# C4-H

## TESTING PROCEDURES

**VERSION 3.0**

SMARTRISE

| Date | Version | Summary of Changes |
|---|---|---|
| April 22, 2025 | 3.0 | Updated template and reviewed testing procedures. |
| March 24, 2025 | 2.0 | Reviewed the ASME sections.<br>Reviewed the testing procedures. |
| March 18, 2025 | 1.12 | Reviewed the Normal Terminal Stopping Device (NTSD) test. |
| March 17, 2025 | 1.11 | Reviewed the Terminal and Emergency Stopping section.<br>Reviewed the Normal Directional Limit Test section. |
| February 18, 2025 | 1.10 | Reviewed the Battery Lowering Device test. |
| September 23, 2024 | 1.9 | Removed the Inspection Speed Limit test.<br>Reviewed the Gate Switch not in Bypass Mode test.<br>Reviewed the Door Zone Stuck High with Doors Open test.<br>Reviewed the Door Zone Input Stuck High Outside of Actual Door Zone test.<br>Reviewed the Door Zone Stuck High In-Flight test. |
| September 9, 2024 | 1.8 | Updated the Direction Counter Trip Reset test. |
| June 3, 2024 | 1.7 | Added schematics location. |
| March 21, 2024 | 1.6 | Added the High Oil Temperature test under Low Oil/Low Pressure. |
| March 11, 2024 | 1.5 | Added the Low Oil Protection/MLT test under Low Oil/Low Pressure. |
| March 6, 2024 | 1.4 | Added the Low Oil tests under Fire. |
| February 14, 2024 | 1.3 | Added the Direction Counter Trip Reset test. |
| December 13, 2023 | 1.2 | Changed document & header titles to “C4-H Testing Procedures”.<br>Changed the “Hydro:Evolved Test Procedure Introduction” title to “ C4-H Test Procedure Introduction”.<br>Changed the “Hoistway Landing Slide Power to RED Test” title to “Shorting Electrical Equipment on the Hoistway Landing Side Test” & updated the testing procedure.<br>Updated the testing procedure under the *Any Positively Broken Contact in the Safety String* section.<br>Updated the testing procedure under the *Safety String to Ground* section. |
| December 8, 2023 | 1.1 | Updated document presentation.<br>Modified A17.1/B44-10 to A17.1/B44-19.<br>Added Door Zone Input Stuck HI Test.<br>Added the Door Zone Stuck High with Doors Open Test<br>Added the Door Zone Stuck High In-Flight Test<br>Added the SFM and SFP Relays Pre-Flight Test.<br>Removed the In-Car Stop Switch Bypass section.<br>Added FEO Phase I and Load Weighing Device Test.<br>Added FEO Phase II and Load Weighing Device Test.<br>Added the Hoistway Landing Slide Power to REF Test.<br>Added the Camera Independence Test.<br>Added the *Electronic Protective Devices (EPD) in Safety String* section.<br>Added the *Ground Faults* section.<br>Added the *Recycling Operations* section.<br>Added the *Phase I under special conditions* section.<br>Added the *Phase II under special conditions* section. |
| October 25, 2021 | 1.0 | Initial Release |

# Table of Tables

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# 1 C4-H Test Procedure Introduction

This manual provides information for C4-H Controller Software.

ENSURE THAT ALL ACTIVE FAULTS AND ALARMS ARE CLEARED BEFORE PERFORMING THE TESTS.

## 1.1 Safety

The following safety measures are to be followed:

- Tests are to be performed by a qualified elevator mechanic only.
- Be certain that there are no passengers inside the elevator car when performing these tests.
- When performing a test that requires open doors, be sure to have proper personnel guarding the doors.
- When making hardware changes, be certain that all power has been disconnected from the elevator controller.

**WARNING!**
FAILURE TO FOLLOW PROPER PRECAUTIONS CAN RESULT IN SERIOUS INJURY, DEATH, OR DAMAGE TO THE ELEVATOR AND/OR BUILDING.

## 1.2 Test Procedure Format

Each test procedure in this document follows the format shown below:

- **Applicable Codes –** Sections of ASME A17.1 relevant to the test.
- **Schematic Location –** Corresponding locations in the job schematics.
- **Testing Notes –** Important considerations when performing the test.

The table below outlines the layout of the testing procedures.

*Table 1: Layout of Testing Procedures*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Required hardware modifications for the test.<br><br>**Software**<br>- Required software modifications for the test.<br><br>**Car**<br>- Required car modifications for the test. |
| **Procedure** | - Step-by-step Instructions for performing the test. |
| **Expected Results** | - The intended outcome of the test. |
| | **Hardware**<br>- Steps to restore hardware to normal. |

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|---|---|
| | **Software**<br>- Steps to restore software to normal. |
| **Revert** | **Car**<br>- Steps to retore car setting to normal. |

The table below outlines the layout of the troubleshooting procedures.

*Table 2: Layout of Troubleshooting Procedures*

| Failure | Troubleshooting Procedure |
|---|---|
| **Description of Failure** | - Steps to resolve issues. |

# 2 Software/Hardware Monitored Electronic Protective Devices

The sections below outline the test procedures related to Software and Hardware Monitored Electronic Protective Devices.

## 2.1 Interlocks

The sections below outline the Interlocks test procedures.

### 2.1.1 Interlocks Not in Bypass Mode

The following test procedure applies to the Interlocks Not in Bypass Mode.

- **Applicable Codes –** ASME A17.1 sections 3.12 and 3.26.4
- **Schematic Location –** Interlock Contacts input feeder – MR SRU board – (1.E,1.F); SFM & SFP – MR SRU board – (5.G)
- **Testing Notes –** This test must be performed for all three Interlocks (Bottom, Middle, and Top).

The table below outlines the step-by-step procedure for testing the Interlocks Not in Bypass Mode.

*Table 3: Interlocks Not in Bypass Mode Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- If the interlock can be opened from outside the landing door, no hardware modifications are needed.<br>- If the interlock cannot be opened from outside the landing door, locate the corresponding interlock wire connected to the Machine Room (MR) board. Be prepared to remove the wire during the test. |
| **Procedure** | - Place a Car Call by navigating to **Main Menu \| Debug \| Enter Car Calls**.<br>- While the car is running, open an interlock or disconnect the interlock wire from the MR board. |
| **Expected Results** | - After the Lock Clip Delay expires, relays SFM and SFP should drop, the safety string should open, and the car should stop.<br>- The controller should issue an Interlock fault. |
| **Revert** | **Hardware**<br>- Restore any removed wires. |

### 2.1.2 Interlocks in Bypass Mode

The following test procedure applies to the Interlocks in Bypass Mode.

- **Applicable Codes –** ASME A17.1 sections 3.12 and 3.26.4
- **Schematic Location –** ABU/ABD input feeder – MR SRU board – (1.F); 120VAC – MR SRU board – (7.G)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Interlocks in Bypass Mode.

*Table 4: Interlocks in Bypass Mode Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Place the Hoistway Door Bypass switch in the OFF position.<br><br>**Software**<br>- Place the car in Normal, Machine Room Inspection, or Hoistway Access operation. |
| **Procedure** | **Normal Operation**<br>- Place a Car Call by navigating to **Main Menu \| Debug \| Enter Car Calls**.<br>- While the car is running, place the Hoistway Door Bypass switch in the BYPASS position.<br><br>**Machine Room Inspection Operation**<br>- Press and hold the Enable and Up/Down buttons to move the car.<br>- While the car is running, place the Hoistway Door Bypass switch in the BYPASS position.<br><br>**Hoistway Access Operation**<br>- Move the car by temporarily placing a jumper between 120 and ABU/ABD.<br>- While the car is running, place the Hoistway Door Bypass switch in the BYPASS position. |
| **Expected Results** | - The car should immediately come to a stop. |
| **Revert** | **Hardware**<br>- Place the Hoistway Door Bypass switch in the OFF position. |

## 2.2 Car Door Switch in Bypass Mode

The following test procedure applies to the Car Door Switch in Bypass Mode.

- **Applicable Codes –** ASME A17.1 sections 3.14 and 3.26.4
- **Schematic Location –** ABU/ABD input feeder – MR SRU board – (1.F); 120VAC – MR SRU board – (7.G)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Car Door Switch in Bypass Mode.

*Table 5: Car Door Switch in Bypass Mode Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Place the Car Door Bypass switch in the OFF position.<br><br>**Software**<br>- Place the car in Normal, Machine Room Inspection, or Hoistway Access operation. |
| **Procedure** | **Normal Operation**<br>- Place a Car Call by navigating to **Main Menu \| Debug \| Enter Car Calls**. |

| | |
|---|---|
| | - While the car is running, place the Car Door Bypass switch in the BYPASS position.<br><br>**Machine Room Inspection Operation**<br>- Press and hold the Enable and Up/Down buttons to move the car.<br>- While the car is running, place the Car Door Bypass switch in the BYPASS position.<br><br>**Hoistway Access Operation**<br>- Move the car by temporarily placing a jumper between 120 and ABU/ABD.<br>- While the car is running, place the Car Door Bypass switch in the BYPASS position. |
| **Expected Results** | - The car should immediately come to a stop. |
| **Revert** | **Hardware**<br>- Place the Car Door Bypass switch in the OFF position. |

### 2.3 Gate Switch Not in Bypass Mode

The following test procedure applies to the Gate Switch Not in Bypass Mode.

- **Applicable Codes –** ASME A17.1 sections 3.14 and 3.26.4
- **Schematic Location –** Front and Rear Gate Switch Contact input feeder – CT SRU board – (4.C) – inputs 501 (F), 502 (R); SFM & SFP – MR SRU board – (5.G); 24V (PWR) – MR SRU board – (5.C)
- **Testing Notes –** This test must be performed for both the Front and Rear Gate Switches, if applicable.

The table below outlines the step-by-step procedure for testing the Gate Switch Not in Bypass Mode.

*Table 6: Gate Switch Not in Bypass Mode Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software/ Hardware**<br>- In Inspection mode, locate the appropriate Gate Switch wire coming into the Car Top (CT) board input terminal.<br>- Disconnect the Gate Switch input from the sensor on the CT board.<br>- Use a spare/unused wire from the Traveler cable to connect to the Gate Switch input on the CT board.<br>- Go to the machine room, take the same spare/unused Traveler wire, and connect it to an available M24 terminal. |
| **Procedure** | - Place the car in Automatic mode.<br>- Place a Car Call by navigating to **Main Menu \| Debug \| Enter Car Calls**.<br>- While the car is running, remove the Gate Switch wire connected to the MR board. |
| **Expected Results** | - Relays SFM and SFP should immediately drop, the safety string should open, and the car should stop.<br>- The controller should issue a Door Jumper fault. |
| **Revert** | **Hardware**<br>- Reconnect the Gate Switch wire to the CT board. |

## 2.4 In-Car Stop Switch in Firefighter Emergency Operation Recall Mode

The following test procedure applies to the In-Car Stop Switch in Firefighters Emergency Operation (FEO) Recall Mode.

- **Applicable Codes –** ASME A17.1 sections 3.27 and 2.27.3.1.6(c)
- **Schematic Location –** In-Car Stop Switch Contact input feeder – COP SRU board – (3.C); SFM & SFP – MR SRU board – (5.G)
- **Testing Notes –** The In-Car Stop switch is **not** bypassed during the initial FEO recall after the doors have closed and the car has started moving. FEO Phase II recall is not included in this test.

The table below outlines the step-by-step procedure for testing the In-Car Stop Switch in FEO Recall Mode.

*Table 7: In-Car Stop Switch in Firefighters Emergency Operation Recall Mode*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Car**<br>- Be prepared to activate the In-Car Stop Switch.<br>- Place the car far away from the FEO main recall landing and be prepared to place it in FEO recall. |
| **Procedure** | - Place the car in FEO recall.<br>- Once the car begins recalling, activate the In-Car Stop Switch. |
| **Expected Results** | - Relays SFM and SFP should drop, the safety string should open, and the car should stop. |
| **Revert** | **Car**<br>- Deactivate the In-Car Stop Switch.<br>- Reset FEO using the Lobby key switch. |

## 2.5 Door Zone Sensor Failure

The sections below outline the Door Zone (DZ) Sensor Failure test procedures.

### 2.5.1 Door Zone Stuck High with Doors Open

The following test procedure applies to the Door Zone Stuck High with Doors Open.

- **Applicable Codes –** ASME A17.1 section 3.26.1 (2.26.9.3.1)
- **Schematic Location –** Door Zone Sensor input feeder – CT SRU board – (4.C,5.C); 24V (PWR) – MR SRU board – (5.C)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Door Zone Stuck High with Doors Open.

*Table 8: Door Zone Stuck High with Doors Open Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software/ Hardware**<br>- In Inspection mode, disconnect the DZ input from the sensor on the CT board.<br>- Use a spare/unused wire from the Traveler cable to connect to the DZ input on the CT board.<br>- Go to the machine room, take the same spare/unused Traveler wire, and connect it to an available M24 terminal. |
| **Procedure** | - Place the car in Automatic mode.<br>- Position the car inside the Door Zone.<br>- Place a Car Call or a Hall Call.<br>- Open the hall door and/or in-car door while the car is moving outside of the Door Zone. |
| **Expected Results** | - The car should fault and come to a stop.<br>- All Hall/Car Calls should be cleared. |
| **Revert** | **Hardware**<br>- Disconnect +24V from DZ, then restore all wires to their original positions. |

### 2.5.2 Door Zone Stuck High Outside of Actual Door Zone

The following test procedure applies to the Door Zone Stuck High Outside of Actual Door Zone.

- **Applicable Codes –** ASME A17.1 section 3.26.1 (2.26.9.3.1)
- **Schematic Location –** Door Zone Sensor input feeder – CT SRU board – (4.C,5.C); 24V (PWR) – MR SRU board – (5.C)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Door Zone Stuck High Outside of Actual Door Zone.

*Table 9: Door Zone Stuck High Outside of Actual Door Zone Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software/ Hardware**<br>- In Inspection mode, disconnect the DZ input from the sensor on the CT board.<br>- Use a spare/unused wire from the Traveler cable to connect to the DZ input on the CT board.<br>- Go to the machine room, take the same spare/unused Traveler wire, and connect it to an available M24 terminal. |
| **Procedure** | - Place the car in Automatic mode.<br>- Position the car inside the Door Zone.<br>- Place a Car Call or a Hall Call. |
| **Expected Results** | - The car should fault and come to a stop.<br>- All Hall/Car Calls should be cleared. |
| **Revert** | **Hardware**<br>- Disconnect +24V from DZ, then restore all wires to their original positions. |

### 2.5.3 Door Zone Stuck High In-Flight

The following test procedure applies to the Door Zone Stuck High In-Flight.

- **Applicable Codes –** ASME A17.1 section 3.26.1 (2.26.9.3.1 and 2.26.9.4)
- **Schematic Location –** Door Zone Sensor input feeder – CT SRU board – (4.C,5.C); 24V (PWR) – MR SRU board – (5.C)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Door Zone Stuck High In-Flight.

*Table 10: Door Zone Stuck High In-Flight Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software/ Hardware**<br>- In Inspection mode, disconnect the DZ input from the sensor on the CT board.<br>- Use a spare/unused wire from the Traveler cable to connect to the DZ input on the CT board.<br>- Go to the machine room, take the same spare/unused Traveler wire, and **prepare** to connect it to an available M24 terminal. |
| **Procedure** | - Place the car in Automatic mode.<br>- Place a Car Call or a Hall Call.<br>- Jump DZ to +24V while the car is moving **and** is outside the Door Zone. |
| **Expected Results** | - The car should fault and come to a stop.<br>- All Hall/Car Calls should be cleared. |
| **Revert** | **Hardware**<br>- Disconnect +24V from DZ, then restore all wires to their original positions. |

## 2.6 SFP and SFM Relays During Preflight

The following test procedure applies to the SFP and SFM Relays During Preflight.

- **Applicable Codes –** ASME A17.1 section 3.26.1 (2.26.9.3.1 and 2.26.9.4)
- **Schematic Location –** SFM & SFP – MR SRU board – (5.G)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the SFP and SFM Relays During Preflight.

*Table 11: SFP and SFM Relays During Preflight Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software**<br>- Place the car in Automatic mode. |
| **Procedure** | - Place Car Calls to floors X and Y, or place Hall Calls at floors X and Y.<br>- Disconnect the SFM and/or SFP relays when the car stops at floor X **and** before it travels to floor Y. |

| | |
|---|---|
| **Expected Results** | - The car should fault and should not reattempt to move.<br>- The Hall/Car Call should be cleared, and the system should not permit the car to move – test by issuing a call. |
| **Revert** | **Hardware**<br>- Reconnect the SFM and/or SFP relays. |

## 2.7 Door Open Outside of the Door Zone

The following test procedure applies to the Doors Open Outside of the Door Zone.

- **Applicable Codes –** ASME A17.1 sections 3.26.3.2 and 2.26.1.6.7
- **Schematic Location –** 24V (PWR) – MR SRU board – (5.C); MM – MR SRU board – (6.F)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Doors Open Outside of the Door Zone.

*Table 12: Doors Open Outside of the Door Zone Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | - NA |
| **Procedure** | - Enter a Car Call to the bottom landing by navigating to **Main Menu \| Debug \| Enter Car Calls**.<br>- Once the car stops at the door zone, toggle the Inspection/Normal switch to the INSPECTION position.<br>- Place a jumper between +24V and the MM input to place the car in Construction mode.<br>- Navigate to **Main Menu \| Debug \| Enter Door Command**.<br>- Select Door Open and press and hold the middle button to open the doors.<br>· The door icon will change from [ \| ] to [<\|>] while opening, and then from [< >] to [ ] when fully opened.<br>- Release the middle button.<br>· The doors should remain open.<br>- Press the Up and Enable buttons on the MR to move the car approximately 2-3 inches above the bottom landing (outside of the door zone). |
| **Expected Results** | - Verify that a Lock Open fault is displayed. |
| **Revert** | **Hardware**<br>- Disconnect the jumper between +24V and MM.<br>- Toggle the Inspection/Normal switch to the NORMAL position. |

# 3 Electronic Protective Devices in Safe String

The sections below outline the test procedures related to Electronic Protective Devices (EPD) in Safety String.

## 3.1 Any Positively Broken Contact in the Safety String

The following test procedure applies to the Any Positively Broken Contact in the Safety String.

- **Applicable Codes –** ASME A17.1 section 3.26.4
- **Schematic Location –** EB output - MR SRU board – (1.F)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Any Positively Broken Contact in the Safety String.

*Table 13: Any Positively Broken Contact in the Safety String Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | - NA |
| **Procedure** | - While the car is running, activate the EPD. |
| **Expected Results** | - The relays supplying neutral to the valves, as well as the contactor powering the hydraulic pump or soft starter, should drop. |
| **Revert** | **Hardware**<br>- Deactivate the EPD. If the car must be moved before deactivation, temporarily place a jumper across the EPD contact to bypass it.<br>- Remove the jumper. |

The table below lists the troubleshooting procedures for the Any Positively Broken Contact in the Safety String test.

*Table 14: Any Positively Broken Contact in the Safety String Troubleshooting Procedures*

| Failure | Troubleshooting Procedure |
|---|---|
| **The contactors failed to open** | - Verify that the EPD is wired correctly.<br>- Ensure there are no jumpers in the Safety String. |

# 4 Terminal and Emergency Stopping Devices

The sections below outline the test procedures related to Terminal and Emergency Stopping Devices.

## 4.1 Normal Terminal Stopping Device

The following test procedure applies to the Normal Terminal Stopping Device (NTSD).

- **Applicable Codes –** ASME A17.1 section 3.25.1
- **Schematic Location –** M24 – MR Power Supply section – (2.B); MM – MR SRU board – (6.F)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the NTSD.

*Table 15: Normal Terminal Stopping Device Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software**<br>- Clear any active alarms and faults, if present.<br><br>**Hardware**<br>- Place a jumper between M24 and MM on the MR board.<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Car**<br>- Position the car far enough away from the terminal landing being tested to allow a full-speed run. |
| **Procedure** | - Navigate to **Main Menu \| Debug \| Acceptance Test**.<br>- Select **NTS**.<br>- Select **Save**.<br>· The UI should display “Checking if in DZ”.<br>- Press the Enable and Up/Down buttons.<br>· The controller should run the car at high speed in the selected direction toward the terminal landing. |
| **Expected Results** | - When NTS is triggered, the MR board will display one of the following alarms:<br>· In the up direction: NTS Up P1-1, NTS Up P1-2, NTS Up P1-3, NTS Up P1-4, NTS Up P1-5, NTS Up P1-6, NTS Up P1-7, NTS Up P1-8<br>· In the down direction: NTS Dn P1-1, NTS Dn P1-2, NTS Dn P1-3, NTS Dn P1-4, NTS Dn P1-5, NTS Dn P1-6, NTS Dn P1-7, NTS Dn P1-8<br>- The NTS output on the MR board should change state.<br>- The car should slow down and come to a stop before reaching the final limit. |
| **Revert** | **Hardware**<br>- Disconnect the jumper between M24 and MM. |

## 4.2 Terminal Speed Reducing Device

The following test procedure applies to the Terminal Speed Reducing Device (TSRD).

- **Applicable Codes –** ASME A17.1 section 3.25.2
- **Schematic Location –** M24 – MR Power Supply section – (2.B); MM – MR SRU board – (6.F)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the TSRD.

*Table 16: Terminal Speed Reducing Device Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software**<br>- Clear any active alarms and faults, if present.<br><br>**Hardware**<br>- Place a jumper between M24 and MM on the MR board.<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Car**<br>- Position the car at the bottom landing. |
| **Procedure** | - Navigate to **Main Menu \| Debug \| Acceptance Test**.<br>- Select **HYDRO TSRD**.<br>- Select **Save**.<br>· The UI should display “Preparing for Test” then “Parameter Setup”.<br>- Press the Enable and Up buttons.<br>· The controller should run the car at high speed in the selected direction toward the terminal landing. |
| **Expected Results** | - The controller should issue a TSRD OVERSPEED fault. |
| **Revert** | **Hardware / Software**<br>- Disconnect the jumper between M24 and MM. |

## 4.3 Camera Independence

The following test procedure applies to the Camera Independence.

- **Applicable Codes –** ASME A17.1 section 3.25.2
- **Schematic Location –** M24 – MR Power Supply section – (2.B); MM – MR SRU board – (6.F); Tape Reader Camera – COP Board Overview section – (3.G)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Camera Independence.

*Table 17: Camera Independence Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software**<br>- Clear any active alarms and faults, if present.<br><br>**Hardware**<br>- Place a jumper between M24 and MM on the MR board.<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Car**<br>- Position the car at the bottom landing. |
| **Procedure** | - Navigate to **Main Menu \| Debug \| Acceptance Test**.<br>- Select **HYDRO TSRD**.<br>- Select **Save**.<br>· The UI should display “Preparing for Test” then “Parameter Setup”.<br>- Press the Enable and Up buttons.<br>· The controller should run the car at high speed in the selected direction toward the terminal landing.<br>- Verify that the active faults display “TSRD OVSP” on the two nodes – MRA and COPA.<br>- Disconnect the camera connect to the COP. |
| **Expected Results** | - A “CEDES3 Offline” active fault should be issued on the COPA node. |
| **Revert** | **Hardware / Software**<br>- Reconnect the camera.<br>- Disconnect the jumper between M24 and MM. |

## 4.4 Car Buffer

The following test procedure applies to the Car Buffer.

- **Applicable Codes –** ASME A17.1 section 2.25.3
- **Schematic Location –** BFL input feeder – MR SRU Board – (1.G); H120 input feeder – MR SRU board – (1.H); M24 – MR Power Supply section – (2.B); MM – MR SRU board – (6.F)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Car Buffer.

*Table 18: Car Buffer Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Place a jumper between M24 and MM on the MR board.<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br>- Place a jumper between H120 and BFL to bypass BFL.<br><br>**Software**<br>- Clear any active alarms and faults, if present. |

| | |
|---|---|
| | - Navigate to **Main Menu \| Setup \| Speeds \| Test Buffer Speed**.<br>- Set this value to match the speed at which the test is being conducted, in FPM.<br><br>**Car**<br>- Position the car at the bottom landing. |
| **Procedure** | - Navigate to **Main Menu \| Debug \| Acceptance Test.**<br>- Select **Car Buffer**.<br>- Select **Save.**<br>· The UI should display "In Door Zone Check".<br>- Press and hold the Enable and Down buttons.<br>· The controller should run the car in the selected direction at a speed command reflecting the Test speed.<br>· If the Enable or Down button is released before the test completes, an emergency stop will occur, and the test will automatically fail. |
| **Expected Results** | - The car should hit the buffer at the Test speed set.<br>- The controller should issue an SS Buffer and CPLD fault. |
| **Revert** | **Hardware/ Software/ Car**<br>- Disconnect the jumper between M24 and MM.<br>- Disconnect the jumper between H120 and BFL. |

# 5 Normal Directional Limit

The following test procedure applies to the Normal Directional Limit.

- **Applicable Codes –** ASME A17.1 section 3.25.1
- **Schematic Location –** NA
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Normal Directional Limit.

*Table 19: Normal Directional Limit Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Car**<br>- Position the car at the bottom or top landing.<br><br>**Hardware**<br>- Toggle the Inspection/Normal switch to the INSPECTION position. |
| **Procedure** | - Run the car past the terminal's door zone under inspection by pressing:<br>· Enable and Up – when testing the upper terminal<br>· Enable and Down – when testing the lower terminal |
| **Expected Results** | - The controller should issue a Normal Limit Reached alarm. |
| **Revert** | **Hardware**<br>- Toggle the Inspection/Normal switch to the NORMAL position. |

# 6 Releveling with In-Car Stop Switch

The following test procedure applies to the Releveling with In-Car Stop Switch.

- **Applicable Codes –** ASME A17.1 section 3.26.4.2(f)
- **Schematic Location –** In Car Stop Switch Contact input feeder – COP SRU board – (3.C)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Releveling with In-Car Stop Switch.

*Table 20: Releveling with In-Car Stop Switch Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software**<br>- Navigate to **Main Menu \| Setup \| Floors \| Enable** Releveling.<br>- Set to ON.<br><br>**Car / Hardware**<br>- Position the car in the door zone.<br>- Turn ON the In-Car Stop switch. |
| **Procedure** | - Slowly bleed out the valve to allow the car to drop out of the dead zone, but **not** out of the door zone.<br>- Turn OFF the In-Car Stop switch. |
| **Expected Results** | - The car should relevel within a few seconds. |
| **Revert** | **Hardware**<br>- Turn ON the In-Car Stop switch. |

# 7 Redundancy

The sections below outline the test procedures related to Redundancy.

## 7.1 Safety Inputs

The following test procedure applies to the Safety Inputs.

- **Applicable Codes –** ASME A17.1 section 3.26.1(2.26.9.3)
- **Schematic Location –** RDC Jumper – CT SRU board – (6.F), COP SRU boar – (6.F)
- **Testing Notes –** (1) Software/Hardware Electronic Protective Devices are monitored through redundant board inputs. (2) These inputs are continuously compared to ensure the proper functioning of the input circuitry. If a mismatch is detected, a Redundancy Fault is latched, and the car is taken out of service.

The table below lists the Electronic Protective Devices that are redundantly monitored by the Software/Hardware system.

*Table 21: Electronic Protective Devices Monitored by the Software/Hardware System*

| Electronic Protective Device | Input Location |
|---|---|
| **Machine Room Board** | |
| Bottom Interlock | LFB/LRB |
| Middle Interlock(s) | LFM/LRM |
| Top Interlock | LFT/LRT |
| Machine Room Inspection Enable | Internal |
| Hoistway Access Top Up | ATU |
| Hoistway Access Top Down | ATD |
| Hoistway Access Bottom Up | ABU |
| Hoistway Access Bottom Down | ABD |
| Car Door Bypass | SWCAR |
| Hoistway Door Bypass | SWHO |
| **Car Top Board** | |
| Cartop Inspection Enable | 507 |
| Front Gate Switch | 501 |
| Rear Gate Switch | 502 |
| **Car Operating Panel Board** | |
| In-Car Stop Switch | SF2 |
| Hoistway Access Enable | SFM |

The table below outlines the step-by-step procedure for testing the Safety Inputs.

*Table 22: Safety Inputs Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Locate RDC jumper. |
| **Procedure** | - Remove RDC jumper. |

| | |
|---|---|
| **Expected Results** | - The controller should latch a Redundancy fault and take the car out of service. |
| **Revert** | **Hardware**<br>- Restore the RDC jumper. |

# 8 Ground Faults

The sections below outline the test procedures related to Ground Faults.

## 8.1 EPD Input to REF

The following test procedure applies to the EPD Input to REF (M24 to REF).

- **Applicable Codes –** ASME A17.1 section 3.26.1(2.26.9.3)
- **Schematic Location –** M24 – MR Power Supply section – (2.B); REF – MR Power Supply section – (2.C)
- **Testing Notes –** This test requires intentionally shorting M24 to REF.

The table below outlines the step-by-step procedure for testing the EPD Input to REF.

*Table 23: EPD Input to REF Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | - NA |
| **Procedure** | - Place a jumper between M24 and REF. |
| **Expected Results** | - Power should be removed from the M24 Bus.<br>- M24 to REF DC voltage should read 0 VDC. |
| **Revert** | **Hardware**<br>- Disconnect the jumper between M24 and REF.<br>- Reset the M24 breaker. |

## 8.2 Safety String to Ground

The following test procedure applies to the Safety String to Ground.

- **Applicable Codes –** ASME A17.1 section 3.26.1(2.26.9.3)
- **Schematic Location –** 120V – MR SRU board – (7.G)
- **Testing Notes –** This test requires intentionally shorting a 120VAC Bus to REF.

The table below outlines the step-by-step procedure for testing the Safety String to Ground.

*Table 24: Safety String to Ground Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure all Safety String contacts are closed. |
| **Procedure** | - Place a jumper from 120 to Ground. |
| **Expected Results** | - Either the onboard fuse will open while the short is present or the breaker will open. |
| **Revert** | **Hardware**<br>- Disconnect the jumper from 120 to Ground.<br>- Reset the circuit breaker or power cycle the MR board. |

# 9 Battery Lowering Device

The following test procedure applies to the Battery Lowering Device (BLD).

- **Applicable Codes –** ASME A17.1 section 3.26.10
- **Schematic Location –** Battery Lowering Device (IN1 & O24) – Main Power Distribution section – (7.F); Main Disconnect Switch – Main Power Distribution section – (1.B)
- **Testing Notes –** Ensure the batteries have been fully charged for at least 24 hours before starting any testing procedures.

The table below outlines the step-by-step procedure for testing the BLD.

*Table 25: Battery Lowering Device Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Verify that the BLD is wired correctly by matching the wires to the job-specific information.<br>- Disconnect all bypass jumpers.<br>- Install a jumper between IN1 and O24 on the BLD.<br>· Verify that the BLD input is activated. |
| **Procedure** | - Turn OFF the main disconnect switch.<br>· Verify that the BLD output voltages match the values specified in the job documentation. |
| **Expected Results** | - The car should lower to the bottom floor, open the doors, and then close them.<br>· Verify that the Door Open buttons inside the car are functional.<br>· The Hall Call button will not function while testing the BLD. |
| **Revert** | **Hardware**<br>- Disconnect the jumper between IN1 and O24 on the BLD. |

## 10 Stop Ring

The following test procedure applies to the Stop Ring.

- **Applicable Codes –** ASME A17.1 section 3.17.1.2
- **Schematic Location –** NA
- **Testing Notes –** Ensure the Hoistway and car top are clear of any personnel.

The table below outlines the step-by-step procedure for testing the Stop Ring.

*Table 26: Stop Ring Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Toggle the Inspection/Normal switch to the INSPECTION position.<br>**Car**<br>- Position the car at the top landing. |
| **Procedure** | - Navigate to **Main Menu \| Setup \| Miscellaneous \| Bypass Term** Limits.<br>- Set to ON.<br>- Navigate to **Setup \| Speeds \| Inspection Speed**.<br>- Set the speed to a value lower than the Contract speed so to activate only the UPL valves.<br>- Press and hold the Enable and Up buttons and slowly run the car up onto Stop Ring. |
| **Expected Results** | - Verify that only the UPL valve is active and observe the relief pressure. |
| **Revert** | - Lower the car back down to the top landing door zone.<br>- Navigate to **Main Menu \| Setup \| Miscellaneous \| Bypass Term Limits.**<br>- Set to OFF.<br>- Restore the inspection speed to its **original value** if it was changed.<br>- Place the car back in Normal operation. |

# 11 Low Oil / Low Pressure

The sections below outline the test procedures related to Low Oil / Low Pressure.

## 11.1 Low Oil

The following test procedure applies to the Low Oil.

- **Applicable Codes –** ASME A17.1 section 3.26.9
- **Schematic Location –** Low Oil input– MR SRU board – input on J12, Expansion board of MR SRU – one of the inputs, Riser board (occasionally, in the case of simplex job) – one of the inputs; DIP A1 – MR SRU board – (6.D)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Low Oil.

*Table 27: Low Oil Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | - NA |
| **Procedure** | - Navigate to **Main Menu \| Debug \| Enter Car Calls**.<br>- Enter a Car Call above the bottom landing.<br>- Disconnect the wire going to the Low Oil input.<br>  · This can be done while the car is moving or stationary at the top landing. |
| **Expected Results** | - The car should move down to the bottom landing.<br>- The doors should fully open and then close within 15 seconds.<br>- The controller should issue a Low Oil fault. |
| **Revert** | **Hardware**<br>- Reconnect the wire to the Low Oil input.<br>- Turn DIP A1 ON.<br>- Turn DIP A1 OFF. |

## 11.2 Low Oil Protection / MLT

The following test procedure applies to the Low Oil Protection / MLT.

- **Applicable Codes –** ASME A17.1 section 3.26.9
- **Schematic Location –** DIP A1 – MR SRU board – (6.D)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Low Oil Protection / MLT.

*Table 28: Low Oil Protection / MLT Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software**<br>- Change the value of the Max Runtime parameter (08-0131) to 5. |
| **Procedure** | - Navigate to **Main Menu \| Debug \| Enter Car Calls**.<br>- Enter a Car Call above the bottom landing. |
| **Expected Results** | - While the car is moving, it should enter Low Oil mode and move down to the bottom landing.<br>- The controller should issue a Low Oil MLT fault. |
| **Revert** | **Hardware**<br>- Turn DIP A1 ON.<br>- Turn DIP A1 OFF. |

### 11.3 High Oil

The following test procedure applies to the High Oil.

- **Applicable Codes –** ASME A17.1 section 3.26.6.5
- **Schematic Location –** Low Oil input– MR SRU board – input on J12, Expansion board of MR SRU – one of the inputs, Riser board (occasionally, in the case of simplex job) – one of the inputs; DIP A1 – MR SRU board – (6.D)
- **Testing Notes –** The High Oil and the Low Oil should be connected in series

The table below outlines the step-by-step procedure for testing the High Oil.

*Table 29: High Oil Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | - NA |
| **Procedure** | - Navigate to **Main Menu \| Debug \| Enter Car Calls**.<br>- Enter a Car Call above the bottom landing.<br>- Disconnect the wire going to the Low Oil input.<br>· This can be done while the car is moving or stationary at the top landing. |
| **Expected Results** | - The car should move down to the bottom landing.<br>- The doors should fully open and then close within 15 seconds.<br>- The controller should issue a Low Oil fault. |
| **Revert** | **Hardware**<br>- Reconnect the wire to the Low Oil input.<br>- Turn DIP A1 ON.<br>- Turn DIP A1 OFF. |

### 11.4 Low Pressure

The following test procedure applies to the Low Pressure.

- **Applicable Codes –** ASME A17.1 section 3.26.8

- **Schematic Location –** Low Pressure input– MR SRU board – input on J12, Expansion board of MR SRU – one of the inputs, Riser board (occasionally, in the case of simplex job) – one of the inputs
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Low Pressure.

*Table 30: Low Pressure Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | - NA |
| **Procedure** | - Navigate to **Main Menu \| Debug \| Enter Car Calls**.<br>- Enter a Car Call above the bottom landing.<br>- Disconnect the wire going to the Low Pressure input.<br>· This can be done while the car is moving or stationary at the top landing. |
| **Expected Results** | - The car should stop.<br>· If the car stops in the door zone, the doors can be opened using the Door Open button.<br>- The controller should issue a Low Pressure fault. |
| **Revert** | **Hardware**<br>- Reconnect the wire to the Low Pressure input. |

## 11.5 Pressure Test

The following test procedure applies to the Pressure Test.

- **Applicable Codes –** ASME A17.1 sections 2.25.3 and 3.17.1.2
- **Schematic Location –** NA
- **Testing Notes –** The pressure test ensures the motor's Bypass Valve and Stop Ring operate normally

The table below outlines the step-by-step procedure for testing the Pressure Test.

*Table 31: Pressure Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Car**<br>- Ensure the Hoistway and the car top are clear of any personnel.<br>- Position the car at the top landing.<br><br>**Hardware**<br>- Toggle the Inspection/Normal switch to the INSPECTION position. |
| **Procedure** | - Navigate to **Main Menu \| Setup \| Miscellaneous \| Bypass Term Limits**.<br>- Set to ON.<br>- Press and hold the Enable and Up buttons and slowly run the car up onto Stop Ring. |
| **Expected Results** | - The car should stop at the Stop Ring. |
| **Revert** | **Software** |

- Navigate to **Main Menu | Setup | Miscellaneous | Bypass Term Limits**.
- Set to OFF.

**Hardware**

- Toggle the Inspection/Normal switch to the NORMAL position.

## 12 Hydro Rupture Setup

The following steps apply to the Hydro Rupture Setup.

- **Applicable Codes –** ASME A17.1 section 3.19.3.3.1
- **Schematic Location –** NA
- **Testing Notes –** (1) This test can be performed either in Inspection Mode or Normal Mode. (2) Setup and adjust the Rupture Valve while the car is moving at the highest speed possible down a multi-run floor. (3) The controller may exhibit a Low Pressure fault as a result of this test.

The table below outlines the step-by-step procedure for the Hydro Rupture Setup.

*Table 32: Hydro Rupture Setup*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Contract Speed < 150 FPM:**<br>- Increase Inspection speed to 150 FPM by navigating to **Main Menu \| Setup \| Speeds \| Inspection Speed**.<br>- Position the car above the bottom landing.<br>- Toggle the Inspection/Normal switch to the INSPECTION position.<br><br>**Contract Speed < 150 FPM:**<br>- Toggle the Inspection/Normal switch to the NORMAL position. |
| **Procedure** | **Inspection Mode:**<br>- Press and hold the Enable and Down buttons to run the car in Inspection mode.<br><br>**Normal Mode:**<br>- Place Car Call by navigating to **Man Menu \| Debug \| Enter Car Calls**. |
| **Expected Results** | - NA |
| **Revert** | - NA |

# 13 Emergency Operation

The sections below outline the test procedures related to Emergency Operation.

## 13.1 Firefighter Emergency Operation

The sections below outline the Firefighter Emergency Operation (FEO) test procedures.

### 13.1.1 Firefighter Emergency Operation Interruption of Power

The following test procedure applies to the FEO Interruption of Power.

- **Applicable Codes –** ASME A17.1 section 3.27 (2.27.3.4)
- **Schematic Location –** NA
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the FEO Interruption of Power.

*Table 33: Firefighter Emergency Operation Interruption of Power Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | - NA |
| **Procedure** | - Recall the car using Phase I, the run it car using Phase II operation to verify functionality.<br>- Reset the main line power. |
| **Expected Results** | - The car should remain in FEO with the correct phase and position. |
| **Revert** | **Hardware**<br>- Reset FEO using the Lobby key switch. |

### 13.1.2 Firefighter Emergency Operation Phase I and Battery Lowering Device

The following test procedure applies to the FEO Phase I and BLD.

- **Applicable Codes –** ASME A17.1 section 3.27.2
- **Schematic Location –** Battery Power input feeder– MRU SRU board – input on J12
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the FEO Phase I and BLD.

*Table 34: Firefighter Emergency Operation Phase I and Battery Lowering Device Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software**<br>- Program an input to Batter Power by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**. |

| | |
|---|---|
| **Procedure** | - Enter a Car Call to any landing away from the FEO Main Recall landing by navigating to **Main Menu \| Debug \| Enter Car Calls.**<br>- Set Hoistway Smoke to Main by navigating to **Main Menu \| Setup \| Fire \| Hoistway Smoke \| Main or Alt**.<br>- Disconnect the power.<br>- Set the Smoke HA to OFF. |
| **Expected Results** | - The car should move to the Fire Recall floor.<br>· Press the DOB – the car doors should open. |
| **Revert** | - Restore power. |

### 13.1.3 Firefighter Emergency Operation Phase II and Battery Lowering Device

The following test procedure applies to the FEO Phase II and BLD.

- **Applicable Codes –** ASME A17.1 section 3.27.4
- **Schematic Location –** Battery Power input feeder– MRU SRU board – input on J12
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the FEO Phase II and BLD.

*Table 35: Firefighter Emergency Operation Phase II and Battery Lowering Device Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Software**<br>- Program an input to Batter Power by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**.<br>- Set the Fire Recall floor to a floor above the bottom landing by navigating to **Main Menu \| Setup \| Fire \| Main Recall \| Floor**. |
| **Procedure** | - Place the car on FEO II.<br>- Press the DCB until the doors fully close.<br>- Place a Car Call to a landing above the Main Recall floor by navigating to **Main Menu \| Debug \| Enter Car Calls.**<br>- Immediately disconnect the power. |
| **Expected Results** | - The car should stop.<br>· Place a Car Call below the current landing and open the doors. |
| **Revert** | - Restore power.<br>- Reset FEO using the Lobby key switch. |

### 13.1.4 Shorting Electrical Equipment on the Hoistway Landing Side

The following test procedure applies to the Shorting Electrical Equipment on the Hoistway Landing Side.

- **Applicable Codes –** ASME A17.1 section 3.27 (2.27.3.3.6)
- **Schematic Location –** 24VDC Supply – MR power supply – (0.B-1.B), CT power supply (0.B-1.B); H24 & REF – Hall Network section – (0-2.H-I)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Shorting Electrical Equipment on the Hoistway Landing Side.

*Table 36: Shorting Electrical Equipment on the Hoistway Landing Side Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | - NA |
| **Procedure** | - Activate FEO Phase II.<br>- Using a jumper wire, connect the positive power terminal (H24), Up Button (UB), and Down Button (DB) to the REF / Door Frame. |
| **Expected Results** | - H24 to REF DC voltage should read 0VDC.<br>- The car should continue to operate on FEO Phase II Operation. |
| **Revert** | - Disconnect the jumper between H24, UB, DB and REF / Door Frame.<br>- Reset H24 breaker. |

## 13.2 Phase I under Special Conditions

The sections below outline the Phase I under Special Conditions test procedures.

### 13.2.1 Phase I Emergency Recall Operation After Device Actuation

The following sections describe the Phase I Emergency Recall Operation After Device Actuation tests.

#### 13.2.1.1 Above the Fire Recall Floor on Battery Power

The following test procedure applies to the Phase I Emergency Recall Operation After Device Actuation (Above the Fire Recall Floor on Battery Power).

- **Applicable Codes –** ASME A17.1 section 3.27.1
- **Schematic Location –** Battery Power input feeder– MRU SRU board – input on J12
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Phase I Emergency Recall Operation After Device Actuation (Above the Fire Recall Floor on Battery Power).

*Table 37: Phase I Emergency Recall Operation After Device Actuation (Above the Fire Recall Floor on Battery Power) Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Batter Power by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**.<br>- Set the Fire Recall floor to any middle floor by navigating to **Main Menu \| Setup \| Fire \| Main Recall \| Floor**.<br><br>**Car** |

| | |
|---|---|
| | - Position the car at the top landing. |
| **Procedure** | - Activate the Battery Power input.<br>· The car should start moving downwards.<br>- While the car is still above the Fire Recall floor, rotate the Fire Recall key switch to the ON position. |
| **Expected Results** | - The car should move to the Fire Recall floor.<br>- The doors should open on arrival and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |
| **Revert** | - Deactivate the Battery Power input.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

#### 13.2.1.2 Above the Fire Recall Floor on Low Oil

The following test procedure applies to the Phase I Emergency Recall Operation After Device Actuation (Above the Fire Recall Floor on Low Oil).

- **Applicable Codes –** ASME A17.1 section 3.27.1
- **Schematic Location –** Low Oil input– MR SRU board – input on J12, Expansion board of MR SRU – one of the inputs, Riser board (occasionally, in the case of simplex job) – one of the inputs; DIP A1 – MR SRU board – (6.D)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Phase I Emergency Recall Operation After Device Actuation (Above the Fire Recall Floor on Low Oil).

*Table 38: Phase I Emergency Recall Operation After Device Actuation (Above the Fire Recall Floor on Low Oil) Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Low Oil by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**.<br>- Set the Fire Recall floor to any middle floor by navigating to **Main Menu \| Setup \| Fire \| Main Recall \| Floor**.<br><br>**Car**<br>- Position the car at the top landing. |
| **Procedure** | - Deactivate the Low Oil input.<br>· The car should start moving downwards.<br>- While the car is still above the Fire Recall floor, rotate the Fire Recall key switch to the ON position. |
| **Expected Results** | - The car should move to the Fire Recall floor.<br>- The doors should open on arrival and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |

| | |
|---|---|
| **Revert** | - Activate the Low Oil input.<br>- Toggle DIP A1 from ON to OFF.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

#### 13.2.1.3 Below the Fire Recall Floor on Battery Power

The following test procedure applies to the Phase I Emergency Recall Operation After Device Actuation (Below the Fire Recall Floor on Battery Power).

- **Applicable Codes –** ASME A17.1 section 3.27.1
- **Schematic Location –** Battery Power input feeder– MRU SRU board – input on J12
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Phase I Emergency Recall Operation After Device Actuation (Below the Fire Recall Floor on Battery Power).

*Table 39: Phase I Emergency Recall Operation After Device Actuation (Below the Fire Recall Floor on Battery Power) Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Batter Power by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**.<br>- Set the Fire Recall floor to any middle floor by navigating to **Main Menu \| Setup \| Fire \| Main Recall \| Floor**.<br><br>**Car**<br>- Position the car at the top landing. |
| **Procedure** | - Activate the Battery Power input.<br>· The car should start moving downwards.<br>- While the car is below the Fire Recall floor, rotate the Fire Recall key switch to the ON position. |
| **Expected Results** | - The car should move to the nearest landing below its current position.<br>- The doors should open on arrival and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |
| **Revert** | - Deactivate the Battery Power input.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

#### 13.2.1.4 Below the Fire Recall Floor on Low Oil

The following test procedure applies to the Phase I Emergency Recall Operation After Device Actuation (Below the Fire Recall Floor on Low Oil).

- **Applicable Codes –** ASME A17.1 section 3.27.1
- **Schematic Location –** Low Oil input– MR SRU board – input on J12, Expansion board of MR SRU – one of the inputs, Riser board (occasionally, in the case of simplex job) – one of the inputs; DIP A1 – MR SRU board – (6.D)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Phase I Emergency Recall Operation After Device Actuation (Below the Fire Recall Floor on Low Oil).

*Table 40: Phase I Emergency Recall Operation After Device Actuation (Below the Fire Recall Floor on Low Oil) Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Low Oil by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**.<br>- Set the Fire Recall floor to any middle floor by navigating to **Main Menu \| Setup \| Fire \| Main Recall \| Floor**.<br><br>**Car**<br>- Position the car at the top landing. |
| **Procedure** | - Deactivate the Low Oil input.<br>· The car should start moving downwards.<br>- While the car is below the Fire Recall floor, rotate the Fire Recall key switch to the ON position. |
| **Expected Results** | - The car should move to the nearest landing below its current position.<br>- The doors should open on arrival and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |
| **Revert** | - Activate the Low Oil input.<br>- Toggle DIP A1 from ON to OFF.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

### 13.2.2 Phase I Emergency Recall Operation Prior to Device Actuation

The following sections describe the Phase I Emergency Recall Operation Prior to Device Actuation tests.

#### 13.2.2.1 Above the Fire Recall Floor on Battery Power

The following test procedure applies to the Phase I Emergency Recall Operation Prior to Device Actuation (Above the Fire Recall Floor on Battery Power).

- **Applicable Codes –** ASME A17.1 section 3.27.2
- **Schematic Location –** Battery Power input feeder– MRU SRU board – input on J12

- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Phase I Emergency Recall Operation Prior to Device Actuation (Above the Fire Recall Floor on Battery Power).

*Table 41: Phase I Emergency Recall Operation Prior to Device Actuation (Above the Fire Recall Floor on Battery Power) Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Batter Power by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**.<br>- Set the Fire Recall floor to any middle floor by navigating to **Main Menu \| Setup \| Fire \| Main Recall \| Floor**.<br><br>**Car**<br>- Position the car at the top landing. |
| **Procedure** | - Rotate the Fire Recall key switch to the ON position.<br>· The car should start moving towards the Fire Recall floor.<br>- While the car is still above the Fire Recall floor, activate the Battery Power input. |
| **Expected Results** | - The car should move to the Fire Recall floor.<br>- The doors should open on arrival and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |
| **Revert** | - Deactivate the Battery Power input.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

#### 13.2.2.2 Above the Fire Recall Floor on Low Oil

The following test procedure applies to the Phase I Emergency Recall Operation Prior to Device Actuation (Above the Fire Recall Floor on Low Oil).

- **Applicable Codes –** ASME A17.1 section 3.27.2

- **Schematic Location –** Low Oil input– MR SRU board – input on J12, Expansion board of MR SRU – one of the inputs, Riser board (occasionally, in the case of simplex job) – one of the inputs; DIP A1 – MR SRU board – (6.D)

- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Phase I Emergency Recall Operation Prior to Device Actuation (Above the Fire Recall Floor on Low Oil).

*Table 42: Phase I Emergency Recall Operation Prior to Device Actuation (Above the Fire Recall Floor on Low Oil) Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Low Oil by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**.<br>- Set the Fire Recall floor to any middle floor by navigating to **Main Menu \| Setup \| Fire \| Main Recall \| Floor**.<br><br>**Car**<br>- Position the car at the top landing. |
| **Procedure** | - Rotate the Fire Recall key switch to the ON position.<br>· The car should start moving towards the Fire Recall floor.<br>- While the car is still above the Fire Recall floor, deactivate the Low Oil input. |
| **Expected Results** | - The car should move to the Fire Recall floor.<br>- The doors should open on arrival and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |
| **Revert** | - Activate the Low Oil input.<br>- Toggle DIP A1 from ON to OFF.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

#### 13.2.2.3 Below the Fire Recall Floor on Battery Power

The following test procedure applies to the Phase I Emergency Recall Operation Prior to Device Actuation (Below the Fire Recall Floor on Battery Power).

- **Applicable Codes –** ASME A17.1 section 3.27.2
- **Schematic Location –** Battery Power input feeder– MRU SRU board – input on J12
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Phase I Emergency Recall Operation Prior to Device Actuation (Below the Fire Recall Floor on Battery Power).

*Table 43: Phase I Emergency Recall Operation Prior to Device Actuation (Below the Fire Recall Floor on Battery Power) Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software** |

| | |
|---|---|
| | - Program an input to Batter Power by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**.<br>- Set the Fire Recall floor to any middle floor by navigating to **Main Menu \| Setup \| Fire \| Main Recall \| Floor**.<br><br>**Car**<br>- Position the car at the bottom landing. |
| **Procedure** | - Rotate the Fire Recall key switch to the ON position.<br>· The car should start moving towards the Fire Recall floor.<br>- While the car is below the Fire Recall floor, activate the Battery Power input. |
| **Expected Results** | - The car should move to the nearest landing below its current position.<br>- The doors should open on arrival and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |
| **Revert** | - Deactivate the Battery Power input.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

#### 13.2.2.4 Below the Fire Recall Floor on Low Oil

The following test procedure applies to the Phase I Emergency Recall Operation Prior to Device Actuation (Below the Fire Recall Floor on Low Oil).

- **Applicable Codes –** ASME A17.1 section 3.27.1
- **Schematic Location –** Low Oil input– MR SRU board – input on J12, Expansion board of MR SRU – one of the inputs, Riser board (occasionally, in the case of simplex job) – one of the inputs; DIP A1 – MR SRU board – (6.D)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Phase I Emergency Recall Operation Prior to Device Actuation (Below the Fire Recall Floor on Low Oil).

*Table 44: Phase I Emergency Recall Operation Prior to Device Actuation (Below the Fire Recall Floor on Low Oil) Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Low Oil by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**.<br>- Set the Fire Recall floor to any middle floor by navigating to **Main Menu \| Setup \| Fire \| Main Recall \| Floor**.<br><br>**Car**<br>- Position the car at the bottom landing. |
| **Procedure** | - Rotate the Fire Recall key switch to the ON position.<br>· The car should start moving towards the Fire Recall floor. |

| | |
|---|---|
| | - While the car is below the Fire Recall floor, deactivate the Low Oil input. |
| **Expected Results** | - The car should move to the nearest landing below its current position.<br>- The doors should open on arrival and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |
| **Revert** | - Activate the Low Oil input.<br>- Toggle DIP A1 from ON to OFF.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

### 13.2.3 Device Actuation at Recall Level on Battery Power

The following test procedure applies to the Device Actuation at Recall Level on Battery Power.

- **Applicable Codes –** ASME A17.1 section 3.27.3
- **Schematic Location –** Battery Power input feeder– MRU SRU board – input on J12; In Car Fire Lamp output – CT SRU board – (4.G); Fire Lobby Lamp output – Riser board; FP1 Lamp output – COP SRU board – (4.G)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Device Actuation at Recall Level on Battery Power.

*Table 45: Device Actuation at Recall Level on Battery Power Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Batter Power by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**. |
| **Procedure** | - Rotate the Fire Recall key switch to the ON position.<br>· The car should recall to the Fire Recall floor and the doors should remain open indefinitely.<br>· Verify that the Fire Lamp is solid.<br>- Activate the Battery Power input. |
| **Expected Results** | - The doors should open and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |
| **Revert** | - Deactivate the Battery Power input.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

### 13.2.4 Device Actuation at Recall Level on Low Oil

The following test procedure applies to the Device Actuation at Recall Level on Low Oil.

- **Applicable Codes –** ASME A17.1 section 3.27.3

- **Schematic Location –** Low Oil input– MR SRU board – input on J12, Expansion board of MR SRU – one of the inputs, Riser board (occasionally, in the case of simplex job) – one of the inputs; DIP A1 – MR SRU board – (6.D); In Car Fire Lamp output – CT SRU board – (4.G); Fire Lobby Lamp output – Riser board; FP1 Lamp output – COP SRU board – (4.G)

- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Device Actuation at Recall Level on Low Oil.

*Table 46: Device Actuation at Recall Level on Low Oil Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Low Oil by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**. |
| **Procedure** | - Rotate the Fire Recall key switch to the ON position.<br>· The car should recall to the Fire Recall floor and the doors should remain open indefinitely.<br>· Verify that the Fire Lamp is solid.<br>- Deactivate the Low Oil input. |
| **Expected Results** | - The doors should open on arrival and then close within 15 seconds.<br>· Press the DOB – the doors should open and close within a few seconds. |
| **Revert** | - Activate the Low Oil input.<br>- Toggle DIP A1 from ON to OFF.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

## 13.3 Phase II under Special Conditions

The sections below outline the Phase II under Special Conditions test procedures.

### 13.3.1 Device Actuation with Phase II Emergency In-Car Operation in Effect on Battery Power

The following test procedure applies to the Device Actuation with Phase II Emergency In-Car Operation in Effect on Battery Power.

- **Applicable Codes –** ASME A17.1 section 3.27.4

- **Schematic Location –** Battery Power input feeder– MR SRU board – input on J12; In Car Fire Lamp output – CT SRU board – (4.G); Fire Lobby Lamp output – Riser board

- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Device Actuation with Phase II Emergency In-Car Operation in Effect on Battery Power.

*Table 47: Device Actuation with Phase II Emergency In-Car Operation in Effect on Battery Power Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Batter Power by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**. |
| **Procedure / Expected Results** | - Rotate the Fire Recall key switch to the ON position.<br>· The car should recall to the Fire Recall floor.<br>- Rotate the Fire II Recall key switch to the ON position<br>· The car should enter Fire Phase II operation.<br>- Press the DCB until the doors are fully closed.<br>- Place a Car Call to the top floor.<br>- While the car is moving upwards, activate the Battery Power input.<br>· The car should immediately come to a stop and should not reattempt to move.<br>· Verify that the Car Call was cleared.<br>· Verify that any Car Call placed to any floor above the current floor does not get latched.<br>- Place a Car Call to any floor below the current floor.<br>· The car should service the Car Call.<br>- Press the DOB until the doors are fully open.<br>- Press the DCB until the doors are fully closed.<br>- Deactivate the Battery Power input.<br>· Verify that the Fire Lamp is solid.<br>- Place a Car Call to the top floor.<br>· The car should go to the top floor.<br>- Place a Car Call to the bottom floor.<br>- While the car is moving towards the bottom floors, active the Battery Power input.<br>· The car should immediately come to a stop and should not reattempt to move.<br>· Verify that the Car Call was cleared.<br>- Place a Car Call to any floor below the current floor.<br>· The car should service the Car Call.<br>- Press the DOB until the doors are fully open.<br>- Press the DCB until the doors are fully closed.<br>- Deactivate the Battery Power input.<br>- Place a Car Call to the Fire Recall floor (if different from the current floor).<br>· The car should move to the Fire Recall floor.<br>- Press the DOB until the doors fully open |
| **Revert** | - Deactivate the Battery Power input.<br>- Exit Fire II by rotating the Fire II key switch to the OFF position.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

### 13.3.2 Device Actuation with Phase II Emergency In-Car Operation in Effect on Low Oil

The following test procedure applies to the Device Actuation with Phase II Emergency In-Car Operation in Effect on Low Oil.

- **Applicable Codes –** ASME A17.1 section 3.27.4
- **Schematic Location –** Low Oil input– MR SRU board – input on J12, Expansion board of MR SRU – one of the inputs, Riser board (occasionally, in the case of simplex job) – one of the inputs; DIP A1 – MR SRU board – (6.D); In Car Fire Lamp output – CT SRU board – (4.G); Fire Lobby Lamp output – Riser board
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Device Actuation with Phase II Emergency In-Car Operation in Effect on Low Oil.

*Table 48: Device Actuation with Phase II Emergency In-Car Operation in Effect on Low Oil Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Ensure the Inspection/Normal switch is set to the NORMAL position.<br><br>**Software**<br>- Program an input to Low Oil by navigating to **Main Menu \| Setup \| Setup I/O \| Setup Input**. |
| **Procedure / Expected Results** | - Rotate the Fire Recall key switch to the ON position.<br>· The car should recall to the Fire Recall floor.<br>- Rotate the Fire II Recall key switch to the ON position<br>· The car should enter Fire Phase II operation.<br>- Press the DCB until the doors are fully closed.<br>- Place a Car Call to the top floor.<br>- While the car is moving upwards, deactivate the Low Oil input.<br>· The car should immediately come to a stop and should not reattempt to move.<br>· Verify that the Car Call was cleared.<br>· Verify that any Car Call placed to any floor above the current floor does not get latched.<br>- Place a Car Call to any floor below the current floor.<br>· The car should service the Car Call.<br>- Press the DOB until the doors are fully open.<br>- Press the DCB until the doors are fully closed.<br>- Activate the Low Oil input.<br>- Toggle DIP A1 from ON to OFF.<br>· Verify that the Fire Lamp is solid.<br>- Place a Car Call to the top floor.<br>· The car should go to the top floor.<br>- Place a Car Call to the bottom floor.<br>- While the car is moving towards the bottom floors, deactivate the Low Oil input.<br>· The car should immediately come to a stop and should not reattempt to move. |

| | |
|---|---|
| | · Verify that the Car Call was cleared.<br>- Place a Car Call to any floor below the current floor.<br>· The car should service the Car Call.<br>- Press the DOB until the doors are fully open.<br>- Press the DCB until the doors are fully closed.<br>- Activate the Low Oil input.<br>- Place a Car Call to the Fire Recall floor (if different from the current floor).<br>· The car should move to the Fire Recall floor.<br>- Press the DOB until the doors fully open |
| **Revert** | - Activate the Low Oil input.<br>- Toggle DIP A1 from ON to OFF.<br>- Exit Fire II by rotating the Fire II key switch to the OFF position.<br>- Reset FEO using the Lobby key switch after the car has recalled to the Fire Recall floor. |

## 13.4 Emergency Power

The sections below outline the Emergency Power test procedures.

### 13.4.1 One Elevator at a Time on Emergency Power

The following test procedure applies to the One Elevator at a Time on Emergency Power.

- **Applicable Codes –** ASME A17.1 section 3.27 (2.27.2)
- **Schematic Location –** Select Car X – Riser Board (RB2)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the One Elevator at a Time on Emergency Power.

*Table 49: One Elevator at a Time on Emergency Power Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Set the Emergency Power Selector switch to the AUTOMATIC position. |
| **Procedure** | - Start the emergency generator. |
| **Expected Results** | - Cars should proceed to the designated level one at a time, based on availability.<br>- The car with the lowest index number should be placed into service.<br>- Adjusting the selector switch should take the current selected car out of service at the next available floor and place the newly selected car into service. |
| **Revert** | - Restore normal building power. |

### 13.4.2 All Elevators at the Same Time on Emergency Power

The following test procedure applies to the All Elevators at the Same Time on Emergency Power.

- **Applicable Codes –** ASME A17.1 section 3.27 (2.27.2)

- **Schematic Location –** NA
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the All Elevators at the Same Time on Emergency Power.

*Table 50: All Elevators at the Same Time on Emergency Power Test*

| Phase | Testing Procedure | |
|---|---|---|
| **Setup** | - | NA |
| **Procedure** | - | Start the emergency generator. |
| **Expected Results** | - | All cars should operate normally, and the Emergency Power Operation lamp should illuminate. |
| **Revert** | - | Restore normal building power. |

## 14 Recycling Operation

The following test procedure applies to the Recycling Operation.

- **Applicable Codes –** ASME A17.1 section 3.26.7
- **Schematic Location –** DIP A3 – MR SRU board – (6.D)
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Recycling Operation.

*Table 51: Recycling Operation Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | **Hardware**<br>- Toggle the Inspection/Normal switch to the NORMAL position.<br>**Car**<br>- Position the car at the bottom landing. |
| **Procedure** | - Navigate to **Main Menu \| Setup \| Hydro \| Jack Resync \| Duration**.<br>- Set the Jack Resync Duration to 10 seconds.<br>- Turn DIP A3 ON.<br>· The car should enter into Normal (Captured) mode.<br>- Place several Car Calls to higher floors.<br>· The car should start servicing the calls.<br>- Trigger the Jack Resync while the Car Calls are being serviced by navigating to **Main Menu \| Setup \| Hydro \| Jack Resync \| Activate Jack Resync**.<br>- Select YES.<br>· The car should continue servicing all latched calls. |
| **Expected Results** | - Once the car services all latched calls with the doors closed, verify that it enters Jack Resync mode and then recalls to the bottom floor.<br>- After the car stops at the bottom floor, confirm that it begins moving toward the pit at Levelling speed (not exceeding 20 FPM) for the duration of 10 seconds specified. Then, ensure the car moves back up to the bottom floor at Levelling speed upon completing the Jack Resync process. |
| **Revert** | **Hardware**<br>- Turn DIP A3 OFF. |

## 15 Direction Counter Trip Reset

The following test procedure applies to the Direction Counter Trip Reset.

- **Applicable Codes –** NA
- **Schematic Location –** NA
- **Testing Notes –** NA

The table below outlines the step-by-step procedure for testing the Direction Counter Trip Reset.

*Table 52: Direction Counter Trip Reset Test*

| Phase | Testing Procedure |
|---|---|
| **Setup** | - NA |
| **Procedure** | **View the Current Value of the Direction Change Counter:**<br>- Navigate to **Main Menu \| Debug \| View Debug Data**.<br>- Select option 030, which displays the Direction Change Counter.<br><br>**Perform the Test:**<br>- Navigate to **Main Menu \| Setup \| Miscellaneous \| Dir. Counter Limit**.<br>- Enter the Access Code (provided by Technical Support).<br>- Set the Direction Counter Limit to 10 increments above the current counter value.<br>- Move the car in various directions, changing direction 10 times, while monitoring the counter.<br>· The Direction Change Counter increments with every change in direction. |
| **Expected Results** | - The car should go out of service after the 10th direction change.<br>· Once the direction counter exceeds the limit, it cannot be reset. |
| **Revert** | - Set a new threshold for the number of direction changes. |