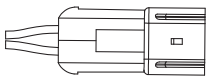
180 Series
Integral Actuator
for DEUTZ 1013/2012 & VOLVO 520/720 Engines

1 SELECTION CHART

PRODUCT NO.	Voltage		Packard Connector	With Mating Connector	With Mating Harness
	12	24			
ADD180G-12	▪		▪	▪	
ADD180G-24		▪	▪	▪	
ADE180G-12	▪		▪		▪
ADE180G-24		▪	▪		▪

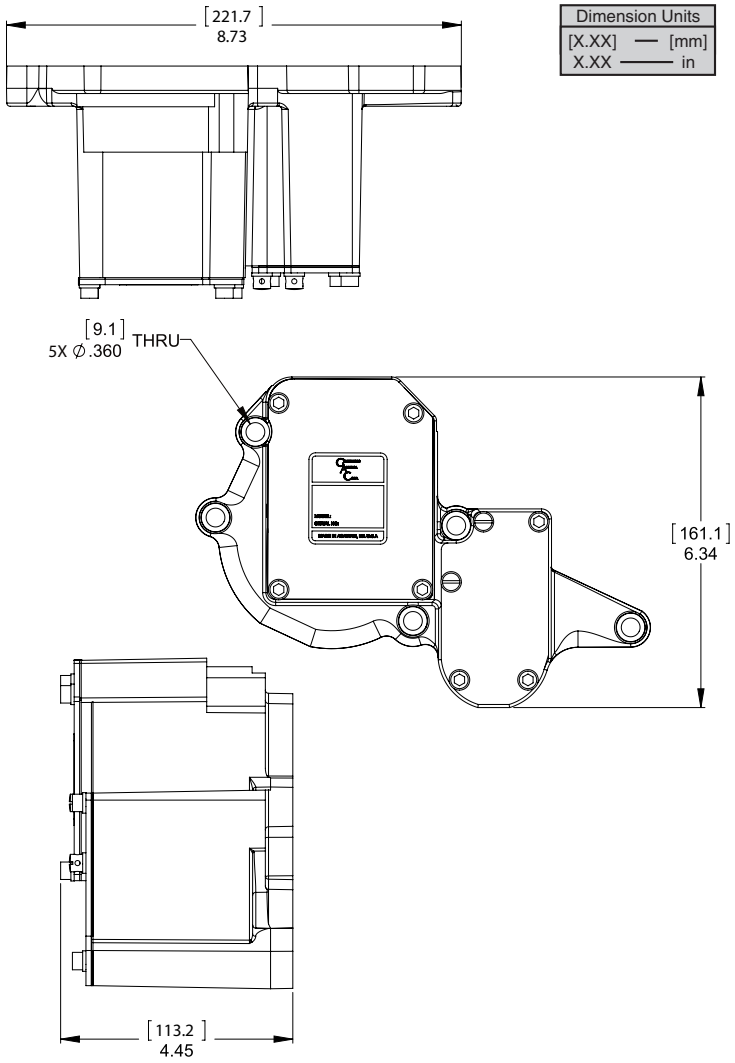
2 SPECIFICATIONS

PERFORMANCE	
Operating Stroke	0.78in [20mm]
POWER INPUT	
Operating Voltage	12 or 24 VDC
Normal Operating Current	3.5 Amps @ 12 VDC 2.0 Amps @ 24 VDC
Maximum Current Continuously Rated	5.5 Amps @ 12 VDC 3.0 Amps @ 24 VDC
ENVIRONMENT	
Operating Temperature Range	-40°F to +212°F (-40°C to +100°C)
Relative Humidity	up to 100%
All Surface Finishes	Fungus Proof and Corrosion Resistant
Ingress Protection	IP65
PHYSICAL	
Operating Temperature Range	-65°F to +200°F (-54°C to +95°C)
Relative Humidity	up to 100%
RELIABILITY	
Testing	100% Tested
AVAILABLE CONNECTORS	



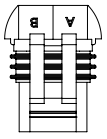
Packard

3 OUTLINE DIAGRAM

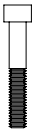


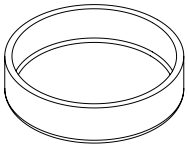
4 INSTALLATION KIT CONTENTS

Included with the actuator you will find:



(1) Packard Mating Connector

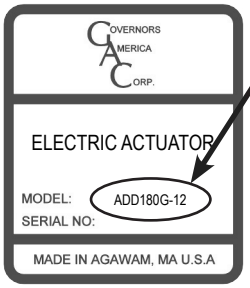

(5) M8 2.25” Bolts


(1) Freeze Plug

5 VOLTAGE

WARNING Remove the battery negative connection before proceeding.

Verify the actuator voltage rating matches the battery voltage.



12 Volt: ADD180G-12 or ADE180G-12
24 Volt: ADD180G-24 or ADE180G-24

NOTE ADE actuator models (ex. ADE180G-12) includes a connector harness inside the box in which it comes packaged. ADD actuator models (ex. ADD180G-12) do not include a cable harness. However, the actuator and installation kits are identical.

6 PREPARATION

Before removing the engine's mechanical governor and replacing it with the 180 Series electric actuator, it is important that the surrounding area be clean. Remove any dirt using compressed air or a suitable cleaning solvent. Prevent any contaminates from entering the engine. If a solvent is used, place a suitable container underneath the mechanical governor to collect the waste solvent and dirt. Dispose of the waste solvent by an environmentally accepted method.

Unbolt the engine's mechanical governor. Engine lubrication fluid will be present inside the mechanical governor.

7 INSTALLING THE FREEZE PLUG

The supplied Freeze Plug must be installed to seal off the area that allows flow of lubrication fluid to the mechanical governor. The 180 SERIES electric actuator does not require lubrication from the engine. Installing this Freeze Plug will insure that sufficient lube oil pressure will be maintained in the engine.

1. Once the mechanical governor has been removed from the engine, make sure the mounting surface and the inner bore are sufficiently cleaned. See Figure 1.

2. The inner bore is where the Freeze Plug will be pressed into to maintain engine oil pressure. Make sure that the outer surface of the Freeze Plug is clean and free of any nicks or burrs. See Figure 2.

3. Apply Loctite 638 (see Loctite instructions) to the outer surface of the Freeze Plug and to the mating surface of the inner bore. See Figures 1 & 2.

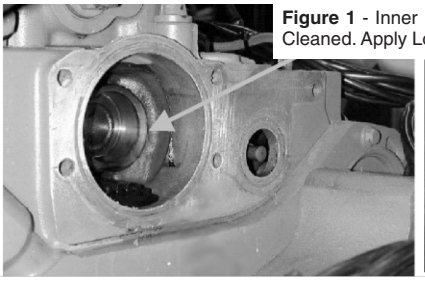


Figure 1 - Inner Bore to be Cleaned. Apply Loctite here.

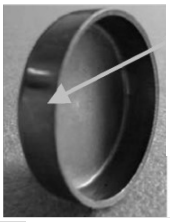


Figure 2 - Freeze Plug. Make sure this surface is clean and free of nicks or burrs. Use Loctite on outer surface.

4. As stated earlier, the Freeze Plug must be pressed into the engine bore. Use a length of steel pipe with a 38mm diameter to hold the Freeze Plug in place. See Figures 3 and 4.

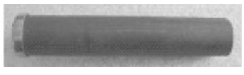


Figure 3 (left**) & 4** (below) - Use a length of 38mm diameter steel pipe to drive the Freeze Plug into the engine's inner bore.

5. Then, using a hammer to tap the steel pipe, drive the Freeze Plug into the inner bore making certain that it goes in straight. Drive the Freeze Plug in until the edge of the Freeze Plug is aligned with the edge of the inner bore. See Figure 5.

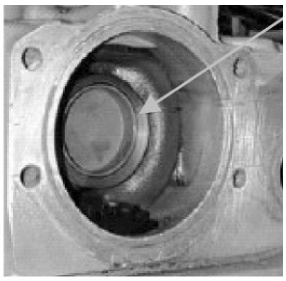


Figure 5 - Align the Freeze Plug to this edge.

8 WIRING

An actuator cable harness is used to connect the 180 SERIES actuator to the selected GAC speed control unit. No polarity needs to be observed. The cable harness with mating half connector provides a vibration resistant and environmentally sealed electrical connection. See the specific speed control unit literature for additional wiring information.

9 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 COIL RESISTANCE		MEASURING COIL ISOLATION
12 VDC ACTUATORS	24 VDC ACTUATORS	EACH WIRE TO ACTUATOR HOUSING
2.5 ohms	10.7 ohms	>1M ohms

Remove the small actuator cover. Manually move the actuator lever through its range of motion. No binding or sticking should occur. Energize the actuator to full fuel (follow the steps in the speed control unit publication). The actuator should operate smoothly throughout its entire stroke without any binding or interruptions in motion.

If the actuator passes these tests, the problem is likely elsewhere in the governor or fuel system. Refer to the speed control unit publication for additional troubleshooting information.