

ADD-175 Series



Manufactured by:



Governors America Corp.

The Integral Electric Actuator for Diesel Pumps

The 175 SERIES electric actuator is designed to mount directly to inline fuel injection-pumps, with a right hand rack in place of the mechanical governor. An optional external fuel shut off lever is provided to manually override the actuator's control. Also provided, as standard equipment, is an adjustable internal maximum fuel limit.

The 175 Series Electric Actuator can control fuel pumps up to 8 cylinders. The actuator was designed with two isolated chambers. The upper chamber is wet with oil and contains the connection to the fuel rack and an optional manual shut off mechanism. The sealed lower chamber contains the electromagnetic components.

Preparing the fuel injection pump

If the fuel injection pump is equipped with a mechanical governor, it must be removed. GAC recommends that this modification be performed by a qualified fuel injection service facility. The following procedure lists the general steps required to remove the mechanical governor.

NOTE: Be prepared to collect the oil that will be released from the mechanical governor.

1. Remove the rear housing from the mechanical governor and disconnect the governor linkage from the pump fuel rack. Remove the flyweight assembly. A special tool is required.
2. Remove the intermediate governor housing. This leaves only the rack and camshaft protruding from the pump.
3. Install the adapter plate to provide the transition required from the actuator to the mounting holes formerly held by the governor housing. This plate must have countersunk holes for the mounting screws.

Installing the actuator

All hardware needed to attach the actuator to the pump is located in kit KT289 supplied with the actuator.

1. Place the spring seat (1) over the fuel rack and slide it to the body of the fuel pump (see Figure 1-1). Slide the fuel rack return spring (2) over the fuel rack and against the spring seat. Attach the rack connection link assembly (4, 5, 6, 7) to the fuel rack with two M5 X 10 mm long retaining screws (3) that include patches of Loctite adhesive. Torque the screws to 3-4 NM.
2. Remove the upper actuator cover (8) and o'ring seal (25). Clean the actuator to pump adapter mounting surface so that it is free of any debris. Insert two M6 X 16 mm long screws (15) and spring washers (16) through the lower mounting holes inside the upper actuator cavity (see Figure 1-3). Align the gasket (29) as shown in (Figure 1-4) and install it over the two screws and carefully slip the actuator over the fuel rack assembly until the two lower screws just start to meet the fuel pump mounting holes. Insert a ball end hex wrench through the access point located on the operating lever (17), to tighten the left lower mounting screw (15) a few turns. Pull the operating lever outward and slide the ball end hex wrench into the space between the operating lever and the access point in the housing of the actuator to tighten the right lower mounting screw. Alternate the turning of each screw so that the actuator is aligned properly with the pump adapter plate. Once these two screws are fully engaged (do not tighten at this time) into the pump housing, insert two additional M6 X 16 mm long screws (15) and spring washers (16) into the top two mounting holes of the actuator and thread into the pump housing. Torque all four mounting screws to 5-6
3. Carefully loosen screw (11) and (20) over the slotted portion of the adjustment plate so that the operating lever bearing assembly (21) can be moved away from the fuel rack connection link. Ensure that the fuel rack is as far out of the pump as possible. Rotate the operating lever (17) out from the actuator until it stops (the armature of the actuator will be in contact with the lower cover (9)) and hold in this position. Rotate the adjustment plate and lever bearing assembly (21) in towards the fuel rack so that contact between the bearing and rack connection link is made. Continue to push in an additional 1 to 2 mm. While holding this position torque the operating lever assembly shaft screw (11) and screw (20) to 4-6 NM.
4. Inspect the assembly to ensure all screws are tight and the fuel rack moves smoothly without any binding. Push in the fuel rack manually to the full fuel position and rotate the fuel shut off lever (22) to minimum fuel to confirm that the shut off lever contacts the metal plate (6) on the fuel rack connector assembly and forces the fuel rack to minimum position.
5. The operating lever has a maximum fuel adjustment set screw (23) which can be used to restrict the fuel rack travel.

NM. Verify that the fuel rack assembly moves in and out freely inside the upper cavity of the actuator.

NOTE: When installed, the cover must not hit the internal operating lever or the maximum fuel adjustment screw.

Torque the cover screws to 2-3 NM. Check for any oil leaks. Lock-wire the lower screws for tamper resistance.

WARNING

Setting high fuel levels may cause the maximum fuel adjustment screw to hit the inside of the top cover, which can change the minimum fuel position. This could lead to a dangerous condition. When setting fuel levels above 17mm of rack travel, ensure that the adjustment screw does not contact the cover at minimum fuel position.

With the fuel pump operating on the engine, the maximum fuel setting screw can be adjusted to provide specific horsepower. Once this setting is made torque the locknut (24) on the fuel adjustmentscrew to 5-6 NM.

Rotate the manual shut off lever (22) to the stop position and ensure that the fuel is completely shutoff and the engine stops. With the engine shut down, install the upper chamber cover (8) and o'ring seal (25) by first applying Loctite 222 to the six screws (26, 27) provided.

CAUTION

The engine should be equipped with an independent shut down device to prevent overspeed which can cause equipment damage or personal injury.

SELECTION CHART

TABLE A

	12V	24V	w/ Shutoff	w/o Shutoff	w/ Mating Conn	w/o Mating Conn
ADD175A-12	*		*			*
ADD175A-24		*	*			*

Specification

Performance

Force.....6.2 lbs (27.5N)
 Operating Stroke.....0.80 in (21mm)
 Response Time (10-90% 2-19mm).....35 MSEC
 Internal Sealing Pressure.....2 bar (29 psi)

Electrical Power Input

Operating Voltage.....12 VDC or 24 VDC
 Coil Resistance.....12 VDC Version- 1.7+/-0.2 OHMS
24 VDC Version- 7.2+/-0.5 OHMS
 Nominal Operating Current.....12 VDC Version- 4.0 A
24 VDC Version- 2.0 A
 Maximum Current.....12 VDC Version- 5.8 A
24 VDC Version- 3.1 A

Environmental

Operating Temperature.....-40° to +200°F (-40° to +95°C)
 Relative Humidity.....Up to 100%
 Shock.....20g @11msec
 Vibration.....20g, 20-500 Hz
 Agency.....RoHS Compliant

Physical

Dimensions.....See Figure 2-1
 Weight.....4.75 lbs. (2.2 kg)
 Mounting.....requires BYC adapter plate
 Finish Specification.....ES1031
 Mating Connector.....EC1300
 Mating Cable Harness.....CH1215

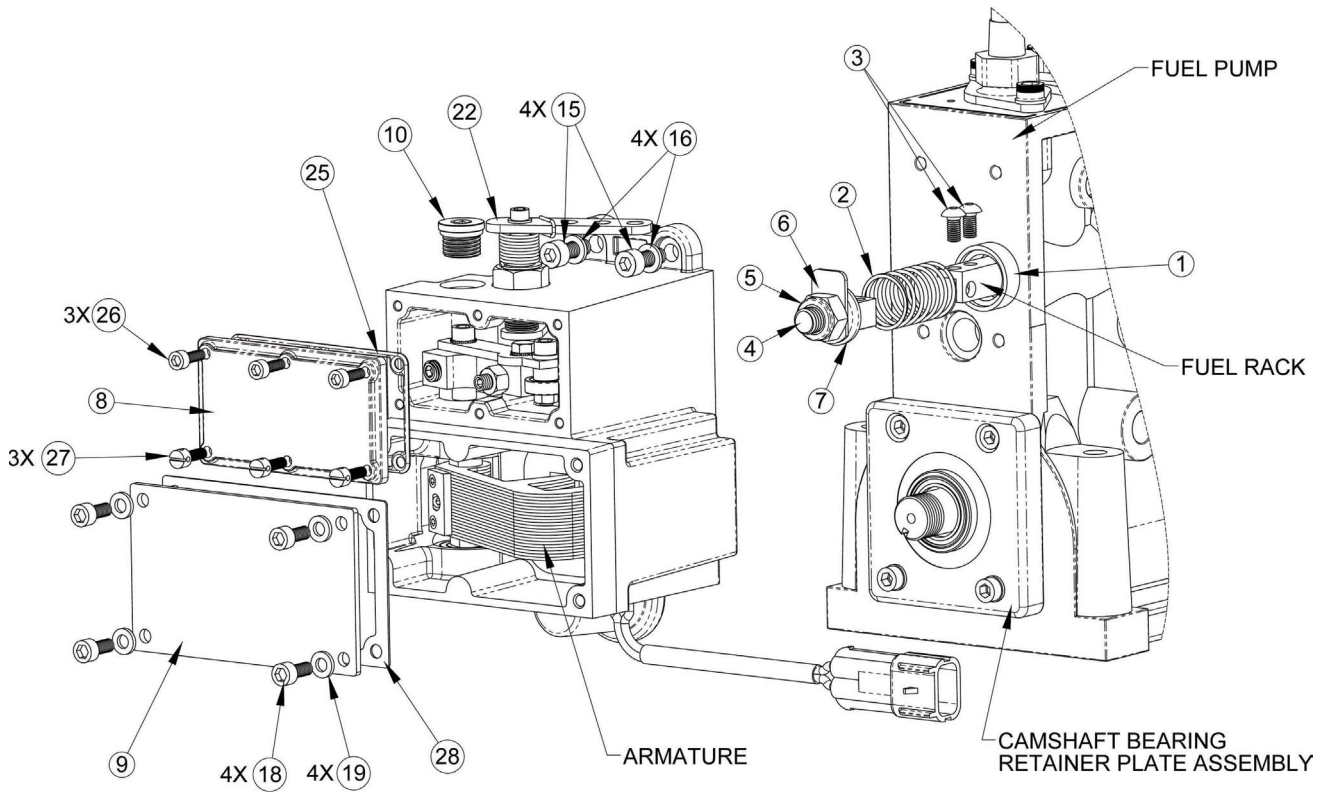


FIGURE 1-1

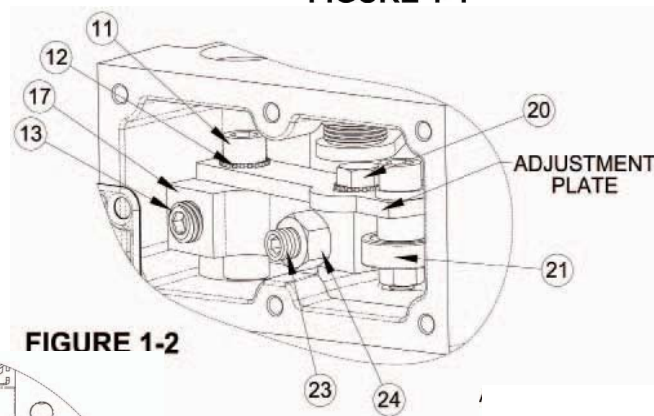


FIGURE 1-2

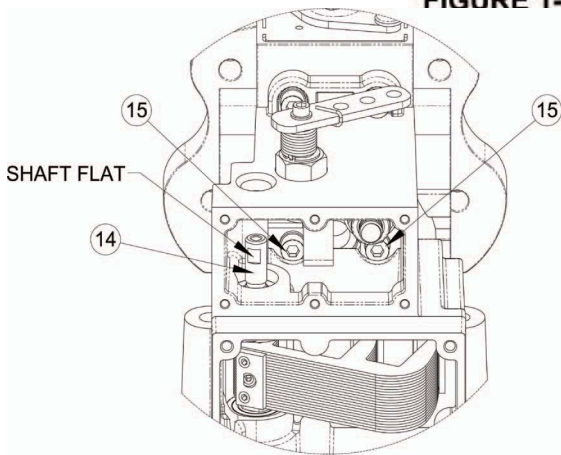


FIGURE 1-3 LOWER COVER AND LEVER ASSEMBLY NOT SHOWN FOR CLARITY

ORIENTATION OF MOUNTING GASKET

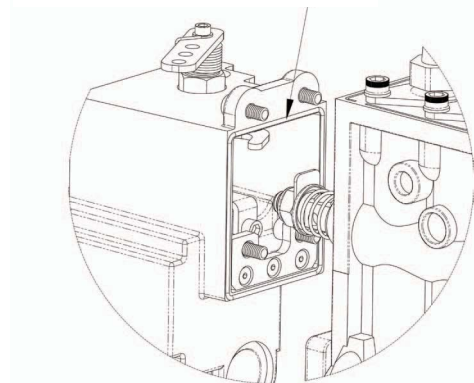


FIGURE 1-4

Dimensions

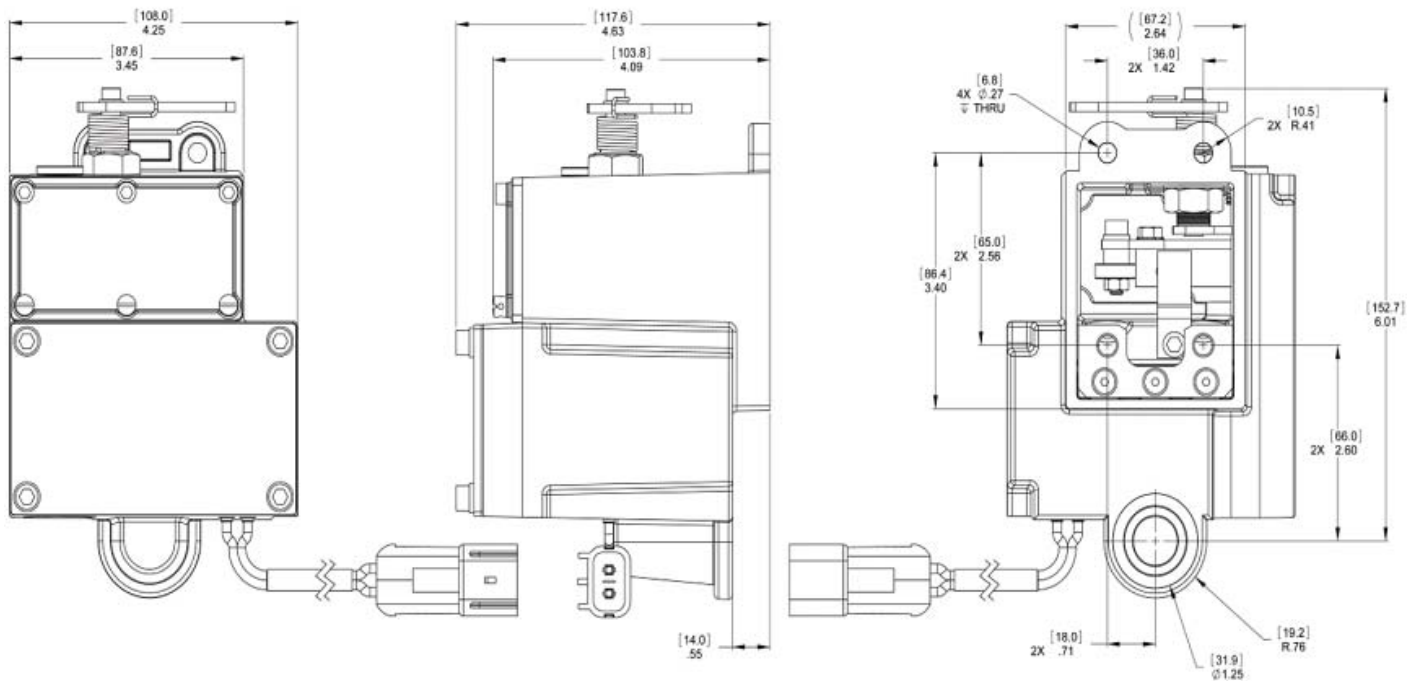
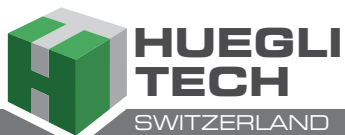


Figure 2-1

Local Distributor / Partner:



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