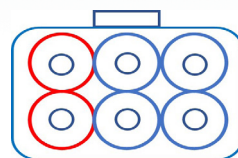
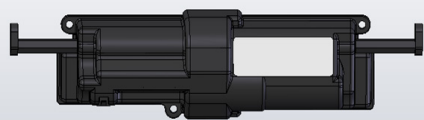


# TRU-BALANCE<sup>®</sup> 4

## Technical Troubleshooting Guide



**QUANTUM<sup>®</sup>**

PROVIDING GREATER INDEPENDENCE

### WARNING!

**A Quantum Rehab Provider or a qualified technician must perform the initial setup of this product and must perform all of the instructions in this manual.**

The symbols below are used throughout this owner's manual and on the power chair to identify warnings and important information. It is very important for you to read them and understand them completely.

### WARNING!

Indicates a potentially hazardous condition/situation. Failure to follow designated procedures can cause either personal injury, component damage, or malfunction. On the product, this icon is represented as a black symbol on a yellow triangle with a black border.

### MANDATORY!

These actions should be performed as specified. Failure to perform mandatory actions can cause personal injury and/or equipment damage. On the product, this icon is represented as a white symbol on a blue dot with a white border.

### PROHIBITED!

These actions are prohibited. These actions should not be performed at any time or in any circumstances. Performing a prohibited action can cause personal injury and/or equipment damage. On the product, this icon is represented as a black symbol with a red circle and a red slash.

## Intended Use

The intended use of this Pride Mobility Products device is to provide mobility assistance to persons limited to a seated position who have the capacity to operate a motorized mobility power chair.

## Regarding Devices for Prescription Use

### WARNING!

**CAUTION!** Federal law restricts this device to sale by or on the order of a physician or other certified personnel licensed by the law of the State (US only) or region in which this personal practices to use or order the use of the device.

*NOTE: These instructions are compiled from the latest specifications and product information available at the time of publication. We reserve the right to make changes as they become necessary. Any changes to our products may cause slight variations between the illustrations and explanations in this manual and the product you have purchased. The latest/current version of this manual is available on our website.*

*NOTE: This product is compliant with WEEE, RoHS, and REACH directives and requirements.*

*NOTE: This product meets IPX4 classification (IEC 660529).*

*NOTE: The Q-Logic 3e Controller and its components are not made with natural rubber latex. Consult with the manufacturer regarding any after-market accessories.*

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**NOTE:** There are more warnings identified and explained in the Consumer Safety that is included with your power chair. Please become familiar with all the warnings and safety information found in the Consumer Safety Guide and refer to this resource often.

Please refer to the TRU-Balance® 4 Basic Operation Instructions and the Consumer Safety Guide included with the power chair prior to making any changes to the pre-programmed parameters of the controller.

 **WARNING!**

A Quantum Rehab provider or a qualified technician are the only personnel authorized to perform adjustments or attempt troubleshooting as explained in this manual.

Always fasten the positioning belt when operating the power chair.

**ADVISORY STATEMENT REGARDING CERTAIN COMPONENTRY INCORPORATED BY THIRD-PARTY MANUFACTURERS INTO FINISHED POWER CHAIRS:** When Quantum Rehab power bases, seating systems, or other components are incorporated into a finished power chair manufactured or assembled by any third party, that third party is responsible to assure the safety, functionality, and legal compliance of the finished power chair. Quantum Rehab makes no representation concerning the safety, functionality, or legal compliance of the finished power chair or its componentry manufactured by a third party. While we make every effort to assure that our components are distributed responsibly, manufacturers, distributors, and consumers are reminded that finished power chairs must comply with a variety of governmental standards and requirements for safety and functionality.

If it is necessary to physically modify a power chair, including the addition of third-party componentry, to accommodate the medical needs of the power chair occupant, a risk assessment in conformance with ISO 14971, as outlined in ISO 7176-19:2022 should be performed.

Changes to power chairs that are likely to affect conformance and risk evaluation include but are not limited to: moving the securement-point brackets; lowering the back-support height; shortening the seat length; adding secondary postural supports that are not firmly attached to the power chair; adding components that have sharp edges (i.e., edges with less than 0.08 in. [2 mm] radius); or any change that compromises the structural integrity of the power chair frame.

## TRU-Balance® 4 Power Positioning System Troubleshooting Guide

This Technical Troubleshooting Guide covers the TRU-Balance 4 Power Positioning System. This guide should assist in the understanding of normal operation and to help diagnose the reasoning if an issue is to occur with the system.

### This guide is divided into four sections:

- Section 1 - TRU-Balance 4 Normal Operation
- Section 2 - TRU-Balance 4 Tilt
- Section 3 - TRU-Balance 4 Power Recline
- Section 4 - TRU-Balance 4 Power Elevating Lift
- Section 5 - TRU-Balance 4 Dual Actuator Articulating Foot Platform

## How to use the Quantum Technical Troubleshooting Guide

This guide is divided into four sections addressing symptoms such as the system not posterior or anterior tilting, actuator feedback defect, and out-of-tolerance error.

Using the Table of Contents, locate the section that best describes your troubleshooting issue. Each section will include a list of symptoms, followed by a error code and finally a troubleshooting procedure to solve the problem.



## Section 1: TRU-Balance 4 Normal Operation

### Switching Motor:

The TRU-Balance 4 Power Positioning System switching motor is the component within the TRU-Balance 4 Seating System that will switch the polarity of the tilt actuator to be able to anterior tilt. The configuration of the switching motor will also indicate to the control system if the seating system is in anterior or posterior tilt.

There are two indicator lights on the switching motor. These lights indicate power going into the switching motor (LED1) which is the left LED light and the other light indicates power going out (LED2) which is the right side LED light.

**NOTE: Left/Right orientations are from the perspective of a user seated in the power chair.**

The TRU-Balance 4 Seating System uses five (5) end switches within the system which can be checked using a programmer. These End Switches are linked directly to the potentiometers within each actuator that allow Positional Feedback. Below is the breakdown of the five (5) end switches and their states when the system is operating normally in the home position.

AM End Switch 2 =	Tilt (Normally "OFF")
AM End Switch 4 =	Recline (Normally "ON")
AM End Switch 6 =	Power Elevating Seat (Normally "OFF")
AM End Switch 8 =	AFP (Articulating Foot Platform Elevate (Normally "OFF")
AM End Switch 10 =	AFP (Articulating Foot Platform Articulate (Normally "OFF")

**NOTE: The end switches may only show these values immediately after a calibration. Any restrictions or a high deceleration rate could cause the seat function to stop before hitting the reference switch. This does not indicate a problem and is part of normal operation.**

- Going into posterior tilt:  
LED2 will light red, LED1 will light green

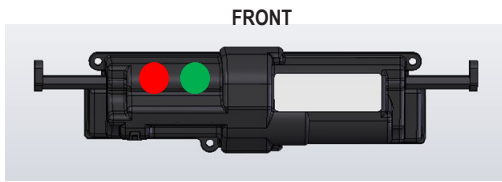


Figure 1. Going into Posterior Tilt

- Tilting to the home position from posterior tilt:  
LED1 will light red, LED2 will light green

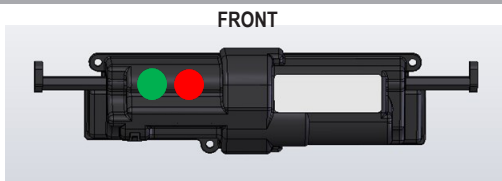


Figure 2. Tilting to home position from posterior tilt

- Tilting into Anterior:  
Both lights red

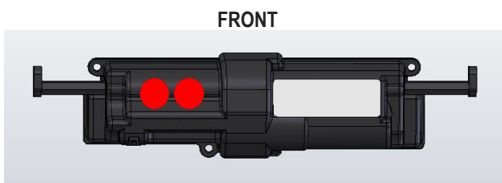


Figure 3. Tilting into Anterior

- Tilting from Anterior Tilt to the home position:  
Both lights green

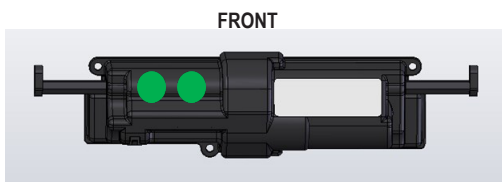


Figure 4. Tilting from Anterior Tilt to home position

**Wiper Voltages:**

These voltages are linked directly to the positional feedback. If any of the following error messages show on the joystick, the best troubleshooting method is to monitor the end switches and the Wiper Voltage for the actuator which is described in the error message.

**Wiper Voltage Ranges:**

The wiper voltage is used in a few different ways for troubleshooting purposes. Below is the breakdown of the Wiper Actuator Voltage for each wiper at the minimum (Min) and maximum (Max) stroke of each:

**NOTE: Min and Max Voltages are approximate.**

Wiper Voltage Ranges	
AM Wiper Voltage Actuator 1 =	Tilt (Posterior tilt: Min V: 0.3 - Max V: 4.1) (Anterior Tilt: Min V: 0.3 - Max V: 3.1)
AM Wiper Voltage Actuator 2 =	Recline (Max V: 3.5 - Min V: 0.3) *Note* Maximum voltage on Recliner Actuator occurs with the back in the upright position)
AM Wiper Voltage Actuator 3 =	Power Lift (Min V: 0.2 - Max V: 4.0)
AM Wiper Voltage Actuator 4 =	AFP Elevate (Min V: 0.2 - Max V: 3.7)
AM Wiper Voltage Actuator 5 =	AFP Articulate (Min V: 0.3 - Max V: 4.9)

## Section II: TRU-Balance 4 Tilt

### Symptoms/Error Codes Troubleshooting

**Symptom:** The seating system will not posterior or anterior tilt. (No error code showing on the joystick).

First, locate and check the switching motor underneath the seat pan. (Reference Normal operation for switching motor for LED light readouts). This will help determine if power is going in and not outputting power or if there isn't power going in at all.

**Troubleshooting:** Switch to the tilt screen and give either a reverse drive command or a forward drive command.

- If LED1 (see figure 4) lights either red or green but LED2 does not light, then the switching motor may need to be replaced.
  - The switching motor is getting power in, but is not outputting power to the rest of the system. This may be due to the slide pins not being in the proper position. Using an 8mm open ended wrench on either side of the switching motor with the seating system in the home position, manually move the switching motor. (See figure 5). The switching motor does not need to move 180-degree turn, just enough to move it the pins slightly and then move back into position.
  - If neither light comes on, then there is no power getting into the switching motor. Continue with the troubleshooting steps below.

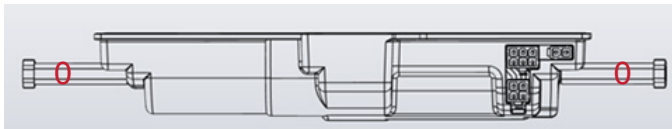


Figure 5. Tool Location for Troubleshooting

The next step will check the wiring and monitor the output of the AAM using one of the Q-Logic 3 Programmers.

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuators
  - AM Actuator 1 Current (A)

Again, make sure the display is on the tilt screen and give either a reverse or forward command to activate the seating.

- If there is not a current reading, then replace the tilt actuator (seating frame).
- If there is a current reading, then replace the AAM.

#### Error Code #150: Tilt actuator feedback defect.

This error code is tied directly into the positional feedback. The potentiometers that are built into the tilt actuator will give these messages if there is an internal failure with those potentiometers. The 4-pin connection that plugs into the AAM over A1 is directly related. However, this code will very rarely flash by itself. It will be in conjunction with Error Message #151.

The best method to troubleshoot whether it is the actuator or the AAM is to monitor the AM Wiper Voltage Actuator 1 using the programmer.

#### Troubleshooting:

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
4. AM Wiper Voltage Actuator 1

When the error message appears, the AM Wiper Voltage for Actuator 1 will be less than the normal reading when in the home position

**NOTE:** See Wiper Voltage Ranges for minimum voltage.

**NOTE:** When there is an error message that appears on the TRU-Balance 4 Power Positioning system, the seating system will go into “Fall Back Mode”. Fall Back mode will disable positional feedback (Memory Positions) and anterior tilt, making the seating system operate as a TRU-Balance 3 Power Positioning System operates.

**NOTE:** If Fall Back Mode appears on the joystick when trying to give a seating command, give a forward command to accept the system going into fall back mode. If the system is in Fall Back mode, it does not effect what parameters can be monitored, so the important part is that the system moves in order to monitor the Wiper Voltage.

Run the tilt actuator for a full cycle. Run from a home position to the most posterior tilt position and then back to the home position.

- If the wiper voltage does not change, there is a feedback failure on the tilt actuator. Replace the seating frame.
- If the voltage does change (increase as the power tilt is tilting back or decreasing while tilting forward), perform an actuator calibration:

**Troubleshooting:**

1. Program Adjustments/Parameter Settings
2. Seat
3. Memory Seating Setup
4. Actuator Calibration (Start)
  - “Start Actuator Feedback Calibration” (Yes)
  - Will need to be confirmed with a forward command on the joystick.

**Error Code #151: Tilt Actuator Feedback out of tolerance.**

This is an error message that has to do with the positional feedback built into the tilt actuator. It is more to detail if the min stroke switch is being closed before the actuator reaches its min stroke. The error message will not appear by itself. It should be troubleshot using the Monitor function within Econ W or a handheld programmer. The best option is to monitor two different parameters, AM Wiper Voltage Actuator 1 and AM End Switch 2

**Troubleshooting:**

1. Monitor
  - Advanced Actuator Module (AM)
    - Actuator Feedback
      - AM Wiper Voltage Actuator 1 (V)
    - End Switches
      - AM End Switch 2

AM End Switch 2	Off
AM Wiper Voltage Actuator 1 (V)	0.371

On the 4-pin harness, depending on which pin going into the AAM from the tilt actuator failed, what is being looked at will vary. Below are the normal operation readings while the seating system is at the home position \*Note\* Wiper Voltage will vary depending on position of the actuator at the time it is monitored.

The readings may vary, here are examples of what can be monitored when this error code is showing:

AM End Switch 2	Off
AM Wiper Voltage Actuator 1 (V)	0.660

- **If the End Switch 2 is off when monitoring and the seating system is in any form of tilt, then there is a failure on the End Switch within the actuator. This will require the seating frame to be replaced.**

AM End Switch 2	On
AM Wiper Voltage Actuator 1 (V)	0.009

When the error message appears, the voltage reading will be less than what is normal minimum voltage (Refer to “Normal Wiper Ranges” for readings). Run the tilt actuator for a full cycle, from a home position to the most posterior tilt position and then back to the home position, and the wiper voltage does not change, then there is a feedback failure on the tilt actuator. Replace the seating frame.

AM End Switch 2	Off
AM Wiper Voltage Actuator 1 (V)	3.972

- **If the monitored values show similar to the values above when the seating system is in the home position, then there is a failure within the tilt actuator. Replace the seating frame.**

**Warning #151: Tilt actuator feedback out of tolerance**

The difference between this warning message and the error message above is that the system will still operate normally (not go into fall back mode). This will mostly happen intermittently. To remedy this warning message, perform an actuator calibration. If this warning message is followed by error message #151, refer to troubleshooting for error message #151.

**Troubleshooting:**

1. Program Adjustments/Parameter Settings
2. Seat
3. Memory Seating Setup
4. Actuator Calibration (Start)
  - “Start Actuator Feedback Calibration” (Yes)
  - This will need to be confirmed with a forward command on the joystick.

**Error Message #152: Tilt Actuator/Anterior Tilt or CAM Lock Defect:**

This error message has to do with either the tilt actuator or the switching motor which changes the system from a posterior tilt to an anterior tilt. The Q-Logic 3 system does not have direct monitoring over the entire tilt actuator or the switching motor. This error message only directs you to a potential problem with the tilt system. Refer to the aforementioned steps within this trouble shooting guide for tilt system diagnostics before proceeding.

The potential failure can be that the tilt actuator feedback is beyond max position. The feedback position is beyond the physical max stroke of the actuator.

**NOTE: If this error occurs while the tilt actuator is moving, then it could be as simple as a calibration. The way to check this is to monitor the Wiper Voltage for the tilt actuator.**

**NOTE: If the CAM Lock partially moves, before showing this error message, check for mechanical interference with may be preventing the tilt actuator from fully moving into the home position.**

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 1 (V)
4. End Switches
  - AM End Switch 2

**POSTERIOR**

AM End Switch 2	On
AM Wiper Voltage Actuator 1 (V)	3.613

With the error message, there will be voltage on the wiper. The voltage may be lower than what it would normally be detected, but if there is voltage, then first perform an Actuator Calibration.

**Troubleshooting:**

1. Parameter Settings/Program Adjustments
2. Seat
3. Anterior/Memory Setup
  - Actuator Calibration (Click "Start")

When the Actuator Calibration is completed, power the chair off and then back on. The simplest way you would be able to determine if the calibration corrected the issue would be to use a memory seat position that the tilt actuator is programmed for and run that memory seat.

This error message will also appear if the seating system goes into anterior tilt. The same parameters will be monitored.

**ANTERIOR**

AM Wiper Voltage Actuator 1 (V)	2.772
AM End Switch 2	On

Ensure that there is voltage on the wiper, if there is, perform an Actuator Calibration first.

- If the error message disappears then the calibration was successful and no further action is needed.
- If the error message continues to show on the joystick once the seating has reached the memory position, continue troubleshooting below.

Next switch to the tilt screen and give either a reverse drive command or a forward drive command.

- If LED1 lights either red or green but LED2 does not light, then the switching motor will need to be replaced. The switching motor is getting power in but is not outputting the power to the rest of the system. Refer to Section 1 TRU-Balance 4 Normal Operation.
- If neither light comes on, then there isn't power getting into the switching motor. Continue with the troubleshooting steps below.

Tilt Max or Min Stroke Switch Defect: The switch which stops the actuator when it reaches the end of the stroke has failed.

**1. Solution:** Replace Seating Frame

Tilt or Cam Lock does not move: There is a potential failure within the tilt system.

1. Refer to the aforementioned steps within this troubleshooting guide for tilt system diagnostics."

**Tilt Actuator Disconnected:** The tilt actuator has somehow become disconnected from the system.

1. Trace the wiring from the AAM to the switching motor, checking the connections and possibly performing continuity checks on the harnesses.
2. If cable is damaged. Replace the Seating Frame
3. If the Actuator has failed. Replace the seating frame
4. If the Switching motor has failed. Replace the switching motor only.



**Error Message #152: Tilt Actuator Disconnected:**

This error message is for when the anterior tilt switch or harness is damaged. In posterior tilt, it will work as designed. This scenario will only come up when the unit goes into anterior tilt. When the error message occurs all the actuators move but the seating system will not go into anterior tilt.

**Troubleshooting:**

1. Tilt the seating system all the way back.
2. Locate the 2-pin connection on the switching motor.
3. That is the anterior tilt switch, unplug it and perform check continuity on the switch.
4. If there is continuity on the 2-pin connection, then replace the switching motor.
5. If there is not continuity on the 2-pin connection, then replace the anterior tilt switch.

**Error Message #153: Tilt Function Error**

The Tilt feedback is not matching the tilt direction. The electronics detect that the voltage being monitored does not match the direction that the tilt should be operating in (polarity). This error message is directly related to the switching motor in the TRU-Balance 4 system.

- **Solution:** Replace Switching Motor.

**NOTE:** This error message can appear if the original error message is #155. Make sure to check the error history using a programmer to determine if the original error message is #153 or #155 and troubleshoot accordingly.

**Anomaly Message #153: Tilt Function Error:**

Anomaly message has to do with the tilt actuator not matching the tilt direction. Since this is an anomaly, it is a message that doesn't happen all the time. The situation is within the switching motor but since it does not happen all the time, it may just need a full cycle from posterior to anterior.

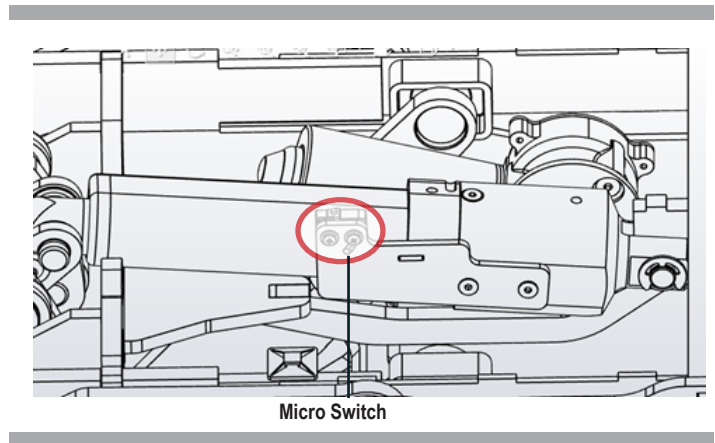
- **Solution:** Run the tilt system a full cycle from posterior to anterior. Observe if at the time the motor is switching from posterior to anterior if the message comes up again. Power cycle unit. Check the cam locks to ensure that nothing impedes the locks from switching from posterior to anterior.
  - If the error message does not show up again, then no additional troubleshooting is needed.
  - If the error message does show on the joystick after the power cycle, then refer to **Section 1: Troubleshooting the Switching Motor.**

**Error #154: Tilt home switch defect:**

The tilt system has a home switch which is an external switch mounted to the tilt actuator. When the tilt system comes forward from posterior or back from anterior it reaches a home position before it goes from anterior to posterior and vice versa. When this error message occurs, the failure is on the external switch which is part of the tilt actuator assembly.

**Troubleshooting:**

1. Navigate to the seat profile on the joystick and posterior tilt the chair all the way back.
2. Locate the micro switch on top of the power tilt actuator (Shown below).



**Figure 6. Home Switch Location**

3. Using a #1 philips screw driver, loosen the two screws that hold the micro switch to the actuator and, if possible, move the switch up so the switch will be triggered sooner.
4. Tighten the two screws back up.
5. Perform a power cycle of the electronics.
6. Bring the seating system back into the home position.
  - If the error message does not appear on the joystick after the adjustment, then no additional troubleshooting is needed.
  - If the error message does appear on the joystick, then replace the seating frame.

**Error #155: Anterior Tilt Switch Defect:**

This error message is directly related to the anterior tilt. When this failure happens, there is a communication failure between the tilt system and 2 pin connection that runs from the seating system into the base. However, this error message will not show on the display until the seating system is in some form of anterior tilt.

**Troubleshooting:**

1. Monitor
2. System
3. General
4. Switch 1

Switch 1 is directly related to the anterior tilt switch. This relates to the power base that the system is in anterior tilt.

- If Switch 1 is off while the system is in anterior tilt, then there is a communication failure within the system.
  - Disconnect the two (2) pin harness that runs from the seating system into the base.
  - On the side that runs to the seating system, set a multimeter to either continuity or the lowest resistance setting on the meter.
  - If there is resistance or continuity on that harness, then reconnect the two (2) pin connector and move down to the PTO harness itself.
  - Remove the rear shroud of the power base and disconnect the PTO harness from the power module.
- If Switch 1 is "On" while the system is in posterior tilt, then replace the PTO harness in the base.
- If the seating system is in posterior tilt and this error message appears, perform an Actuator Calibration.

**Troubleshooting:**

5. Parameter Settings/Program Adjustments
6. Seat
7. Anterior/Memory Setup
  - Actuator Calibration (Click "Start")

This error message could also occur if somehow the calibrated value of the start position is too low. This is a very rare occurrence but if it does happen, perform an Actuator Calibration.

**NOTE: The system will go into fall back mode with this error message. If the power is cycled, then the error message can switch from #155 to #153. Verify this by checking the error history using a programmer to check the original error message. Make sure to use the troubleshooting steps for error code #155 and not #153 in this instance.**

**Section III: TRU-Balance 4 Power Recline****Power Recline Actuator Troubleshooting:****Error Code #156: Recline Actuator Feedback Defect:**

The feedback errors are always tied into one another. If one error message shows, it's very likely that there will be up to 4 error/warnings that will show on the joystick when the system has failed. They will be #156, #157, and #158 all at the same time.

The best method to troubleshoot is to use the programmer. The monitoring values will be different.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 2 (V)
4. End Switches
  - AM End Switch 4

When the system is operating normally.

**NOTE: Wiper Voltage will vary depending on position of the actuator at the time the system is monitored.**

AM End Switch 4	On
AM Wiper Voltage Actuator 2 (V)	3.185

**When this error message is active, wiper voltage will drop to almost zero (0).**

AM End Switch 4	On
AM Wiper Voltage Actuator 2 (V)	0.006

The error message will be directly related to the feedback on the recline actuator. If this error message is active, then the recline actuator will need to be replaced.

**Error Code #157: Recline Actuator Feedback Out of Tolerance.**

This error message will be active in any group of error messages related to the recline actuator. Although it will depend on which of the 4 pins has failed. In this case, like the previous error message #156, End Switch 4 will need to be monitored along with the Wiper Voltage for Actuator 2.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 2 (V)
4. End Switch
  - AM End Switch 4

Values below show when the system is operating normally.

**NOTE: Wiper Voltage will vary depending on position of the actuator at the time the system is monitored.**

AM End Switch 4	On
AM Wiper Voltage Actuator 2 (V)	3.185

Below are the readings for when error message #157 is active.

AM End Switch 4	On
AM Wiper Voltage Actuator 2 (V)	0.028

The monitored information above shows if the wiper is shorted to low or open. If the wiper is open, the system can not monitor the voltage since there isn't a reference point, so it will appear as if the wiper is shorted to low. Depending on outside influences it may not always be a low voltage.

AM End Switch 4	Off
AM Wiper Voltage Actuator 2 (V)	4.134

The monitored information above shows if the wiper is shorted to high

**Warning #157: Recline Actuator Feedback is out of Tolerance.**

This will be mostly an intermittent warning message when this is displayed on the joystick alone. If it does not follow with an error message, then the system may still operate. This warning will also tie into the #157 Error Message: if the warning shows and the error message immediately follows, then it will be a failure of the system.

**Troubleshooting:**

1. Program Adjustment/Parameter Settings
2. Seat
3. Memory Setting Setup
4. Actuator Calibration (Start)
  - Start Actuator Feedback Calibration (Yes)

**NOTE: It will need to be confirmed on the joystick by pushing forward.**

**Error Code #158: Recline Actuator Switch Defect:**

This error message will appear if there is an issue within the 4-pin connection harness coming from the actuator. It is directly related to the feedback of the actuator. This error message can happen in a few different scenarios, however for this error message to appear by itself, the actuator must be moving.

- If the recline actuator is beyond the minimum or maximum position (mechanically beyond the feedback switches within the actuator.)
- When the recline actuator is being run and there isn't a change in the feedback (Actuator is in one position but the feedback doesn't match where it should be in space).
- The minimum switch is still open, but mechanically the actuator is not at the minimum position.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 2 (V)
4. End Switches
  - AM End Switch 4

AM End Switch 4	Off
AM Wiper Voltage Actuator 2 (V)	3.259

While monitoring the AM Wiper Voltage Actuator 2 (V), navigate to the seat profile on the joystick and navigate to the recline. If the option to continue in fall back mode does appear, give a forward drive command to accept. Next, run the power recline actuator and monitor the voltage. The voltage should change and decrease as the power recline is reclining, then return the recline to the home position.

If the voltage decreases while reclining back and increases while returning to home position, then perform an Actuator Calibration. Once complete, cycle power on the power chair.

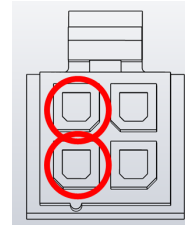
- If the calibration is successful, then the error will disappear.
- If the error message still appears, replace the power recline actuator.

**Troubleshooting Power Recline Errors using a Multi-Meter:**

Some of error codes can also be troubleshoot using a multi-meter. The readings will show differently because the polarity is inverted on the recline actuator. But the setting on the meter and the pins to check are the same.

1. Remove the back shroud of the power recline back.
2. Remove the two (2) screws that hold the AAM onto the center spine.
3. Unplug the 4-pin molex connector that is above A2.

4. Set multimeter to Ohms (If multimeter does not have auto range, set the resistance range to at least 10K)
5. Take readings from of the following pins (pin outs below).



- If the reading is an open or do not get a reading, then replace the recline actuator.
- If there is resistance, of about 0 to 10 kohms, across these two (2) pins, then replace the AAM.



- If the reading is an open or do not get a reading, then replace the recline actuator.
- If there is resistance, of about 0 to 10 kohms, across these two (2) pins, then replace the AAM.

**Mechanical Troubleshooting:**

Power Recline shows input on the joystick but will not physically move.

Keep in mind, this type of malfunction will not show an error message at all. It will act normally on the joystick, it will just not move. This could be a mechanical failure or one of the actuator's internal switches.

This will need to be checked in two different places. The first one would be the 4-pin connector coming off the actuator itself.

**Measuring resistance on the power recline actuator.**

Step 1: Unplug the 2-pin connection which is marked A2.

Step 2: Set multimeter to resistance and take a resistance reading off of the recline actuator.

- If you get a low resistance reading (approximately between 1-3 ohms) on the actuator, replace the AAM.
- If you get an open reading on the actuator, then replace the power recline actuator.

## Section IV: TRU-Balance 4 Power Elevating Lift

### Power Elevating Lift Troubleshooting

#### Error Code #159: Elevate Actuator Feedback Defect

This error message relates directly to the positional feedback on the power elevating lift actuator. Just like any other positional feedback error messages, there will be warnings and errors that display on the joystick at the same time. This message will mostly show with warning #160 (Elevate Actuator Feedback Out of Tolerance). When this error message does appear the joystick, the best method to troubleshoot is monitoring the system.

#### Troubleshooting:

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 3 (V)
4. End Switches
  - AM End Switch 6

When the error message #159 appears on the joystick, the AM Wiper Voltage Actuator 3 will show almost no voltage. This is due to the wiper being shorted to low.

AM End Switch 6	On
AM Wiper Voltage Actuator 3 (V)	0.012

If the wiper voltage shows similar to the above with this error message, then the seating frame will need to be replaced due to a failure within the power lift actuator.

Another scenario is when the power elevate can be elevated up and down normally until it hits the max elevation. This error message will appear along with Error Code #161 Error: Elevate Actuator Switch Defect. Monitor the same functions as above, but the monitored values will be different.

AM End Switch 6	Off
AM Wiper Voltage Actuator 3 (V)	3.393

In this scenario, wiper voltage will be the same, however, it will also turn off End Switch 6. The elevate will operate up but not come back down into the home position. See Error Code #161 below for additional troubleshooting steps.

This error can also occur if the wiper drifts or does not reach the end to trigger the end switch. Again, monitoring the End Switch and Wiper Voltage will show where the problem lies and how to proceed.

#### Troubleshooting:

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 3 (V)
4. End Switches
  - AM End Switch 6

AM End Switch 6	On
AM Wiper Voltage Actuator 3 (V)	3.408

With this error message, there will be voltage on the wiper, but it will be lower than what it would normally be. If there is voltage, then first perform an Actuator Calibration.

#### Troubleshooting:

1. Parameter Settings/Program Adjustments
2. Seat
3. Anterior/Memory Setup
  - Actuator Calibration (Click "Start")

When the Actuator Calibration is completed, power the chair off and then back on. Use a memory seat position that the recline actuator is programmed for and run that memory seat. If there are memory positions programmed, run the power recline actuator a full cycle and verify if the error code goes away.

- If the error message goes away, then the calibration was the only step for repair.
- If the error message continues to appear on the joystick once the seating as reached the memory position, replace the elevate actuator.

**Error Code #160: Elevate Actuator Feedback Out of Tolerance:**

This error message will not display on the joystick without another error message associated with it, but the troubleshooting and monitored values will be different than the previous error messages.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 3 (V)
4. End Switches
  - AM End Switch 6

In normal operation, End Switch 6 is “Off” and the AM Wiper Voltage Actuator 3 is less than 0.5 volts while the power chair is in the home position.

**NOTE: Wiper Voltage will vary depending on position of the actuator at the time it is monitored.**

AM End Switch 6	On
AM Wiper Voltage Actuator 3 (V)	0.311

When monitoring with Error Code #160, either End Switch 6 will stay “Off” and the voltage will drop to almost zero (0) volts (Wiper shorted to low) or End Switch 6 will switch to “On” and the Wiper Voltage will raise up above 4 volts (wiper shorted to high).

AM End Switch 6	On
AM Wiper Voltage Actuator 3 (V)	0.012

AM End Switch 6	Off
AM Wiper Voltage Actuator 3 (V)	4.621

**Warning #160: Elevate Actuator Feedback is Out of Tolerance.**

This will be mostly an intermittent warning message when this appears on the joystick alone. If it does not follow with an error message, then the system may still operate. This warning will also tie into the #160 Error Message. If the warning shows, and the error message immediately follows, then it will be a failure of the system.

**Troubleshooting:**

1. Parameter Settings/Program Adjustments
2. Seat
3. Anterior/Memory Setup
  - Actuator Calibration (Click “Start”
  - “Start Actuator Feedback Calibration” (Yes)

**Error Code #161: Elevate Actuator Switch Defect**

This error message will appear if there is an issue within the 4-pin connection coming off the actuator. It is directly related to the feedback of the actuator. This error message can happen in a few different scenarios, however for this error message to appear by itself, the actuator must be moving.

- If the power elevating lift actuator is beyond the minimum or maximum position (mechanically beyond the feedback switches within the actuator.)
- When the power elevating lift actuator is being run and there isn't a change in the feedback (Actuator is in one position but the feedback doesn't match where it should be in space).
- The minimum switch is still open, but mechanically the actuator is not at the minimum position.

**Troubleshooting:**

1. Monitor
  2. Advanced Actuator Module (AM)
  3. Actuator Feedback
    - AM Wiper Voltage Actuator 3 (V)
  4. End Switches
    - AM End Switch 6

AM End Switch 6	Off
AM Wiper Voltage Actuator 3 (V)	0.530

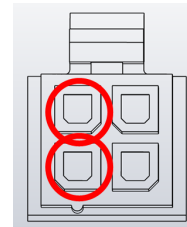
While monitoring the AM Wiper Voltage Actuator 3 (V), navigate to the seat profile on the joystick and navigate to the elevate function. (If the option to continue in fall back mode does appear, give a forward drive command to accept). Next run the power lift actuator and monitor the voltage. The voltage should change and increase as the power lift is elevating, and decrease as the power lift returns to the home position.

- If the voltage increases while elevating and decreases while returning to home position, then perform an Actuator Calibration. Once complete, cycle power on the power chair.
- If the calibration is successful, then the error will go away.
- If the error message still appears, replace the seating frame.
- If the power lift actuator will only go in one direction (normally will elevate up but not down), then there is a mechanical failure in the signal switch within the actuator. The seating frame would need to be replaced due to this failure.

**Troubleshooting Power Lift Errors using a Multi-Meter:**

Some of error codes can also be troubleshot using a multi-meter, in the event a programmer is not available.

1. Remove the back shroud of the power recline back.
2. Remove the two screws that hold the AAM onto the center spine.
3. Unplug the 4-pin molex connector that is above A3.
4. Set multimeter to Ohms (If multimeter does not have auto range, set the resistance range to at least 10K).
5. Take readings from the following pins (Refer to pin outs below)..



- If the reading is an open or there is no reading at all, then replace the elevate actuator.
- If there is resistance, of about 0 to 10 kohms, across these two (2) pins, then replace the AAM.



- If the reading is an open or there is no reading at all, then replace the elevate actuator.
- If there is resistance, of about 0 to 10 kohms, across these two (2) pins, then replace the AAM.

**Mechanical Troubleshooting: Elevate will not operate**

Troubleshooting the lift is straight forward. The actuator plugs directly into the AAM.

1. Remove the back shroud of the power recline back.
2. Remove the two screws that hold the AAM onto the center spine.
3. Unplug the 2-pin connection which is marked A3.
4. Set multimeter to resistance and take a resistance reading off of the recline actuator.

- If you get a resistance reading on the actuator, replace the AAM.
- If you do not get a resistance reading on the actuator, then replace the power elevate actuator. (Seat Frame replacement due to mechanical failure).

**Dual Actuator AFP Troubleshooting**

This AFP functions with independent articulation and elevation. The two functions can also be combined to operate like the previous generation AFP. This troubleshooting will require both monitoring using one of the programmers and traditional troubleshooting due to the intermediate harness which connects the actuators to the AAM.

**Section V: TRU-Balance 4 Dual Actuator Articulating Foot Platform****Error Code 169: AFP Elevation Actuator Feedback Defect**

This error message can be active in any group of error messages on the AFP elevate actuator, or it can show up by itself. It will also be included with error code #171 and/or warning message #170.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 4 (V)
4. End Switches
  - AM End Switch

AM End Switch 8	Off
AM Wiper Voltage Actuator 4 (V)	0.267

In normal operation, AM End Switch 8 is “Off” when in the home position and as soon as the AFP starts moving, AM End Switch 8 will switch to “On” and the AM Wiper Voltage Actuator 4 (V) (which is the AFP elevate actuator in the system) is around 0.6 volts.

**NOTE: Wiper Voltage will vary depending on position of the actuator at the time the system is monitored.**

AM End Switch 8	Off
AM Wiper Voltage Actuator 4 (V)	0.025

When the error message appears on the joystick, the AM Wiper Voltage Actuator 4 (V) will show almost no voltage and, regardless of the position of the AFP, AM End Switch 8 will always be “On”.

Additional troubleshooting is required to determine if the AFP Elevate actuator has failed or the intermediate harness has failed.



**Troubleshooting Intermediate Harness**

There is one more step to ensure where the failure is. A continuity check needs to be done on the intermediate harness to narrow down the issue even further.

1. Unplug the 6-pin that goes to the elevate actuator under the front of the seating system.
2. Remove the back shroud of the power recline back.
3. Remove the two screws that hold the AAM onto the center spine.
4. Unplug the 2-pin connection which is marked A4 and the corresponding 4-pin connection.
5. Set multimeter to resistance or continuity. Check continuity on the harness (the pin out is below). **Refer to Figure 7** for pin out.

- If continuity checks out on this harness, then replace the AFP Elevate Actuator.
- If one or more does not have continuity, then replace the AFP elevate intermediate harness.

This error can also occur if the wiper drifts or does not reach the end to trigger the end switch. Again, monitoring the End Switches and Wiper Voltage will show where the problem lies and how to proceed.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 4 (V)
4. End Switches
  - AM End Switch 8

AM End Switch 8	On
AM Wiper Voltage Actuator 4 (V)	3.130

With the error message, there will be voltage on the wiper. The Voltage will be lower than what it would normally be, but if there is voltage, then first perform an Actuator Calibration.

**Actuator Calibration**

- Parameter Settings/Program Adjustments
  - Seat
    - Anterior/Memory Setup
      - Actuator Calibration (Click “Start”)

When the Actuator Calibration is completed, power the chair off and then back on. The easiest way you would be able to tell would be to use a memory seat position that the lift actuator is programmed for and run that memory seat. If there is not a memory seat programmed, then operate the AFP Articulate Function through the joystick.

- If the error message disappears, then the calibration was the only step for repair.
- If the error message continues to appear on the joystick once the seating has reached the memory position, replace the elevate actuator.

**Error Code #170: AFP Elevation Actuator Feedback Out of Tolerance:** This error message will have a warning as well as the error, both #170 and both with the same description.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 4 (V)
4. End Switches
  - AM End Switch 8

AM End Switch 8	Off
AM Wiper Voltage Actuator 4 (V)	0.267

In normal operation, AM End Switch 8 is “Off” when in the home position and as soon as the AFP starts moving, AM End Switch 8 will switch to “On” and the AM Wiper Voltage Actuator 4 (V) (which is the AFP elevate actuator in the system) is around 0.6 volts.

**NOTE: Wiper Voltage will vary depending on position of the actuator at the time the system is monitored.**

AM End Switch 8	Off
AM Wiper Voltage Actuator 4 (V)	3.958

In this scenario, the wiper is shorted to high, and End Switch 8 will always be “Off”. The AFP will also not be able to be moved to the home position due to the system not knowing where the articulate actuator is in space. This means that the system does not know, if moved to the home position, whether it will or will not hit the ground. The AFP will elevate outward, just not inward.

Additional troubleshooting is required to determine if the AFP Elevate actuator has failed or the intermediate harness has failed.

**NOTE: Refer to Troubleshooting Intermediate Harness.**

**Warning Message #170: AFP Elevation Actuator Feedback Out of Tolerance:**

This will be mostly an intermittent warning message when this appears on the joystick alone. If it does not follow with an error message, then the system will still operate. This warning will also tie into the #170 Error code. If the warning appears and the error message immediately follows, it will be a failure of the system.

**Troubleshooting:**

1. Program Adjustments/Parameter Settings
2. Seat
3. Memory Seating Setup
4. Actuator Calibration (Start)
  - Start Actuator Feedback Calibration” (Yes)

It will need to be confirmed on the joystick by pushing forward.

If the recalibration did not make the warning disappear, then refer to the troubleshooting steps for Error Code #170.

**Error Code #171: AFP Elevation Actuator Switch Defect:**

This error message will appear if there is an issue within the 4-pin connection coming off the actuator. It is directly related to the feedback of the actuator. This error message can happen in a few different scenarios, however for this error message to appear by itself, the actuator must be moving.

- If the AFP elevate actuator is beyond the minimum or maximum position (mechanically beyond the feedback switches within the actuator.)
- When the AFP elevate actuator is being run and there is not a change in the feedback (Actuator is in one position but the feedback doesn't match where it should be in space)
- The minimum switch is still open, but mechanically the actuator is not at the minimum position.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 4 (V)
4. End Switches
  - AM End Switch 8

When monitoring with this error message, AM End Switch 8 will change from “On” to “Off”.

AM End Switch 8	Off
AM Wiper Voltage Actuator 4 (V)	1.885

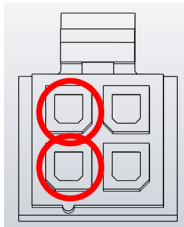
Additional troubleshooting is required to determine if the AFP Elevate actuator has failed or the intermediate harness has failed.

**NOTE: Refer to Troubleshooting Intermediate Harness.**

**Troubleshooting: Power AFP Elevate Errors using a Multi-Meter**

Some of error codes can also be troubleshoot using a multi-meter, in the event a programmer is not available.

1. Remove the back shroud of the power recline back.
2. Remove the two screws that hold the AAM onto the center spine.
3. Unplug the 4-pin molex connector that is above A4.
4. Set multimeter to Ohms (If multimeter does not have auto range, set the resistance range to at least 10K).
5. Take readings from of the following pins (pin outs below).



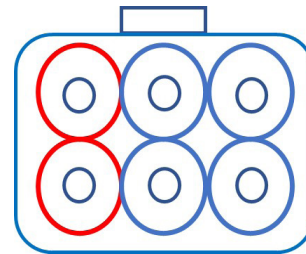
- If the reading is an open or there is no reading at all, then move to the 6-pin on the AFP elevate actuator.
- If there is resistance, of about 0 to 10 kohms, across these two (2) pins, then replace the AAM.



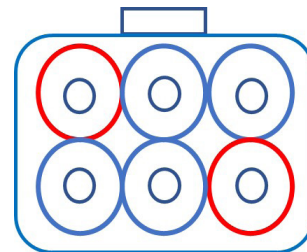
- If the reading is an open or there is no reading at all, then move to the 6-pin on the AFP elevate actuator.
- If there is resistance, of about 0 to 10 kohms, across these two (2) pins, then replace the AAM.

**Troubleshooting: Power AFP Elevate Actuator (6-pin)**

1. On the right side of the Dual Actuator AFP, there will be a curly cord connector coming from the actuator into a 6 pin connection, unplug that connection.
2. Set multimeter to Ohms (If multimeter does not have auto range, set the resistance range to at least 10K).
3. On the curly cord side, going into the actuator, take readings from the two locations below (locations highlighted in red).



- If the reading is an open or there is no reading at all, then replace the AFP elevate actuator.
- If there is a resistance, of about 0 to 10 kohms, across these two pins, then replace the intermediate harness that connects into the AFP elevate actuator.



- If the reading is an open or there is no reading at all, then replace the AFP elevate actuator.
- If there is a resistance, of about 0 to 10 kohms, across these two pins, then replace the intermediate harness that connects into the AFP elevate actuator.

**Error Code #166: AFP Articulation Actuator Feedback Defect.** This error message will be active in any group of error messages on the AFP articulate actuator. It will also be included with error code #167 and/or warning message #167.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 5 (V)
4. End Switches
  - AM End Switch 10

In normal operation, AM End Switch 10 is "On" and the AM Wiper Voltage Actuator 5 (V) (which is the AFP Articulate actuator in the system) is around 0.7 volts.

**NOTE: Wiper Voltage will vary depending on position of the actuator at the time the system is monitored.**

AM End Switch 10	On
AM Wiper Voltage Actuator 5 (V)	0.717

When the error message appears on the joystick, the AM Wiper Voltage Actuator 5 (V) will show almost no voltage. Depending on where the AFP is positioned at the time, AM End Switch 10 will either show "On" or "Off".

AM End Switch 10	On
AM Wiper Voltage Actuator 5 (V)	0.023

There is one more step to ensure where the failure is. A continuity check needs to be done on the intermediate harness to narrow down the issue even further.

**Troubleshooting Intermediate Harness**

Step 1: Unplug the 6-pin that goes to the AFP Articulate actuator under the front of the seating system.

Step 2: Remove the back shroud of the power recline back.

Step 3: Remove the two screws that hold the AAM onto the center spine.

Step 4: Unplug the 2-pin connection which is marked A5 and the corresponding 4-pin connection.

Step 5: Set multimeter to resistance or continuity. Check continuity on the harness (the pin out is below.) Refer to Figure 7 for pin out.

- If continuity checks out on this harness, then replace the AFP upper assembly.
- If one or more does not have continuity, then replace the AFP articulate intermediate harness.

This error can also occur if the wiper drifts or does not reach the end to trigger the end switch. Again, monitoring the End Switches and Wiper Voltage will show where the problem lies and how to proceed.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 5 (V)
4. End Switches
  - AM End Switch 10

AM End Switch 10	On
AM Wiper Voltage Actuator 5 (V)	4.160

With the error message, there will be voltage on the wiper. The voltage will be lower than what it would normally be, but if there is voltage, then first perform an Actuator Calibration.

1. Parameter Settings/Program Adjustments
2. Seat
3. Anterior/Memory Setup
  - Actuator Calibration (Click "Start")

When the Actuator Calibration is completed, power the chair off and then back on. The easiest way you would be able to tell would be to use a memory seat position that the AFP Articulate actuator is programmed for and run that memory seat.

- If the error message goes away, then the calibration was the only step for repair.
- If the error message continues to show on the joystick once the seating as reached the memory position, replace the AFP Articulate actuator.

**Error Code #167: AFP Articulation Actuator Feedback Out of Tolerance**

This error message will have a warning as well as the error, both #167 and both with the same description.

**Troubleshooting:**

1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 5 (V)
4. End Switches
  - AM End Switch 10

When this error code shows on the display, AM End Switch 10 will either be “On” or “Off” depending on where the AFP is positioned at the time of the failure. AM Wiper Voltage 5 will change depending on where the potential failure is.

AM End Switch 10	Off
AM Wiper Voltage Actuator 5 (V)	0.023

In this scenario, AM Wiper Voltage Actuator 5 is showing low voltage, which means that the wiper is shorted to low.

There is one more step to ensure where the failure is. A continuity check needs to be done on the intermediate harness to narrow down the issue even further.

**NOTE: See troubleshooting intermediate harness on page 20.**

**Error Code #168: AFP Articulating Actuator Switch Defect**

This error message will show up if there is an issue within the 4-pin connection coming off the actuator. It is directly related to the feedback of the actuator. This error message can happen in a few different scenarios, however for this error message to show up by itself, the actuator has to be moving.

- If the AFP articulating actuator is beyond the minimum or maximum position (mechanically beyond the feedback switches within the actuator.)
- When the AFP articulating actuator is being run and there isn’t a change in the feedback (Actuator is in one position but the feedback doesn’t match where it should be in space)
- The minimum switch is still open, but mechanically the actuator is not at the minimum position.

**Troubleshooting:**

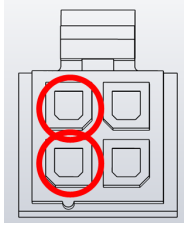
1. Monitor
2. Advanced Actuator Module (AM)
3. Actuator Feedback
  - AM Wiper Voltage Actuator 5 (V)
4. End Switches
  - AM End Switch 10

With error code #161, AM End Switch 10 will change from “On” to “Off”. When this happens, the articulating actuator will need to be replaced. (Replace the Dual Actuator AFP Upper).

AM End Switch 10	Off
AM Wiper Voltage Actuator 5 (V)	0.714

**Troubleshooting Power Articulating Errors using a Multi-Meter:** Some of error codes can also be troubleshot using a multi-meter, in the event a programmer is not available.

1. Remove the back shroud of the power recline back.
2. Remove the two screws that hold the AAM onto the center spine.
3. Unplug the 4-pin molex connector that is above A5.
4. Set multimeter to Ohms (if multimeter does not have auto range, set the resistance range to at least 10K).
5. Take readings from of the following pins (pin outs below).



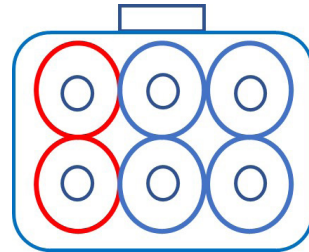
- If the reading is an open or there is no reading at all, then move to the 6-pin on the AFP articulate actuator.
- If there is a resistance, of about 0 to 10 kohms, across these two pins, then replace the AAM.



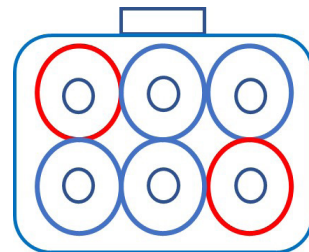
- If the reading is an open or there is no reading at all, then move to the 6-pin on the AFP articulate actuator.
- If there is a resistance, of about 0 to 10 kohms, across these two pins, then replace the AAM.

### Troubleshooting: AFP Articulate Actuator (6-pin)

1. On the left side of the Dual Actuator AFP, there will be a curly cord connector coming from the actuator into a 6-pin connection, unplug that connection.
2. Set multimeter to Ohms (If multimeter does not have auto range, set the resistance range to at least 10K).
3. On the curly cord side, going into the actuator, take readings from the two locations below (locations highlighted in red).



- If the reading is an open or do not get a reading, then replace the AFP articulate actuator.
- If there is resistance across these two pins, then replace the intermediate harness that connects into the AFP articulate actuator.



- If the reading is an open or there is no reading at all, then replace the AFP articulate actuator.
- If there is resistance across these two pins, then replace the intermediate harness that connects into the AFP articulate actuator.

**Mechanical Troubleshooting:** Power AFP Articulate actuator shows on the joystick but will not physically move.

Keep in mind, this type of malfunction will not show an error message at all. It will act normally on the joystick, it will just not move. This could be a mechanical failure or one of the internal switches in the actuator.

This needs to be checked in two different places. The first one would be the 2-pin connector coming off the intermediate harness.

1. Unplug the 2-pin connection which is marked A5.
2. Set multimeter to resistance and take a resistance reading off of the AFP Intermediate harness.
  - If you get a low resistance reading (approximately 1-3 ohms) on the actuator, replace the AAM.
  - If you get an open reading on the 2-pin, move down to the actuator (different pin out).

**Memory Position Error Messages:** Some error messages do not have to do with the troubleshooting of the actuators within the TRU-Balance 4 seating system, but may occur with the memory seating.

## Memory Seating Troubleshooting:

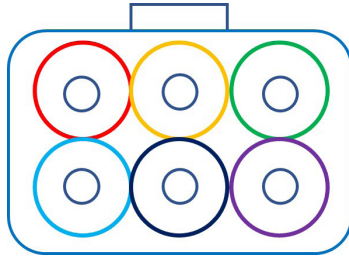
### Error Code #174: Memory Position Invalid

This error message will show on the joystick in only certain situations. The error will occur if the memory seat position in question's Operational Type is set to Sequential instead of Synced and the dealer or consumer (depending if User Adjustable is set to Enabled) is trying to save a memory position in anterior tilt.

When programming anterior tilt positions using the Memory positions, the Operation Type always must be set to Synced, so all actuators work/move at the same time. This prevents any restrictions from stopping the system.

The method to remedy this error message is to change the Operation Type from Sequential to Synced.

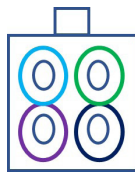
Error 174, Invalid Memory position can also be caused if the seat is in an anterior tilt position and a sequential memory position is attempted, or the reset anterior tilt function is run, by a programmer returning the anterior tilt position to 10 degrees, and a memory seat position that was previously saved at a position greater than 10 degrees, was attempted.



Connects into the AFP Elevate actuator or Articulate actuator



Connects into A4 or A5 on the AAM



Memory Position

Figure 7: Pin out for intermediate harnesses for AFP Elevate and AFP Articulate.









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