Optional
Dynamic Setup and Tuning Procedure

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1. **Rated Gain Adjustment (Normally only dynamic setting changed)**: Start with 0.165.

a. To speed up response, raise to around 0.2

b. If hunting, lower gain to 0.101, then to 0.06.

c. If still hunting at the 0.04 lowest limit, hunting issue cannot be solved with configuration. Investigate for linkage, fuel pressure or other mechanical issues.

2. **Integral:** Start with 3.68 .

Can lower to 3.0 for slower response.

3. **Derivative:** Start with 0.11

Dampens response – usually not changed.

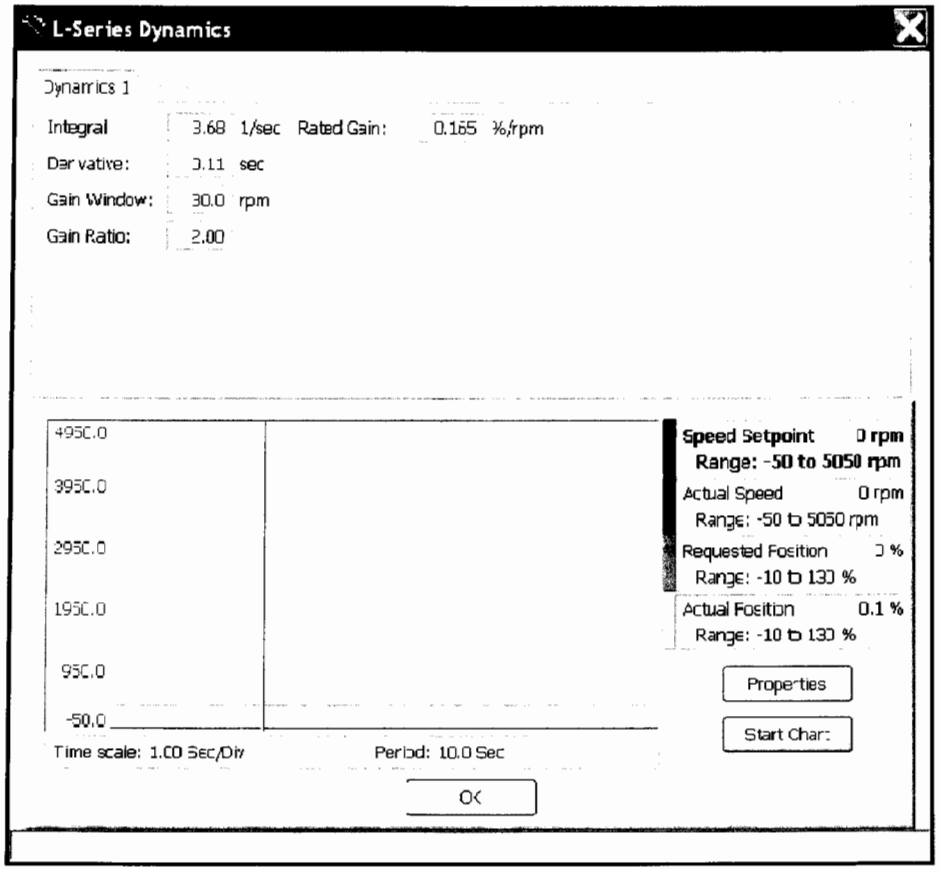
4. **Gain Ratio:** Start with 2

a. To tune optimally, set at 1 which disables the gain multiplier.

b. Perform above tuning adjustments.

c. The final step is to increase back to 2 or more if needed for faster overall response.

5. Hit OK



Important Safety Statement

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After changing any configuration parameters or Position Verifications, confirm the engine can be started safely. Setting the actuator for the wrong direction can result in engine overspeed and in personal injury or damage to equipment. The engine is now ready to be started.

Position Verification

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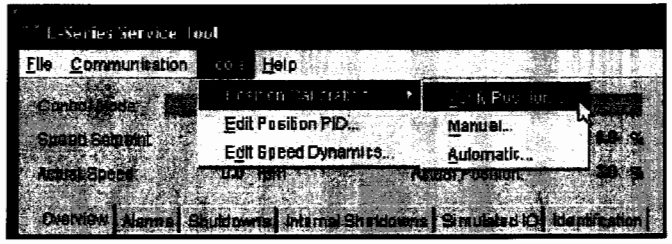
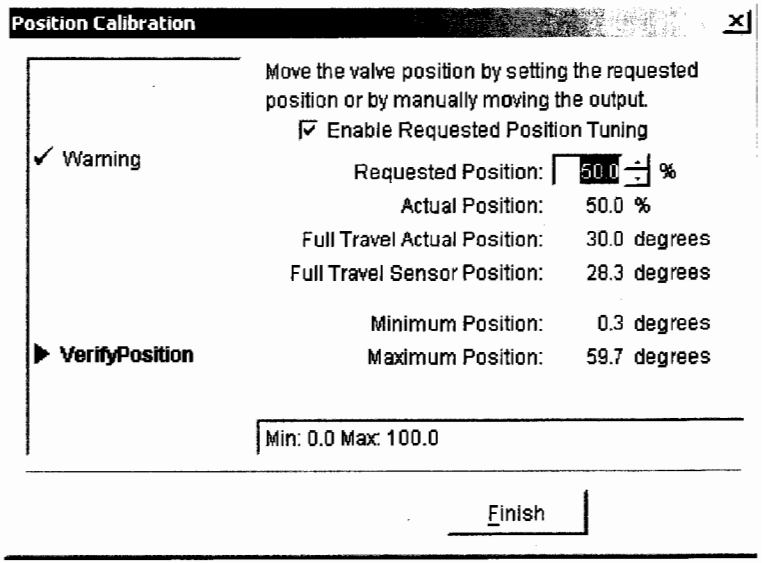
Select "Verify Position" from the "Position Calibration" drop down under the "Tools" menu. The current position is displayed.



If the "Enable Requested Position Tuning" box is checked, the valve will go to the "Requested Position" value entered. If unchecked, the limp valve can be positioned anywhere to verify the position value at each position.

The "Full Travel Actuator Position" shows the actual position in a 60 degree *range programmed*.



The "Full Travel Sensor Position" shows the current position in degrees of the total 60 degree *range available*.

If "Minimum Position" and "Maximum Position" are at 0.3 Min and 59.7 Max, they are at the factory default values and the automatic calibration has not yet been run.

The actuator requires a minimum of 40 degrees (closer to 60 maximum is better) of rotation for improved stability. On lever applications with adjustable positions, the mounting position closest to the actuator shaft is typically used for maximum range

Saving Configuration

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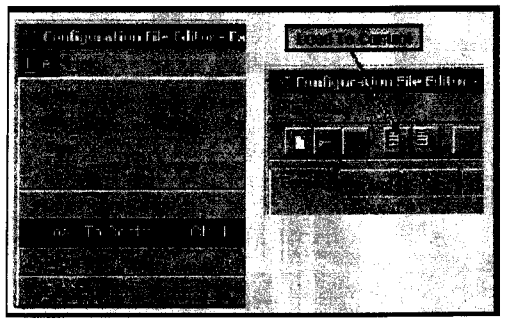
1. To save to L-Series, Select "File", then "Load to Control"

2. Select "File", then "Save As" to save a copy of .cfg file to computer.

   It is helpful to note application and customer data in file name.

   Use this generic file template with any necessary application modifications for quickly creating future configurations.



3. Close

Alarm / Shutdown Tab

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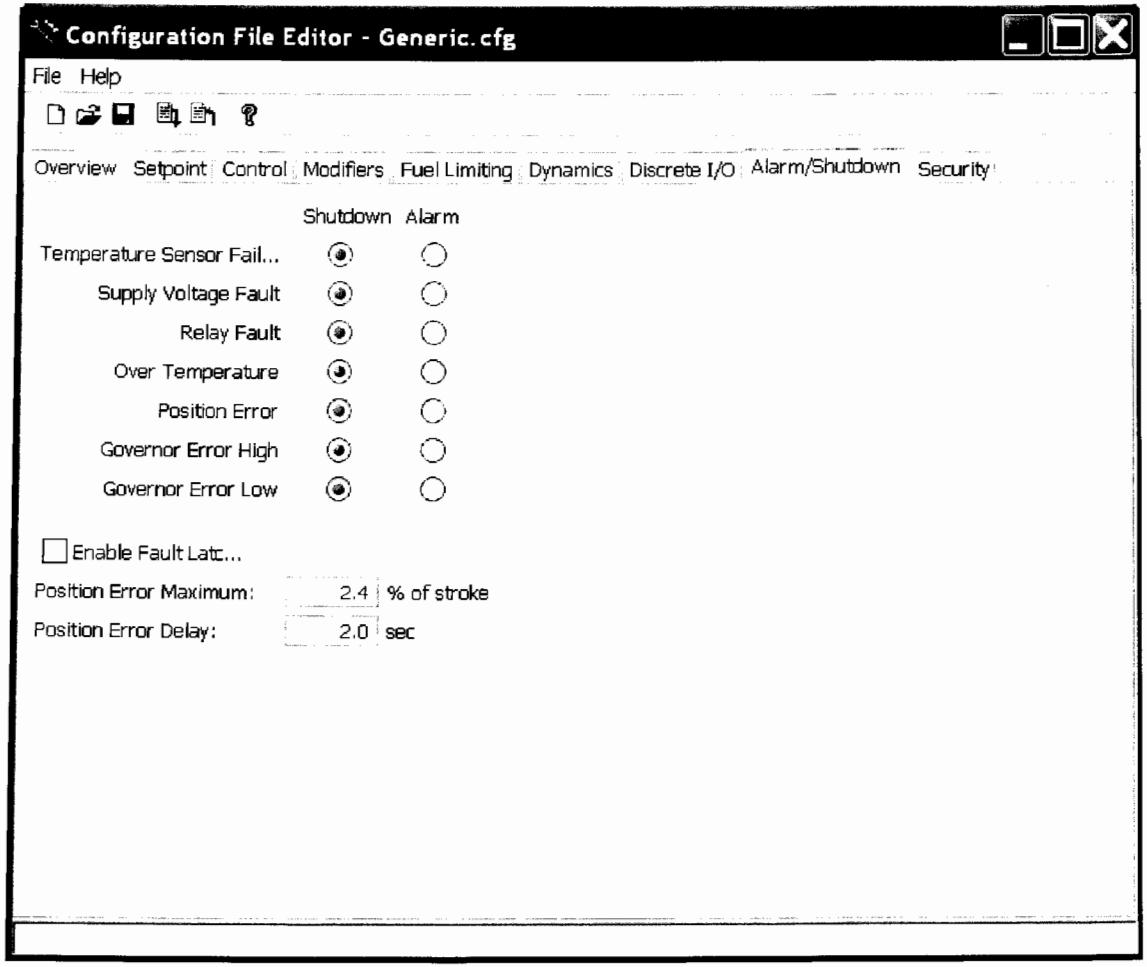
Check all Shutdowns.

Do ***not*** check
"Enable Fault Latch"



Dynamics Tab

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Common settings:

Cold Start Gain: 0.003

Cold Start Time: 0.0

Dynamics 1 Tab: "Rated"

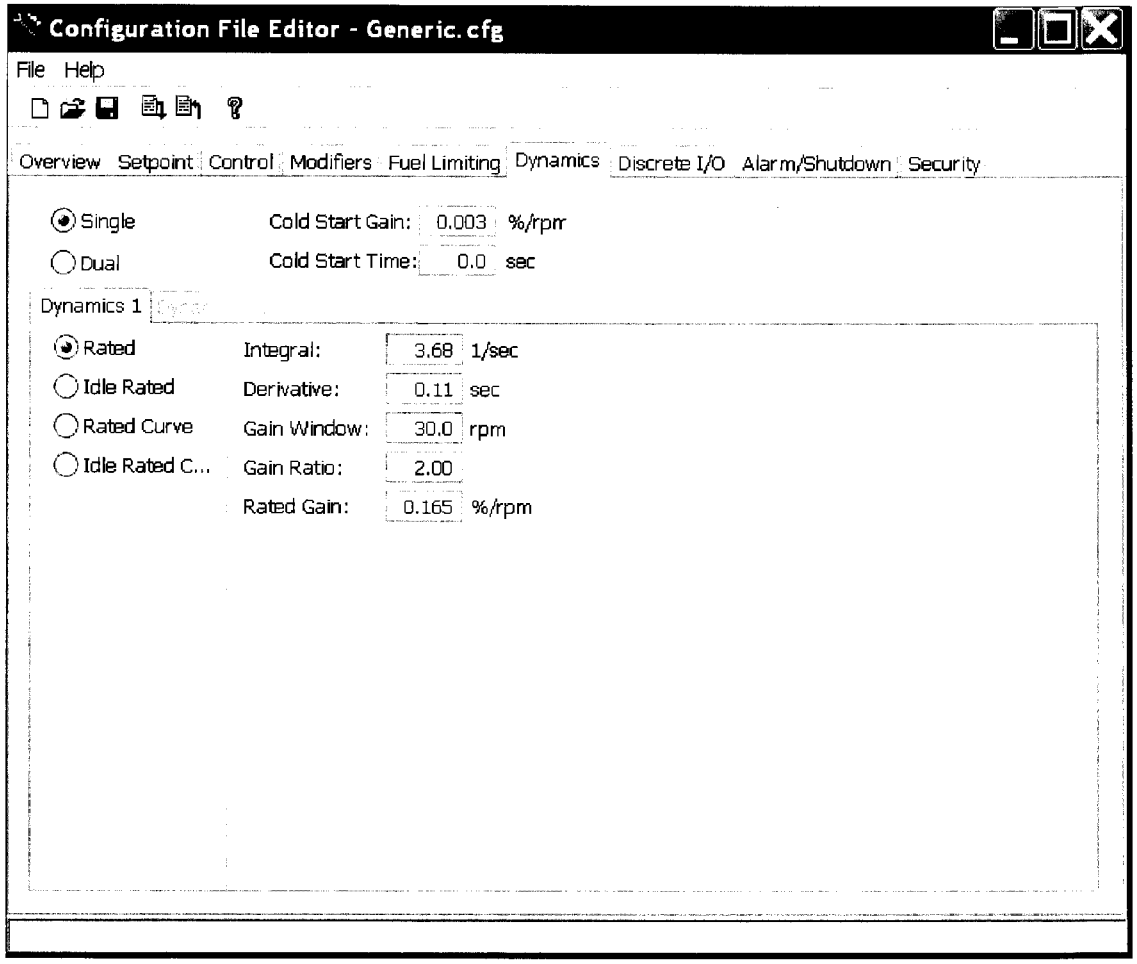
Integral: 3.68

Derivative: 0.11

Gain Window: 30.0

Gain Ratio: 2.00

Rated Gain: 0.165

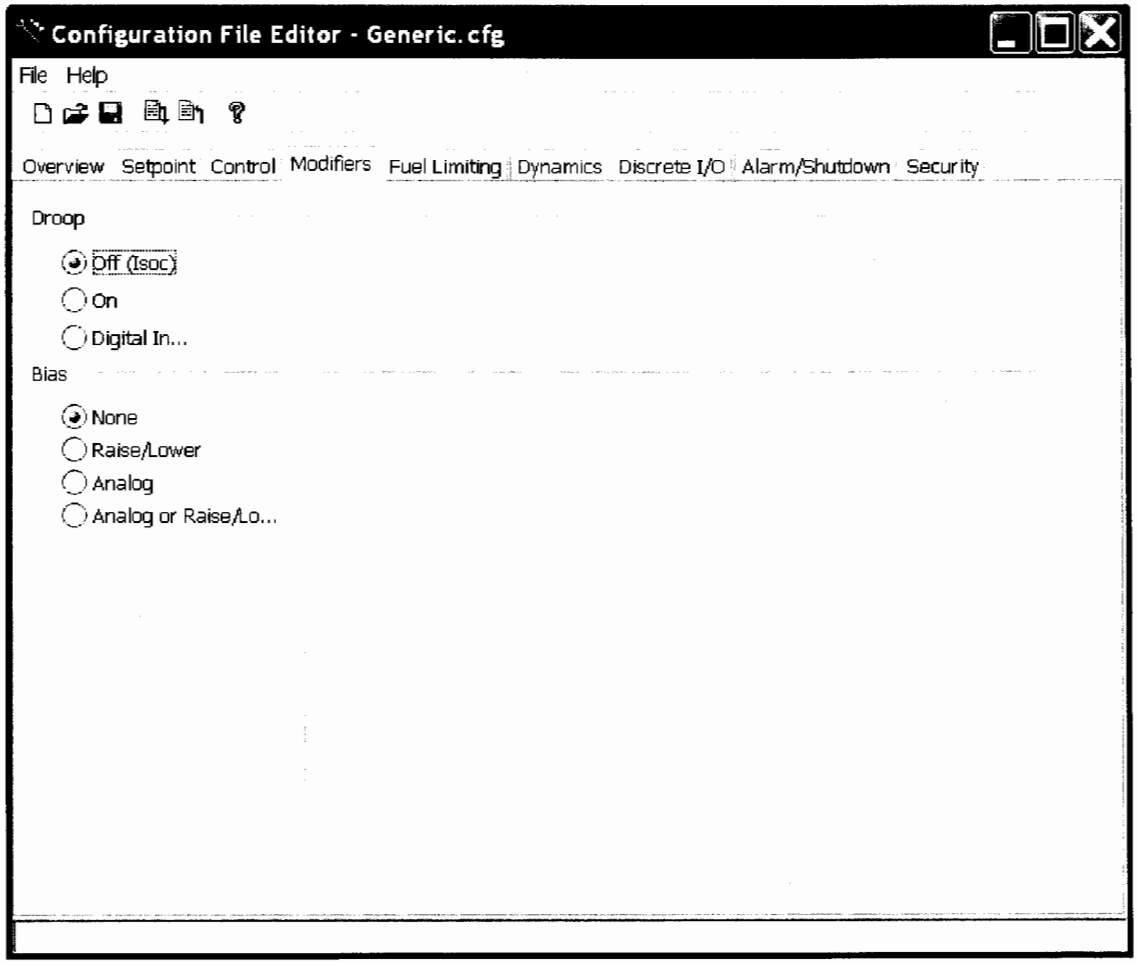


Modifiers Tab

This tab depends on application.

Usual generator applications:

- Droop: “Off (Isoc)”
- Bios: “None”



Setpoint Tab

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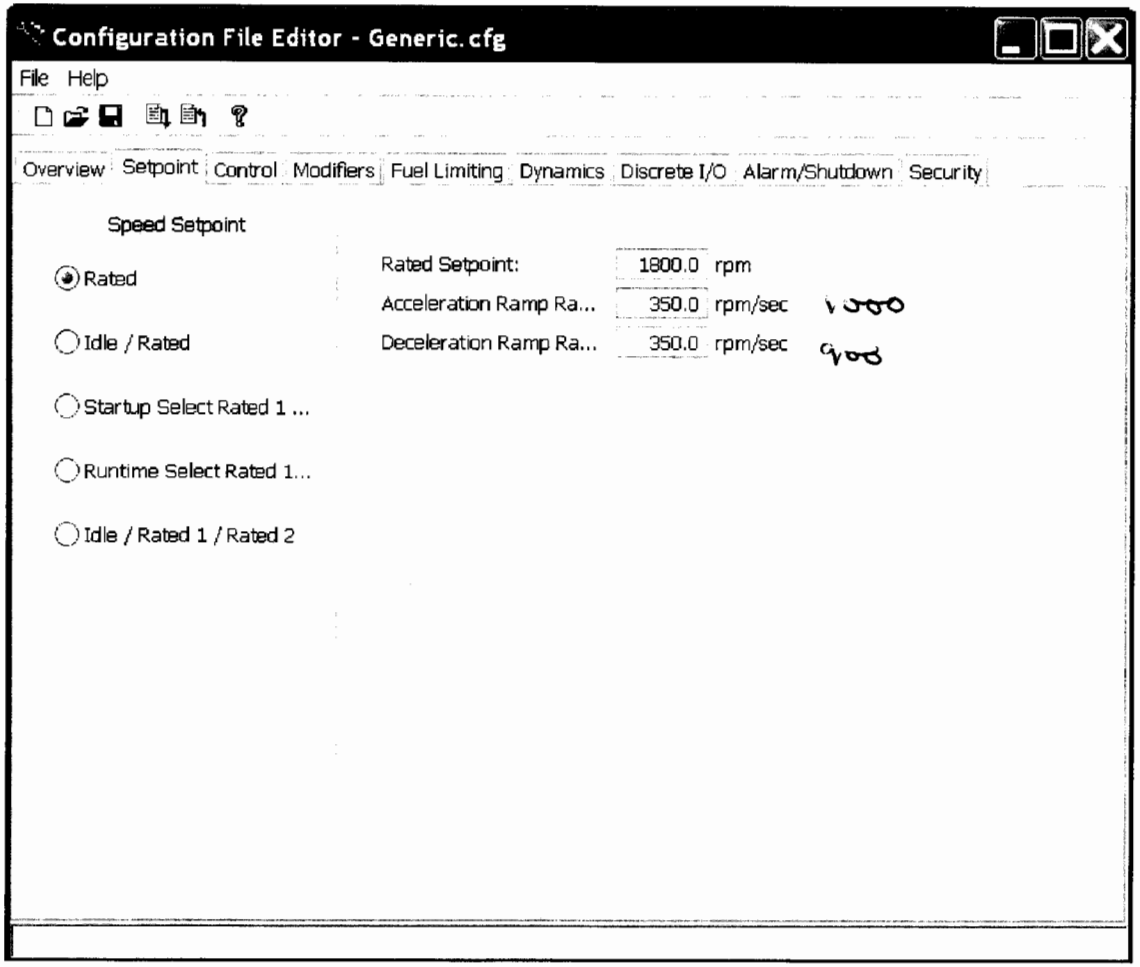
Speed Setpoint is set to engine rated speed .

Ramp is defines as the rate of change from Run Speed threshold to Rated Speed.

Usually set Accel and Decel parameters the same.

Rate of 225 rpm/sec is 4 seconds

Rate of 450 rpm/sec is 2 seconds



Configuration Procedure

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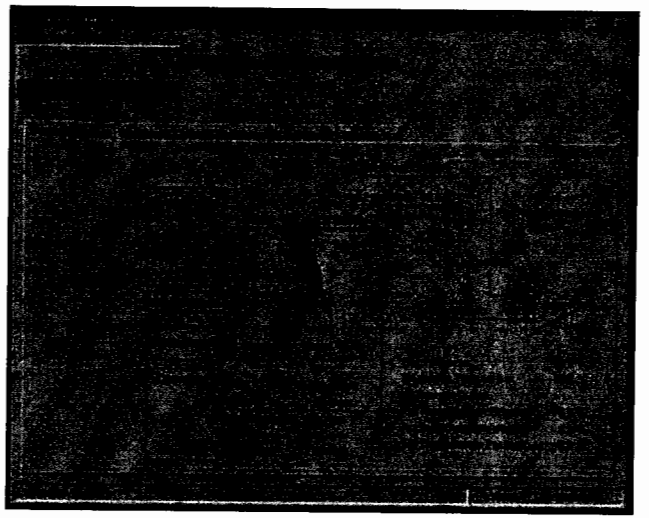
Configuration editing requires the control on-line and engine speed at zero. On some protected applications, editing is only available if the "Allow unsecured tuning of speed input and speed settings" and/or "Allow unsecured tuning of under-torque fuel limiter settings" are selected on the Security Tab in the Configuration Editor.



Select one of the following:

New or Modify Program *in L-Series*:

"Open Control Configuration"

Load existing program *from computer file*:
"Open Configuration File"

Rarely Use:

"New Configuration"

Purpose

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- This manual provides the end user a quick and accurate method to configure and calibrate the majority of L-Series controls.
- Peaker created this manual as a supplement to Woodward's L-Series generic manual 26250H or other application manuals which take precedent whenever a question arises.
- There is no guaranty that these settings are optimal for all applications. All responsibility is up to the skill of the service technician.

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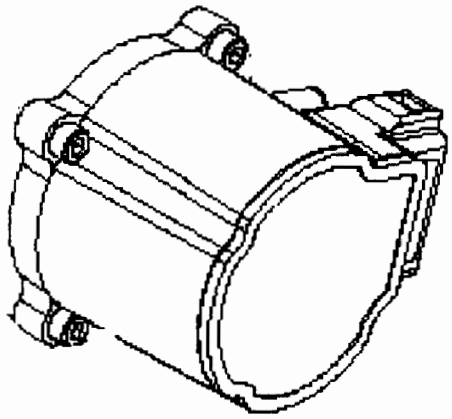

L-Series
Peaker Calibration Manual

DRAFT COPY

7/20/09

Establishing Communication

- L-Series can be configured on a bench off line before going to the engine site.
- Download free software from Woodward's website.
- Connect harness to TTL converter, then to the R232 port.
- If needed for additional length, use a straight R232 serial cable. Do not use a null modem serial cable (Terminals 2 & 3 crossed).
- Apply 12 volts to pin 1 and negative to pin 5. (Note: if replacing a LCS model, must move ground from pin 2 to pin 5).
- Actuator shaft will vibrate if receiving 12 volts.
- Confirm correct computer com port (usually port 1 is active)

Overview Tab

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Important settings!

Make sure all values are correct for application.

Important! Hit enter on keyboard after changing each parameter.

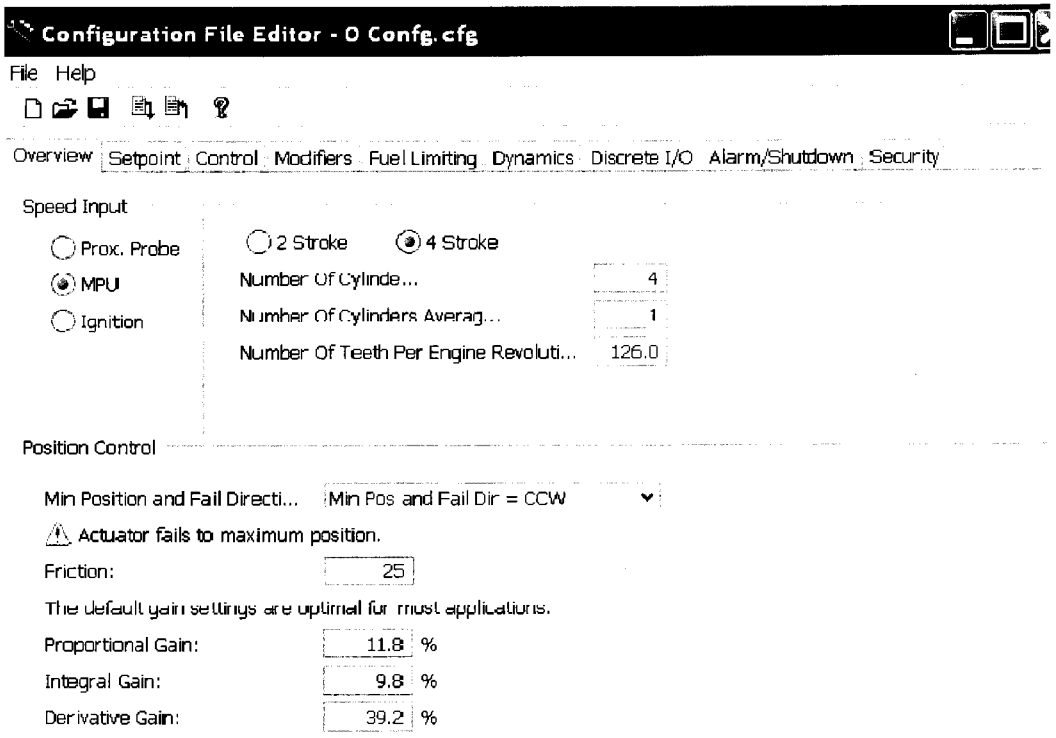
Speed Input: MPU for most applications. Choose Ignition if input is from ignition.

Number of Cylinders Averaged : 1

Number of teeth: Necessary to count the number of flywheel teeth. Common counts are 126, 133, 168 and 184.

Min Position and Fail direction: Look at the actuator with the end of the shaft pointing towards you to determine the correct direction for your application.

All other position control selections are to be left at factory default settings.



Control Tab

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Start Speed Threshold: Speed where cranking rpm is detected to initiate start sequence.

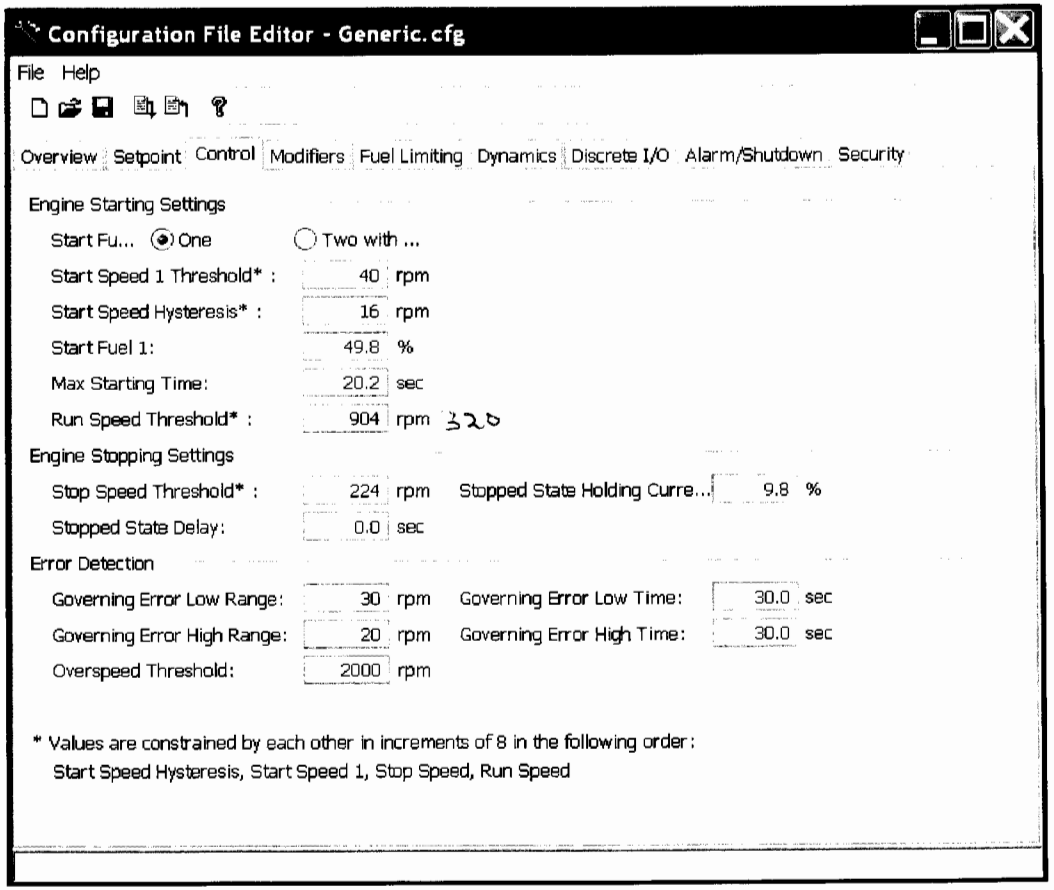
Start Fuel 1: Percent of output (valve position) when crank RPM is detected. Common values:

Diesel – 50%, Gas – 30%

Run Speed Threshold: RPM where Speed control takes over. (Not Rated Speed!)

Usually set at 900 rpm.

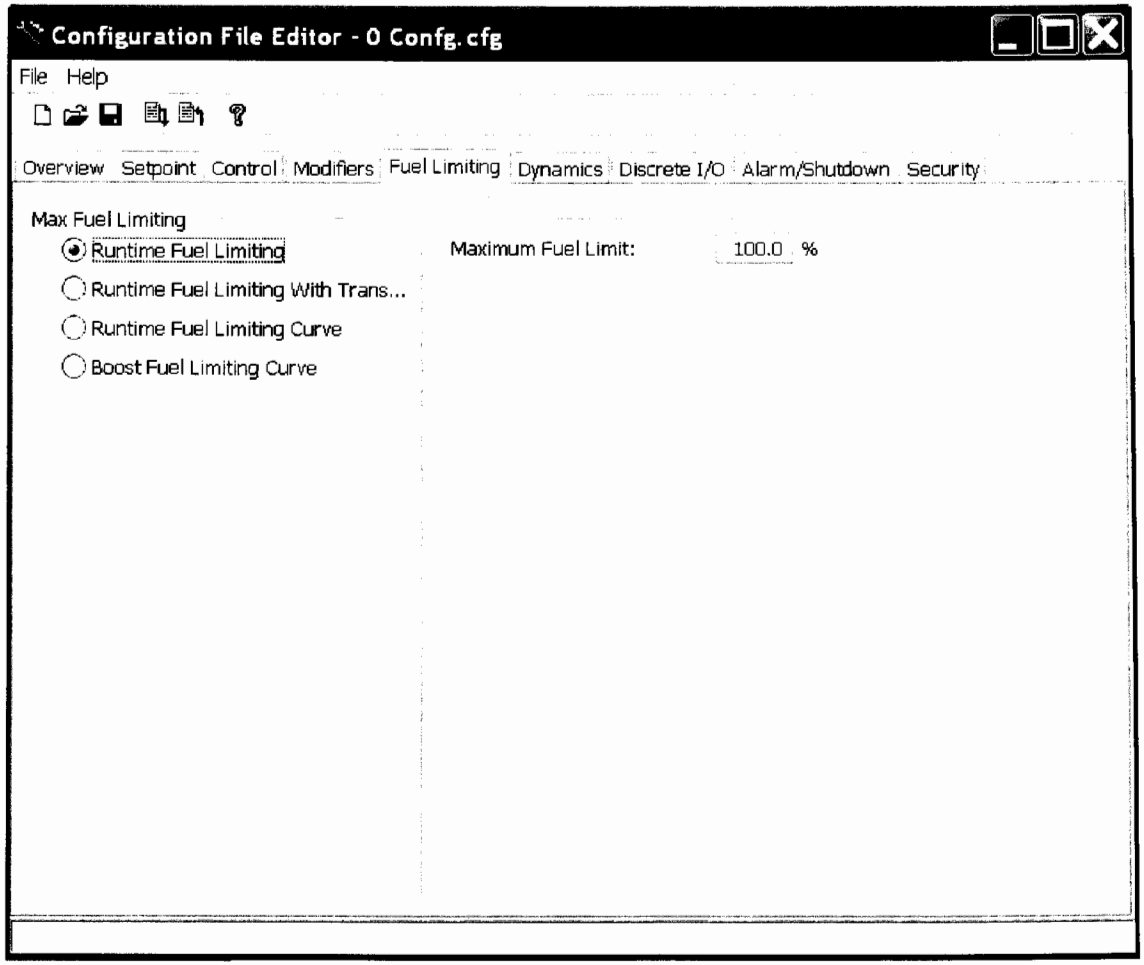
Overspeed Threshold: Usually set at 10% over rated speed.



Fuel Limiting

Common setting is:

Runtime Fuel Limiting with a Maximum Fuel Limit of 100%

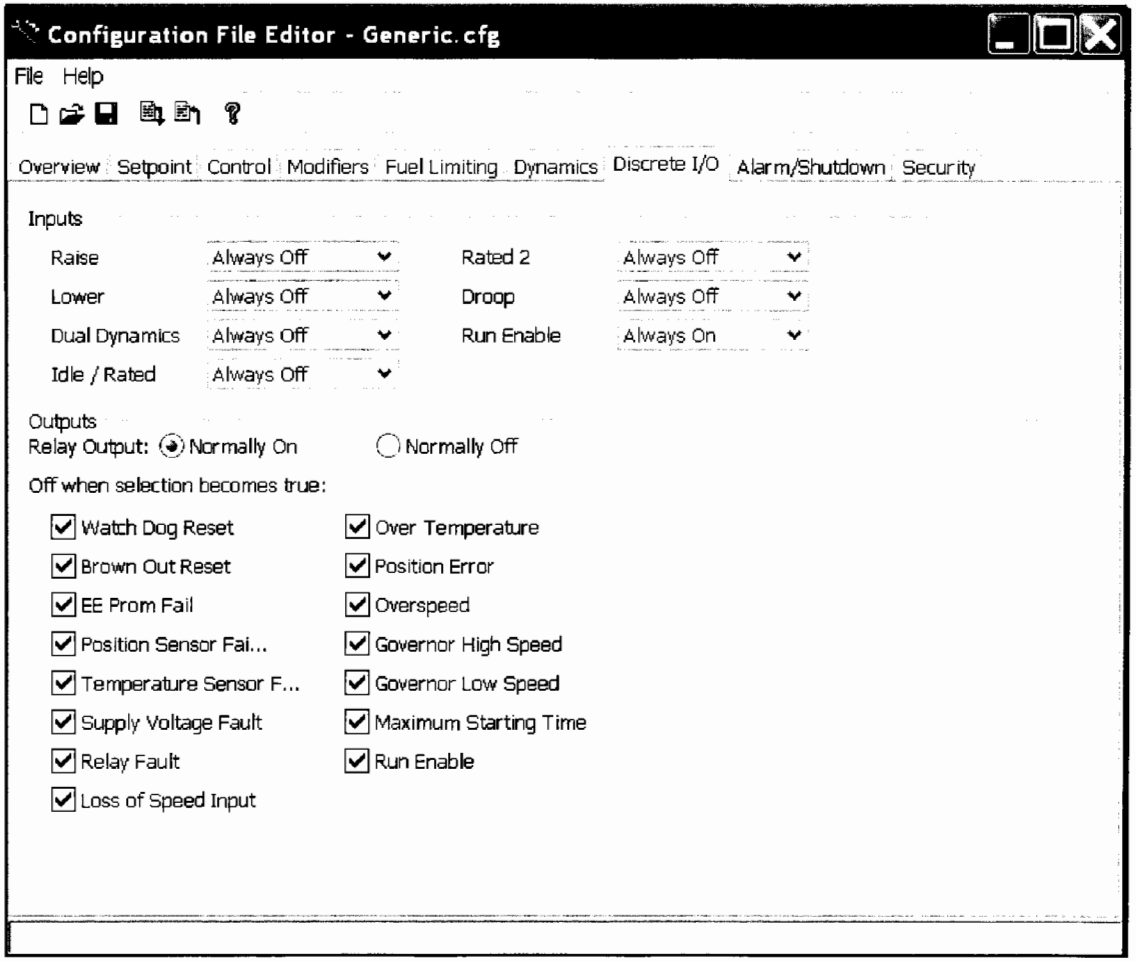


Discrete I/O

All Inputs "Always Off"

Exception:
Run Enable "Always On"

Relay Output: "Normally On"
Check all selections



Security Tab

It is not necessary to add a security lock. Be considerate of the next technician.

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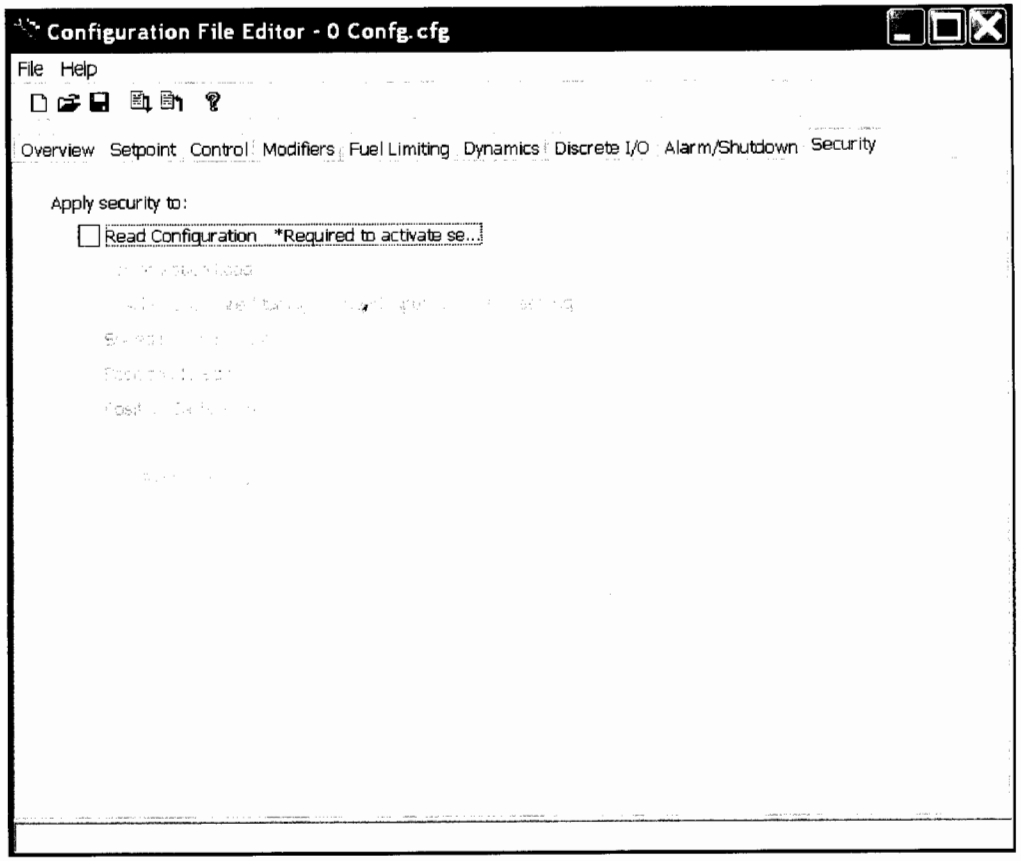

Automatic Position Calibration

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Used to automatically set the min position and fail direction, plus mechanical hard stops.

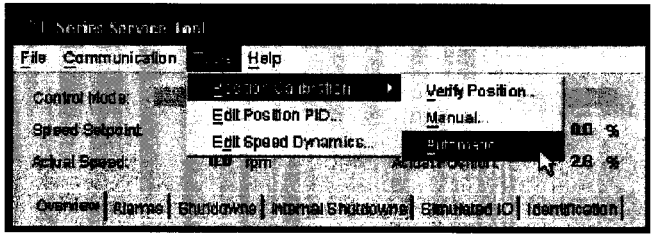
1. Select "Automatic" from the "Position Calibration" drop-down under the "Tools" menu.

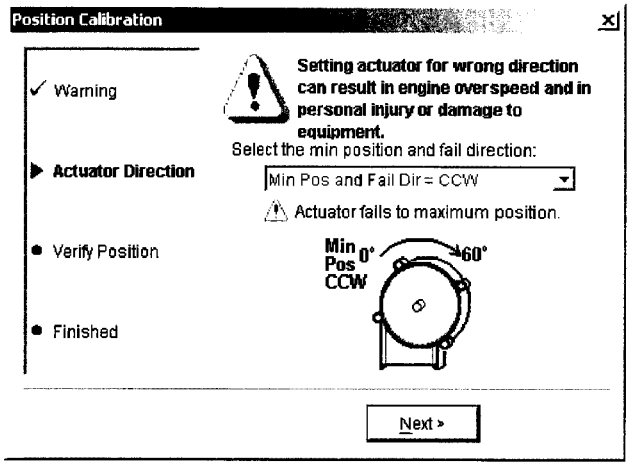
2. Select correct Min Pos and Fail Dir.
   (Both should be the same direction).
   Face the end of shaft as pictured on screen to determine rotation direction.

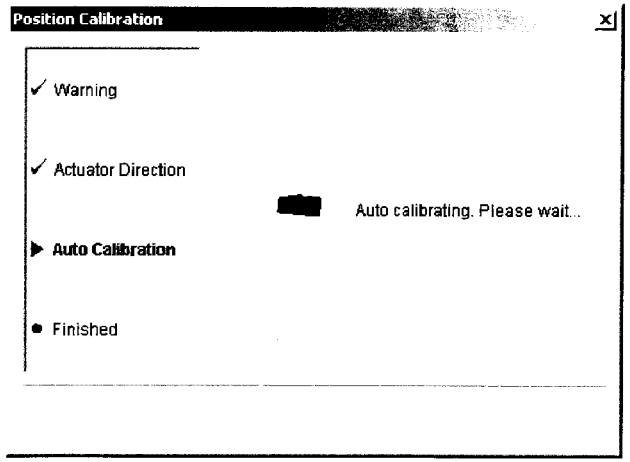
3. Hit "Next" to run automatic sweep. Observe and confirm throttle physically reaches both min and max stop limits.

4. Hit Finished.

5. Power (terminal 1) must be removed approximately 10 seconds and then turned on again for settings to take effect.







OPTIONAL
Manual Calibration

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1. Select "Manual" from the "Position Calibration" drop down under the "Tools" menu.

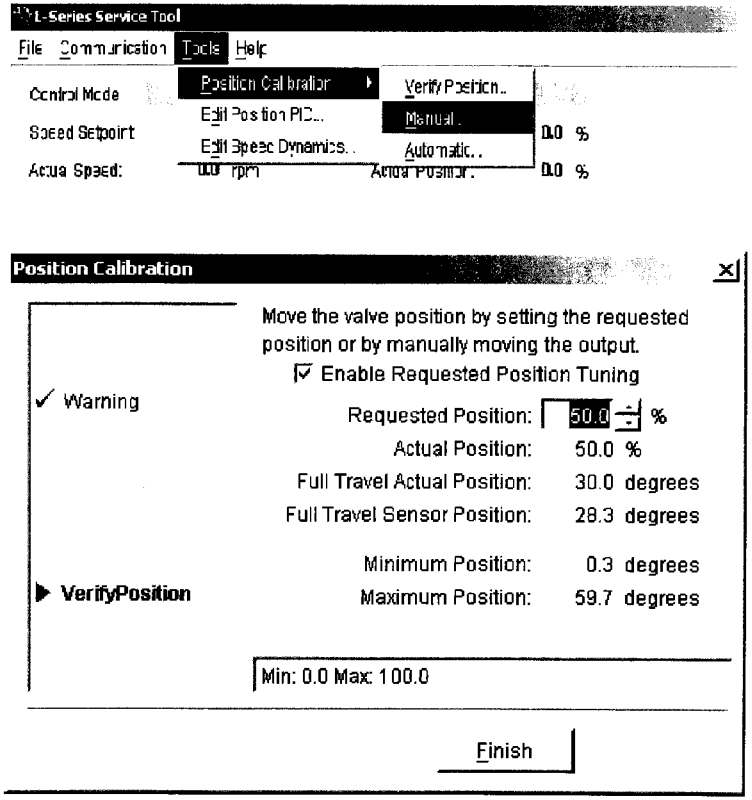
2. Check "Enable Requested Position Tuning" box.

3. Select 95% and hit enter.

4. Verify the valve is in the fully opened position.

5. Hit Finished.

6. Power (terminal 1) must be removed approximately 10 seconds and then turned on again for settings to take effect.



Optional
Setup and Tuning Overview

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Before starting engine, go to Tools menu and open:

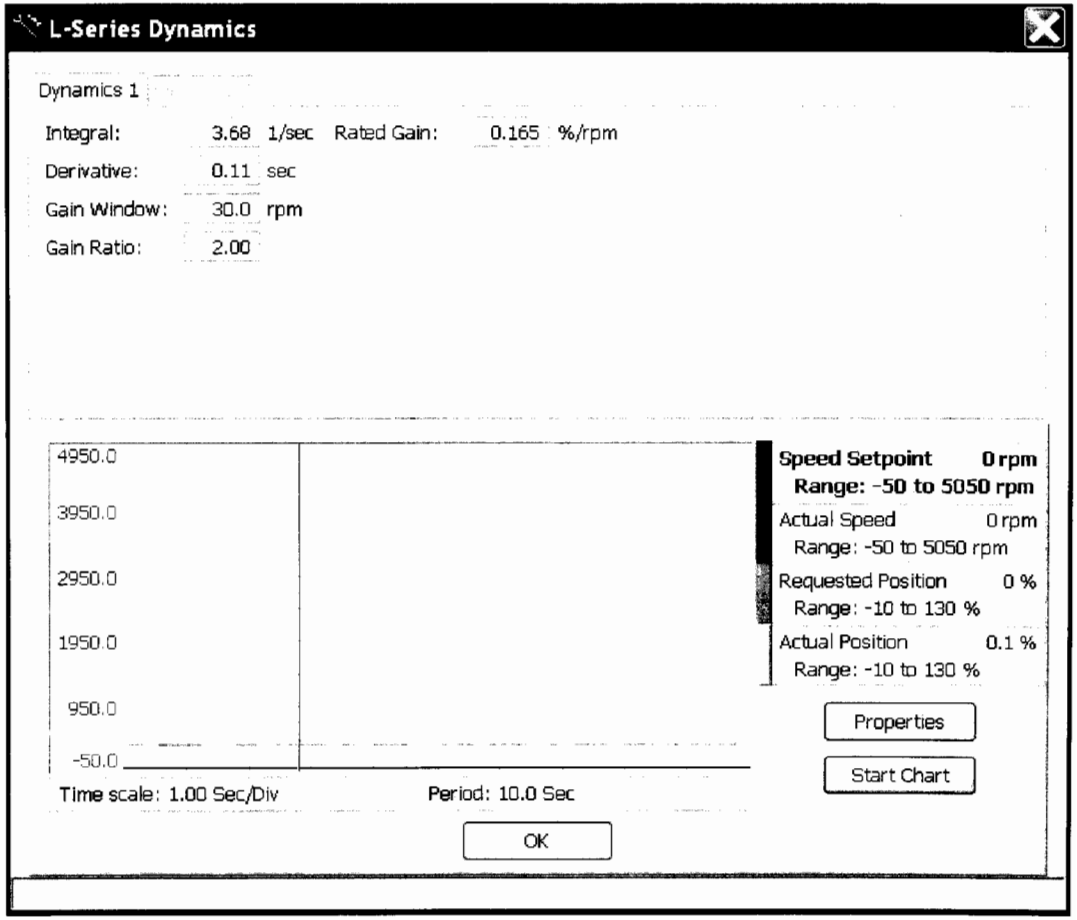
"Edit Speed Dynamics"

After starting engine, this feature enables live changes of parameters .

Change a parameter and hit enter to observe performance.

Hit OK to save change and then go back to confirm setting is permanent.

Use this feature to confirm Speed Setpoint (target) rpm compared to Actual Speed. This can pinpoint mechanical issues or control configuration. Note: Speed (target) Setpoint does not display until speed is above run speed threshold.



Saving Configuration and Dynamics

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2. Select "File", then "Save As" to save a copy of .cfg file to computer.

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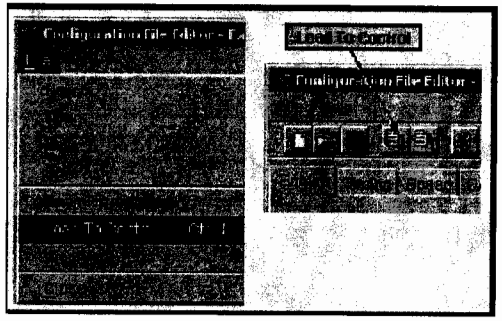

3. Close