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## Installation of the Barber-Colman Linear Governor on a Cummins "B" Series Engine. The Actuator is a 1/2 Ft-Lb DYNC-10502, which connects to the Stop Lever of the V.E. Bosch Rotary Pump.

This bulletin contains the following:

- I. Installation Instructions
- II. Parts List
- III. Wiring Diagram
- IV. Calibration Information
- V. Installation Drawing

*Read all instructions and review the layout drawing before attempting this installation.*

### I. Installation Instructions

#### A) Installing the Actuator

1. Refer to the layout drawing and locate the actuator mounting bracket on the left side of the engine. Remove and discard the M8 screws which attach the fuel pump support brace. Place the actuator bracket - Item 3 - onto the fuel pump support brace and secure them to the engine block with two M8 x 22 mm screws and lock washers - Items 4 and 5.
2. Attach the actuator - Item 2 - to the top of the actuator bracket using four 1/4-28 x 3/4 screws, lock washers and nuts - Items 6, 7 and 8.

#### B) Installing the Throttle Linkage

1. It is necessary to remove the return spring from the stop lever.
  - a. Scribe a mark on the stop lever and shaft to ensure proper alignment.
  - b. Remove the stop lever.
  - c. Remove the spring.
  - d. Reinstall the stop lever. Be sure to align the scribed marks.
2. Drill the two existing holes in the stop lever out to 7/32". Attach the add-on stop lever - Item 12 - to the existing stop lever using two 10-32 screws, lock washers and nuts - Items 16, 17 and 18.
3. Install the actuator clevis - Item 9 - five complete turns onto the actuator shaft and tighten the jam nut into the clevis to 60 inch/pounds.

4. Obtain from the parts list one threaded rod, two 1/4-28 rod end bearings and two 1/4-28 jam nuts - Items 7, 10 and 11.

Install one jam nut and rod end bearing onto each end of the threaded rod. Insert one rod end bearing into the actuator clevis and secure it with a 1/4-28x7/8" screw lock washer and nut - Items 6, 7 and 8.

5. Position the throttle lever to operate the engine no load speed at least 10% above rated speed. Operate the engine manually, controlling its speed by the stop lever. Slowly rotate the lever decreasing its speed until the engine quits. **Note:** This is the minimum active fuel.
6. Adjust the length of the threaded rod as to position the stop lever in the minimum active fuel position with the actuator at its no fuel position. Secure the jam nuts into the rod end bearings to ensure this length. Attach the remaining rod end bearing to the stop lever using one 1/4-28x1-1/4" screw, spacer, lock washer and nut - Items 7, 8, 13 and 15. Refer to the exploded view for the proper arrangement of these parts.

#### C) Installing the Magnetic Pickup

1. On the upper left side of the flywheel housing, remove a 3/4" plug and install a 3/4" to 3/8" bushing - Item 14.
2. Turn the flywheel until a ring gear tooth aligns into the center of the bushing.
3. Screw the magnetic pickup - Item 19 - into the bushing until it bottoms on the tooth. Turn the magnetic pickup counterclockwise 1/2 turn and tighten the jam nut.

## II. Parts List

### A. Table 1. Governor Assembly

Specify voltage when ordering Items 1 and 2

Item	Description	Barber-Colman Part Number	Qty.
1	Governor actuator	DYNC-10502	1
2	Controller	DYN1-1075X*	1

\*Specify number of flywheel teeth and remote speed option

### B. Table 2. Installation Kit

B-C Part Number DYNK-10329

Item	Description	Barber-Colman Part Number	Qty.
3	Actuator mounting bracket	DYNK-138-40	1
4	M8 x 25 mm screw	DYNC-257	2
5	M8 lock washer	W1-3	2
6	1/4-28x7/8 Actuator mounting screws	BYRF-1460	5
7	1/4-28 Hex nut	DYRF-110	8
8	1/4 Lock washer	CYRD-558	6
9	Actuator clevis	DYNK-218-1	1
10	Rod end bearings 1/4-28	DYNZ-47-1	2
11	Threaded linkage rod 1/4-28x2"	GYRF-42-3	1
12	Add-on stop lever	DYNK-138-41	1
13	Spacer	DYNC-985-10	1
14	3/4 to 3/8 Bushing	DYNC-600-2	1
15	Screw 1/4-28x1-1/4"	BYRF-3050	1
16	Screw 10-32x5/8"	BYRF-1434	2
17	Nut 10-32	DYRF-357	2
18	Lock washer 10-32	CYRD-198	2
19	Magnetic pickup	DYNT-17200	1

### C. Table 3. Optional Parts

Item	Description	Barber-Colman Part Number	Qty.
20	Governor controller	DYN1-1070X	1

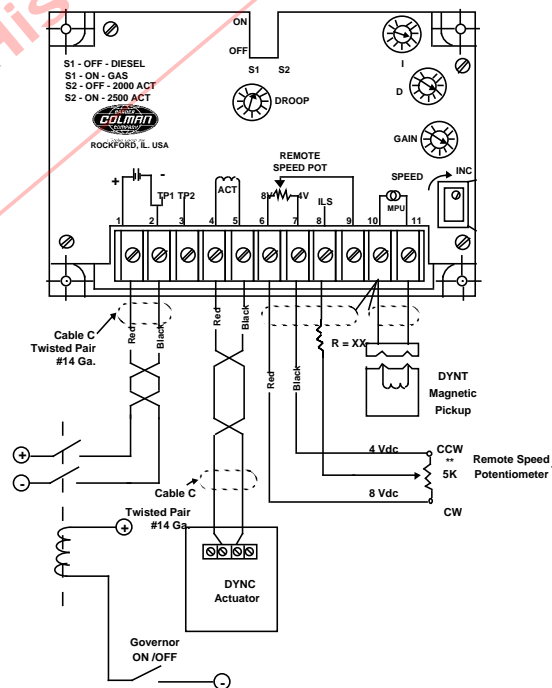
## IV. System Calibration

- Initial controller settings:  
GAIN = 30%  
D = 10%  
I = 40%
- Start the engine and adjust the low speed with the speed potentiometer located in the lower right corner of the controller.
- Engage the high speed and adjust it with the potentiometer attached to terminals 6, 7 and 8.
- With the engine running at rated speed turn the gain potentiometer slowly clockwise until the engine becomes unstable. Once unstable, turn the gain counterclockwise until stable. If the engine will not go unstable, place gain at 75%.
- The "D" potentiometer has an adjustable range from 0 to 100%. In this application the unstable range is 0 to 35%. If the potentiometer is turned above 35%, the actuator will most likely have a high frequency hunt.

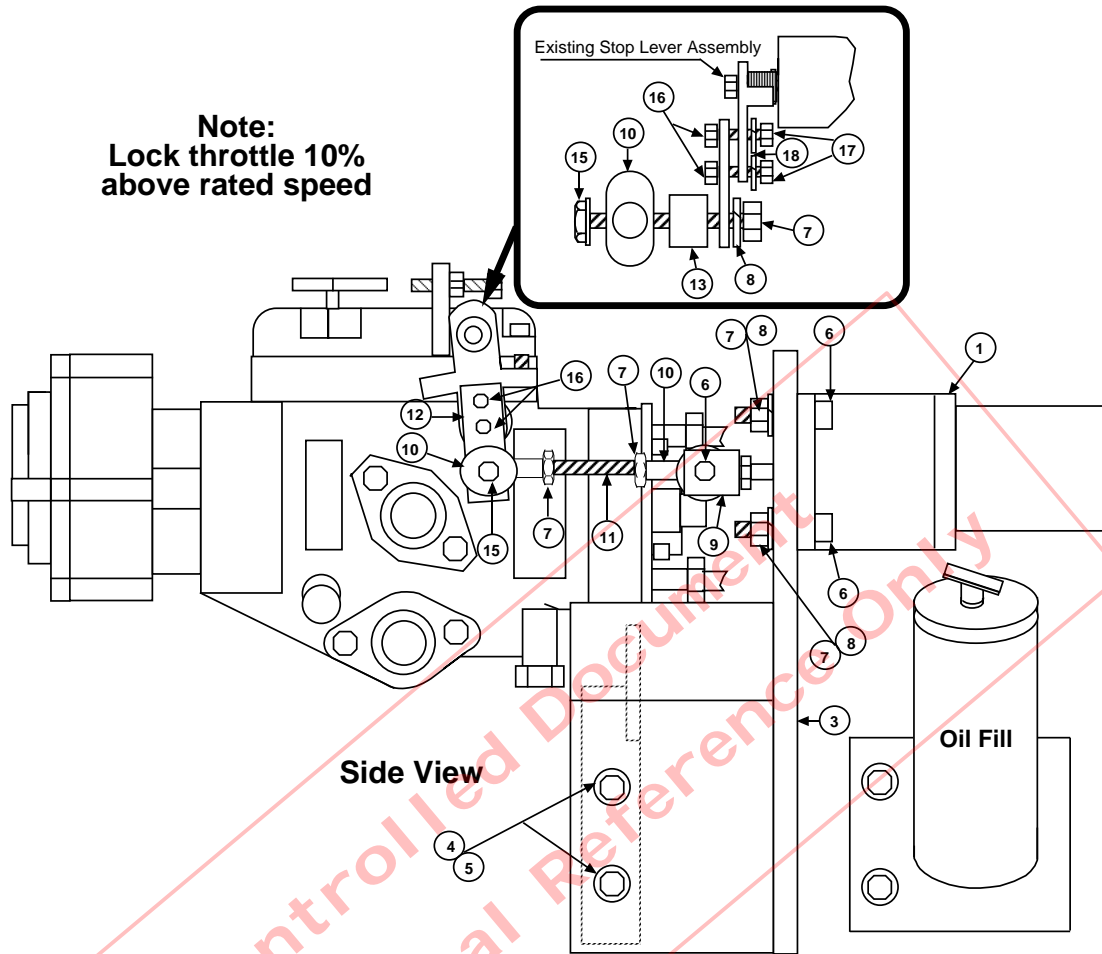
Adjust the "D" by turning the potentiometer slowly clockwise until the engine becomes unstable, or to 35%. Turn back counterclockwise until stable. If the unit does not become unstable, set the "D" at 20%.

- The "I" is adjusted to match the controller to accelerate at the same rate as the engine. With the engine off and the "I" set at 40%, start the unit and watch the frequency. **Note:** Whether the frequency overshoots or coasts up to speed, continue to start and stop the unit while increasing the "I" until the frequency overshoots about 20Hz (400 Hz unit). Turn the "I" potentiometer back counterclockwise 1/2 degree or 5%.

## III. Typical Wiring for DYN1-1075X Controller



## IV. Layout Drawing



### 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.

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