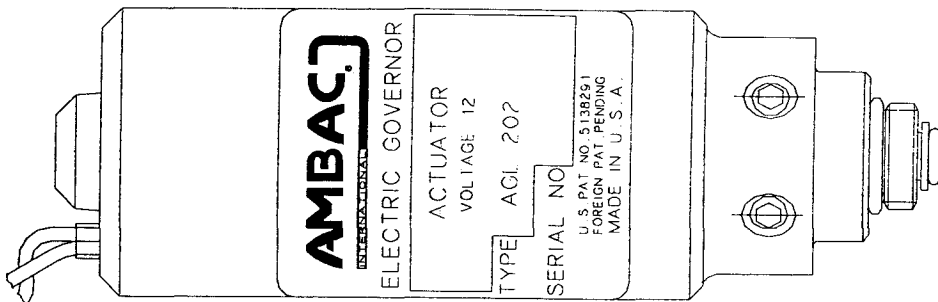


AGL 202  
AGL 222

Supersedes Issue  
Dated April 1995

**INTEGRAL ACTUATOR  
FOR  
LUCAS (CAV)  
DPA AND DPS FUEL PUMPS**



**ACTUAL SIZE**

**REPLACES ELECTRIC SHUTDOWN SOLENOID**

**SPECIFICATIONS**

**POWER INPUT**

- Operating Voltage ..... 12 or 24 VDC
- Normal Operating Current ..... 3.0 amps, 12V  
1.5 amps, 24V
- Maximum Current (Instantaneous) ..... 8.0 amps, 12V  
4.0 amps, 24V
- Polarity ..... Case Isolated

**ENVIRONMENTAL**

- Temperature Range ..... -40° to + 125°C (-40° to +250°F)
- Relative Humidity ..... up to 100%

**PHYSICAL**

- Dimensions ..... See Figure 1
- Weight ..... 1.3 lb.
- Mounting ..... Integrally Mounted

**MATING CONNECTOR**

- Supplied with Actuator ..... EC 410494

**RELIABILITY**

- Tested ..... 100%

**VARIATIONS**

- AGL 202A1 ..... For 12V Operation
- AGL 222A1 ..... For 24V Operation

**APPLICATIONS**

Lucas (CAV) DPA and DPS Fuel Pumps  
which do not vary timing during engine running

**ACCESSORIES**

- VA 678A ..... Drain Line Check Valve  
(supplied with actuator)

# ENGINE GOVERNING SYSTEMS

# AMBAC

INTERNATIONAL

## INTRODUCTION

The AGL 202 actuator is an electro-magnetic device which replaces the shutdown solenoid on the Lucas DPA and DPS fuel injection pumps, which have fixed engine timing. The actuator modulates the injected fuel quantity, according to the amount of current flowing to it from the speed control unit. Switching off power to the actuator will shut down the engine. The fuel pump mechanical governor can be adjusted to provide a safety backup to prevent engine overspeed.

The AMBAC EC50, EC60, ECD 67-5111 and CW 673C are compatible speed control units.

A significant feature of this integral actuator is the elimination of external fuel system control linkage, fuel pump modifications, and actuator brackets. The actuator requires no engine drive for hydraulic input, and requires no maintenance. The fast-acting solenoid is completely self-contained requiring only electrical connecting wires and the fuel drain line plumbing.

## DESCRIPTION

An AC frequency signal, i.e., from a magnetic pickup, is constantly fed into the speed control unit. The signal is compared with the preset frequency (speed setting). If the frequencies are not identical, a change in current from the speed control unit changes the magnetic force in the actuator. This change resets the fuel delivery to the engine.

10% above engine operating speed (i.e., 66 Hz for a 60 Hz generator set). This ensures that the mechanical governor operation does not interfere with the electric governor and provides a safety backup to prevent engine overspeeds.

The mechanical fuel pump throttle lever is locked fully open. The mechanical high idle governor is set to

The actuator housing is sealed against the engine environment so steam or other water based cleaning will not affect the system's operation. No maintenance is necessary.

## INSTALLATION AND ADJUSTMENTS

**CAUTION:**  
THE ENGINE SHOULD HAVE A FUNCTIONING INDEPENDENT OVERSPEED SHUTDOWN MECHANISM TO PREVENT RUNAWAY WHICH CAN CAUSE EQUIPMENT DAMAGE OR PERSONNEL INJURY.

1. Set the mechanical governor maximum speed adjustment sufficiently high so that the full load droop speed is above rated speed. When making this adjustment, operate the engine with no load. Allowing for 10% mechanical governor droop, the high speed limit should be set at 1980 RPM for 1800 RPM rated engine speeds, and 1650 RPM for 1500 RPM rated engine speeds. Refer to the appropriate Lucas or engine manufacturer's fuel pump service bulletin for adjustment instructions.

2. With the engine shut down, rotate the throttle lever to operate the engine at the desired maximum power and lock in place.
3. Unscrew the engine shutdown solenoid from the fuel pump and screw in the actuator, hand tight.
4. Select the drain line tapping (one of six) in the actuator body which will be used to connect the drain line adapter and check valve. Unscrew the sealing plug from this tapped hole. Leave the copper sealing washer in place at the bottom of the hole.
5. Screw the threaded tightening rod into the tapped hole, hand tight. Using the rod, tighten the actuator into the fuel pump until the tightening rod starts to flex. Remove the tightening rod and save for later use. Fit the adapter and drain line check valve to the actuator.

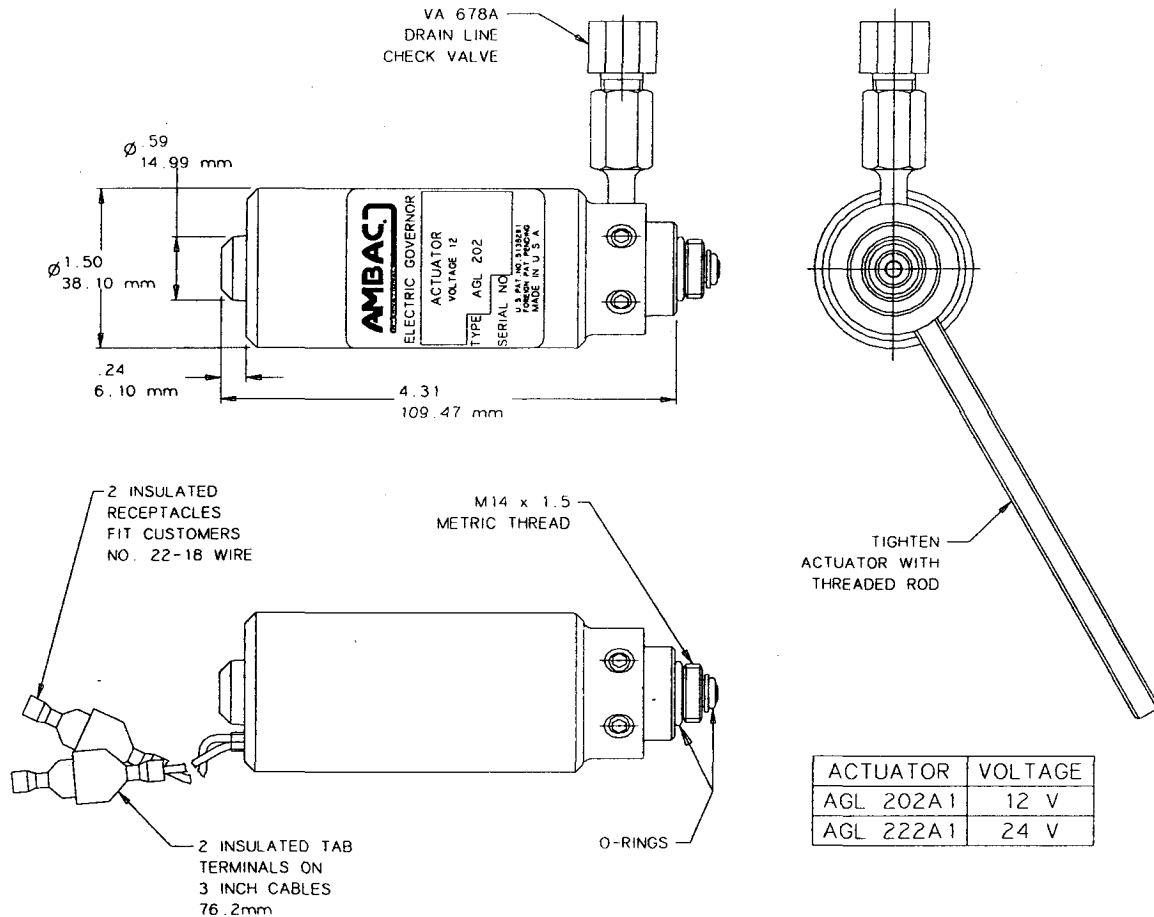


Figure 1 - AGL 202 and AGL 222 Actuator Dimensions

6. CAUTION Do not tighten the actuator to the fuel pump by clamping on the actuator body or outer end cap. This could result in actuator damage and/or fuel pump seizure.
7. Connect a fuel drain line between the actuator check valve (1/8 NPTF) outlet and either the engine fuel injector drain line, a "day tank", the engine fuel tank, or the upstream side of the engine fuel filter. All NPTF fittings should be hand tightened and then wrench tightened 1 to 1-1/2 turns. If sealant is used, it should be liquid type applied after initially engaging the threads prior to tightening. Right angle bends in fuel lines and fittings should be avoided near the fuel pump and actuator; use 30° to 45 fitting, or tubing with gradual sloping bends.
8. After installing the actuator, install the speed control unit, magnetic speed sensor and speed trim control (if needed) in accordance with the installation instructions furnished with the selected AMBAC electronic governor components.
9. Check that the engine shuts down when electrical power is removed from the actuator. Check that the steady state current flow corresponds with the normal operating currents shown on the specification on Page 1. Higher currents will cause the actuator to run hotter and may damage the coil assembly.