

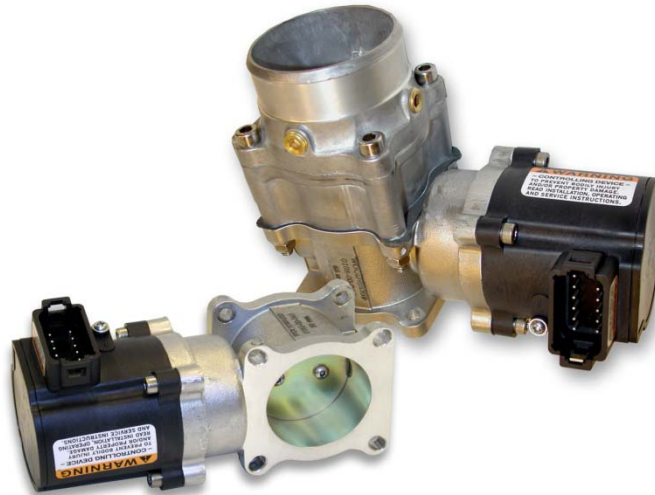
## LC-50

### Integrated Gas Mixer, Throttle Body, and Programmable Speed Control/Actuator

#### Application

The LC-50 is designed for use on gaseous fueled industrial engines between 5 and 100 kW (7 and 134 hp). The throttle and venturi sizes are between 24 and 50 mm.

Applications include power generation, refrigeration units, pumps, irrigation, and mobile industrial.



The mixer can be used with propane and natural gas and requires a zero pressure regulator. The throttle body incorporates the proven Woodward L-Series speed control, which operates the throttle plate. The LC-50 can be programmed via the RS-232 port of a PC/laptop to a variety of configurations, as follows:

- isochronous speed control
- auxiliary input
- adjustable ramp time
- remote speed setting
- error relay driver
- droop
- dual dynamics
- overspeed/underspeed protection
- three speed select

#### Description

The LC-50 provides a building block approach to total engine management. This modular design consists of a die-cast aluminum throttle body, mixer, plus a fully programmable integrated digital speed control and bi-directional actuator.

This unique design includes a venturi style annular ring mixer with no moving parts for superior mixing. The throttle body incorporates a corrosion-protected, plated steel shaft, plate, and an optional sealed ball-bearing design for durability and long life. An internal throttle return spring is standard to close the throttle in the event of power failure.

The LC-50 modular design reduces total engine assembly cost, eliminates external linkages, lowers inventory and part number proliferation. The programmable controller offers security to your configuration.

The LC-50 is compatible with Woodward's venturi-style mixer and other brands of gas mixers using suitable adapters (see L-Series product specification 03225 for actuator details and operating parameters).

- Integrated, bi-directional actuator and programmable speed control
- Suitable for gaseous engines
- OEM configurable
- Venturi mixer has superior mixing with no moving parts
- Eliminates external linkages
- Reduces total engine assembly costs
- Optional positioner mode
- Five sizes available
- Optional air/fuel ratio trim valve
- Optional sealed ball-bearing throttle body design
- Optional external throttle position switch

## Specifications

|                 |   |
|-----------------|---|
| Mass/Weight     | 425 g (15 oz)   |
| Engine Type     | 2-cycle or 4-cycle gasoline, diesel, or gaseous fuel  |
| Actuator Torque | High-efficiency torque motor delivers 0.34 N·m (0.25 lb-ft) (standard model) over 60° travel range to operate fuel or air control |

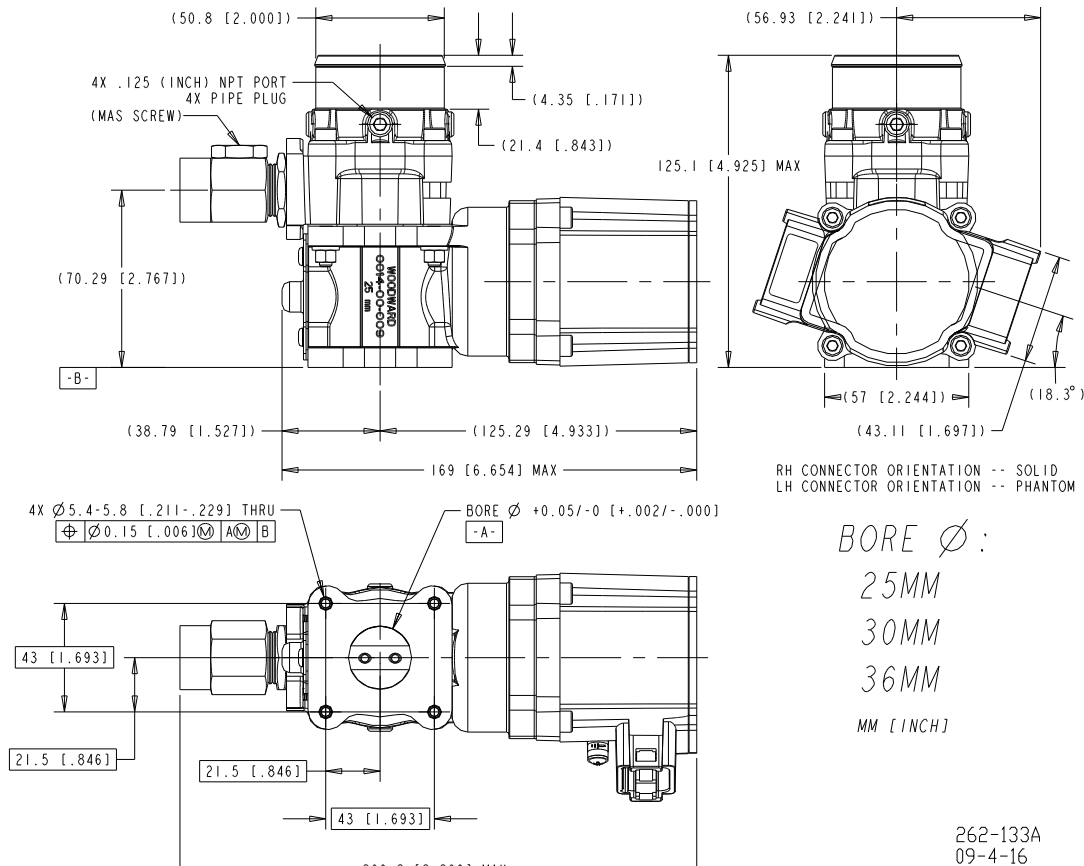
### Environment

|                               |  |
|-------------------------------|--|
| Ambient Operating Temperature | -40 to +105 °C (-40 to +221 °F)  |
| Storage Temperature           | -40 to +125 °C (-40 to +257 °F)  |
| Humidity                      | US MIL-STD 810E, Method 507.3, Procedure III   |
| Salt Spray                    | US MIL-STD 810E, Method 509.3, Procedure I   |
| Shock                         | MS1-40G 11ms sawtooth  |
| Vibration                     | Random: 0.3 G <sup>2</sup> /Hz , 10–2000 Hz (22.1Grms) 3 h/axis<br>Sine: 5 G 2.5 mm peak-to-peak, 5–2000 Hz, 3 h/axis, 90 min dwells, 1 octave/min |
| Drop                          | SAE J1211, Paragraph 4.8.3 (modified)  |
| Thermal Shock                 | SAE J1455, Paragraph 4.1.3.2   |
| Ingress Protection            | IP56 per EN60529   |
| Inlet Pressure                | Sealed shaft bearings: 2 bar (29 psi) gage<br>Standard shaft bearings: 0.068 bar (1 psi) gage  |

### Reliability and Quality Goals

The L-Series control system has a reliability target of 17 500 hours MTBF. It also has a quality goal of less than 25 PPM when measuring out-of-the-box defects. This quality goal is a target based on continuous improvement.

### Technical Manual 26249



Representative Drawing of LC-50 (small-bore shown) (Do not use for construction)



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