



**Application Note 36735**  
**(Revision B, 1/2024)**  
Original Instructions



## **Small Engine Controller Compatibility Guide**

## ***Small engine speed control is precise and innovative with Woodward engine control systems.***

When it comes to stabilizing your engine rpm, Woodward's engine control systems are considered among the best in the world by OEMs worldwide. Our controllers and actuators adapt to a variety of applications and provide some of the most flexible solutions on the market today.

This broad product line balances performance with economy, providing:

- CAN / J1939 bus interface
- Reliable load sharing systems
- Multiple speed signal input options
- Software or manual configuration
- Isochronous or droop speed control
- Engine protection

### **Actuators**

Woodward's linear and rotary actuators meet the needs of a variety of applications. Paired with our controllers and accessory components they create motion control system solutions that save you time and money.

- Linear actuators from net force ranges of 17.8 N (4.0 lbf) to 66.7 N (15.0 lbf)
- Rotary actuators with torque ranges from 0.066 N-m (0.05 lb-ft) to 7.3 N-m (5.4 lb-ft)
- Integrated Throttle Body actuators for speed control, position control, and air/fuel control
- Stanadyne actuators integrated onto pump

### **Electronic Speed Controls**

Woodward's worldwide reputation as a leading manufacturer of governor systems is enhanced by this full line of controllers for small industrial engines . . .

- APECS (Advanced Proportional Engine Control System) digital controller family
- DPG (Digital Programmable Governor) digital controller family with adjustment buttons.
- EPG (Electrically Powered Governor) analog controller family
- L-Series integral digital speed-control / actuator systems

Table 1. Actuator Models

ACTUATOR MODEL	DIRECTION		NET FORCE		TORQUE			WORK		TRAVEL	CONTROLLER
	Linear	Rotary	N	lbf	N-m	Lb-ft	Oz-in	J	Ft-lbf		
0175	✓		15.6	3.5				0.41	0.30	0.8" 20.3mm	APECS & DPG
0225	✓		28.9	6.5				0.73	0.54	1.025" 26.03mm	APECS & DPG
0275	✓		57.8	13.0				1.47	1.08	1.025" 26.03mm	APECS & DPG
GBA		✓			0.066	0.05	9.35			65°	APECS & DPG
Dyna 7000		✓			0.169	0.12				70°	APECS & DPG
L-Series Position Controller		✓			0.34	0.25				60°	▲
L-Series Speed Controller		✓			0.34	0.25				60°	❖
EPG 512/524		✓						0.7/1.0	0.51/0.74	30°	
EPG 1712/1724		✓						2.0/2.3	1.48/1.70	35°	
Dyna 8000		✓			1.4	1.0		1.2	0.89	35°	DPG
Dyna 8200		✓			4.07	3.0		2.85	2.10	45°	DPG
Dyna 8400		✓			7.3	5.4		5.8	4.28	45°	DPG
F-Series Position Controller		✓			1.4	1.0				70°	▲
Dyna 70025	Rotary actuator specifically designed for Stanadyne "D" Series injection pumps										DPG
nadyne L-Series	L-Series rotary actuator specifically designed for Stanadyne injection pumps. Actuator on Iveco version is rotated to fit on Iveco engine.										❖
Stanadyne-Iveco L-Series											

(❖) The L-Series speed controller combines an L-Series electronic actuator with integrated speed control software to control the engine speed. The L-Series speed controller incorporates a microprocessor-based control into the actuator, creating a single, integrated package. This eliminates the need for an additional driver box and speed control box.

(▲) Both the L-Series and F-Series position controllers require an additional controller to provide a PWM command for output position.

Table 2. Controller Models

	APECS 500	APECS DPG-21xx- 00xx	APECS DPG- 2200	APECS DPG- 2300	APECS 4500	APECS 4800	L-SERIES SPEED CONTROL
<b>SPEED SELECT OR ADJUSTMENT OPTIONS</b>							
Discrete Speed (via Switch)	1	2 or 3	2 or 3	2	4	4	3
Digital Raise/ Lower Switch					✓	✓	✓
Speed Bias Input *			✓ (2.3-2.7V)		✓	✓	✓
Set Speed Potentiometer					✓	✓	✓
Drive By Wire (foot pedal)				✓	✓	✓	✓
CAN					✓	✓	✓
<b>FUEL LIMITING OPTIONS</b>							
Start Fuel (smoke limiting)			✓	✓		✓	✓
Black Smoke Control						✓	✓
Torque Limit Control			✓	✓		✓	✓
<b>CONTROLLER OUTPUT</b>							
Low-side PWM 6A Continuous	✓					✓	
PWM, 7A Continuous 14A surge		✓	✓	✓			
High-side PWM 6A Continuous					✓		
Integral with Actuator							✓

(\*) as needed for synchronizing and load sharing

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