Calibration Procedure - DYN1 1078X Controllers For Stanadyne Pumps Using DYNC-70025 Integrated Actuator

Part Number	Input Signal Frequency Maximum
DYN1-10784-000-0-12/24 DYN1-10784-001-0-12/24*	2500 to 5000 Hz
DYN1-10786-000-0-12/24 DYN1-10786-001-0-12/24*	5000 to 9500 Hz

* CE

1.0 Calibration Procedure

1.1 With no power to the governor, adjust the GAIN to 9:00.

1.2 Start the engine and adjust the speed by turning the SPEED potentiometer clockwise (CW) to desired speed.

— NOTE —

Controllers are factory adjusted to minimum RPM. However, for safety, the engine should be capable of being disabled if an overspeed should exist.

1.3 At no load, turn the GAIN potentiometer clockwise (CW) until the engine begins to hunt. If the engine does not hunt, momentarily disrupt the governor power supply.

1.4 Turn the GAIN potentiometer counterclockwise (CCW) until stable. For optimum performance, the engine should oscillate 3 to 5 diminishing cycles.

2.0 Wiring

2.1 Non CE conformed controllers are wired as shown in Wiring Diagram, *Figure 1.*

1. Red to battery positive.
2. Black to battery negative.
3. White to one side of the magnetic pickup.
4. Black and white to the other side of the magnetic pickup, connected with the shield drain wire.
5. Purple to the actuator with no designated polarity.

2.2 Controllers with CE conformity are wired as shown in Wiring Diagram, *Figure 2.*

Basic Wiring Diagram

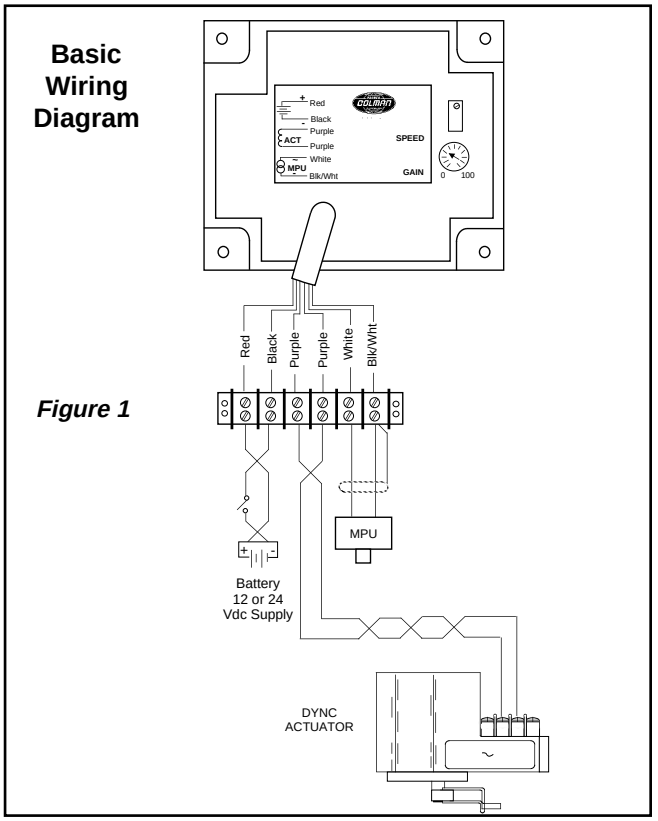

Figure 1

Basic Wiring Diagram For CE Controllers

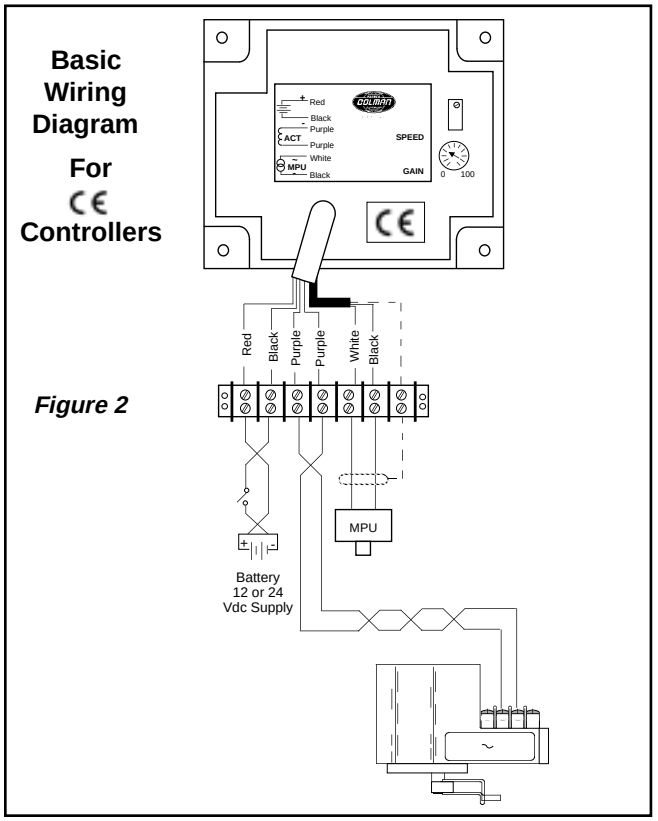

Figure 2

3.0 Troubleshooting Chart

Problem	Detection	Corrective Action
I. System appears dead.	**1.** CHECK BATTERY VOLTAGE AT CONTROLLER with power switch “ON”. Measure DC battery voltage between the Red (+) and Black (-) leads. Battery voltage should be present.	Check connections to battery.
	2. NO SIGNAL OR WEAK SIGNAL FROM MAGNETIC PICKUP. Measure AC voltage between the White and Black/White leads on controller while cranking engine. Voltage should be 2.5 volts RMS or greater. (AC input impedance of meter must be 5000 ohms/volt or greater.)	Check for damage to or improper adjustment of magnetic pickup. Replace or re-adjust.
	3. CHECK ACTUATOR with power “ON” to controller. Measure following terminals on control box with actuator wires connected. All points should read BATTERY VOLTAGE. (+0.00/-0.75 VDC) **a.** Purple lead to Black lead on controller. **b.** Second Purple lead to Black lead on controller. (Continue this test only if battery voltage is not present.) **c.** Following checks are terminals on the actuator and the Black lead on controller. **1)** Low voltage (1.0-2.0 VDC) at either actuator connector. **2)** Battery voltage at both actuator connectors. **3)** Battery voltage at one actuator lead but not at the other.	Replace controller if battery voltage is not present at both Purple leads. Check actuator leads for continuity. Repair or replace if needed. Replace actuator.
II. Actuator hunts during operation.	**1.** Improper governor adjustment.	Readjust calibration.
	2. Inadequate power supply voltage. **a.** Turn power switch "OFF". **b.** Connect a DC voltmeter to Red and Black leads at control box. **c.** Disconnect both leads to actuator at Purple leads of control box. **d.** Connect one actuator lead to the Red lead and one actuator lead to the Black lead of the control box. **e.** Momentarily turn "ON" the DC power. The actuator should go to full fuel and the DC voltage must be greater than 80% of supply. 24 VDC @ 80% = 19.2 VDC 12 VDC @ 80% = 9.6 VDC **Note:** Reconnect actuator leads properly after completing this test.	If actuator doesn’t get to full fuel, then check actuator leads. If voltage is less than specified, check for loose or poor connections to battery, or get larger supply leads or larger power supply.

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CAUTION
As a safety measure, the engine should be equipped with an independent overspeed shutdown device in the event of failure which may render the governor inoperative.

DYNA Controller For Stanadyne "D" Series Injection Pumps Using DYNC 70025 Integrated Actuator

General

The Barber-Colman controller for the DYNC 70025 actuator is an isochronous, solid state design, resulting in fast, stable engine response to speed or load changes. The controller circuits measure proportional (amount of offspeed), integral (time of offspeed) and derivative (rate of change of offspeed) to ensure optimum performance.

The controller electronics are environmentally potted providing protection against the various liquids and vibrations associated with engines. This makes the unit suitable for panel or engine mounting. It is easy to adjust, having only SPEED and GAIN adjustments. The power for the governor is obtained from the engine's DC starting system, eliminating the need for mechanical drives and hydraulic lines.

Standard Features

- All electric
- Precise
- High reliability
- Temperature stable
- Isochronous

Available Models:

	Input Signal Frequency
DYN1-10784-000-0-12	
DYN1-10784-000-0-24	2500 - 5000 Hz
DYN1-10784-001-0-12*	
DYN1-10784-001-0-24*	
DYN1-10786-000-0-12	
DYN1-10786-000-0-24	5000 - 9500 Hz
DYN1-10786-001-0-12*	
DYN1-10786-001-0-24*	

*CE

Speed Sensing

The DYNA all-electric governor requires a frequency signal to read engine speed. Typically, a hole is drilled and tapped in the flywheel housing perpendicular to the crankshaft, and a magnetic pickup is inserted into it to sense the teeth on the ring gear.

Failsafe

The DYNA Governor has an internal FAILSAFE circuit that instantly reacts to:

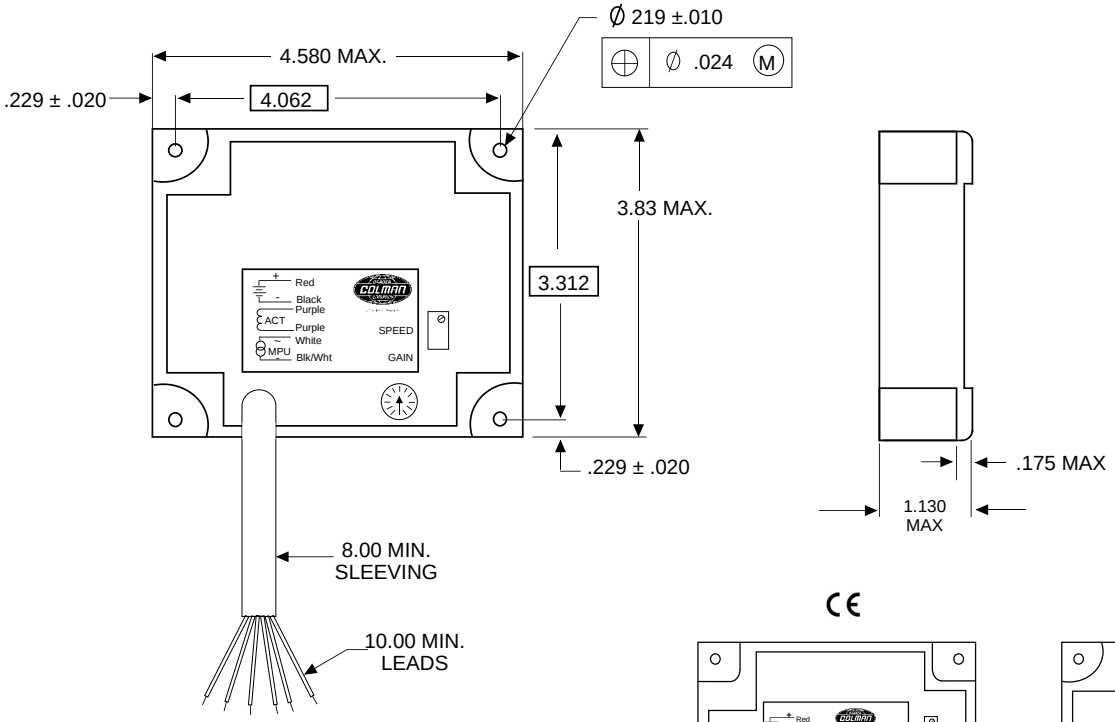
- Interruption of the DC power returns actuator to minimum fuel position.
- Loss of speed reference signal removes power from actuator causing it to spring return to minimum fuel position.

Controller Specifications

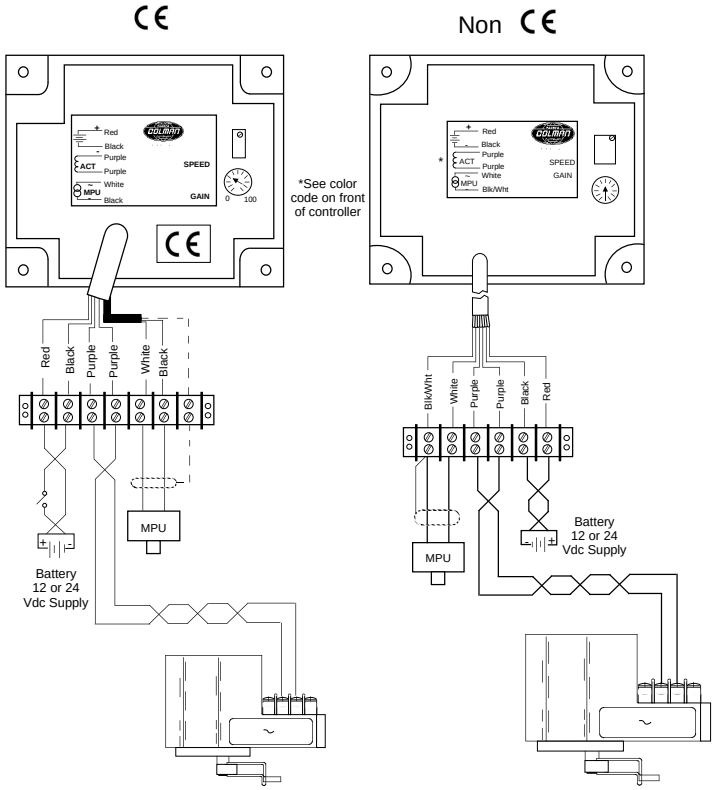
CONTROLLER		DYN1-10784 & DYN1-10786
Max.Output Current in Amperes @ 12 Vdc		6.0
Max.Output Current in Amperes @ 24 Vdc		4.0
Weight	Pounds	1.25
	Kilograms	0.568
Operating Voltage		12 or 24 Vdc ±20%
Ambient Operating Temp.		-40° to +180°F (-40° to +85°C)
Mechanical Vibration		5 to 500 Hz, Curve L, per MIL STD 810C
Sealing		Oil, water and dust tight
Connections		#18 gauge leads with minimum length of 10 inches (25.4 cm) with no connector of any kind
Input Signal Frequency From Mag Pickup		Input Signal Frequency in Hertz = Engine RPM x number of gear teeth on flywheel / 60
Input Signal Voltage From Mag Pickup		2.5 Vac RMS minimum during cranking
Steady State Speed Band		±0.25%
Controller Adjustments		GAIN and SPEED

Controller Installation Dimensions

(For CE and non CE.)



Typical Wiring Diagrams



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CAUTION

As a safety measure, the engine should be equipped with an independent overspeed shutdown device in the event of failure which may render the governor inoperative.

NOTE

Barber-Colman believes that all information provided herein is correct and reliable and reserves the right to update at any time. Barber-Colman does not assume any responsibility for its use unless otherwise expressly undertaken.