GOVERNORS AMERICA CORP.

ENGINE GOVERNING SYSTEMS

PRODUCT TECHNICAL INFORMATION

PTI 5021

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TMS

KT121 SERIES

GOVERNOR SYSTEM INSTALLATION KIT FORD 460 N/A - TURBOCHARGED

INTRODUCTION

The KT121 Series Governor System Installation Kit provides the bracket, cables and hardware to install a GAC precise Electronic Governor on Ford 460 naturally aspirated and turbocharged gas or gasoline engines. The GAC 225 Series electric actuator is the correctly sized servo.

The engine must have either 3/8-24, 5/8-18 or 3/4-16 thread tapped hole in the bell housing to accept the Magnetic Speed Sensor.

A specific GAC speed control unit and any remaining governor system components can be selected by the customer to meet the specific application requirements.

Contact GAC marketing or engineering for application suggestions.

PRE-INSTALLATION

Disconnect the engine battery cables (negative connection first) to prevent accidental engine starting.

The throttle lever must be on the left side of the engine when viewed from the radiator. If present, disconnect the mechanical governor.

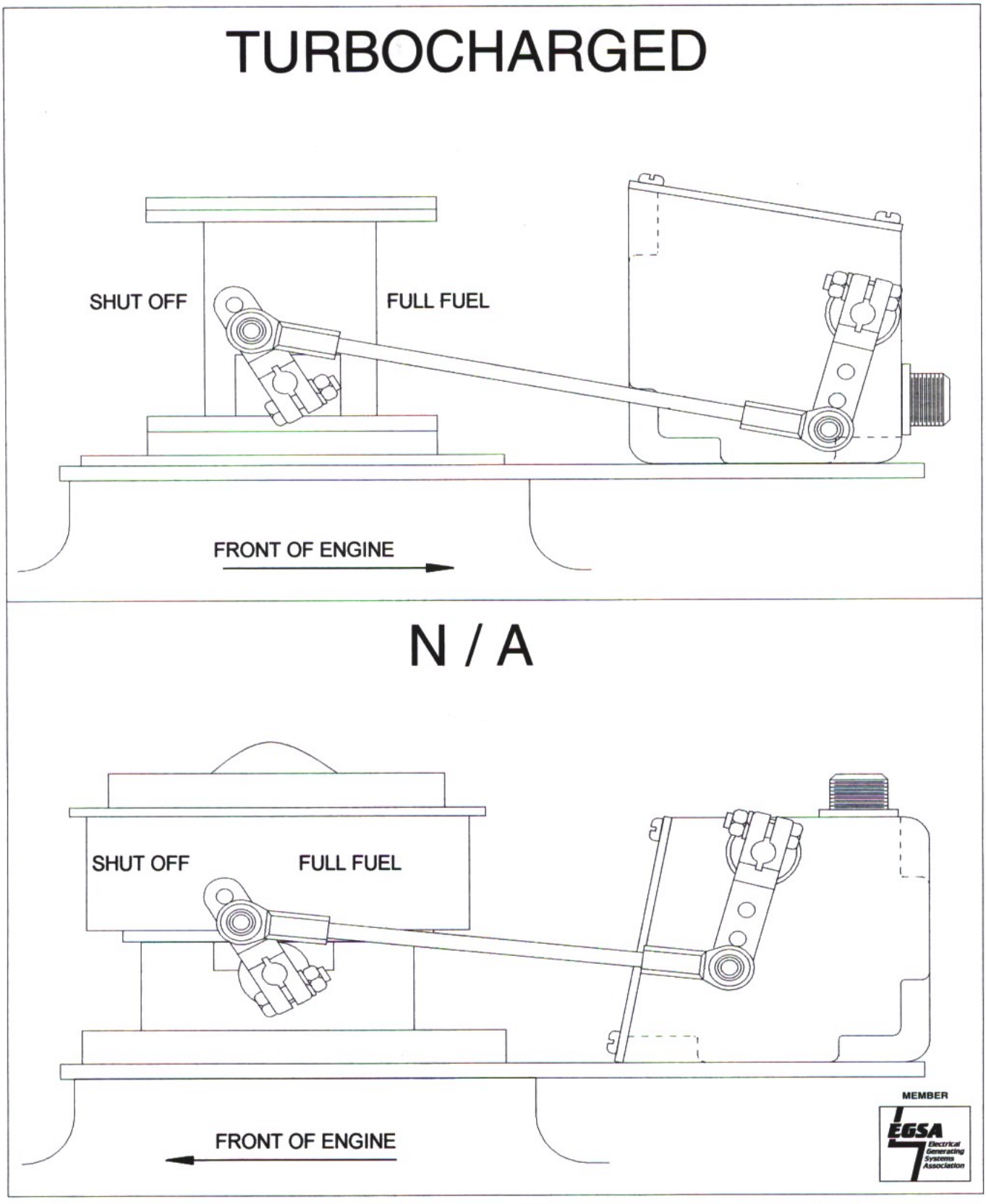
ACTUATOR INSTALLATION

1. To attach the actuator bracket (1) to the engine, the engine's throttle body or carburetor must be removed. The actuator bracket fits over the throttle body or carburetor mounting studs. Longer mounting studs maybe required due to the added 1/4" thickness of the actuator bracket. To facilitate mounting versatility the actuator bracket can be positioned. To allow for either front or rear engine mounting of the actuator.
2. Attach the actuator to the bracket with its connector either pointing up or horizontal using two 5/16-18 x 1" screws (2), flat washers (3), lock washers (4), and nuts (5). Tighten all screws.

ACTUATOR LINKAGE ASSEMBLY

1. Thread a 1/4-28 jam nut (7) and a Ball Bearing Rod End (8) approximately 1/2" onto each end of the linkage rod (6). Adjust the ball bearing rod ends so that the hole centers are parallel to each other and the distance between them is 7".
2. Attach one end of the linkage rod assembly to the outside of the throttle lever as near as possible to the butterfly valve shaft using a 1/4-20 x 1" screw (10), flat washer (11), and locking nut (12). See Figure 1.
3. Hold the throttle lever in the no fuel position, toward the front of the engine. Slide the actuator lever (9) flat side away from the actuator, onto the actuator shaft so that the third or fourth hole from the shaft is aligned with the ball bearing rod end. If necessary slightly adjust the length of the linkage. Push the lever onto the shaft until the linkage is straight between the levers. Attach the linkage to the outboard side of the actuator lever with 1/4-20 x 1" screw (10), flat washer (11), and locking nut (12).
4. Move the linkage assembly through its full travel. There must be not friction or binding in any position. Push the actuator lever and linkage to the maximum fuel position and release. The assembly must snap back to the no fuel position without binding.

FIGURE 1


TURBOCHARGED
SHUT OFF
FULL FUEL
FRONT OF ENGINE
N / A
SHUT OFF
FULL FUEL
FRONT OF ENGINE
MEMBER
EGSA
Electrical Generating Systems Association

SPEED CONTROL UNIT INSTALLATION

Mount the Speed Control Unit in the engine control cabinet or engine mounted enclosure.

If water, mist or condensation is to come in contact with the controller, it should be mounted vertically.

Extreme heat should be avoided.

Site selection should allow for access to the Speed Control Unit adjustments.

The Speed Control Unit case mounting holes can be used as drilling template.

MAGNETIC SPEED SENSOR INSTALLATION

1. Remove the plastic plug from the tapped hole in the engine bell housing.
2. If there is no hole, drill and tap the engine bell housing. The hole must be located perpendicular to the crankshaft centerline and centered over the engine ring gear.
3. Rotate the engine ring gear until a tooth crown is in the center of the tapped hole.
4. Thread the Magnetic Speed Sensor into the tapped hole until it strikes the ring gear tooth. Back out the sensor 1/2 turn and secure with the lock nut.

GOVERNOR SYSTEM WIRING

See specific Speed Control Unit publication for connection information.

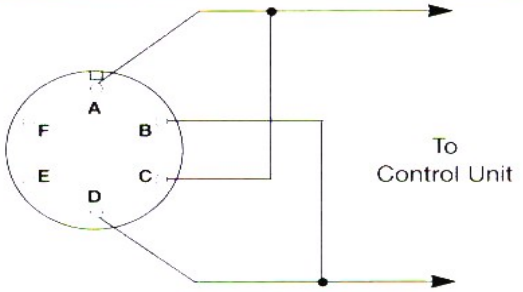
1. If an ADC type actuator is used, it is prewired for 12V. Use the supplied wiring harness. If an ACB or ADB is used, connect the Electric Actuator harness (13), as per Figure 2.
2. Connect the electric actuator harness to the actuator. Cut the harness to length. Attach the solderless spade connectors and attach to the ACTUATOR terminals of the speed control unit.
3. Attach the Speed Sensor Harness (15) to the magnetic speed sensor either with the mating half connector or two solderless splice connectors.
4. Cut the magnetic speed sensor harness to length. Attach the solderless spade connectors and connect the leads and shield to the PICK-UP terminals of the speed control unit.
5. Install wire leads from the battery (-) and (+) to the BATTERY input terminals of the speed control unit using solderless spade connectors (14). Battery polarity must be observed. Fuse protection of 15 amps in the positive lead is recommended.

OPTIONAL SPEED TRIM CONTROL

Panel mount and wire the speed trim potentiometer available from GAC. Connect the terminals of the potentiometer to the speed control unit.

FIGURE 2

ACB AND ADB WIRING



12 Volt Operation

A to C
B to D
A & D to output terminals of speed control units

SPEED CONTROL UNIT ADJUSTMENT

1. Remove the protective covers over the adjustments on Speed Control Unit.
2. Check to insure that the GAIN and STABILITY adjustments are in their mid positions.
3. If used, set the optional External Speed Trim Control to mid position.

WARNING: An overspeed shutdown device, independent of the governor system, should be provided. Equipment damage or personal injury may result due to loss of engine control.

4. Start the engine and rotate the engine SPEED adjustment to the desired engine speed setting. Clockwise adjustment increases engine speed.

GOVERNOR PERFORMANCE ADJUSTMENTS

1. Rotate the GAIN adjustment clockwise until instability develops. Gradually move the adjustment counterclockwise until stability returns. Move the adjustment 1/8 of a turn further counterclockwise to insure stable performance.
2. Rotate the STABILITY adjustment clockwise until instability develops. Gradually move the adjustment counterclockwise until stability returns. Move the adjustment 1/8 of a turn further counterclockwise to insure stable performance.
3. Gain and Stability adjustments may require minor changes after engine load is applied. Normally, adjustments made under no load conditions achieve satisfactory performance. A strip charge recorder can be used to further optimize the adjustments.

   If instability cannot be eliminated, or further performance improvements are required, refer to Troubleshooting Sections of the speed control unit and actuator publications.
4. Apply full load to the generator set. If the set will not carry full load, stop the engine and lengthen the linkage rod by rotating the ball bearing rod ends. Repeat the load test. It may be necessary to back out the maximum fuel stop screw on the throttle and/or shut off levers until full load is reached.

KT 121 SERIES GOVERNOR SYSTEM INSTALLATION KIT PARTS LIST

ITEM	DESCRIPTION	GAC P/N	QTY
1	Actuator Bracket	BK123	1
2	5/16-18 x 1-1/4" Screw		2
3	5/16" Flat Washer		2
4	5/16" Lock Washer		2
5	6/16-18 Nut		2
6	1/4-28 x 5.5 Linkage Rod	RD100-6	1
7	1/4-28 Nut		2
8	Ball Bearing Rod End	BR200	2
9	Actuator Lever	SEE TABLE	1
10	1/4-20 x 1" Screw		2
11	1/4" Flat Washer		2
12	1/4-20 Locking Nut		2
13	Electric Actuator Harness	SEE TABLE	1
14	Solderless Spade Connector	EC204	2
15	Speed Sensor Harness	SEE TABLE	

KT121 SERIES INSTALLATION KITS

KIT	ACTUATOR	LEVER	ACTUATOR CABLE	PICK-UP CABLE
KT121	ACB/ABD225G	LE1400-4	CH1203	CH1208
KT121B	ACB/ADB225G	LE1400-4	CH1203	CH1204
KT121E	ACB/ADB225G	LE1400-4	CH1203	CH1207
KT121I	ACB/ADB225G	LE1400-4	CH1203	
KT121J	ADC225GS	LE1400-4		CH1207
KT121L	ADC225GS	LE1400-4		CH1208
KT121M	ADC225GS	LE1400-4		
KT121N	ADC225GS	LE1400-4		CH1204

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