

1 INTRODUCTION

The ADB120E4 from Governors America Corp. is a linear, proportional, electric fuel metering servo for use on Cummins engines with PT fuel systems. The actuator is energized by signals from a speed control unit and is capable of delivering fuel at rates up to 1700 lbs./hr. The actuator's proportional fuel valve improves steady state and transient response.

2 INSTALLATION

The actuator must be rigidly mounted as close as possible to the outlet of the PT pump. GAC's optional bracket BK114 is designed to fit the ADB120E4 to all Cummins engines.

Attach the actuator bracket to the engine.

Attach the actuator to the bracket with ¼-20 1" screws washers and nuts.

The actuator to valve linkage is set at the factory and requires no adjustment.

Connect the valve to the fuel system as shown in **Diagram 1**.

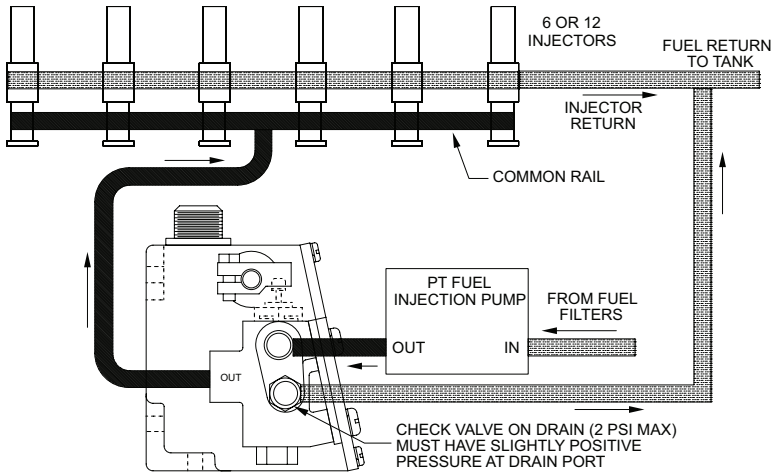
All fuel line connections can be made using either steel tubing or wire braided rubber hose. All engines require 5/16" ID tubing except 12 and 16 cylinder engines which require 3/8" ID tubing.

The outlet of the PT fuel pump is connected to the inlet of the valve. The outlet of the valve is connected to the fuel rail that leads to the injectors. The valve inlet and outlet are ¼" NPTF thread.

The drain on the valve must be connected to the fuel injector return line through the check valve supplied. A maximum of 2 PSI back pressure on the valve is acceptable. Higher back pressures may cause fuel leakage from the valve stem.

All fittings to the fuel valve should be hand tightened, then tightened an additional 1 - 1½ turns with a wrench. Avoid over tightening. A liquid sealant may be used if desired. Do not use Teflon tape on these connections. Avoid right angle bends in both the fittings and the inlet and outlet lines.

DIAGRAM 1



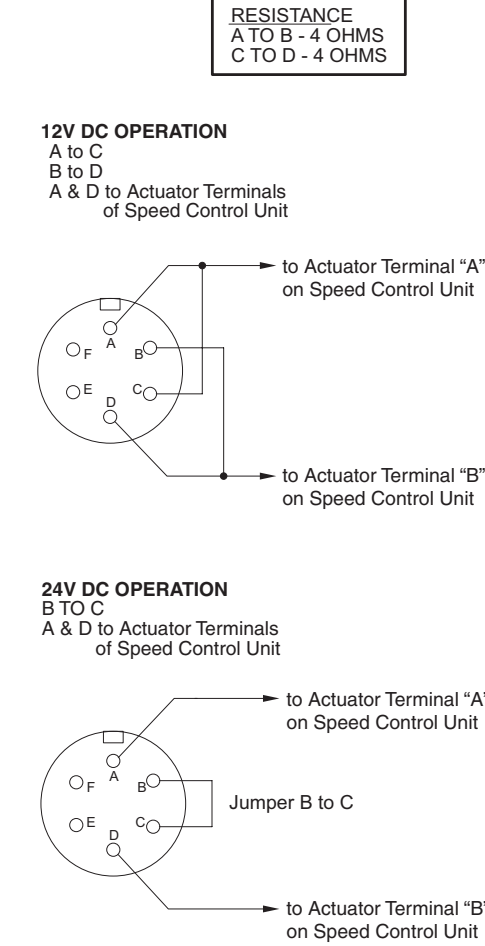
Fabricate a cable harness to connect the speed control unit to the actuator. The recommended wire size for the cable harness is at least #16 gauge (1.5 mm²) for 12 V systems and #18 gauge (1.0 mm²) for 24 V systems. Larger gauge wire is necessary for cable lengths greater than 12 ft (4 m). Cable harness CH1203 is available from GAC, which is preterminated and has 6 ft of cable attached.

The GAC mating connector EC1000 must be wired in a configuration to match the system voltage supply. See **Diagram 2**.

For 32 V operation, wire the connector as shown for 24 V operation and add a 1.5 ohm, 25 W resistor in series with pin A of the actuator connector and the corresponding output terminal of the speed control unit. For 76 V operation, use a 15 ohm, 150 W resistor.

Connect the wires from pins A and D of the actuator connector to the speed control unit. Refer to the specific speed control unit literature for wiring information.

DIAGRAM 2



3 SPECIFICATIONS

PERFORMANCE	
Torque	1.1 lb-ft (1.49 Nm)
Operating Stroke	25°±1°
Response Time (10-90% 2-19mm)	30 msec
POWER INPUT	
Operating Voltage	12, 24, or 32 VDC
Normal Operating Current	2.0 A at 12 VDC 1.0 A at 24 VDC
Maximum Current (Continuously Rated)	6.0 A at 12 VDC 3.0 A at 24 VDC
ENVIRONMENT	
Operating Temperature Range	-40°F to +200°F (-40°C to +95°C)
Relative Humidity	up to 100%
Vibration	Up to 20 G, 50 - 500 Hz
All Surface Finishes	Fungus Proof and Corrosion Resistant
PHYSICAL	
Dimensions	See Section 4 Outline Drawing
Weight	4.75 lb (2.2 kg)
Mounting	Vertical/Electrical Connector on Top
Fuel Flow (0.8 A)	80 ml/min (±25%)
(1.5 A)	2000 ml/min (±25%)

4 OUTLINE DRAWING

ADB120E4 WITH SQUARE ALUMINUM VALVE

Dimension Units
[X.X] — [mm]
X.XX — in

ADB120E4 WITH HARD COATED ALUMINUM VALVE

Dimension Units
[X.X] — [mm]
X.XX — in

120E4 Electric Actuator 3.14

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