ENGINE GOVERNING SYSTEMS

AMBAC INTERNATIONAL

AGS 50
AGS 52

Supersedes Issue
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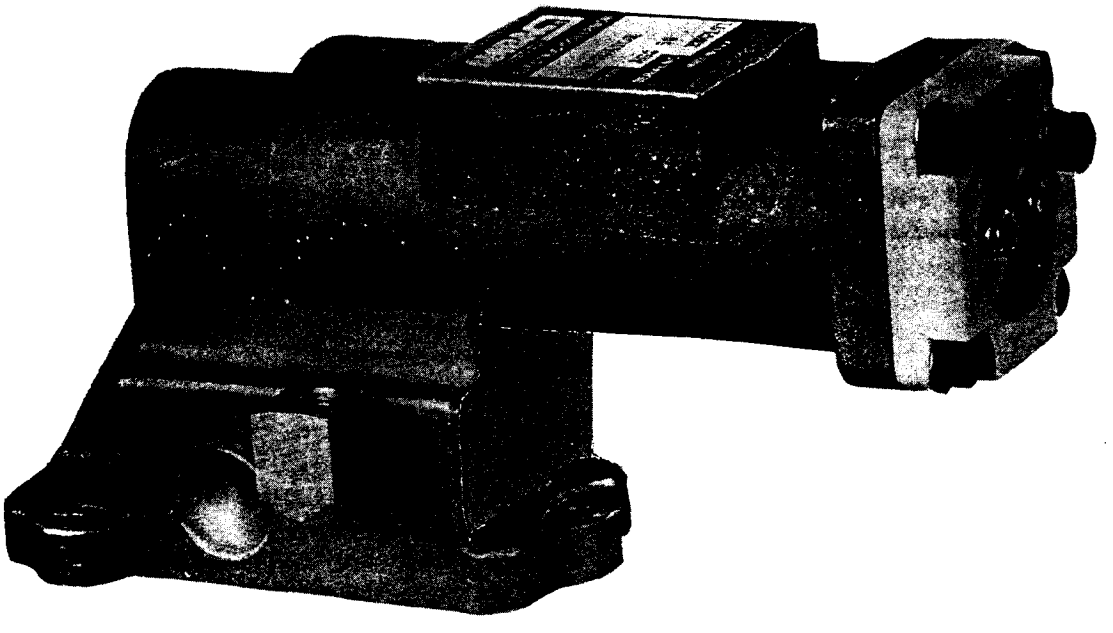
INTEGRAL ACTUATOR FOR STANADYNE FUEL PUMPS



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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 + 95°C (-40° to +200°F)
- Relative Humidity ..... up to 100%

PHYSICAL
- Dimensions ..... See Figure 1
- Weight ..... 2 lbs.
- Mounting ..... Integrally Mounted, Replaces Top Cover on Fuel Pump

MATING CONNECTOR
- Supplied with Actuator ..... EC 410494

RELIABILITY
- Tested 100%

VARIATIONS - HEAVY DUTY VERSIONS
- AGS 50A3 ..... For 1/8 NPTF Drain Line Valve (Stanadyne No. 15830), 12 VDC Operation
- AGS 52A3 ..... For 1/8 NPTF Drain Line Valve (Stanadyne No. 15830), 24 VDC Operation
- AGS 50A4 ..... For either 7/16 UNF O'Ring Drain Line Valve (Stanadyne No. 21252) or 1/8 NPTF Drain Line Valve (Stanadyne No. 15830), 12 VDC Operation
- AGS 52A4 ..... For either 7/16 UNF O'Ring Drain Line Valve (Stanadyne No. 21252) or 1/8 NPTF Drain Line Valve (Stanadyne No. 15830), 24 VDC Operation

APPLICATIONS ..... Stanadyne Diesel Fuel Injection Pumps Models DB, DC and DM

DRAIN LINE ELBOWS
- FI 1155 ..... For 1/8 NPTF Drain Line Valve (Stanadyne No. 15830)
- FI 410887 ..... For 7/16 UNF O'Ring Drain Line (Stanadyne No. 21252)

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AGS 52

INTRODUCTION

The AGS50 actuator is a linear electro-magnetic throttle positioning device which mounts integral to Stanadyne's DB, DC and DM 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 complete family of speed control units is suitable for use with the AGS 50 actuator and will provide other governor system fail-safe features.

The significant features of an engine governing system utilizing the integral actuator are 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 and the fuel pump drain line.

DESCRIPTION

An AC frequency signal (proportional to speed) generated by the magnetic speed sensor is constantly fed into the speed control unit. The signal is compared with the present 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 as shown in Figure 1. 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 interface with the electric governor and provides a safety backup to prevent overspeeding the engine. The actuator housing is sealed against the engine environment with gaskets at all openings 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. 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 Stanadyne fuel pump service bulletin for adjustment instructions. Rotate the throttle lever fully clockwise to operate the engine at the desired maximum power and hold in place.

2. Remove the fuel pump cover by unfastening the 3 mounting bolts and install the AGS 50 actuator as follows:

   a) Lower the actuator onto the top of the fuel pump from a position further towards the drive shaft end of the fuel pump than its final assembled position (Ref: Figure 1).

b) When the actuator contacts the sealing gasket, slide the actuator to align the 3 mounting holes and install the 3 mounting cap screws and washers. Tighten the cap screws progressively to 35/45 lbs-ins.

After the actuator is installed on the fuel pump, connect the fuel drain line to the drain line check valve which fits into the elbow at the side of the actuator. Two 1/8 NPTF holes are provided as shown in Figure 1 as alternative drain line connection locations. Seal off the unused connection hole with the 1/8 pipe plug provided with the actuator. Note: Two alternative drain line pressurizing valves are available on Stanadyne fuel pumps. 1/8 NPTF (Part No. 15830) and 7/16 UNF with O'ring (Part No. 21252). See "Variations" on Page 1 for corresponding actuator. Voltage ratings are 12 and 24 volts. After installing the AGS 50 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.

3. Check that the engine shuts down when electrical power is removed from the actuator. Screwing in the shutdown adjusting screw as shown in Figure 1 reduces the fuel delivery to the engine and assists shut-off. Engines adjusted with marginal shutdown settings will have a slower transient response during load dumps. Check that the steady state current flow does not exceed 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. Screwing the shutdown screw-out will decrease the current flow but will eventually prevent engine shutdown.

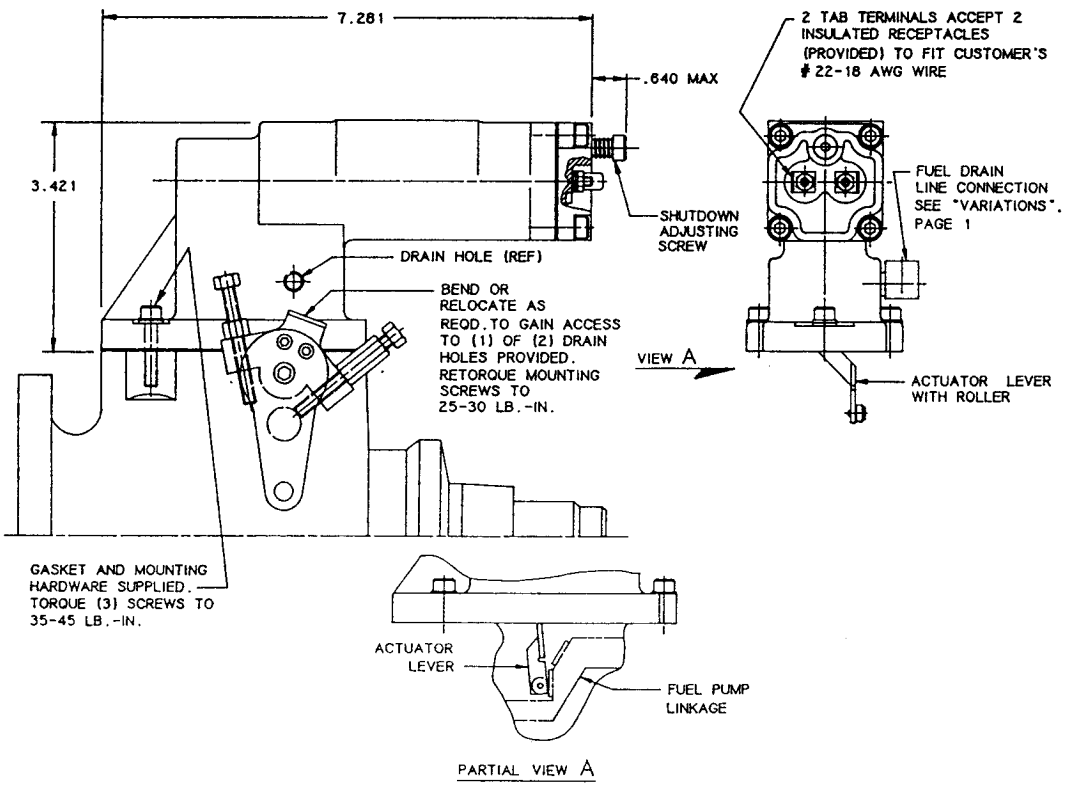

FIGURE 1