Check traveling cable and connections between CPU and TOC, check TOC.
Lost Communication Remote Flr x Dr y	A Communication Failure was detected on the Remote for floor X door Y.	Check that the address jumpers on rear of Remote are configured correctly. Check CPU configuration in Setup menus. Check 10 conductor flat cable from CPU to 1st Remote and all consecutive Remotes to Floor X, Door X.
Control Inoperable In Normal Mode	The Control is Inoperable.	A communication error(s) is(are) preventing the control from operating in Normal mode.
CPU and TOC Pendants are both connected Disconnect either CPU or TOC Pendant	A Pendant is connected to both the CPU board and the TOC board.	Only one Pendant may be connected at a time. Disconnect 1 pendant and replace with Pendant Jumper.

Message	What It Means	How To Resolve
Inspection Mode Car Stopped	The control system is in Inspection mode and the car is stopped.	*Informational Message, Resolution not required*
Inspection Mode Car Moving Up	The control system is in Inspection mode, the Pendant Up button is depressed, the car is traveling upward.	*Informational Message, Resolution not required*
Inspection Mode Car Moving Down	The control system is in Inspection mode, the Pendant Down button is depressed, the car is traveling down.	*Informational Message, Resolution not required*
Call from Floor x to unused Floor y	A Call was placed from floor X to Unused Floor Y.	*Informational Message, Resolution not required*
Error Memory Full View & Erase Errors	Error Buffer Full	View and erase errors using the Maintenance menus.
Installation Mode Car Stopped	The control system is in Installation mode and the car is stopped.	*Informational Message, Resolution not required*
Installation Mode Car Moving Up	The control system is in Installation mode, the Pendant Up button is depressed, the car is traveling upward.	*Informational Message, Resolution not required*
Installation Mode Car Moving Down	The control system is in Installation mode, the Pendant Down button is depressed, the car is traveling down.	*Informational Message, Resolution not required*
Homing Car From Floor x to Floor y	Homing is enabled and the car is currently traveling from floor X to floor Y.	*Informational Message, Resolution not required*
TOC Installation Mode Not Allowed Exit Installation or Move Pendant to CPU	An attempt to enter Installation mode was made while the Pendant was plugged into TOC board.	Installation mode is only permitted when Pendant is connected to CPU board. Remove Pendant from TOC and reconnect to CPU if Installation mode is desired.

Message	What It Means	How To Resolve
In Emergency Mode 240VAC Is Missing	Main power, 240VAC, has been disconnected. Control system is in emergency mode. UPS power is active.	Check disconnect switches, fuses, breakers, etc. for cause of utility power failure. Only downward car movement is permitted during emergency mode.
Cannot Travel Up In Emergency Mode	An up call was placed during Emergency mode.	Only downward car movement is permitted during emergency mode.
Safety Circuit Loop-back Plug Is Missing Check for Plug at Remote Flr x Dr y	The last Remote, Floor X – Door Y, in the Remote wiring chain does not have the loopback plug installed.	Install Loopback plug into last Remote of Remote wiring chain.
COP Key Is in The Off Position	The COP key is in the off position and thus elevator is disabled. PIs = - -	To enable elevator, move COP key switch to On position.
Connect CPU Pendant For Utility Menus	The Pendant must be connected at the CPU to be able to access the utility menus.	*T*he Pendant must be connected to the CPU board to access utility menus.
CPU/TOC Bd Mismatch Control Inoperable	The CPU board hardware version is not compatible to the TOC board hardware version.	Contact factory for resolution.
Automatic Gate Error Gate did not open	The car Automatic Gate did not open.	Obstruction in the path of opening the car gate. Automatic Gate mechanism misaligned or misadjusted. Check gate switch wiring.
Automatic Gate Error Gate did not close	The car Automatic Gate did not close	Obstruction in the path of closing the car gate. Automatic Gate mechanism misaligned or misadjusted. Check gate switch wiring.
Door/Gate Sw Fault Cycle Gate To Clear	A Door/Gate Monitor fault has been detected.	While the COP Run/Stop switch is in the Run position, open and close car gate to clear the fault.
Door/Gate Sw Fault Cycle Door To Clear	A Door/Gate Monitor fault has been detected.	Open and close landing door to clear the fault.

Message	What It Means	How To Resolve
VFD Braking Resistor has Overheated	An overheated braking resistor has been detected in the Motor Control Enclosure.	The system is inoperable. The thermal fuse mounted to the braking resistor has electrically opened due to excessive heat. Contact Inclinator for replacement thermal fuse.
RTC Hardware Problem Replace CPU Board	Real Time Clock Hardware Problem	
Positioning Error 01 Dn DZ to UL&DZ	Position Error Downward Travel from (Door Zone) to (Up Level & Door Zone) not detected	Check positioning of tape reader magnets at each landing.
Positioning Error 02 Dn DZ&UL to UL	Position Error Downward Travel from (Door Zone & Up Level) to (Up Level) or (Up Level & Door Zone & Down Level) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 03 Dn UL to Between Flr	Position Error Downward Travel from (Up Level) to (Nothing)	Check positioning of tape reader magnets at each landing
Positioning Error 04 Dn Between Flr to DL	Position Error Downward Travel from (Nothing) to (Down Level)	Check positioning of tape reader magnets at each landing
Positioning Error 05 Dn DL to DZ&DL	Position Error Downward Travel from (Down Level) to (Door Zone & Down Level) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 06 Dn DZ&DL to DZ	Position Error Downward Travel from (Door Zone & Down Level) to (Door Zone) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 07 Dn UL&DZ&DL to	Position Error Downward Travel from (Up Level & Door Zone & Down Level) to (Up Level & Down Level) or (Door Zone & Down Level) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 08 Dn UL&DL to	Position Error Downward Travel from (Up Level & Down Level) to (Up Level & Door Zone & Down Level) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 09 Dn Unknown Position	Position Error Downward Travel Unknown Position	Check positioning of tape reader magnets at each landing

Message	What It Means	How To Resolve
Positioning Error 10 Up DZ to DZ&DL	Position Error Upward Travel (Door Zone) to (Door Zone & Down Level) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 11 Up DZ&UL to DL	Position Error Upward Travel (Door Zone & Up Level) to (Down Level) or (Up Level & Door Zone & Down Level) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 12 Up DL to Between Flr	Position Error Upward Travel (Down Level) to (Nothing)	Check positioning of tape reader magnets at each landing
Positioning Error 13 Up Between Flr to UL	Position Error Upward Travel (Nothing) to (Up Level)	Check positioning of tape reader magnets at each landing
Positioning Error 14 Up UL to UL&DZ	Position Error Upward Travel (Up Level) to (Up Level & Door Zone) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 15 Up UL&DZ to DZ	Position Error Upward Travel (Up Level & Door Zone) to (Door Zone) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 16 Up UL&DZ&DL to UL&DL	Position Error Upward Travel (Up Level & Door Zone & Down Level) to (Up Level & Down Level) or (Up Level & Door Zone) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 17 Up UL&DL to UL&DZ&DL	Position Error Upward Travel (Up Level & Down Level) to (Up Level & Door Zone & Down Level) not detected	Check positioning of tape reader magnets at each landing
Positioning Error 18 Up Unknown Position	Position Error Upward Travel Unknown Position	Check positioning of tape reader magnets at each landing
Positioning Error 19 Unexpected Movement	Position Error Unexpected Car Movement Tape reader status changed when car should have been stopped	Check mechanical systems for unintentional car movement.
Positioning Error 20 D Non-sequential Flr	Position Error Downward Travel Non-sequential floor count	Check positioning of tape reader magnets at each landing

Message	What It Means	How To Resolve
Positioning Error 21 U Non-sequential Flr	Position Error Upward Travel Non-sequential floor count	Check positioning of tape reader magnets at each landing
Positioning Error 22 Below Lowest Floor	Car has traveled below lowest floor	Check VFD settings, Hydro Valve adjustments, tape reader magnet placement.
Positioning Error 23 Above Highest Floor	Car has traveled above highest floor	Check VFD settings, Hydro Valve adjustments, tape reader magnet placement.
Positioning Error 24 No Stored TR Data	Position Error No Stored Tape Reader Data	Check positioning of tape reader magnets at each landing
Positioning Error 25 Tape Reader Missing	Position Error Tape Reader Not Connected PIs = **NC**	Reseat or replace cable betwwen TOC board and Tape Reader, Tape Reader is missing or defective.
Car Overshot Floor In Upward Travel	Car Has Stopped Above the Landing While Traveling Upward.	Review section “Landing Level Adjustments” and make any necessary changes.
Car Overshot Floor In Downward Travel	Car Has Stopped Below Landing While Traveling Downward.	Review section “Landing Level Adjustments” and make any necessary changes.
Door Fault Interrupt Elevator is Disabled	A Door Fault has been detected by the control system. The elevator is now inoperable or “Out of Service”. PIs = OS	Verify that all landing doors are closed, all locks are functioning as expected, and wiring between lock and hall call are not compromised.
Push Cancel to Reset Door Fault Interrupt	Instructional message.	Press cancel button on CPU board to clear fault
CCO Fault: Contactor Missing/Stuck Closed	Motor Contactor in Motor Control Enclosure Did Not Release. Dirty CCO contacts (CCO contacts in contactor are open)	Replace contactor and/or CCO contacts. Check “Signal” cable connections at both CPU control enclosure & Motor Control enclosure.
CCO Fault: Contactor Contacts Stuck Open	Motor Contactor in Motor Control Enclosure Did Not Pick. Stuck CCO contacts (CCO contacts are closed)	Replace contactor and/or CCO contacts.

Message	What It Means	How To Resolve
Hydro Safety Chain Relay Circuit Fault	A fault has been detected in the Relay wiring or the Relay inside the Pump Control Enclosure.	Check for proper connection of Conduit cable to Signals Connector in Pump Control Enclosure (PCE). Check for 24VDC across coil, A1-A2, on relay in PCE. Check for 24VDC on pins 11 & 14 to GND (A2) on relay in PCE.
Exceeded Upward Re-Leveling Time	(Hydraulic or Cable Drum if enabled) Upward Travel Re-leveling time has exceeded the 30 Second time limit. ***Elevator will no longer travel upward.*** PIs = T↑ Disabled when pendant is connected.	***Cycle power or clear error log to reset.*** Check Hydraulic Fluid level, review Blain EV100 Valve Adjustment document for proper valve operation, check for mechanical issue causing excessive drag on car movement.
Exceeded Downward Re-Leveling Time	(Hydraulic or Cable Drum if enabled) Downward Travel Re-leveling time has exceeded the 30 Second time limit. Disabled when pendant is connected	Review Blain EV100 Valve Adjustment document for proper valve operation, check for mechanical issue causing excessive drag on car movement.
Exceeded Upward Travel Run Time	(Cable Drum 500lb) Upward Travel Run time has exceeded the 2:00 m/s time limit. (Cable Drum 1000lb, MRL-Geared, Overhead Cable Drum) Upward Travel Run time has exceeded the 1:30 m/s time limit. (Hydraulic) Upward Travel Run time has exceeded the 2:00 m/s time limit. ***Elevator will no longer travel upward.*** PIs = T↑ Disabled when pendant is connected	***Cycle power or clear error log to reset.*** Check Motor wiring connections, Check Brake wiring connections, Check Hydraulic Fluid level, Review Blain EV100 Valve Adjustment document for proper valve operation, check for mechanical issue causing excessive drag on car movement.
Exceeded Downward Travel Run Time	(Cable Drum 500lb) Downward Travel Run time has exceeded the 2:00 m/s time limit. (Cable Drum 1000lb, MRL-Geared, Overhead Cable Drum) Downward Travel Run time has exceeded the 1:30 m/s time limit. (Hydraulic) Downward Travel Run time has exceeded the 2:30 m/s time limit. Disabled when pendant is connected	Check Motor wiring connections, Check Brake wiring connections, Review Blain EV100 Valve Adjustment document for proper valve operation, check for mechanical issue causing excessive drag on car movement.

Message	What It Means	How To Resolve
In Installation Mode But >>No Pendant<<	The Control System is in Installation Mode but the Pendant is not connected to the CPU board.	Connect the Pendant to the CPU board with the Pendant Switch in the Inspection Position. To Exit Installation mode see "To Disable Installation Mode:To Disable Installation Mode:" section.
In Installation Mode But >Inspection Off<	The Control System is in Installation Mode but the Pendant Switch is in the Normal Position. The Normal position on the Pendant is not functional when in Installation Mode.	Connect the Pendant to the CPU board and turn the Pendant Switch to the Inspection Position. To Exit Installation mode, see instructions in the "To Disable Installation Mode:" section.
Re-Leveling ='Off' Handwheel Required	(Cable Drum if enabled) A selection of "Off" was entered in the Re-Level CPU Setup menus regarding the installation of the Handwheel on the machine shaft?	Handwheel must installed for Re-Leveling to be enabled. Install Handwheel.
Re-Leveling ='Off' Toe Guards Required	(Cable Drum if enabled) A selection of "Off" was entered in the Re-Level CPU Setup menus regarding the installation of the Toe Guard(s) on the elevator Cab?	Toe Guard(s) must be installed on Elevator cab at each gate opening for Re-Leveling. Install Toe Guard(s).
Automatic Door Error FX Door didn't open	An automatic door on floor/landing X did not open.	Check automatic door mechanism for problem(s). E.g. blown fuse, tripped circuit breaker, malfunction, obstruction.
Automatic Door Error FX Door didn't close	An automatic door on floor/landing X did not close.	Check automatic door mechanism for problem(s). E.g. blown fuse, tripped circuit breaker, malfunction, obstruction.
Car/Send Floor X to Floor Y	A car send operation has been instituted from floor/landing X to floor/landing Y	*Informational Message, Resolution not required*
Pit Float Sw Fault Call For Service	The pit float switch, located in the hoistway, has detected a water level in the pit/hoistway. The car will move upward to the highest available floor. See the pit float section for additional details. PIs = **FS**	System is configured to require a service call to reset system. Dealer service call is required to reset control system after water level drops.

Message	What It Means	How To Resolve
Pit Float Sw Fault Usage is Limited	The pit float switch, located in the hoistway, has detected a water level in the pit/hoistway. The car will move upward to the highest available floor. See the pit float section for additional details. PIs = **FS**	System is ***not*** configured to require a service call to reset system. Control will automatically return to normal operation after water level drops
Float Sw Car Send Floor X to Floor Y	The pit float switch, located in the hoistway, has detected a water level in the pit/hoistway when the car was located at floor/landing X. The car was then called automatically to floor/landing Y.	*Informational Message. See pit float switch section for additional information.*
Push Cancel to Reset Pit Float Sw Fault	Instructional message.	Press cancel button on CPU board to clear fault
Non-Sequential Floor Call For Service	A Non-Sequential floor error has been detected.	Verify correct placement of all steel tape magnets. Insure adhesive backing removed from magnets and magnets are secured to steel tape. Verify correct operation of all tape reader / TOC sensor P1, P2, P4, DL, DZ, UL.
Push Cancel to Reset Non-Sequential Floor	Instructional message.	Press cancel button on CPU board to clear fault
Door Open on Floor X But Car is NOT in DZ	An open door has been detected at floor/landing X but the car is not in the door zone on floor X. PIs = **Z!**	Door locks are only unlocked while car is the door zone. Check for mechanical problems with lock, wiring problems, over ridden door lock switches, etc.
Door Open on Floor X B Car is on Floor Y	An open door has been detected at floor/landing X but the car is at floor/landing Y. The floor/landing door can only be unlocked when the car is in the door zone at a floor/landing. The system has received information that the open door is not at the detected floor/landing. PIs = **D!**	Verify the IN & OUT flat cable wiring is correct on all remotes. Verify that the proper setting for mounting type is selected in the setup menu.

Message	What It Means	How To Resolve
Open Safety Circuit Gate 1 Switch	Indicates that the Gate switch #1 is open. PIs = **GT**	Insure gate #1 is closed, check wiring.
Open Safety Circuit Gate 2 Switch	Indicates that the Gate switch #2 is open. PIs = **GT**	Insure gate #2 is closed, check wiring.
Door/Gate Sw Fault Cycle Gt 1 to Clear	A Door/Gate Monitor fault has been detected.	While the COP Run/Stop switch is in the Run position, open and close car gate #1 to clear the fault.
Door/Gate Sw Fault Cycle Gt 2 to Clear	A Door/Gate Monitor fault has been detected.	While the COP Run/Stop switch is in the Run position, open and close car gate #2 to clear the fault.
Door/Gate Sw Fault Cycle Dr 1 to Clear	A Door/Gate Monitor fault has been detected.	Open and close landing door #1 to clear the fault.
Door/Gate Sw Fault Cycle Dr 2 to Clear	A Door/Gate Monitor fault has been detected.	Open and close landing door #2 to clear the fault.
Lock Fault Flrx Drx Call For Service	A lock fault has been detected.	Verify wiring between Hall Calls and door locks. Look for damage on back of Hall Call boards. See Lock Fault section for more information.
Lock Fault Car Send Floor y to Floor x	A lock fault was detected, and the car was sent to the floor associated with the lock fault floor X from floor Y	*Informational Message, Resolution not required*
Lock Fault Flrx Drx Push Cancel to Clear	Instructional message.	Press cancel button on CPU board to clear fault

The preceding section has been provided to assist the dealer in troubleshooting the system. If you still cannot solve the problem and need assistance, call Inclinator at 1-800-343-9007, Tech Support, and someone will be able to assist you.

Troubleshooting the UC601 Elevator Control System

WARNING
This elevator is equipped with a door/gate (D/G) Safety Monitor that will disable, "LOCKOUT" the elevator under certain conditions. The purpose of the D/G monitor is to detect if the homeowner has jumped out hall door and/or cab gate switches.

See section "Door/Gate Monitor" for additional information.

CAUTION – PLUGGING OR UNPLUGGING ANYTHING OTHER THAN THE PENDANT OR SAFETY OVERRIDE JUMPERS WHILE POWER IS TURNED ON COULD CAUSE DAMAGE TO ELECTRICAL DEVICES/COMPONENTS

PROBLEM:	POSSIBLE SOLUTION:
Elevator not moving, but power is on	Safety chain broken, see LCD on CPU board for information, fault in the controller (check fault codes in controller)
No power to controller boards when turned on	Check all fuses within disconnect or breaker and on the Main Controller Board, also check that Main Disconnect is on
Elevator moves opposite direction of the inspection button pushed.	Turn off all elevator power and switch any 2 of the U, V, and W leads in motor junction box.
COP and Remote Hall Calls PIs display "GT".	Car gate safety switch open. Car Gate is not closed properly. Close gate or open gate and then close gate.
COP and Remote Hall Calls PIs display "DX".	Landing door X safety switch is open. Landing door is not closed properly. Close door or open door and then close door.
COP and Remote Hall Calls PIs display "ST".	COP Run/Stop switch in stop position, Pit switch in stop position, Emergency Stop switch on Pendant in stop position. Move offending switch into Run position.
Remote PI, Not COP PI, display dashes, "- -".	Remote (optional) key switch is turned off. Remote is disabled and thus no calls will be accepted at this remote. Turn Remote key switch to on position to accept calls at this remote.
Remote & COP PIs display dashes, "- -".	COP key switch is turned off.
Remote & COP PIs display "??".	Tape Reader cannot determine position of car or non-sequential floor has been detected. Check magnets, white stripe on magnet facing out, long 8.5" magnet on left, 2" short magnets on right.
Remote & COP PIs, display "NC".	Tape Reader is not connected. Check cable between taper reader and TOC board.
Remote & COP PIs are blinking.	Loss of 208/240VAC power. Elevator is running on battery backup power. No up calls will be accepted, only down calls permitted.

PROBLEM:	POSSIBLE SOLUTION:
COP and Remote Hall Calls PIs display "LK".	Door/Gate monitoring software has detected that a gate & door open/close was not detected between the last car call and the current car call. While the COP Run/Stop switch is in the Run position, open and close car gate and landing door to clear the fault.
Elevator hits lower final limit when car is called to the lowest floor	Magnets on steel tape are improperly positioned. Review and change lowest floor magnet positions and then retest.
Elevator continues to pit floor when car is called to the lowest floor	Lower limit cam on steel tape is at improper position or is misaligned. Review and change cam position or alignment.
Elevator does not come level at landing	Improper positioning of magnets on steel tape, improper adjustment of Up Leveling or Down Leveling
Elevator hits upper final limit when car is called to the highest floor	Magnets on steel tape are improperly positioned. Review and change highest floor magnet positions and retest.
Elevator continues to overhead when car is called to the highest floor	Upper limit cam on steel tape is at improper position or is misaligned. Review and change cam position or alignment.
COP and Remote Hall Calls PIs indicates a door on floor "x" is open although the only door open is door on floor "y".	Either the IN & OUT flat cable wiring is swapped on at least one remote. The setting for mounting type is incorrect in the CPU setup menu.

Over Current Protection

CPU Board

The CPU board contains six replaceable fuses:

- F8, 5A, protects the 120VAC Power output for TOC J24.
- F9 & F10, 15A, slow blow, protects the building power 240VAC output J27 pins 4,5,6.
- F11 & F13, 15A, slow blow, protects the UPS 240VAC Power output J27 pins 1,2,3.
- F14, 5A, protects the 24VDC input on J31.

Fuse Designation	ICOA P/N	Description
F8	90301480	Fuse, 5 A, Cooper/Bussmann AGC-5-R, 0.25x1.25"
F9, F10	90310681	Fuse, 15 A, LittelFuse, 3AB 15A, 0.25x1.25", slow blow
F11, F13	90310681	Fuse, 15 A, LittelFuse, 3AB 15A, 0.25x1.25", slow blow
F14	90301480	Fuse, 5 A, Cooper/Bussmann AGC-5-R, 0.25x1.25"

TOC Board

The TOC board contains three replaceable fuses:

- F2, 2A, protects the 120VAC Car Lamp Power output J3.
- F3, 3A, protects the 120VAC Autogate Power output J6 & J8.
- F4, 3A, protects the 120VAC GAL Retiring Cam Power output J9.

Fuse Designation	ICOA P/N	Description
F2	90310682	Fuse, 2 A, Cooper/Bussmann GMA-2-R, 5 x 20mm
F3	90310683	Fuse, 3 A Time Delay / Slow Blow 5 x 20mm Bel Fuse P/N 5TT 3-R
F4	90310683	Fuse, 3 A, Cooper/Bussmann GMA-3-R, 5 x 20mm

Remote (Hall Call) Board

The Remote contains one replaceable fuse, F2, which protects the Automatic Door output. See Figure 54.

Fuse Designation	ICOA P/N	Description
F2	90310690	Fuse, 1 A, Cooper/Bussmann GMA-1-R, 5 x 20mm

Hydraulic Control Enclosure

The Hydraulic Control Enclosure contains two replaceable fuses:

- F8, 30A, protects the 220VAC Power input for the Hydraulic pump unit.

Fuse Designation	ICOA P/N	Description
F1, F2	90310732	FUSE, MIDGET, 30A, 250V, TIME DELAY, 13⁄32″ x 1-1⁄2″

Fuse Kits

Fuse Kit 90110885, contains spare fuses for the CPU, TOC, & Call Stations boards and is included in all UC601 control systems. The fuses included are as follows:

- 2 pcs 90301480 Fuse, 5 A, Fast Acting, Cooper/Bussmann AGC-5-R, 1/4 X 1-1/4 Inch
- 4 pcs 90310681 Fuse, 15 A Slow Blow, LittelFuse 3AB 15A, 6.3x32mm
- 1 pc 90310682 Fuse, 2 A, Cooper/Bussmann GMA-2-R, 5 x 20mm
- 2 pcs 90310926 Fuse 3 A Time Delay/Slow Blow 5 x 20MM Bel Fuse P/N 5TT 3-R
- 1 pc 90310690 Fuse, 1 A, Cooper/Bussmann GMA-1-R, 5 x 20mm

Fuse Kit 90110922 is included for Hydraulic elevators only and contains two 30A fuses (90310732).

Dealer Program Kit

The Dealer Programming Kit is provided, 1 per dealer or as needed, in the unlikely event that updated firmware is required to be installed in the CPU board.

The CPU board incorporates a programming connector which can be used by dealers in the field to perform program updates, if necessary.

If an update is necessary, a programming application and program file will be emailed or sent to the dealer.

The Dealer Programming Kit consists of:

- USB portable battery (Battery may or may not incorporate a flashlight)
- PICKit 3 In-Circuit-Debugger
- RJ-11 to ICSP Adaptor

See UC601 CPU Programming Instructions, ICOA PN 80210668, for further details.

TECO FM50 Variable Frequency Drive (VFD) Parameter Programming Instructions

Programming Procedure for Functions 0 "F00" through Function 28 "F28":

During this procedure you must refer to and use the values from the column of the required configuration: 500 Lb., 1000 Lb., or MRL Geared.

1. On the TECO drive, press the "DSP/FUN" button to enter the programming mode, function 0 "F00" will appear.

3. Press the "DATA/ENT" button to check the value of the selected function. Refer to the proper table column on page 2.
a. If the value of the selected function is incorrect, go to Step 4.
b. If the value is correct, press the "DATA/ENT" button; "End" will momentarily appear. Skip Step 4 and go to Step 5.

4. Referring to the proper table column on page 2, press the "Up Arrow" or the "Down Arrow" buttons until the desired value is displayed, and then press the "DATA/ENT" button to save the new value; "End" will momentarily appear.

5. Press the "Up Arrow" button to advance to the next function.
a. If the selected function is between function 0 "F00" and function 28 "F28", repeat Step 3, Step 4 or Step 5 until function 28 "F28" is reached.
b. When function 29 "F29" is reached, go to Step 6.

6. Function 29 "F29" is the Software Version display function and is a read only function. At the time of this writing, the software version is 02.3. It is subject to change at any time. Press the "DATA/ENT" button to exit the check function mode, "End" will momentarily appear. Then press the "Up Arrow" button to advance to function 30 "F30".

7. Function 30 "F30" is the Fault Log function. Press the "DATA/ENT" button to check errors, and then press the "Down Arrow" button to clear any errors.

8. Press the "DSP/FUN" button to exit the programming mode.

Programming Note:

When programming a new drive, the numbers in bold print in are the only values that should need to be changed; all the other values are the default values of the drive.

Table 1, TECO Drive Adjustments

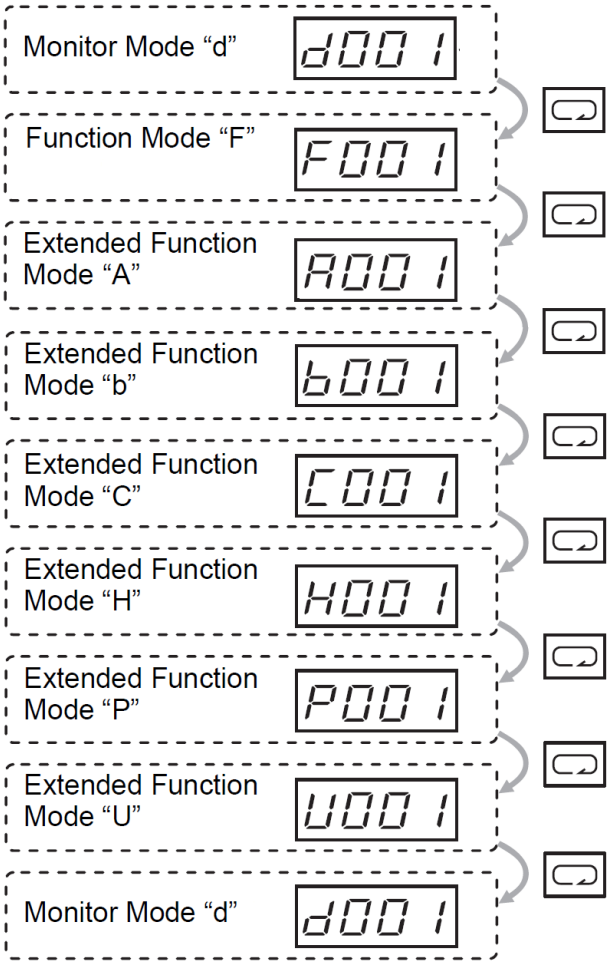
Function Number	Function Description	CD-500	CD-1000	OHCD-1000 Standard	OHCD-1000 30FPM	MRL Geared
F00	Factory Adjustment - **DO NOT CHANGE**	000	000	000	000	000
F01	Acceleration Time	**02.0**	**01.0**	**02.0**	**02.0**	**02.0**
F02	Deceleration Time	**02.0**	**01.0**	**01.0**	**02.0**	**02.5**
F03	Operation Mode	000	000	000	000	000
F04	Motor Rotation Direction	000	000	000	000	000
F05	V/F Pattern	004	004	004	004	004
F06	Frequency Upper Limit	**44.0**	**65.0**	**65.0**	**48.8**	**50.0**
F07	Frequency Lower Limit	00.0	00.0	00.0	00.0	00.0
F08	SP1 Frequency	10.0	10.0	10.0	10.0	10.0
F09	Jog Frequency	06.0	06.0	06.0	06.0	06.0
F10	Start/Stop Control	**001**	**001**	**001**	**001**	**001**
F11	Frequency Control	**001**	**001**	**001**	**001**	**001**
F12	Carrier Frequency Control	**007**	**007**	**007**	**007**	**007**
F13	Torque Compensation	**06.0**	**06.0**	**06.0**	**06.0**	**06.0**
F14	Stop Method	000	000	000	000	000
F15	DC Braking Time	00.5	00.5	00.5	00.5	00.5
F16	DC Braking Injection Frequency	1.5	**10.0**	**10.0**	**10.0**	1.5
F17	DC Braking Level	**15.0**	**12.0**	**12.0**	**12.0**	**15.0**
F18	Electronic Thermal Overload Protection	100	100	100	100	**75**
F19	SP1 Function	002	002	002	002	002
F20	Reset Function	005	005	005	005	005
F21	Multifunction Output	**001**	**001**	**001**	**001**	**001**
F22	Reverse Lock-Out	000	000	000	000	000
F23	Momentary Power Loss	000	000	000	000	000
F24	Auto Restart	**005**	**005**	**005**	**005**	**005**
F25	Factory Setting - **DO NOT CHANGE**	000	000	000	000	000
F26	SP2 Frequency	20.0	20.0	20.0	20.0	20.0
F27	SP3 Frequency	30.0	30.0	30.0	30.0	30.0
F28	Direct Start	001	001	001	001	001
F29	Software Version (Read Only)	xx.x	xx.x	xx.x	xx.x	xx.x
F30	Fault Log	-.--	-.--	-.--	-.--	-.--

Omron 3G3MX2 Variable Frequency Drive (VFD) Parameter Programming Instructions

This procedure requires that the VFD must not be in RUN mode.

Display	Name
RUN	RUN key
STOP RESET	STOP/RESET key
	Mode key
	Enter key
	Increment key
	Decrement Key

1. Press the Mode key  for 3 seconds or more until the data of Output Frequency Monitor (d001) is displayed. The display will show 00.00 when not in RUN mode.
2. Press the Enter key  to switch to the parameter display. The display will show d001.
3. Press the Mode key  to move the beginning of the parameter group to view or change a parameter.



4. Once you have navigated to the desired parameter group, press the Increment  or Decrement  key to move to the desired parameter.

5. Press the Enter key  to switch to the data display.

6. Press the Increment  or Decrement  keys to change the value if necessary.

7. Press the Enter key  to store the new value (into the EEPROM) and return to the parameter display.

8. After all desired parameters are viewed or changed, press the Mode key  for 3 seconds or more. The data of Output Frequency Monitor (d001) will be displayed and will indicate 00.00.

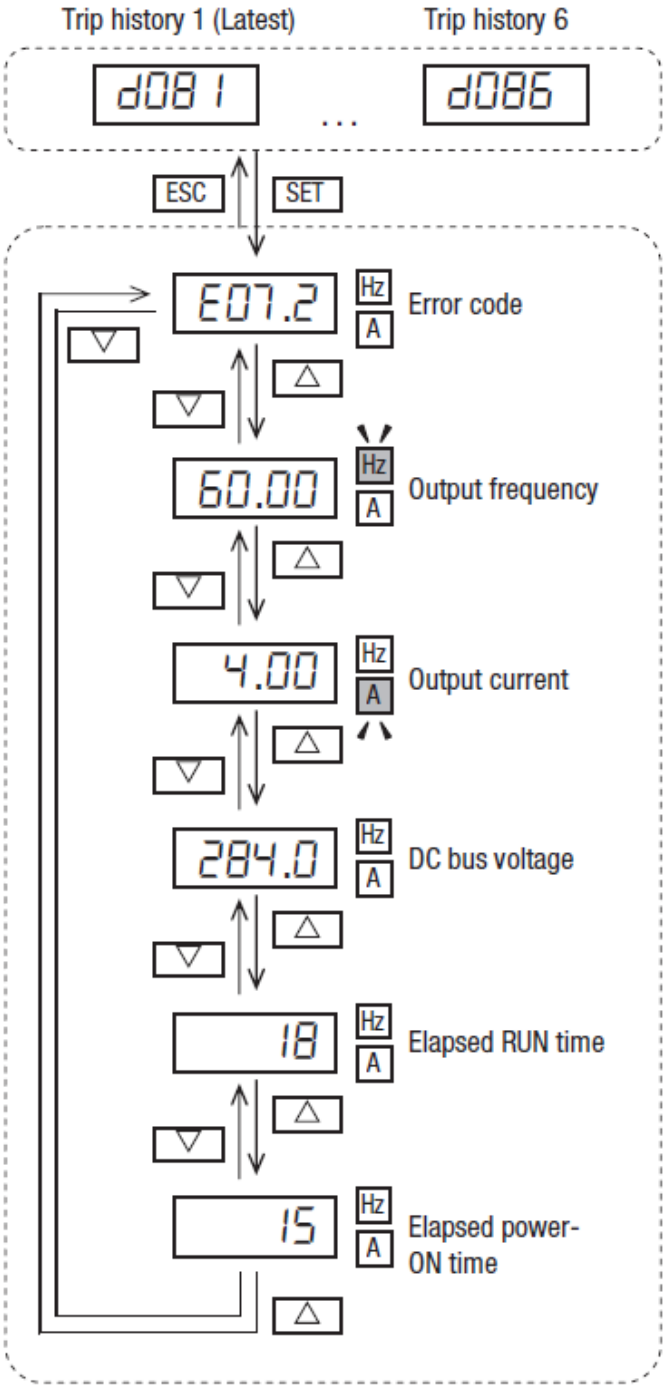
Omron 3G3MX2 Variable Frequency Drive (VFD) Trip History and Inverter Status

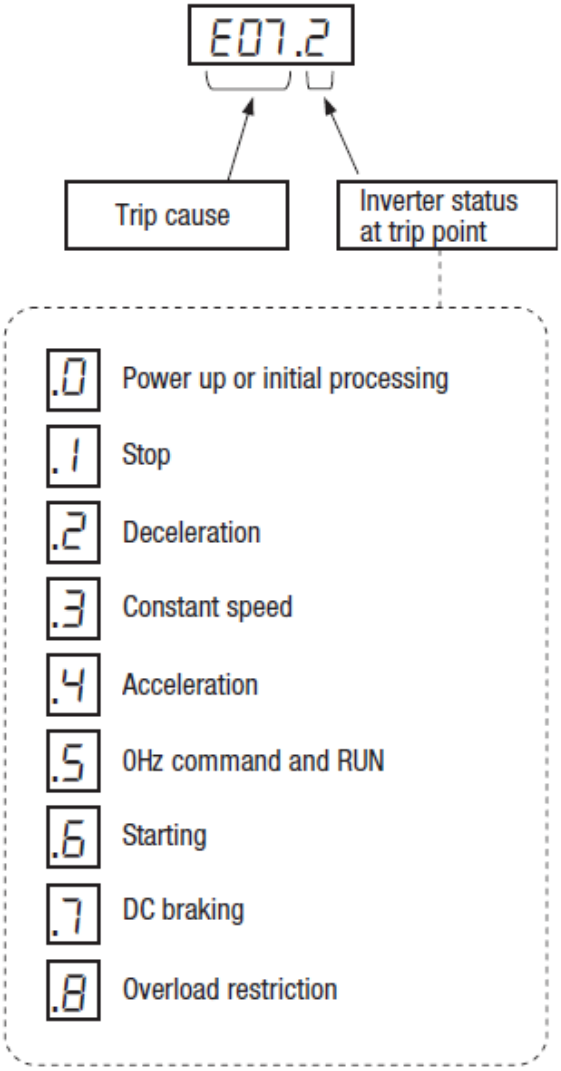
We recommend that you first find the cause of the fault before clearing it. When a fault occurs, the inverter stores important performance data at the moment of the fault. To access the data, use the monitor function (dXXX) and select d081 details about the present fault. The previous 5 faults are stored in d082 to d086. Each error shifts d081-d085 to d082-d086 and writes the new error to d081.

The following Monitor Menu map shows how to access the error codes. When fault(s) exist, you can review their details by first selecting the proper function: d081 is the most recent, and d086 is the oldest.

1. Press the Mode key  for 3 seconds or more until the data of Output Frequency Monitor (d001) is displayed. The display will show 00.00 when not in RUN mode.

2. Press the Enter key  to switch to the parameter display. The display will show d001.





Note: Indicated inverter status could be different from actual inverter behavior. e.g. When PID operation or frequency given by analog signal, although it seems constant speed, acceleration and deceleration could be repeated in very short cycle.

Omron Drive Parameter, Quick Reference

	CD 500 Leeson Motor	CD 500 Baldor Motor	CD 1000	OHCD Grove 30 FPM	OHCD Grove 40 FPM	OHCD Sumi 30 FPM	OHCD Sumi 40 FPM	MRL Chain Hi-Eff Motor	MRL Chain Std Motor	5/18/2023		
Parameter	Value	Value	Value	Value	Value	Value	Value	Value	Value	Description	Setting	Notes
P027	0.06	8.01	1.06	5.03	2.06	3.03	4.03	6.02	7.02	Drive Program Identifier	Elevator . Revision	
A001	01	01	01	01	01	01	01	01	01	Frequency Reference Input	Terminal Block	
A002	01	01	01	01	01	01	01	01	01	Run Command Input	Terminal Block	
A003	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	Base Frequency	60 Hertz	
A004	60.0	60.0	65.0	65.0	65.0	60.0	60.0	60.0	60.0	Maximum Frequency	xx.x Hertz	See Note 1
A005	02	02	02	02	02	02	02	02	02	FV/FI Selection	FV	
A012	44.0	44.0	65.0	48.8	65.0	39.0	52.0	50.0	50.0	FV End Frequency	xx.x Hertz	See Note 1
A041	01	01	01	01	01	01	01	01	01	Torque Boost	Automatic	
A042	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	Manual Torque Boost	x.x Percent	See Note 1
A044	03	03	03	03	03	03	03	03	03	Control Method	Sensorless Vector	
A047	100	100	100	100	100	100	100	100	100	Automatic Torque Boost Slip Compensation	100 Percent Gain	
A082	230	230	230	230	230	230	230	230	230	Motor Incoming Voltage Selection	230 VAC	
A131	2	2	2	2	2	10	10	10	10	Acceleration Curve	Units	See Note 1
B001	01	01	01	01	01	01	01	01	01	Retry Selection	0 Hertz Restart	
B002	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	Allowable Momentary Power Interruption	2.0 Seconds	
B003	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	Restart Standby Time	0.3 Seconds	
B008	01	01	01	01	01	01	01	01	01	Overvoltage/Overcurrent Restart Selection	0 Hertz Restart	
B011	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Overvoltage/Overcurrent Restart Standby	0.5 Seconds	
B012	10.5	11.0	8.91	9.03	9.03	8.04	8.04	5.89	6.37	Electronic Thermal Level	Motor Nameplate Amps x 1.05	See Note 2
B013	01	01	01	01	01	01	01	01	01	Electronic Thermal Characteristics Selection 1	Constant Torque	
B021	00	00	00	00	00	00	00	00	00	Overload Limit 1 Selection	Disabled	
B027	00	00	00	00	00	00	00	00	00	Overcurrent Suppression Selection	Disabled	
B037	00	00	00	00	00	00	00	00	00	Display Selection	Complete Display	
B038	001	001	001	001	001	001	001	001	001	Initial Screen Selection	D001 to D060	
B082	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	Starting Frequency	1.50 Hertz	
B083	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	Carrier Frequency	12.0 Kilohertz	
B085	00	00	00	00	00	00	00	00	00	Initialization Data Selection	Use Area "A"	
B089	02	02	02	02	02	02	02	02	02	Automatic Carrier Reduction	Depends on Fin Temperature	
B090	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	Usage Rate of Regenerative Braking	30.0 Percent	
B092	02	02	02	02	02	02	02	02	02	Cooling Fan Operation	Depends on Fin Temperature	
B095	02	02	02	02	02	02	02	02	02	Regenerative Braking Selection	Enabled, running & stopped	
B097	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	Braking Resistor Value	70.0 Ohms	
B130	01	01	01	01	01	01	01	01	01	Decel Overvoltage Suppression Function	Enabled	
B131	390	390	390	390	390	390	390	390	390	Decel Overvoltage Suppression Level	390 VDC	

C004	11	11	11	11	11	11	11	11	11	S4 Pin Function	Free Run Stop	
C026	21	21	21	21	21	21	21	21	21	Alarm Relay Function	Output MA/MB at 0 Hz	
C028	00	00	00	00	00	00	00	00	00	AM Selection	Output Frequency	
C102	02	02	02	02	02	02	02	02	02	Reset Selection	Enabled only during trip	
F001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Output Frequency Setting	0.00 Hertz	
F002	2.00	2.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	Acceleration Time	x.xx Seconds	See Note 1
F003	3.00	3.00	2.00	2.00	2.00	2.50	2.00	2.00	2.00	Deceleration Time	x.xx Seconds	See Note 1
Motor Auto-Tuning Values												
H002	02	02	02	02	02	02	02	02	02	Motor Parameter selection	Use Auto-Tuning Parameters	
H003	2.20	2.20	2.20	2.20	2.20	2.20	2.20	1.50	1.50	Motor Capacity	x.xx Kilo Watts (kW)	See Note 1
H004	6	6	4	4	4	4	4	4	4	Motor Poles	Number of poles	See Note 1
H005	125	100	100	100	100	100	100	100	100	Speed Reponse	xxx Units	See Note 1
H030	0.759	0.703	0.609	0.829	0.829	0.708	0.708	1.118	1.479	Motor Parameter R1 (Auto Tuning)	x.xxx Ohms	See Notes 1 & 3
H031	0.485	0.374	0.394	0.496	0.496	0.472	0.472	0.877	0.861	Motor Parameter R2 (Auto Tuning)	x.xxx Ohms	See Notes 1 & 3
H032	11.42	12.82	9.46	11.13	11.13	11.21	11.21	16.72	13.88	Motor Parameter L (Auto Tuning)	xx.xx Millihenry (mH)	See Notes 1 & 3
H033	8.49	9.46	6.36	6.04	6.04	5.23	5.23	3.83	5.22	Motor Parameter Io (Auto Tuning)	x.xx Amps	See Notes 1 & 3
H034	0.051	0.002	0.021	0.013	0.013	0.030	0.030	0.021	0.019	Motor Parameter J (Auto Tuning)	x.xxx kgm^2	See Notes 1 & 3

Note 1: This parameter varies with elevator type. Refer to the data in the column that matches your elevator type for the correct value.

Note 2: This parameter varies with elevator type and motor in use. It must match the rating on the motor nameplate Full Load Amperage times 1.05 (FLA) x 1.05.
The CD500 B (Baldor Motor) is rated at 10.6 amps but, 10.6 * 1.05 = 11.13 which is above the drive maximum of 11.0 amps. For this elevator/motor configuration, set B012 to 11.0 amps

Note 3: MRL Chain Elevators may be equipped with either a standard (Std) or a high-efficiency (Hi-Eff) motor. To determine your motor type refer to the rating of your motor nameplate Full Load Amperage (FLA), Std motor is 6.07 amps and Hi-Eff motor is 5.61 amps. Once you have your motor type refer to your matching Std or Hi-Eff column above and verify the Motor Auto-Tuning Values are entered in drive parameters H030 thru H034.

Mitsubishi Drive Parameter, Quick Reference

	OHCD Sumi 30 FPM	OHCD Sumi 40 FPM	OHCD Sumi 30 FPM - Rev 102 OHCD Sumi 40 FPM - Rev 202 (Program revision is stored in parameter 888)		2/29/2024	Red Indicates this parameter is NOT at default value
Parameter Number	Value	Value	Default Value	Description	Units	Notes
0	4.0	4.0	4.0	Torque Boost	Percentage	
1	39.00	52.00	120.0	Maximum Frequency	Hertz	
2	0.00	0.00	0.00	Minimum Frequency	Hertz	
3	60.00	60.00	60.00	Base Frequency	Hertz	
4	60.00	60.00	60.00	Multi-speed Setting (High Speed)	Hertz	
5	30.00	30.00	30.00	Multi-speed Setting (Middle Speed)	Hertz	
6	10.00	10.00	10.00	Multi-speed Setting (Low Speed)	Hertz	
7	3.0	3.0	5.0	Acceleration Time	Seconds	
8	1.8	2.1	5.0	Deceleration Time	Seconds	
9	7.66	7.66	10.00	Electronic Thermal O/L Relay	Amps	
10	3.00	3.00	3.00	DC Injection Brake operation Frequency	Hertz	
11	0.5	0.5	0.5	DC Injection Brake operation Time	Seconds	
12	4.0	4.0	4.0	DC Injection Brake operation Voltage	Volts	
13	0.50	0.50	0.50	Starting Frequency	Hertz	
14	0	0	0	Load Pattern Selection		
15	5.00	5.00	5.00	Jog Frequency	Hertz	
16	0.5	0.5	0.5	Jog Acceleration/Deceleration Time	Seconds	
17	0	0	0	MRS Input Selection		
18	39.00	52.00	120.0	High Speed Maximum Frequency	Hertz	
19	230.0	230.0	9999	Base Frequency Voltage	Volts	
20	60.00	60.00	60.00	Acceleration/Deceleration Reference Frequency	Hertz	
22	200.0	200.0	150.0	Stall Prevention Operation Level	Percentage	
23	9999	9999	9999	Stall Prevention Operation Level Compensation Factor		
24	9999	9999	9999	Multi-speed Setting (Speed 4)		
25	9999	9999	9999	Multi-speed Setting (Speed 5)		
26	9999	9999	9999	Multi-speed Setting (Speed 6)		
27	9999	9999	9999	Multi-speed Setting (Speed 7)		
29	1	1	0	Acceleration/Deceleration Pattern Selection		
30	1	1	0	Regenerative Function Selection		
31	9999	9999	9999	Frequency Jump 1A		
32	9999	9999	9999	Frequency Jump 1B		
33	9999	9999	9999	Frequency Jump 2A		
34	9999	9999	9999	Frequency Jump 2B		
35	9999	9999	9999	Frequency Jump 3A		
36	9999	9999	9999	Frequency Jump 3B		
37	0.000	0.000	0.000	Speed Display		
40	0	0	0	RUN Key Rotation Direction Selection		
41	10.0	10.0	10.0	Up-To-Frequency Sensitivity	Percentage	
42	6.00	6.00	6.00	Output Frequency Detection	Hertz	
43	9999	9999	9999	Output Frequency Detection For Reverse Direction	Hertz	
44	5.0	5.0	5.0	Second Acceleration/Deceleration Time	Seconds	
45	9999	9999	9999	Second Deceleration Time	Seconds	
46	9999	9999	9999	Second Torque Boost	Percentage	
47	9999	9999	9999	Second V/F (Base Frequency)	Hertz	
48	9999	9999	9999	Second Stall Prevention Operation Current	Percentage	
51	9999	9999	9999	Second Electronic Thermal O/L Relay	Amps	
52	9	9	0	DU/PU Main Display Data Selection		Revs 102 & 202, Brake % in 3rd Monitor
55	60.00	60.00	60.00	Frequency Monitoring Reference	Hertz	
56	10.00	10.00	10.00	Current Monitoring Reference	Amps	
57	9999	9999	9999	Restart Coasting Time	Seconds	
58	1.0	1.0	1.0	Restart Cushion Time	Seconds	
59	0	0	0	Remote Function Selection		
60	0	0	0	Energy Saving Control Selection		
65	0	0	0	Retry Selection		
66	60.00	60.00	60.00	Stall Prevention Operation Redfuction Starting Frequency	Hertz	
67	103	103	0	Number of Retries At Fault Occurrence		Revs 101 & 201
68	0.5	0.5	1.0	Retry Waiting Time	Seconds	Revs 101 & 201
69	0	0	0	Retry Count Display Erase		
70	30.0	30.0	0.0	Special Regenerative Brake Duty	Percentage	Revs 101 & 201
71	13	13	0	Applied Motor		
72	15	15	1	PWM Frequency Selection		
73	0	0	1	Analog Input Selection		
74	1	1	1	Input Filter Time Constant		
75	14	14	14	Reset Selection/Disconnected PU Detection/PU Stop		

77	2	2	0	Parameter Write Selection		
78	0	0	0	Reverse Rotation Prevention Selection		
79	2	2	0	Operation Mode Selection		
80	2.20	2.20	9999	Motor Capacity	Kilo-Watts	
82	9999	9999	9999	Motor Excitation Current	Amps	
83	230.0	230.0	200.0	Rated Motor Voltage	Volts	
84	60.00	60.00	60.00	Rated Motor Frequency	Hertz	
90	0.606	0.606	9999	Motor Constant (R1)	Ohms	Value after tuning
96	13	13	0	Auto Tuning Setting/Status		Drive has been tuned to motor
117	0	0	0	PU Communication Station Number		
118	192	192	192	PU Communication Speed		
119	1	1	1	PU Communication Stop Bit Length		
120	2	2	2	PU Communication Parity Check		
121	1	1	1	Number of PU Communication Retries		
122	9999	9999	9999	PU Communication Check Time Interval	Seconds	
123	9999	9999	9999	PU Communication Waiting Time Setting	Milli-Seconds	
124	1	1	1	PU Communication CR/LF Selection		
125	60.00	60.00	60.00	Terminal 2 Frequency Setting Gain Frequency	Hertz	
126	60.00	60.00	60.00	Terminal 4 Frequency Setting Gain Frequency	Hertz	
127	9999	9999	9999	PID Control Automatic Switchover Frequency	Hertz	
128	0	0	0	PID Action Selection		
129	100.0	100.0	100.0	PID Proportional Band	Percentage	
130	1.0	1.0	1.0	PID Integral Time	Seconds	
131	9999	9999	9999	PID Upper Limit	Percentage	
132	9999	9999	9999	PID Lower Limit	Percentage	
133	9999	9999	9999	PID Action Set Point	Percentage	
134	9999	9999	9999	PID Differential Time	Seconds	
145	1	1	1	PU Display Language Selection		
146	xxxx	xxxx	xxxx	Parameter For Manufacturer Setting		Do Not Change
150	150.0	150.0	150.0	Output Current Detection Level	Percentage	
151	0.0	0.0	0.0	Output Current Detection Signal Delay Time	Seconds	
152	5.0	5.0	5.0	Zero Current Detection Level	Percentage	
153	0.50	0.50	0.50	Zero Current Detection Time	Seconds	
154	1	1	1	Voltage Reduction Selection During Stall Prevention …		
156	0	0	0	Stall Prevention Operation Selection		
157	0.0	0.0	0.0	OL Signal Output Timer	Seconds	
158	1	1	1	AM Terminal Function Selection		
160	0	0	0	Extended Function Display Selection		
161	0	0	0	Frequency Setting/Key lock Operation Selection		
162	1	1	1	Automatic Restart After Instantaneous Power Failure		
165	150.0	150.0	150.0	Stall Prevention Operation Level For Restart	Percentage	
166	0.1	0.1	0.1	Output Current Detection Signal Retention Time	Seconds	
167	0	0	0	Output Current Detection Operation Selection		
168	xxxx	xxxx	xxxx	Parameter For Manufacturer Setting		Do Not Change
169	xxxx	xxxx	xxxx	Parameter For Manufacturer Setting		Do Not Change
170	9999	9999	9999	Watt-hour Meter Clear		
171	9999	9999	9999	Operation Hour Meter Clear		
178	60	60	60	STF Terminal Function Selection		
179	61	61	61	STR Terminal Function Selection		
180	0	0	0	RL Terminal Function Selection		
181	1	1	1	RM Terminal Function Selection		
182	2	2	2	RH Terminal Function Selection		
190	0	0	0	RUN Terminal Function Selection		
192	99	99	99	ABC Terminal Function Selection		
197	80	80	80	SO Terminal Function Selection		
232	9999	9999	9999	Multi-speed Setting (Speed 8)	Hertz	
233	9999	9999	9999	Multi-speed Setting (Speed 9)	Hertz	
234	9999	9999	9999	Multi-speed Setting (Speed 10)	Hertz	
235	9999	9999	9999	Multi-speed Setting (Speed 11)	Hertz	
236	9999	9999	9999	Multi-speed Setting (Speed 12)	Hertz	
237	9999	9999	9999	Multi-speed Setting (Speed 13)	Hertz	
238	9999	9999	9999	Multi-speed Setting (Speed 14)	Hertz	
239	9999	9999	9999	Multi-speed Setting (Speed 15)	Hertz	
240	1	1	1	Soft-PWM Operation Selection		
241	0	0	0	Analog Input Display Unit Switchover		
244	1	1	1	Cooling Fan Operation		

245	9999	9999	9999	Rated Slip	Percentage	
246	0.50	0.50	0.50	Slip Compensation Time Constant	Seconds	
247	9999	9999	9999	Constant-power Range Slip Compensation Selection		
249	0	0	0	Earth (Ground) Fault Detection At Start		
250	9999	9999	9999	Stop Selection	Seconds	
251	1	1	1	Output Phase Loss Protection Selection		
255	0	0	0	Life Alarm Status Display		
256	100	100	100	Inrush Current Limit Circuit Life Display	Percentage	
257	100	100	100	Control Circuit Capacitor Life Display	Percentage	
258	100	100	100	Main Circuit Capacitor Life Display	Percentage	
259	0	0	0	Main Circuit Capacitor Life Measuring		
260	0	0	0	PWM Frequency Automatic Switchover		
261	2	2	0	Power Failure Stop Selection		
267	0	0	0	Terminal 4 Input Selection		Revs 101 & 201
268	9999	9999	9999	Monitor Decimal Digits Selection		
269	xxxx	xxxx	xxxx	Parameter For Manufacturer Setting		Do Not Change
295	0.00	0.00	0.00	Magnitude Of Frequency Change Setting		
296	9999	9999	9999	Password Lock level		
297	9999	9999	9999	Password Lock/Unlock		
298	163	163	9999	Frequency Search Gain		Value after tuning
299	0	0	0	Rotation Direction Detection Selection At Restarting		
338	0	0	0	Communication Operation Command Source		
339	0	0	0	Communication Speed Command Source		
340	0	0	0	Communication Startup Mode Selection		
342	0	0	0	Communication EEPROM Write Selection		
343	0	0	0	Communication Error Count		
450	9999	9999	9999	Second Applied Motor		
495	0	0	0	Remote Output Selection		
496	0	0	0	Remote Output Data 1		
502	0	0	0	Stop Mode Selection At Communication Error		
503	0	0	0	Maintenance Timer		
504	9999	9999	9999	Maintenance Timer Alarm Output Set Time		
549	0	0	0	Protocol Selection		
551	9999	9999	9999	PU Mode Operation Command Source Selection		
552	9999	9999	9999	Frequency Jump Range		
555	1.0	1.0	1.0	Current Average Time	Seconds	
556	0.0	0.0	0.0	Data Output Mask Time	Seconds	
557	10.00	10.00	10.00	Current Average Value Monitor Signal Output Reference	Amps	
561	9999	9999	9999	PTC Thermistor Protection Level	Ohms	
563	0	0	0	Energization Time Carry-over Times		
564	0	0	0	Operating Time Carry-over Times		
571	0.1	0.1	9999	Holding Time At a Start	Seconds	
575	1.0	1.0	1.0	Output Interruption Detection Time	Seconds	
576	0.00	0.00	0.00	Output Interruption Detection Level	Hertz	
577	1000	1000	1000	Output Interruption Cancel Level	Percentage	
611	9999	9999	9999	Acceleration Time At a Restart	Seconds	
653	0.0	0.0	0.0	Speed Smoothing Control	Percentage	
665	100.0	100.0	100.0	Regeneration Avoidance Frequency Gain	Percentage	
882	0	0	0	Regeneration Avoidance Operation Selection		
883	400.0	400.0	400.0	Regeneration Avoidance Operation Level	Volts	
885	6.00	6.00	6.00	Regeneration Avoidance Compensation Frequency Limit	Hertz	
886	100.0	100.0	100.0	Regeneration Avoidance Voltage Gain	Percentage	
888	102	202	9999	Free Parameter 1		Used for Program ID
889	9999	9999	9999	Free Parameter 2		
891	9999	9999	9999	Cumulative Power Monitor Digit Shifted Times		
990	1	1	1	PU Buzzer Control		
991	58	58	58	PU Contrast Adjustment		

Safety Circuit Schematic

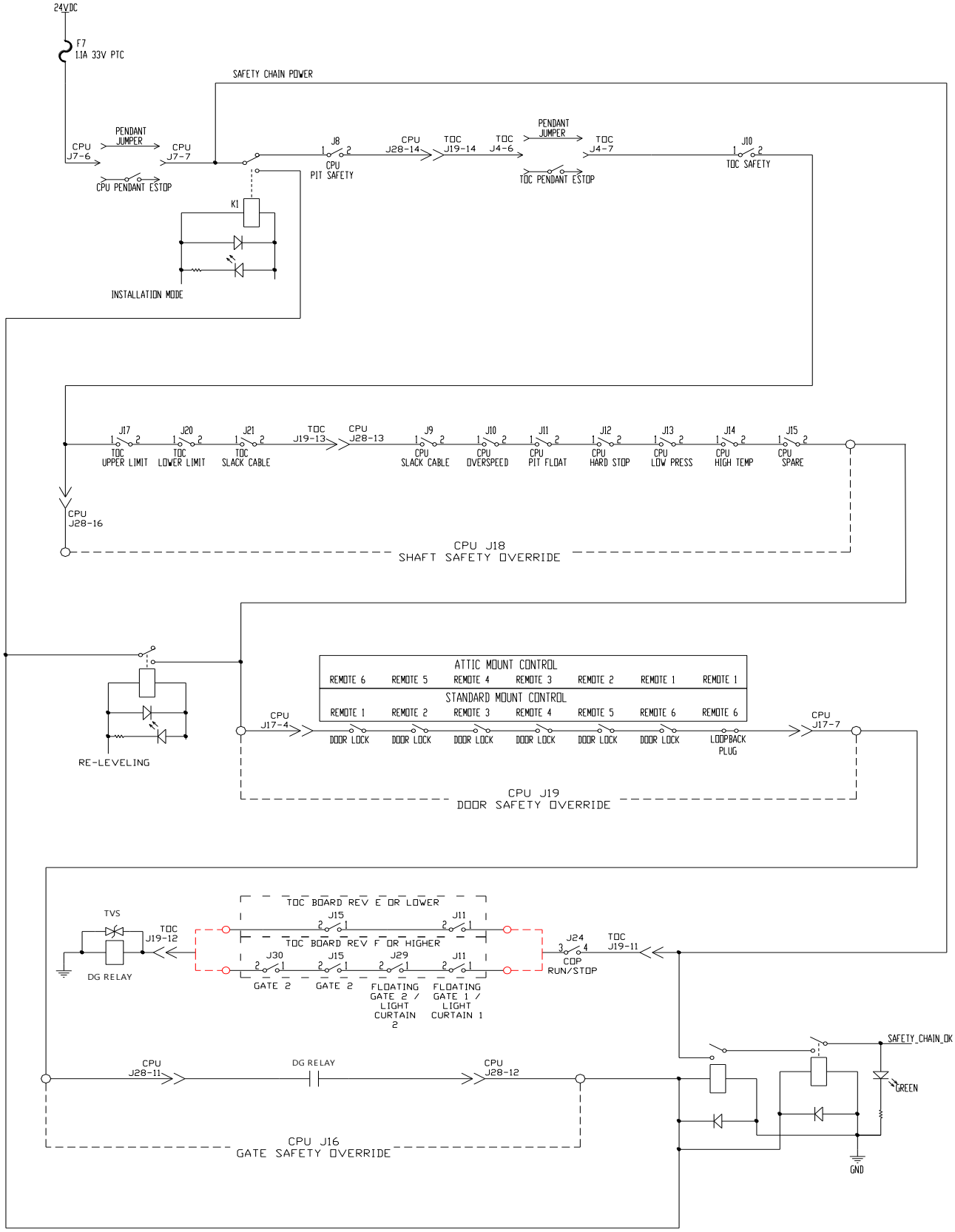


Figure 62 – Safety Circuit Schematic

NOTES:

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