

ENGINE GOVERNING SYSTEMS

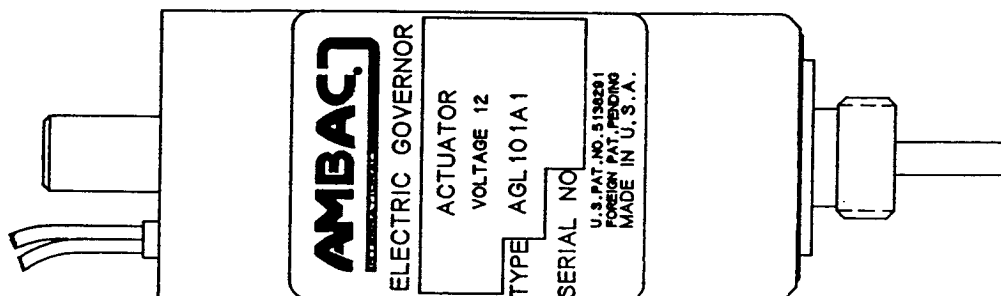
AMBAC

INTERNATIONAL

AGL 101
AGL 121

SUPERSEDES OCTOBER 1993 ISSUE

INTEGRAL ACTUATOR FOR NIPPONDENSO PFR CAMSHAFTLESS FUEL PUMPS



ACTUAL SIZE

REPLACES SHUTDOWN SOLENOID ON:

- PERKINS 100 SERIES ENGINES
- VOLVO 2000 SERIES ENGINES
- NORTHERN LIGHTS GENERATOR SETS, <40KW
- FORD COMPACT TRACTORS, 10-30 HP
- AND OTHERS TYPICALLY IN THE 5 TO 50 HP RANGE

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SPECIFICATIONS

POWER INPUT

- Operating Voltage 12 or 24 VDC
- Normal Operating Current 4 amps, 12V
2 amps, 24V
- Maximum Current (Instantaneous) 8 amps, 12V
4 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 lb.
- Mounting Integrally Mounted

MATING CONNECTOR

- Supplied with Actuator EC 410494

RELIABILITY

- Tested 100%

VARIATIONS

- AGL 101A1 For 12V Operation
- AGL 121A1 For 24V Operation

APPLICATIONS Nippondenso PFR Camshaftless Fuel Pumps

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INTRODUCTION

The AGL101 actuator is a linear electro-magnetic throttle positioning device which mounts integral to Nippondenso's PFR camshaftless fuel injection pumps. It positions the engine fuel throttle according to the amount of current flowing from the speed control unit through the actuator. 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 EC 50, EC 60 and CW 673C-50 Speed control units are suitable for use with the AGL 101 actuators and will provide other governor system fail-safe

features.

A significant feature of this integral actuator is the elimination of external fuel system control linkage and engine actuator brackets. The actuator requires no engine drive for hydraulic input, and requires no maintenance. The system provides the utmost in performance because the actuator is directly connected to the fuel injection pump linkage, thus minimizing delays and ensuring fast response. It is completely self-contained except for the wires connecting it to the speed control unit.

DESCRIPTION

An AC frequency signal, i.e., 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. The change causes repositioning of the fuel injection pump control linkage and resets the fuel delivery to the engine. The actuator stroke is proportional to the amount of current flowing through the actuator coils and is counter-balanced by an internal spring.

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

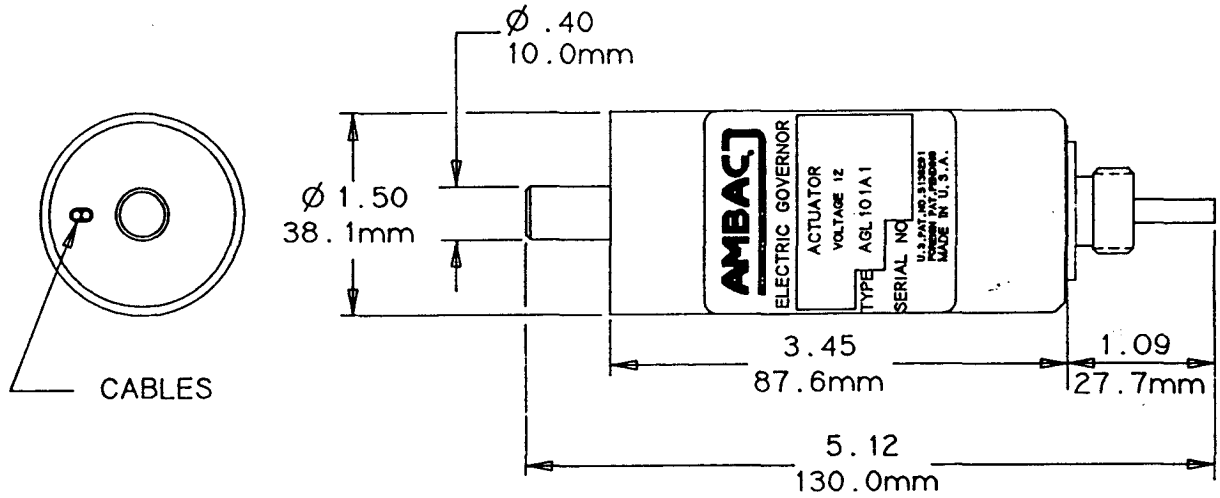
INSTALLATION AND ADJUSTMENTS

CAUTION:

THE ENGINE SHOULD HAVE A FUNCTIONING INDEPENDENT OVERSPEED SHUTDOWN MECHANISM TO PREVENT RUNAWAY WHICH CAN CAUSE EQUIPMENT

1. Adjust 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 Nippondenso or engine manufacturer's fuel pump service bulletin for adjustment instructions. Rotate the throttle lever to operate the engine at the desired maximum power and lock in place.
2. With the engine shut down, unscrew the engine shutdown solenoid from the fuel pump. Transfer the sealing washer to the actuator and screw into the fuel pump. Tighten to 25/30 in-lbs.
3. 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 engine governing system.
4. 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.

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ACTUATOR	VOLTAGE
AGL 101A1	12 V
AGL 121A1	24 V

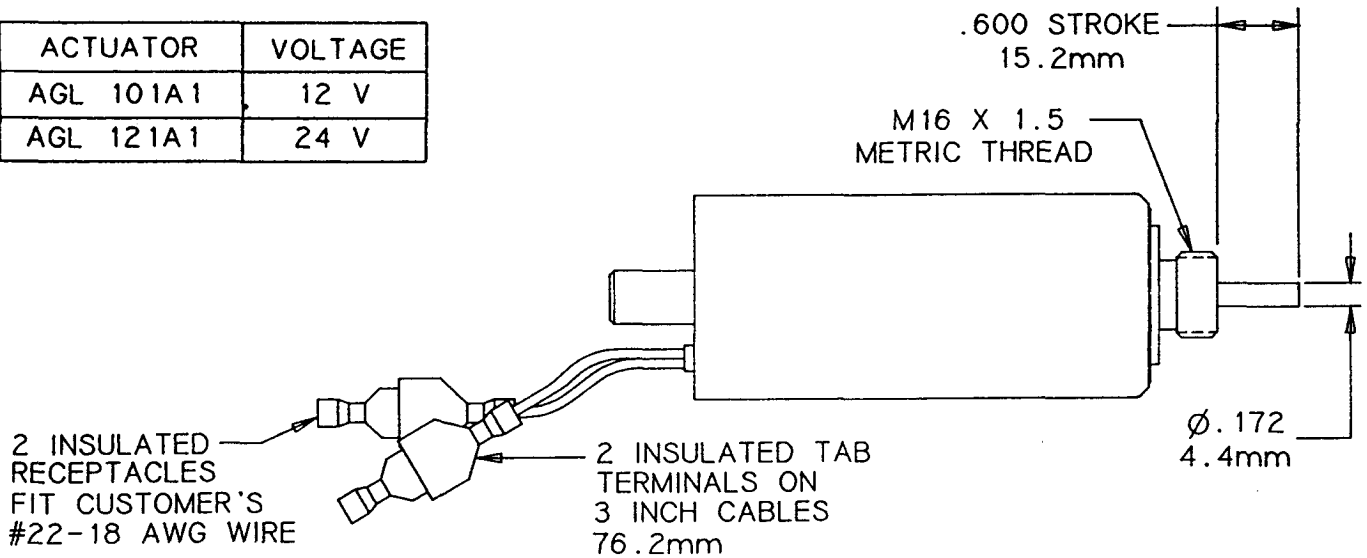


Figure 1
AGL 101 and AGL 121 Actuator Dimensions