



CALIBRATION AND ADJUSTMENTS FOR DYNA 8000 SERIES CONTROLLERS

Part Number	Input Signal Frequency Maximum	Part Number	Input Signal Frequency Maximum
DYN1-10652-000-0-12/24	250 to 1200 Hz	DYN1-10654-000-0-12/24	2500 to 5000 Hz
DYN1-10652-001-0-12/24*		DYN1-10654-001-0-12/24*	
DYN1-10653-000-0-12/24	1200 to 2500 Hz	DYN1-10656-000-0-12/24	5000 to 9000 Hz
DYN1-10653-001-0-12/24*		DYN1-10656-001-0-12/24*	



NOTE

See Step 3.0 for proper procedures for setting switches S1 and S2, if you have a controller that has the two switches located on top of the controller.

1.0 CONNECTION INFORMATION

1.1 When using an ILS unit, the remote speed potentiometer may be left connected to the controller as shown.

1.2 When an ILS unit is used, connect 3-wire shielded cable to terminals 6, 7 and 8. Connect drain shield wire to terminal 10 at the controller only. Other end of drain shield wire is to be cut off and taped.

2.0 CALIBRATION AND ADJUSTMENTS

2.1 See Figure 1 for a reference guide before making any adjustments of the potentiometers, DROOP, I, GAIN and SPEED.

2.2 Power OFF — engine not operating.

2.3 Initial potentiometer settings:

2.3.1 Set the I adjustment three divisions from zero and the GAIN at the second division from zero.

2.3.2 For isochronous operation, set DROOP counterclockwise to minimum position as shown in Figure 1.

2.3.3 For DROOP operation, set DROOP potentiometer clockwise to obtain desired amount of DROOP from no-load to full load. Turning potentiometer clockwise increases DROOP.

NOTE

If the full 35° rotation of the actuator shaft is used and the linkage adjusted to use only the active fuel range, the maximum obtainable DROOP would be approximately 12% at full load.

2.3.4 See step 3.0 for setting switches S1 and S2.

2.4 If a remote speed potentiometer is used for narrow range, set it to mid-range. If the remote speed potentiometer is connected to terminals 6, 7 and 9, a resistor "R" in the wiper is not needed. This will provide approximately a ±5% adjustable speed range.

2.5 Start the engine.

2.5.1 Adjust the controller speed potentiometer until the engine is operating at the desired engine RPM. Clockwise increases engine RPM.

2.5.2 If the governor system is unstable, slightly reduce the GAIN setting.

NOTE

Except for the speed adjustment, the potentiometers have internal stops at the 0 and 100% positions.

2.6 With the engine unloaded, finalize the settings, I and GAIN adjustments as follows:

2.6.1 Turn the GAIN adjustment clockwise slowly until the actuator lever oscillates. (One may need to disturb actuator lever to cause oscillation.) Reduce the GAIN adjustment slowly counterclockwise until the lever is stable. Upset the lever by hand. If the lever oscillates 3 to 5 diminishing oscillations and stops, the setting is correct.

If system performance to load changes is satisfactory, omit step 2.6.2.

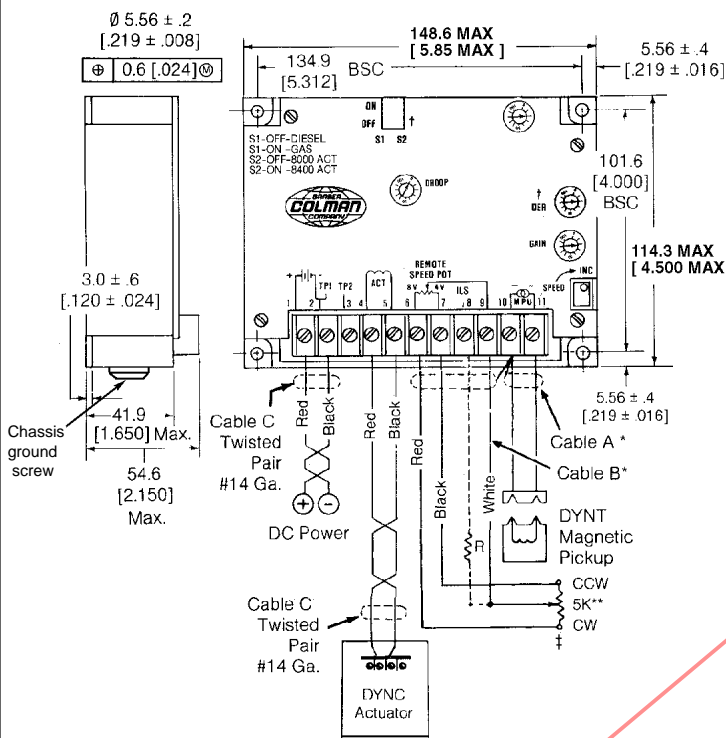
2.6.2 Reduce the GAIN setting counterclockwise one division. Next, turn the I adjustment fully clockwise while observing the actuator lever. If the lever does not become unstable, upset it by hand. When the lever slowly oscillates, turn the adjustment counterclockwise slowly until the lever is stable. Upset the lever again; it should oscillate 3 to 5 times and then become stable for optimum response.

NOTE

Use the settings of step 2.6.1 or step 2.6.2, whichever provides the best performance.

2.6.3 Unit is now calibrated.

**Figure 1. Electronic Control Box Adjustments and Typical Wiring Diagram**



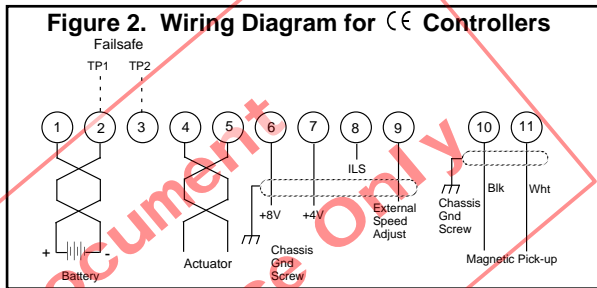
Cable A - DYNK 44-XX (specify length) (90° connector)  
 Cable B - E26-22 (specify length)  
 Cable C - DYNZ 70-4 (specify length)

\*Shielded Cable - Should be purchased from Barber-Colman or customer should purchase a cable with a wrapped mylar supported aluminum foil shield with a drain wire.

\*\*Remote Speed Potentiometer and 499 K Ohm Resistor - DYNZ 10000.

‡ The 5 K Remote Speed Potentiometer can be wired two different ways:

1. As shown by the solid line from the wiper of the 5 K potentiometer and then connected to terminal 9 (no resistor required). Adjustable range is approximately ±5% at 1800 RPM.
2. As shown by the dashed line from the wiper of the 5K potentiometer through resistor "R" and then connected to terminal 8. Reducing the value of "R" increases the remote adjustable speed range.



**3.0 ALL CONTROLLERS WITH REVISION J AND ABOVE HAVE SWITCHES S1 AND S2**

These units have two new features now added to the DYN1 1065X series controllers. They are:

**3.1 Two response ranges, for matching either the diesel or gas engine dynamics.**

- Set S1 to the OFF position for diesel engine applications.
- Set S1 to the ON position for gas/gasoline engine applications.

**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.

**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.

**3.2 Two actuator selections, so the same controller can be used on the DYNA 8000, DYNA 8200 or DYNA 8400 actuator.\***

- Set S2 to the OFF position when using a DYNA 8000 actuator.
- Set S2 to the ON position when using a DYNA 8200 or DYNA 8400 actuator.

\* DYNA 8000 — DYNC 11020 Series  
 DYNA 8200 — DYNC 12000 Series  
 DYNA 8400 — DYNC 14800 Series

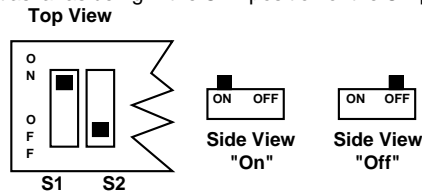
These actuators do not have a potentiometer feedback transducer.

**4.0 GENERAL INFORMATION ON S1 AND S2**

- Switch S1 selects one of two integrating rate ranges. The diesel version integrates at twice the rate of the gas version.
- Switch S2 selects the point at which actuator coil current level causes the integrator limit to be actuated. This level is nominally 6.3 amperes for the DYNA 8000 and 7.3 amperes for the DYNA 8200 and 8400 actuator.

**5.0 PROPER PROCEDURES FOR SETTING SWITCHES S1 AND S2**

**Question:** How do I know if the switches in the dual-in-line packages are correctly set as far as being in the OFF position or the ON position?



**Answer:** The drawings above should clarify any confusion about switch settings. The easiest way to set the switches is to apply pressure with a small pointed object until the switch clicks into position.

**NOTE**

For some diesel engines, better operation may be obtained by placing SW1 in "ON" position. If difficulty is experienced in "OFF" position, try SW1 ON and recalibrate.

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