

Knowtek ESD5500E

Knowtek ESD5500E Engine Speed Control Unit User Manual

Model: ESD5500E

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the Knowtek ESD5500E Engine Speed Control Unit. The ESD5500E is designed to precisely control engine speed in diesel generator applications. Please read this manual thoroughly before installation and operation to ensure proper function and safety.

2. SAFETY INFORMATION

Warning: Improper installation or operation can lead to equipment damage, personal injury, or death. Always follow safety precautions.

- Disconnect all power sources before installation or servicing the unit.
- Ensure proper grounding to prevent electrical shock.
- Only qualified personnel should perform installation and maintenance.
- Refer to the engine manufacturer's manual for additional safety guidelines.

3. PRODUCT OVERVIEW

The Knowtek ESD5500E is a robust electronic speed control unit designed for diesel generator governor systems. It is suitable for placement in control cabinets or engine-mounted enclosures with other control equipment. The unit features various adjustment potentiometers and terminal connections for comprehensive engine speed management.



Figure 3.1: Top view of the ESD5500E unit, displaying control knobs for Stability, Gain, Speed Ramping, Starting Fuel, Speed, Idle, and Droop, along with the terminal block for wiring connections. The model number ESD5500E and a caution label are visible.

The unit's design allows for vertical mounting if water, mist, or condensation may come into contact with the controller, facilitating fluid drainage away from the internal components.

4. SPECIFICATIONS

Feature	Specification
Model Number	ESD5500E (also referred to as ESD5500, internal reference 26-4754)
Product Dimensions	6 x 4.7 x 1 inches
Item Weight	1.2 pounds
Manufacturer	KNOWTEK
Compatibility	Compatible with various engine brands for diesel generator applications

Feature	Specification
Mounting	Control cabinet or engine-mounted enclosure; vertical mounting recommended in humid environments

5. INSTALLATION

5.1 Mounting Considerations

Mount the ESD5500E unit in a location that minimizes exposure to vibration, extreme temperatures, and moisture. If the unit may be exposed to water, mist, or condensation, mount it vertically to allow fluids to drain away from the control unit.

5.2 Wiring Connections

The ESD5500E features a terminal block for all electrical connections. Refer to the labels on the unit for correct wiring. Ensure all connections are secure and properly insulated.



Figure 5.1: Close-up of the terminal block on the ESD5500E, showing individual terminals labeled A (Actuator), B (Actuator), C (Pick-up), D (Pick-up), E (Battery -), F (Battery +), G-H-J (Resistor), K (Droop), L (Idle), M (Aux), N (10V), P (Output).

Typical Connections:

- **Actuator (A, B):** Connects to the engine's actuator.
- **Magnetic Pick-up (C, D):** Connects to the engine's magnetic speed sensor.
- **Battery (E, F):** Connects to the DC power supply (E for negative, F for positive).
- **Droop (K):** Used for droop adjustment.
- **Idle (L):** Connects to an idle switch or input.
- **Auxiliary Input (M):** For external speed trim or other auxiliary functions.
- **10V Output (N):** Provides a 10V reference output.
- **Output (P):** General output terminal.

Consult the specific wiring diagram for your engine and generator setup for precise connections.

6. OPERATING AND ADJUSTMENTS

The ESD5500E unit features several potentiometers for fine-tuning engine speed and response. These adjustments should be made with the engine running and under supervision.



Figure 6.1: Close-up of the adjustment potentiometers on the ESD5500E, including Stability, Gain, Speed Ramping, Starting Fuel, Speed, Idle, and Droop.

- **Stability:** Adjusts the response rate of the governor. Turn clockwise for faster response, counter-clockwise for slower response.
- **Gain:** Controls the sensitivity of the governor. Higher gain increases sensitivity, lower gain reduces it.
- **Speed Ramping:** Sets the rate at which the engine accelerates to its set speed.
- **Starting Fuel:** Adjusts the amount of fuel provided during engine start-up.
- **Speed:** Fine-tunes the desired engine operating speed.
- **Idle:** Adjusts the engine speed when in idle mode.
- **Droop:** Controls the percentage of speed reduction from no-load to full-load.

Initial Setup Procedure:

1. Ensure all wiring is correct and secure.
2. Start the engine according to the manufacturer's instructions.
3. Adjust the 'Speed' potentiometer to achieve the desired operating RPM.
4. Adjust 'Gain' and 'Stability' to achieve stable engine operation without hunting or oscillations. Start with low gain and gradually increase until stable.
5. If droop operation is required, adjust the 'Droop' potentiometer to the desired percentage.
6. Set 'Starting Fuel' and 'Speed Ramping' for optimal engine start and acceleration characteristics.

7. MAINTENANCE

The ESD5500E is designed for reliable operation with minimal maintenance. Regular checks should focus on the integrity of connections and the operating environment.

- Periodically inspect all wiring connections for tightness and corrosion.
- Ensure the unit is free from excessive dust, dirt, and moisture. Clean the exterior with a soft, dry cloth if necessary.
- Verify that the mounting remains secure and free from excessive vibration.
- No internal user-serviceable parts. Do not attempt to open the unit.

8. TROUBLESHOOTING

This section provides guidance for common issues. For complex problems, contact qualified service personnel.

Problem	Possible Cause	Solution
Engine hunts or oscillates	Gain too high, Stability incorrect, mechanical issues	Reduce 'Gain' or adjust 'Stability'. Check engine's mechanical components.
Engine speed unstable	Loose wiring, faulty magnetic pick-up, incorrect adjustments	Check all wiring connections. Inspect magnetic pick-up. Re-adjust 'Gain' and 'Stability'.
Engine does not reach desired speed	'Speed' potentiometer setting, actuator issue, fuel supply problem	Adjust 'Speed' potentiometer. Check actuator function. Verify fuel supply.
No engine response from unit	No power, incorrect wiring, unit failure	Verify power supply to terminals E and F. Check all wiring. If issues persist, unit may be faulty.

9. WARRANTY AND SUPPORT

Specific warranty information for the Knowtek ESD5500E Engine Speed Control Unit is not provided in this manual. For details regarding warranty coverage, technical support, or service, please contact your vendor or the manufacturer directly. Keep your purchase receipt for warranty claims.

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