**4. START THE ENGINE**

The speed control unit governed speed setting is factory set at approximately engine idle speed (1000 Hz., Speed sensor signal or 600 RPM)

Crank the engine with DC power applied to the governor system. The actuator will energize to the maximum fuel position until the engine starts. The governor system should control the engine at a low idle speed. If the engine is unstable after starting, refer to Section 6 ADJUSTING FOR STABILITY.

**5. GOVERNOR SPEED SETTING**

The governed speed set point is increased by clockwise rotation of the speed adjustment control. Remote speed adjustment can be obtained with an optional 5K Speed Trim Control.

**6. ADJUSTING FOR STABILITY**

Once the engine is running at operating speed and at no load, the following governor performance adjustments can be made to increase engine stability.

- **STABILITY GAIN**
  - **A** Gain Adjustment clockwise until instability develops.
  - **B** Stability Adjustment, follow the same adjustment procedure, steps 1-3, as the GAIN parameter.

**7. STARTING FUEL ADJUSTMENT**

The engine's exhaust smoke at start-up can be minimized by completing the following adjustments:

1. Place the engine in idle by connecting Terminals M & G.
2. Adjust the IDLE speed for as low a speed setting as the application allows.
3. Adjust the STARTING FUEL CCW until the engine speed begins to fall.
4. The IDLE speed is returned to the desired level.
5. Stop the engine.

**8. TWO METHODS OF OPERATION**

One of two methods of operation for the ESD500E may now selected.

**METHOD 1**

1. Remove the connection between Terminals M & G.
2. Start the engine and adjust the SPEED RAMPING for the least smoke on acceleration from idle to rated speed.
3. If the starting smoke is excessive, the STARTING FUEL may need to be adjusted slightly CW.
4. If the starting time is too long, the STARTING FUEL may need to be adjusted slightly CW.

**METHOD 2**

Start the engine and maintain an idle speed for a period of time prior to accelerating to the operating speed. This method separates the starting process so that each may be optimized for the lowest smoke emissions.

1. Replace all pressure switch, usually an oil pressure switch.
2. Start the engine.
3. If the starting smoke is excessive, the STARTING FUEL may need to be adjusted slightly CW.
4. If the starting time is too long, the STARTING FUEL may need to be adjusted slightly CW.
5. When the switch opens, adjust the SPEED RAMPING for the least amount of smoke when accelerating from idle speed to rated speed.

**ADDITIONAL FEATURES & OPTIONAL WIRING**

If the IDLE speed setting was not adjusted as detailed in Section 7 “Starting Fuel Adjustment”, then place the optional external selector switch in the IDLE position. The IDLE speed set point is increased by clockwise rotation of the IDLE adjustment control. When the engine is at idle speed, the control unit applies drop to the governor system to insure stable operation.

**9. INSTALLATION**

See Section 12 for more dimensions

- Vertical orientation places fluids for drain in most applications.
- Mount in a cabinet, engine section, or sealed metal box.
- Avoid Extreme Heat

**10. WIRING**

See Section 12 for the Wiring Diagram

**11. RECOMMENDATIONS**

1. Shielded cable should be used for all external connections to the ESD control.
2. One end of each shield, including the speed sensor shield, should be grounded to a single point on the ESD case.

**12. ADJUSTMENTS BEFORE ENGINE STARTUP**

Make sure the following adjustments are set before starting the engine.

- **GAIN**
  - Middle Position
  - Full CCW (Maximum Fuel)
  - Full CCW (Failed)

- **SPEED RAMPING**
  - Middle Position
  - Full CW (Maximum Fuel)

- **STARTING FUEL**
  - Full CW (Maximum Fuel)

**13. ADJUSTMENT PROCEDURE**

1. Place the engine in idle by connecting Terminals M & G.
2. Start the engine and adjust the SPEED RAMPING for as low a speed setting as the application allows.
3. Increase the STARTING FUEL slightly so that the idle speed is returned to the desired level.
4. Stop the engine.
The image contains a document with technical specifications and troubleshooting information for a governor system. The text is dense and technical, detailing various aspects such as performance, environmental conditions, system troubleshooting, and wiring diagrams. The information is presented in a structured format, with tables, diagrams, and detailed explanations of system behavior and troubleshooting steps. The document appears to be a technical manual or guide for a governor system, providing comprehensive information for users to understand and maintain the system effectively.