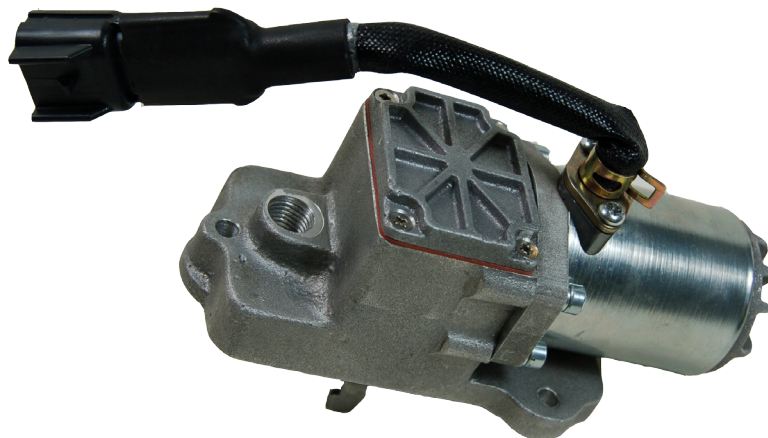


# Electric Actuator

## HT-100-DB Series

### Features and Benefits

- A Low Cost Integral Actuator
- Proven Electromechanical Design with High Reliability
- Easy Installation with Minimal Setup Time
- Fast Response
- Environmentally Sealed, All Metal Design
- Increased Operational Integrity and Security



## The Integral Electric Actuator for the Stanadyne DB-Fuel Pumps

This integral actuator is an electromagnetic servo device which, when installed becomes part of a closed loop fuel control system.

This system can be described as follows:

Electrical pulses, generated by the magnetic speed sensor, are directly proportional to the engine speed.

These pulses are transmitted to the speed control unit, which will compare the real-time pulses to the preset engine speed setting.

If the real-time pulses differ from the preset speed setting, the speed control unit will deviate the current to the electric actuator in an amount proportional to the difference. This deviation in current will cause the actuator shaft to rotate thus adjusting engine speed to match the preset engine speed setting.

Since there are no sliding parts in the HT-100 Series electric actuator and the unit is sealed, outstanding reliability and no maintenance are the resulting qualities.

### Introduction

The HT-100 Series integral Actuator is designed to mount directly to Stanadyne "D" Series fuel injection pumps. When the HT-100 Series electric actuator is installed on the fuel pump, an Integral high performance fuel control system results. No external linkages or brackets are required and no extra Stanadyne parts are needed. In addition, when the governor system is de-energized, the HT-100 Series electric actuator provides the function of a fuel shut off solenoid. Huegli Tech employs its field proven electro-mechanical design which provides proportional actuator movement based on actuator coil current.

The HT-100 Series actuator is simple to install. It conveniently replaces the fuel injection pump mechanical governor cover to achieve an integrated proportional servo fuel control package.

### System Description

The actuator is an electromagnetic servo device which can be integrated into a closed loop fuel control system. An engine speed control system can be described as follows. Electrical signals are generated by a magnetic speed sensor which are proportional to engine speed. The signal is sent into the electronic speed control unit which compares it to the preset engine speed setting. If the magnetic speed sensor signal and the preset engine speed setting are not equal, a change in current from the speed control unit to the actuator will change the magnetic force to the actuator. The rotation of the actuator shaft will then adjust the fuel delivery to the engine which will result in adjusting the engine speed to be equal to the preset engine speed setting. Shaft rotation is proportional to the amount of actuator current and counterbalanced by the actuator's return spring.

Since the design has no sliding parts and is sealed, outstanding-reliability results. No maintenance is required.

### Warning:

An Overspeed shutdown device, independent of the governor system, should be provided to prevent loss of engine control, which may cause personal injury or equipment damage.

### Installation

#### Preparing the Fuel Pump

Before the fuel Injection pump's Governor Cover can be removed and replaced by the HT-100 Series electric actuator, It is important for the outside of the pump to be clean. If necessary, remove any dirt with a solvent. This will prevent contaminants from entering the pump. The cleaning solvent as well as fuel oil can be collected by placing a suitable container underneath this pump.

1. Disconnect the pump's Electric Shutoff Solenoid wire from its connection point on the pump's Governor Cover. This wire connection is no longer necessary and it can be eliminated at its source.
2. Remove the Fuel Return Line from the Fuel Return Line Connector.
3. Remove the three (3) Governor Cover Screws. These will be replaced by mounting screws provided with the HT-100 Series actuator.
4. Remove the Governor Cover assembly with care, to insure that no dirt is allowed to enter the fuel injection pump.
5. Remove the Fuel Return Line Connector and the Gasket from the Governor Cover Assembly. Save the Fuel Return Line Connector and Gasket for later assembly use with the HT-100 Series electric actuator.

#### Installing the Actuator

1. Re-Install the straight Fuel Return Line Connector and original pump Gasket to the HT-100 Series electric actuator.
2. Position the HT-100 Series electric actuator on the fuel injection pump with the tall end of the electric actuator tilted slightly upward.
3. Slide the HT-100 Series electric actuator toward the rear (injector) end of the fuel injection pump until the actuators's U shaped coupler engaged the pump's Governor Linkage Hook. After engagement has been made, align the mounting holes between the electric actuator and the fuel injection pump.

**CAUTION:** Improper engagement of the actuator coupler to the pump's Governor Linkage Hook can cause an engine overspeed condition.

4. Securely fasten the HT-100 Series electric actuator to the fuel injection pump, using the (3) screws provided with the actuator.
5. Re-attach the Return Fuel Line to the Fuel Return Line Connector sealed on the HT-100 Series electric actuator.

## Fuel Injection Pump Set-Up

Prior to starting the engine, the pump's shut off lever, throttle lever and mechanical governor must be set, to insure compatibility with the electronic governor.

1. Secure the shut off lever in the "On Fuel" position, If the Stanadyne pump is equipped with one.
2. Lock the throttle lever in the High Idle fuel setting position. This setting should be 10-12% above the desired governor speed.
3. Adjust the pump's mechanical governor Droop by turning the Droop Adjusting Screw counterclockwise (CCW) until it stops. Then turn It clockwise (CW) two turns. This adjustment will provide compatibility between the mechanical governor and the electronic governor. See Diagram 2.
4. Purge the air in the fuel by removing the alien head plug located on top of the actuator.

## Wiring

The HT-100 Series is designed to have a dedicated coil for use in the 12 VDC operation and another dedicated coil for 24 VDC operation. These actuators are respectively identified as HT-100-DB-12 and HT-100-DB-24. The output from the selected HT-SG-XXX speed control unit is connected to the HT 100 Series actuator using the Huegli Tech cable harness CH1220-LXX. See the specific speed control unit literature for wiring information. CH1220 includes the pre-wired actuator mating connector for the HT-100 Series actuator. The actuator connector offers a vibration resistant and environmentally sealed electrical connection.

## Troubleshooting

If the governor system fails to operate and the actuator is suspected to be the problem, make the following tests:

### Measure Coil Resistance

10 ohms            12 VDC  
7.5 ohms           24 VDC

### Measure Coil isolation

>1 M ohm to ground

Remove actuator cover and manually move the actuator through its range by depressing the actuator's armature. Energize the actuator to full fuel (follow steps in control unit publication). No binding or sticking should occur.

If the actuator passes these tests, the problem is elsewhere in the governor system. Refer to the speed control unit trouble shooting publication.

## Specifications

### Power Input

Operating Voltage (Dedicated Coil) .....	12 or 24 VDC available
Nominal Operating Current .....	1.9 A at 12 VDC
.....	1.5 A at 24 VDC
Maximum Current (Continuous) .....	2.7 A at 12 VDC
.....	9 A at 24 VDC

### Environmental

Operating Temperature Range .....	-40°to+180°F(-40°to+85°C)
Relative Humidity .....	up to 100%
All Surface Finishes.....	Fungus Proof and Corrosion Resistant

### Physical

Dimensions.....	See Diagram 1
Weight.....	2.2 lbs (1 Kg.)
Mounting .....	Directly on STANADYNE "D" Series fuel injection pumps

### Reliability

Testing.....	All Units 100% Tested
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### Mating Hardware

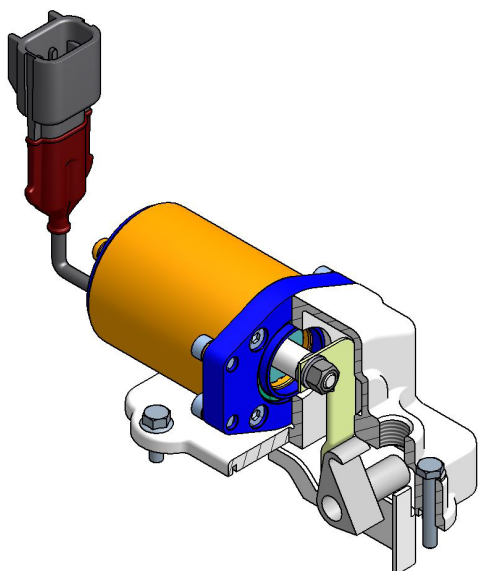
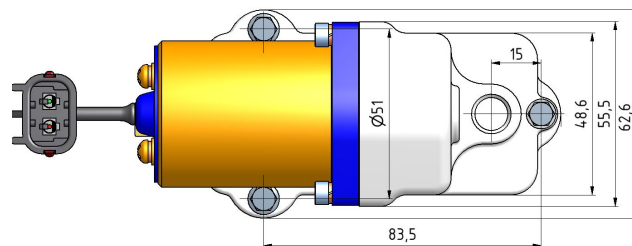
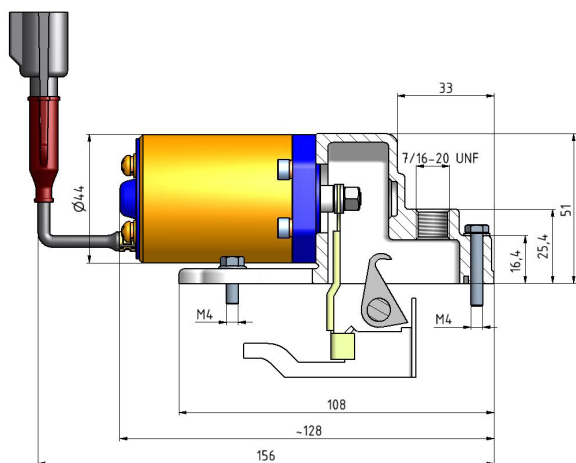
Wiring Harness - .....	CH-1220-LXX
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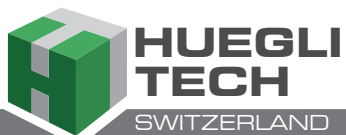
# Electric Actuator

Diagram

HT-100 Series



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