

1 INTRODUCTION

The 335 series is a universal, 2.9 lb-ft, 75 ° max rotation actuator with fast response, low current draw, and precision bearings.

2 INSTALLATION

The actuator must be rigidly mounted as close as possible to the fuel control or throttle body control lever of the engine. Vibration from the engine will not affect the operation of the actuator. The preferred mounting is with the electrical connector facing to the side or downward. Applications with the actuator upside down, on its back, or sideways should be avoided.

- Linkage arrangement of any actuator system is always important. High quality rod end bearings should be used. Rod end bearings that have high friction can cause instability and require servicing.
- Levers and linkage should be sturdy yet low in mass for the fastest speed of response.

Arrangement of the linkage for actuation of the engine fuel control is an important application consideration. For proportional actuators to operate with linear control systems, it is important to obtain a linear relationship between actuator stroke and fuel delivery. The linkage configuration for gaseous systems is illustrated in Diagram 1. The lever on the actuator should be nearly parallel to the throttle body lever at the mid fuel position for linear fuel control.

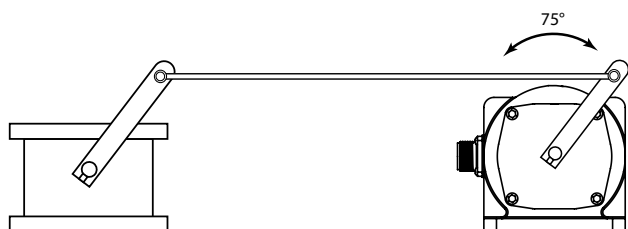
IMPORTANT The 335 has 75° of travel, so a linear linkage or direct coupling can be used for throttle bodies.

In general, the linkage should be adjusted so that the fuel control lever minimum and maximum fuel stops are used rather than the actuator internal mechanical stops. The actuator should be adjusted so that it operates over at least one half (35 degrees) of its available travel.

DIAGRAM 1 FUEL LEVER AT MID FUEL/AIR POSITION



DIAGRAM 2 FUEL LEVER AT FULL FUEL/AIR POSITION

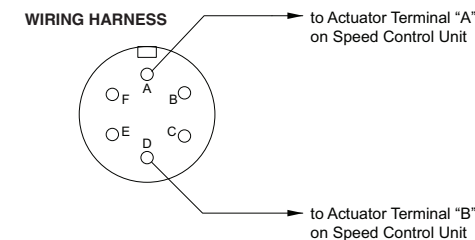


3 WIRING

ACB ADB The mating electrical connector must be wired in a configuration dependent on the system voltage supply. The maximum wire size that will fit into the actuator mating half connector is #16 AWG (1.3 mm sq.). Cable CH 1203, a pre-wired actuator cable harness, is available. It is 12 feet (4 Meters) in length and suitable for use on 24 volt systems.

24 Volt Applications Maximum current is 6.0 Amps. The recommended wire size is at least #16 AWG (1.0 mm sq.). See Diagram 3.

DIAGRAM 3 24 VOLT OPERATION



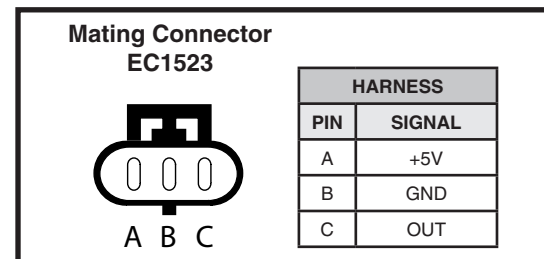
NOTE Since the 335 is a proportional actuator, the connector to speed control does not have polarity.

Actuator cable harnesses with lengths greater than 10 ft. (3 meters) from the actuator to the speed control unit may introduce current losses which can restrict full rotation of the actuator. In this case, use of a larger gauge wire is required.

For applications where EMI is of concern, twisted, shielded cable for the actuator is recommended. Twisting of the cable alone will substantially reduce EMI.

NOTE The ADB335F version of the actuator includes a position sensor. See below for wiring. A GAC speed control unit that includes fuel management electronics is required to interface with this sensor. See the appropriate speed control unit literature for complete wiring information.

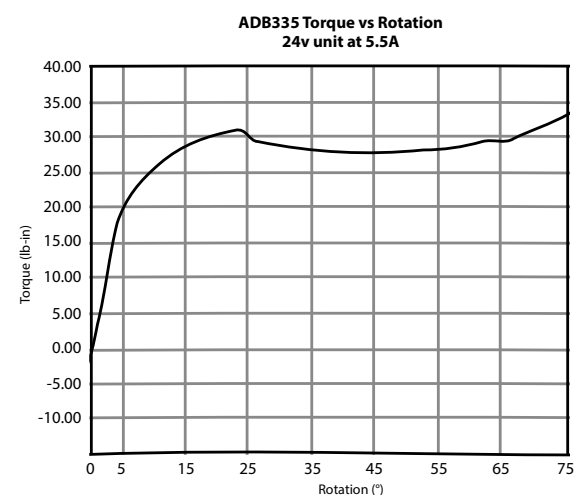
POSITION FEEDBACK SENSOR



4 ADJUSTMENTS

Reconfirm that the linkage is not binding and that friction is minimal. Before starting the engine, push the actuator to the full fuel or air position and release. It should return instantly to the zero fuel/air position without any binding. Once the engine has been started, the linkage can be optimized.

NOTE Smaller angles of actuator travel may improve transient performance, but will reduce available force at the fuel control lever. Allowing the actuator to operate through at least one half (35 degrees) of its stroke will usually provide near optimum response.



5 TROUBLESHOOTING

If the governor system fails to operate, make the following tests at the actuator mounted connector while moving the actuator through its stroke.

MEASURING THE RESISTANCE - ADB335

TERMINALS	RESISTANCE
A to D	2.5 Ohms
A to Housing	Infinity
D to Housing	Infinity

Energize the actuator to full fuel (follow steps in control unit publication) and manually move the actuator through its range. No binding or sticking should occur. If the actuator passes the tests, the problem is elsewhere in the system. Refer to the control unit troubleshooting publication.

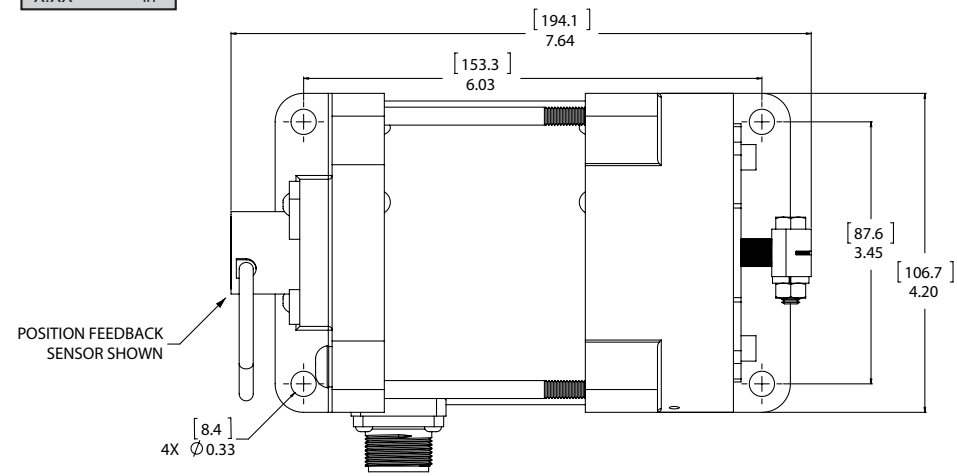
6 SPECIFICATIONS

PERFORMANCE	
Maximum Rotation	75° ±1°
Available Torque	2.9 lb-ft (3.93 N-m)
Response (0-100%)	38 msec
(10-90%)	35 msec
POWER INPUT	
Operating Voltage	24 VDC
Normal Operating Current	2.5 A at 24 VDC
Maximum Current	6.0 A at 24 VDC
Coil Resistance (Red to White 24VDC)	2.5 Ω
Wiring to Ground	5 M Ω
RELIABILITY	
Vibration	±4G, 25 to 100 Hz
Shock	20G, 11 msec
Testing	100% Functionality Tested
Rated Life	>40 Million Cycles
LEVER	
Shaft	SAEJ1300 Actuator (Works with GAC serrated shaft levers)
ENVIRONMENT	
Ambient Temperature	221°F max (105°C)
Relative Humidity	SAEJ1455
Salt Spray	ASTMB117-97
All Surface Finished	Fungus & Corrosion Resistant
AGENCY COMPLIANCE	
CE Compliant	Stationary Industrial Markets Only
PHYSICAL	
Dimensions	See Section 6
Weight (approx.)	13.2 lbs (5.99 kg)
WIRING HARNESS	
Mating Connector (Military-style)	EC1000 EC1010
Cable Harness (Military-style)	CH1203 CH1210 CH1212
Feedback Position Sensor Connector	EC1523 (Delphi Metri Pack 150)

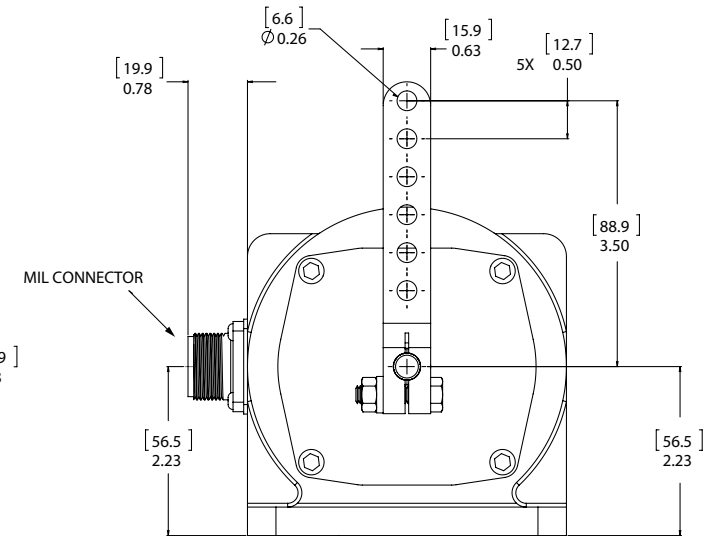
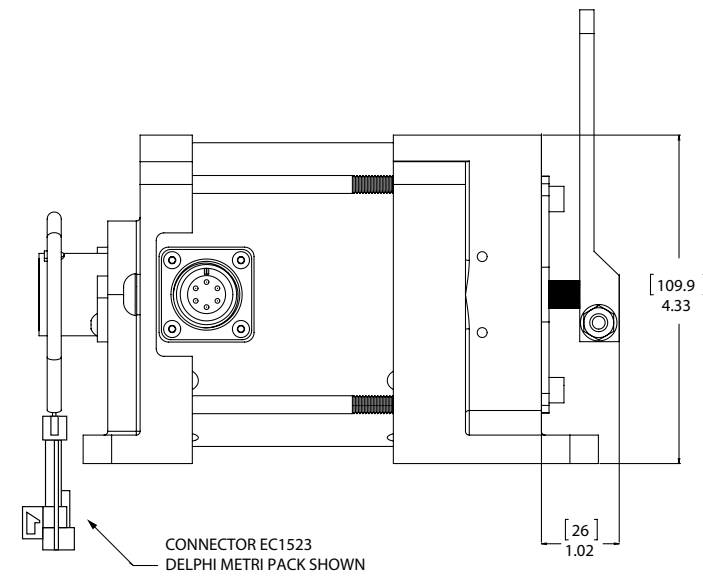
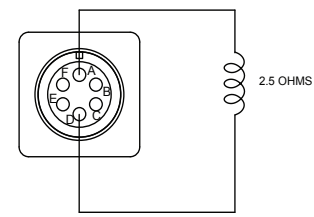
* FOR OUTLINE & DIMENSIONS SEE OTHER SIDE OF THIS DOCUMENT

7 OUTLINE & DIMENSIONS

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



AVAILABLE CONNECTOR: MILITARY CONNECTOR



MIL CONNECTOR