# TROUBLESHOOTING

## POWERFLEX 525

## Manual Parameter Tuning

There are four main parameters on the PowerFlex 525 that will solve most startup or performance issues.

- Parameter A531 – Start Boost (0-25%)
- Parameter A532 – Break Voltage (0-100%)
- Parameter P041 - Acceleration Time (Seconds)
- Parameter P042 - Deceleration Time (Seconds)

**Here are important parameters to monitor.**

- Parameter B003 - (Output Current) - Real time amperage draw of motor.
- Parameter P034 - (P/N FLA) - Full Load Amperage of motor.

**There are four protection parameters that should NEVER be modified**

- Parameter A486 - Shear Pin 1 Level (Max Safe Amperage)
- Parameter A487 - Shear Pin 1 Time (Over FLA for 10 Seconds)
- Parameter A488 - Shear Pin 2 Level (Overload Current)
- Parameter A489 - Shear Pin 2 Time (Above OL for 3 Seconds)

*Always start tuning with A531, A532 should be tuned if motor "pulses" or "oscillates".*

*Before tuning verify there are no mechanical interference or binding issues.*

## Torque Boost Tuning (Parameter A531 – Start Boost)

**You will need:**
- P/N Technical Details Sheet
- P/N FLA Value

### Tuning Instructions:

1. Set Starting Value to 7% (Rarely is this value below 6% or above 9%)
2. Set Speed to 0Hz. Commanded frequency for tuning.
3. Start motor & Monitor Parameter B003 (Output Current of drive)
4. Adjust parameter A531 up or down by values of 1 until B003 (Output Current of drive) is equal to 60% of parameter P034 (P/N FLA)

*(Example: Your FLA is 2.2 Amps, so 2.2A * .6 = 1.32A. So, you want your B003 to be around 1.3 amps)*

**Once these parameters are dialed in, rerun Power On / Start Up procedures.**

If performance issues persist, move on to Break Voltage Tuning.

## Break Voltage Tuning (Parameter A532 – Break Voltage)

**You will need:**
- P/N Technical Details Sheet

*Note: You only need to adjust this parameter if the motor doesn't operate correctly, after you have changed the A531 parameter.*

### Tuning Instructions:

1. Set parameter A532 to 30% - Starting Value (rarely is this value below 20% or above 50%)
2. If the drive trips from over - current, this value can be decreased by 5%
3. If the motor doesn't start/run in a constant forward motion, increase this by 5%

Changing break voltage settings usually wont increase current, In some cases it does, and may cause issues. Proceed with caution.

## Acceleration Time (Parameter P041)

*In the event of oscillation or pulsing you may want to increase this to a longer ramp up time in seconds. This is dependent on your application's requirements. (This value is measured in seconds)*

## Deceleration Time (Parameter P042)

*In some situations you may want to adjust deceleration time to allow for application needs. This is dependent on your application's requirements. (This value is measured in seconds)*

| Param Name | Alterability | Description |
|---|---|---|
| 31 Motor NP Volts | Drive Specific | Drive determines this value |
| 32 Motor NP Hertz | Motor Specific | 60 Hz - Rated Frequency |
| 33 Motor OL Current | Motor Specific | Peak Current/Maximum Current |
| 34 Motor NP FLA | Motor Specific | Full Load Current - Max amps continuous run @ |
| 35 Motor NP Poles | Motor Specific | Number of motor poles |
| 36 Motor NP RPM | Motor Specific | RPM of motor. Determined by # of poles & freq. |
| 37 Motor NP Power | Motor Specific | Power(watts) = Volts * Amps |
| 39* PM Mode | Every Motor! | Permanent magnet mode setting on drive!! |
| 41 Accel Time 1 | Customer specific | Longer accel time = less current needed |
| 42 Decel Time 1 | Customer specific | Longer decel time = less current needed |
| 486* Shear Pin1 Lvl | Motor Specific! | Above FLA but below OL amps for P487 sec. |
| 487 Shear Pin 1 Time | Permanent Magnet Setting | Determines cutoff seconds for P486 |
| 488 Shear Pin2 Level | Permanent Magnet Setting | Over OL current for P489 seconds |
| 489 Shear Pin 2 Time | Permanent Magnet Setting | Determines cutoff seconds for P488 |
| 501 PM IR Voltage | Motor Specific | Voltage across the stator resistance |
| 502 PM IXd Voltage | Motor Specific | Voltage across the d-axis stator inductance |
| 503 PM IXq Voltage | Motor Specific | Voltage across the q-axis stator inductance |
| 504 PM BEMF Voltage | Motor Specific | Back electromotive force (generator effect) |
| 517 PM DC Inject Cur | Permanent Magnet Setting | Max DC current to reset stator position |
| 518 PM Align Time | Permanent Magnet Setting | Magnetic pole reorientation time |
| 527 PM FWKn 1 Kp | Permanent Magnet Setting | gain for performance in field weakening region |
| 528 PM FWKn 2 Kp | Permanent Magnet Setting | gain for robustness step load weakening region |
| 530 Boost Select | Permanent Magnet Setting | Sets A531 (% of P031[NP Volts]) & V/Hz curve |
| 531 Start Boost | Customer specific | Sets boost Volts(% of P031 NP Volts) |
| 532 Break Voltage | Customer specific | Sets voltage (in % of base freq) @ A533 |
| 533 Break Frequency | Advanced customer specific | Sets freq where A532(Break Voltage) is applied |
| 580 Current Loop BW | Permanent Magnet Setting | Current feedback loop |
| 583 PM Stable 1 Kp | Permanent Magnet Setting | % of gain for stabilization loop |
| 584 PM Stable 2 Kp | Permanent Magnet Setting | Gain for stabilization loop |
| 585 PM Stable Brk Pt | Permanent Magnet Setting | % of P037 NP Power for gain of A584 |
| 586 PM Stepload Kp | Permanent Magnet Setting | gain for robustness under step load @ low speed |
| 587 PM 1 Efficiency | Advanced customer specific | Efficiency control when motor is loaded |
| 588 PM 2 Efficiency | Advanced customer specific | Efficiency control when motor is not loaded |

*This is a breakdown of parameter functions.*

**Green - Safe to Modify**

**Yellow - Use Caution**

**Red, Blue & Orange - Do Not Modify**

## Contact Information

**For advanced support:**

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