



# GAC CUMMINS ENGINE SOLUTIONS



**GOVERNORS AMERICA CORP.**

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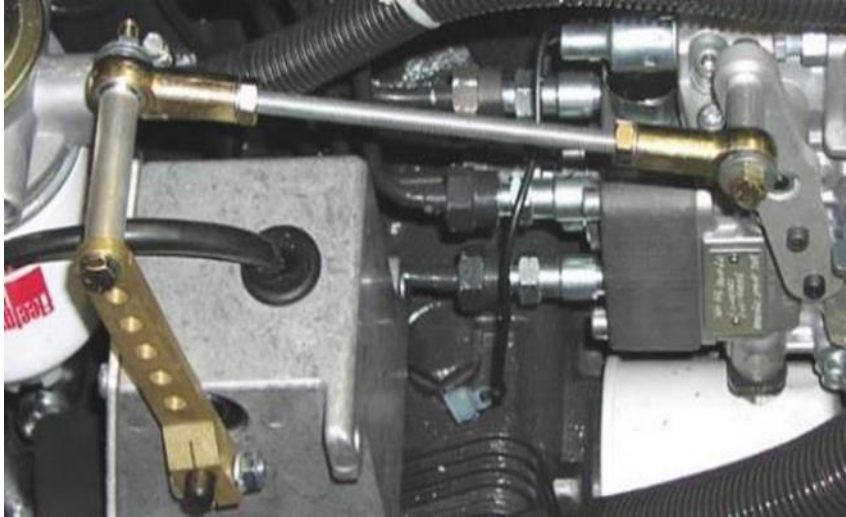
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# CUMMINS 4A2.0, 4A2.3 AND 4AT2.3

## Marine Engine Generator

GAC's 120 Series actuators provide the best solution to adding an electromechanical actuator for the engine fuel control positioning for the Cummins 4A2.0 (122 in<sup>3</sup>), 28.6 HP, 4A2.3 (140.3 in<sup>3</sup>), 33 HP and 4AT2.3 (140.3 in<sup>3</sup>) 4 cylinder in line engines.



The actuator lever must have sufficient travel to shut down the engine when de-energized. [DETAILED INSTALLATION INSTRUCTIONS](#) are available on the GAC website.

### 120 SERIES



NOTE: All components are sold separately.

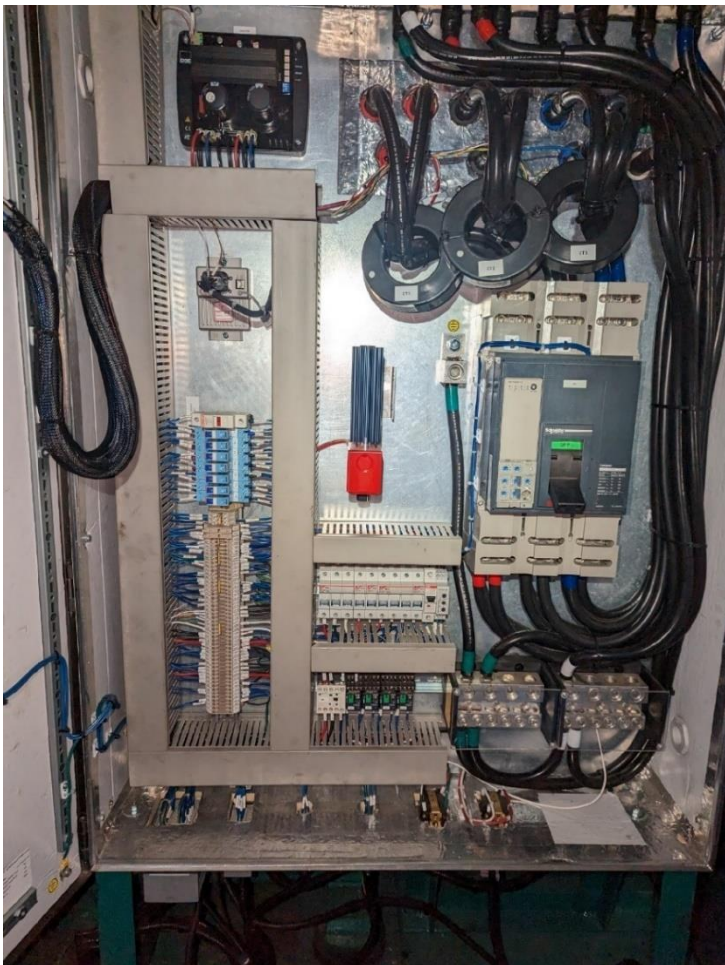
COMPONENT	PART NUMBER	DESCRIPTION
Actuator	<a href="#">120 Series</a>	Universal Actuator includes Lever. Suitable for rotary or small in-line fuel pumps on small carburetors
Other Items	BK234, KT234, LKS234	Bracket, Hardware kit, Linkage



## Gantry Crane

A **container crane** at a Canadian port asked for help fine tuning its new EEG7000. Communicating with Deep Sea DSE 7410-04 controller, the support personnel were very satisfied with the reliability and precision provided by the GAC unit.

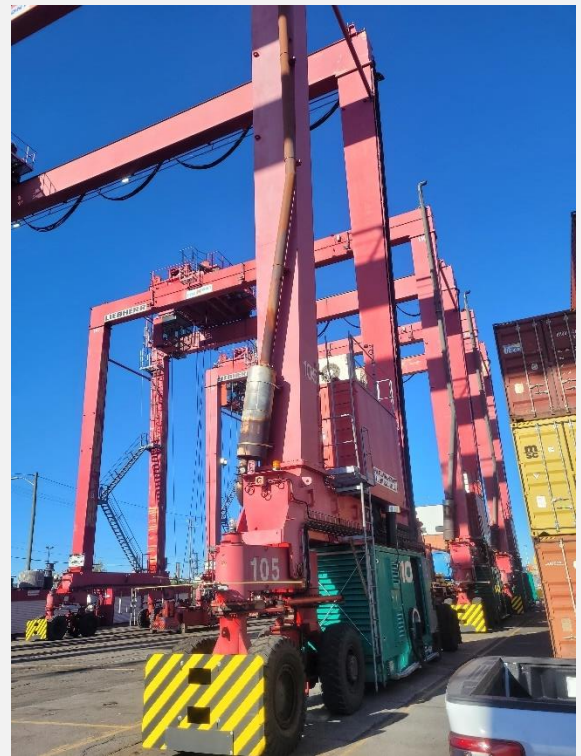
The customer chose the EEG7000 speed controller because it allows the end user to modify or reinstall the original settings without updating the load bank; they just upload GAC's free software and upload the saved configuration file and then, done. The EEG7000 replaced a Cummins (Onan) PCC3100 with integrated speed and voltage controller.



**EEG7000**



**GANTRY CRANE**



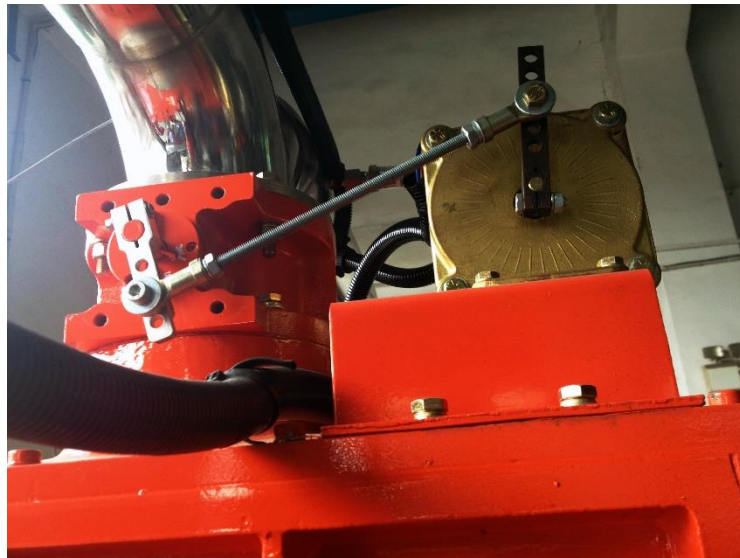
NOTE: All components are sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controller	<a href="#">EEG7000</a>	Speed Controller

# CUMMINS KT38 37.8

## 37.8L Natural Gas GEN Set 500KW

Camda New Energy Equipment Co. Ltd., a generator manufacturer, 500 kW gaseous gen-set built on the Cummins Kt38 37.8L engine uses the GAC ACB2001 controlled by the GAC ESD5330, specifically designed to run the ACB2001, ensures stability and smooth results.



**ESD5330**



**ACB2001-24**



NOTE: All components are sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Actuator	<a href="#">ACB2001-24</a>	24 V DC Heavy-duty Actuator
Speed Controller	<a href="#">ESD5530</a>	Speed Controller for Heavy Duty Actuators



# CUMMINS NT or KT SERIES ENGINE with PT PUMP and EFC FUEL SYSTEM or PT PUMP with MECHANICAL GOVERNOR

## Diesel Engine Generators and Compressors

The 225 Series or ADB120E4-GAC actuators provide engine fuel control positioning on the Cummins NT and KT engines. The Cummins PT fuel system is controlled with either a mechanical governor or Normally Open or Normally Closed Electronic Fuel Control (EFC) system with its actuator integrated in the P.T. pump. These GAC has actuator / governor solutions for each control system offering Isochronous, Droop and Variable Speed operation. [INSTALLATION INSTRUCTIONS ARE AVAILABLE ON THE GAC WEBSITE.](#)



**EEG6500**



**ADC225JS or ADB120E4-GAC**



### OPTIONAL ITEMS

**EAM100**



**SYC6714**



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Actuator	<a href="#">ADB120E4-GAC</a>	120E4 Rotary Actuator for Fuel Metering
Speed Controller	<a href="#">EEG6500</a>	EEG6500 Enhanced Electronic Controller

# CUMMINS KT38

## Alaskan Tug Boat

The *GLACIER WIND* of COOK INLET, AK needed more stable control of its 2 Cummins KT38 Engines: V12, 38L (2300 in3) Turbocharged / After-cooled engines. GAC had the answer with ramping control and a heavy-duty actuator.



**ESD5221**



**RSC671**



**ADB120E4**



NOTE: All components are sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controllers	<a href="#">ESD5221</a>	2 Multi-V DC, Overspeed Switch, Overspeed LED, Selectable droop
Actuator	<a href="#">ADB120E4-GAC</a>	120E4 Rotary Actuator for Fuel Metering
Other Items	<a href="#">RSC671</a>	2 Speed Ramping Controllers

# CUMMINS QSM11

## Deep Water Vessel

Ease of use, reliability, and system compatibility are hallmarks of GAC equipment.



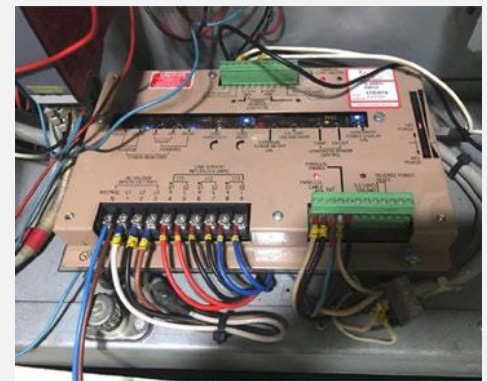
A deep-water operations vessel had a question about a new piece of GAC equipment, the LSM201N load sharing module, recently added to a pair of auxiliary generators - QSM11 Cummins engines with the ISM Engine Control Module (ECM). Balancing power distribution between engines is the primary function of the LSM. It can also provide power control through ramping and monitoring, accurately measuring true engine power.

When one of the two QSM11-DM engines reversed power it was easy to determine the cause. Out of the box the LSM201N interpreted the ECM increased voltage to be a request to decrease power. But the ECM translated increased voltage as a need to increase power. The LSM was built to allow a hardware solution of adding a jumper to change polarity, but like both GACs EEG7000 and the EEG7500 controllers, the ECM was also able to use software to match the LSMs polarity. The issue was easily resolved, and the boat was quickly back in service.

## CUMMINS QSM11



## LSM201N



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controllers	<a href="#">LSM201N</a>	2 Multi-V DC, Overspeed Switch, Overspeed LED, Selectable droop



# CUMMINS QST30G with Bosch inline Fuel Pump

## Replacing A Pump To Gain Control

GAC offers a complete electronic governing system conversion kit for the Cummins QST30G governing system using a GAC ADD175F actuator.

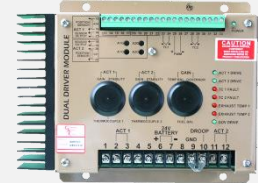
The kit is designed for the QST30G / 30.5L, V121 / 760 to 1500 HP / 567 to 1119 kW - Bosch in-line pump with EDC governor.



Converting to the GAC system requires installation of an ADD175F actuator on each pump with a KT197 adapter kit, installing a K-Type thermocouple in the exhaust stream of each bank, and connecting the actuators, position feedback sensors and thermocouples to the DDM101 module and ESD5111 or ESD5221 speed controller.

The DDM101 uses the input from the two thermocouples and two position sensors to balance and maintain an equal output from both banks of the engine while being controlled by a single governor.

## CONTROLLERS



## 175 SERIES ACTUATOR



## SUPPORTING ITEMS



[Installation instructions](#) available on the GAC website.

**NOTE:** This solution is not compatible with Cummins PCC controller or Bosch injection pump mounted actuators.



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Actuators	<a href="#">ADD175F</a> , CH1243	Pump Mounted Actuator with Position Feedback Sensor
Installation Kit	KT197	Bosch EDC Governor Adaptor Kit (2 required):
Magnetic Pickup	MSP678, CH1204	Magnetic Speed Pickup: 5/8" and harness
Thermocouple	STE101	K-Type Thermocouples (2 )
Speed Controllers	<a href="#">ESD5111</a> or ESD5221	Isochronous, Variable Speed, Droop Governing Speed Controller
	<a href="#">DDM101</a>	Dual Driver Module:

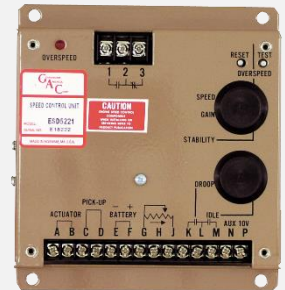
# CUMMINS B4

## Taylor Machine Works Forklift

CUMMINS B4.5T-C99 on this 10 ton Taylor forklift uses a GAC ESD2300 series electronic speed controller to provide superior speed regulation over a variable RPM range and an immediate, precise response to transient load changes. The electronic foot pedal interface provides the load signal while a ring gear mounted magnetic Pickup provides the speed input.



**ESD2349**



**FP202**



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controllers	ESD2349	2 Multi-V DC, Overspeed Switch, Overspeed LED, Selectable droop
Other Items	FP202	2 Speed Ramping Controllers

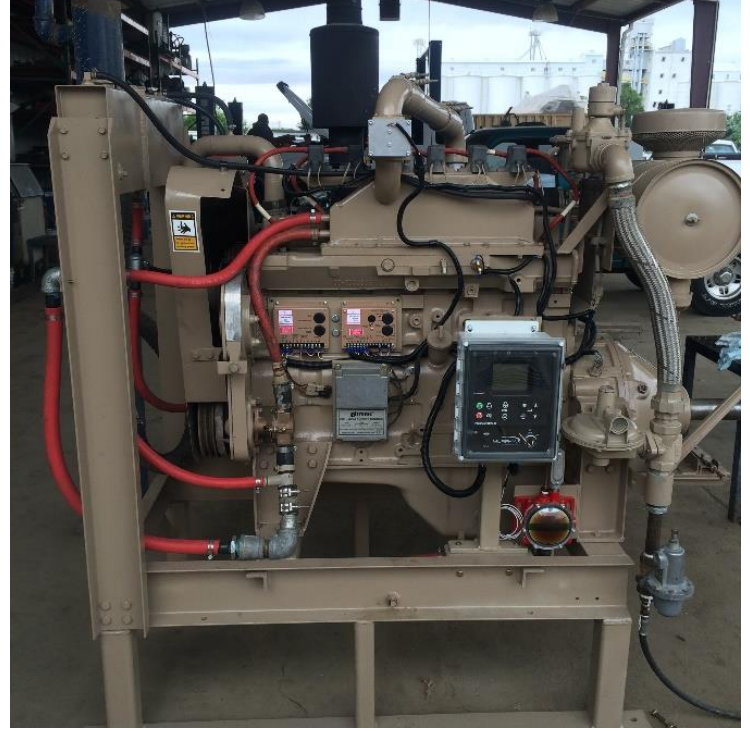
# CUMMINS GTA 8.3L and GTA855

## Cummins GTA 8.3L and GTA855 Using Natural Gas

PSS Governor Services (PSS) updated Cummins irrigation pump drives on 2 systems. These after market natural gas engines are now controlled by GAC integrated actuator/throttle body assemblies ATB throttle body actuators, RSC671 programmable ramp generators, and ESD5526E governor speed controllers

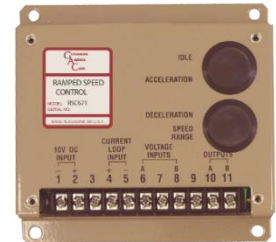


**ATBT2**



**ESD5221**

**RSC671**



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Actuator	<a href="#">ATBT2</a>	Throttle Body Actuator
Speed Controller	<a href="#">ESD5526e</a>	Isochronous, Variable Speed, Droop Speed Controller
Other Items	<a href="#">RSC671</a>	Ramp Speed Control Module



# CUMMINS KTAA-50 L4

## Cummins India Ltd. Locomotive

This C.I.L. Diesel Electric Locomotive needed overspeed control. GAC combined their LCC107B controller with the ADB120E4 fuel metering actuator to give them the control they needed. Designed specifically for locomotive use, the LCC107B provides Closed Loop PID Speed Control with Overspeed Sensing, Start Fuel Adjustments, Speed Selects and Excitation Control.



### ADB120E4



### LCC107B



### LCC107B in Control Cabinet



## ADB120E4 Fuel Metering Actuator



## C.I.L. KTTA-50-L4 ENGINE INSTALLATION



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controller	LCC107B	Locomotive Speed and Load Control for Cummins KTA50
Actuator	<a href="#">ADB120E4-GAC</a>	120E4 Rotary Actuator for Fuel Metering

## Irrigation Generator with Natural Gas

GAC worked with Johnson Irrigation, a third-generation full service engine and generator support house, to determine the optimal natural gas control system for their irrigation engines. The combination of GACs throttle body and EDG5500 speed controller provided a smooth result.



**ATB652T2N-24**



**EDG5500**



NOTE: All components sold separately

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controller	<a href="#">EDG5500E</a>	Electronic Speed Controller with built in display
Actuator	<a href="#">ATB652T2N-24</a>	65 mm Integrated Actuators/Throttle Body

# CUMMINS 855 NA (14L)

## Generators, Compressors, Others

GAC's solution to transforming your diesel engine to a gaseous fueled engine uses a GAC ATB throttle body, speed controller, and customer supplied IMPCO carburetor to upgrade to gaseous fuel.



### ATB652T2N



### ESD5526E



### ADAPTERS



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controller	<a href="#">ESD5526E</a>	Isochronous, Variable Speed, Droop Speed Controller
Actuator	<a href="#">ATB652T2N</a> -12 or 24	65 mm Integrated Actuators/Throttle Body
Other Items	<a href="#">KT425</a> , <a href="#">KT855</a>	Mounting Kits



# CUMMINS KTA50-G9 – 2220 HP, 50L, V16 Engine

## Control Emergency Water Cooling System

DCML installed a KTA50-G9 engine with a PT fuel system and EFC actuator, controlled by an ESD5500E series speed control, to drive a water pump to displace 3600m<sup>3</sup> of water per hour (over 951,000 gallons per hour). The pump runs on an automated system and comes on-line with a power failure or other interruption.

The ESD5500E is programmed to re-start in idle speed for 20 seconds then accelerate under speed ramp control to 1800 RPM. The rate of acceleration is set to correspond with the opening rate of the water repression valve. The system is programmed to run for one hour each day to confirm function and ensure its availability in the event of an emergency.

**ESD5500E**



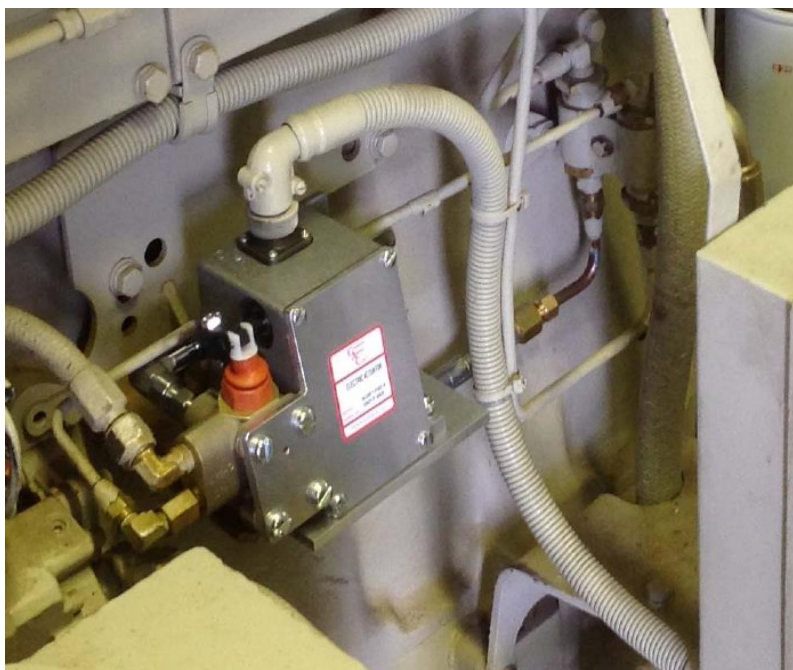
NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controller	<a href="#">ESD5500E</a>	Series Isochronous, Variable Speed, Droop Speed Control

# CUMMINS NT and KT Engines with EFC System

## Cummins NT and KT engines EFC System

This linear, proportional, electric fuel metering servo is designed for use on Cummins engines with PT fuel systems. The actuator is energized by signals from a speed control unit and can deliver fuel at rates up to 770 kg/h (1700 lbs/h).



**ESD5522E**



**ADB120E4**



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Actuator	<a href="#">ADB120E4</a>	Rotary Actuator for Fuel Metering with BK115
Speed Controller	<a href="#">ESD5522E</a>	24 V DC, Two-element speed switch, Speed ramping, Starting fuel control, Unique actuator power drive circuit, dynamic start
Other Items	MSP6724	Magnetic Speed Pickup

# CUMMINS VT1710 ENGINE

## Irrigation Engine Solution

The Cummins VT1710 Engine requires two gaseous throttle body Actuator, each receiving equal fuel levels. The Dual Driver Module (DDM101) is used to regulate the fuel in each bank using its fuel and exhaust temperature balance.

Using the DDM101, none, one, or two actuators can have droop. Two [thermocouples](#) measure, track, and therefore trim the balance based on exhaust temperatures.



**ESD5111**



**ATB652T2F14**



**DDM101**



**STE101**



NOTE: All components sold separately.

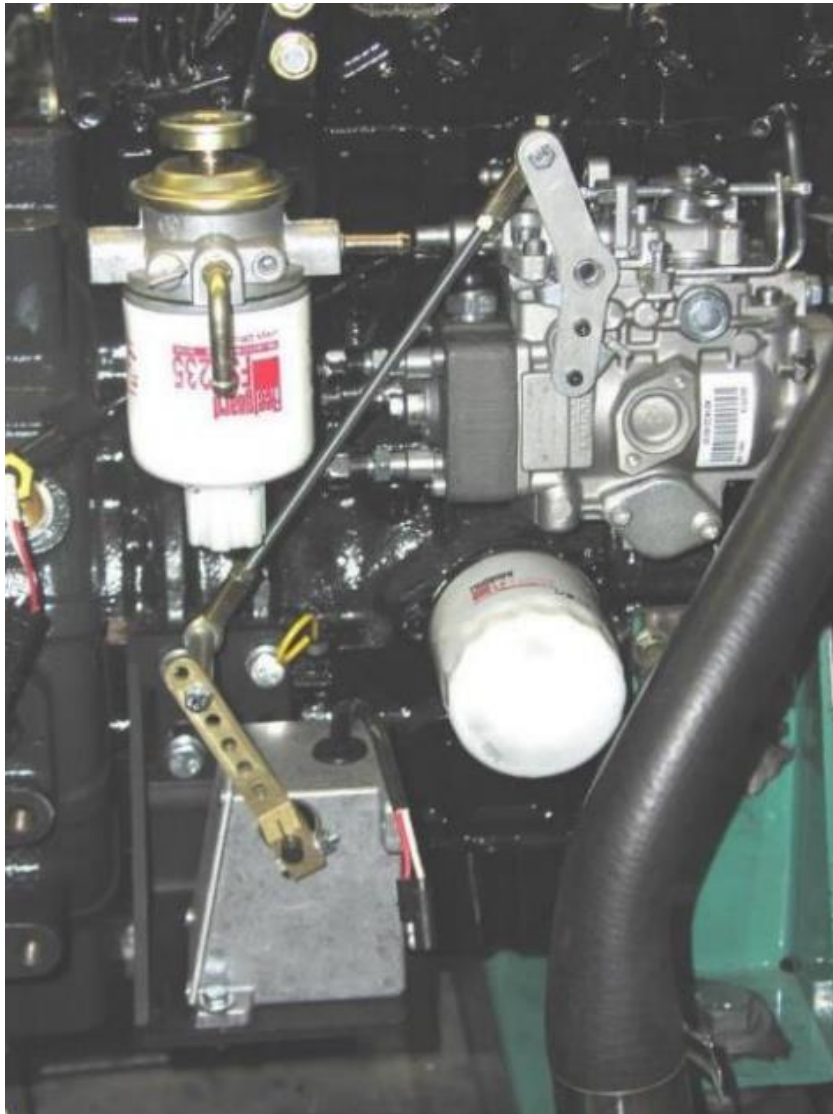
COMPONENT	PART NUMBER	DESCRIPTION
Speed Controller	<a href="#">ESD5111</a>	Isochronous, Variable Speed, Droop Speed Controller
Actuator	<a href="#">ATB652T2F14</a> -24	65 mm Integrated Actuators/Throttle Body with Feedback Sensor
Other Items	<a href="#">DDM101</a> <a href="#">STE101</a>	Dual Driver Module Exhaust Gas Temperature Sensor



# CUMMINS 3A1.4 & 3A1.7 3 CYLINDER ENGINES

## Generators and Compressors

[DETAILED INSTALLATION INSTRUCTIONS](#) are available on the GAC website FOR THE 120 Series Installation Instructions and Parts List for Cummins 3A1.4 and 3A1.7 provide an electromechanical actuator used for engine fuel control positioning.



### 120 SERIES



### HARDWARE



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Actuator	<a href="#">ADC120</a>	Universal Actuator for rotary or small in-line fuel pumps
Other Items	BK233, KT233, LKS233	Mounting hardware

# CUMMINS 6B/5.9L ENGINE

## Marine Propulsion / Generator Drive

This Bosch Inline Pump, Diesel 173 HP on the Cummins 6B profited from an upgrade to an electronic governor.



**ESD5500E**



**ADC225S-24**



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controller	<a href="#">ESD5500E</a>	Multi-V DC controller (Volvo Part Number 3817999)
Actuator	<a href="#">ADC225S-24</a> or ADC175A	Rotary output, linear torque, proportional servo (Volvo Part Number 3838271)
Other Items	KT175-A-R or KT275, MSP6724	Mounting kits and Magnetic Speed Pickup

# CUMMINS 4B (T) and 6B (T) Engines

## Agricultural and Industrial Equipment

The 120 Series is a precise electronic actuator designed for use on a Cummins 4B(T) & 6B(T) engine equipped with a CAV/DPA injection pump. GAC and CAV recommend replacing the idling and governor springs of the DPA fuel injection pump when applying external governors.

### CAV DPA ROTARY PUMP



### CUMMINS B Series



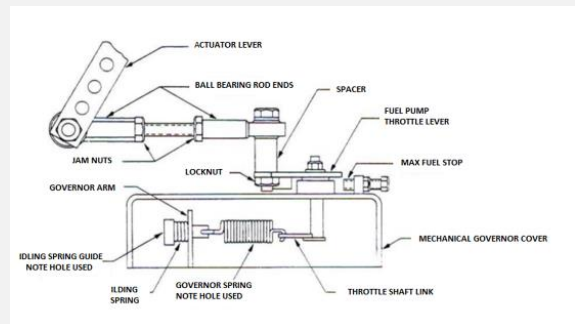
### ESD5500E



### 120 SERIES



### LINKAGE



NOTE: All components sold separately.

COMPONENT	PART NUMBER	DESCRIPTION
Speed Controller	<a href="#">ESD5500E</a>	ESD2210, ESD5111, ESD5500E, or EEG6500
Actuator	<a href="#">ADC120</a>	Universal Actuator for rotary or small in-line fuel pumps
Other Items	<a href="#">MSP6728C</a> KT101	Magnetic Speed Pickup Mounting Kit



## REPLACEMENT PARTS

This table provides replacement parts with GAC part numbers that could replace or repair existing equipment. These cross references are recommendations based on the most common application and may not always be direct solutions for your application. Call your local application engineer for assistance if your installation or engine is not shown or you are unsure of the part number you are replacing.

CUMMINS PART NUMBER	GAC ACTUATOR	GAC SPEED CONTROLLER	GAC MSP / ACCESSORIES
213272			MSP677
213273			CH1205
3003916			MSP678
3005810		<a href="#">ESC61C-17</a>	
3005811			CH1203
3008316			LCC200
3014107		<a href="#">ESC61C-7</a>	
3014195		ESC63-23	
3015105			TP503
3017418			MSP676
3019635 3001817	<a href="#">ADB120E4</a>		
3019635/3001817	ACD120		
3020987		<a href="#">ESD5111</a>	
3039571		<a href="#">SSW676</a>	
3052504      3052508 3052505      3052509 3052506      3037359 3052507      3032733		<a href="#">ESD5119</a> (Reverse action) Normally open	
3063504 3063505 3044189 3044196		<a href="#">ESD5120</a> Normally closed	
3081313		<a href="#">EEG6500</a>	
3628381			MSP678
8836		<a href="#">SSW675</a>	
ITM050			ITM050
ITM051			ITM051