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## Typical Wiring Diagram When Using A Cummins Controller and EFC Fuel Valve

### DYNA II Isochronous Load Sharing Control

The DYNA II Isochronous Load Sharing Control (P/N's DYN2 80100, DYN2 80101, DYN2 80104 or DYN2 80105) can be used with the DYNA I governor to provide control of an engine generator set by maintaining preset engine speed or proportional sharing of load between similar or dissimilar generators. Both droop and isochronous modes can be selected.

Figure 1 illustrates the wiring of two engine generator sets having Cummins governors and DYNA II Isochronous Load Sharing Controls. Additional engine generator sets can be paralleled by wiring them at the point designated, PARALLELING LINES TO OTHER SYSTEMS.

The DYNA II ILS Control can be wired with other manufacturers' load sharing controls. For information, consult your nearest DYNA Power Control Distributor or Barber-Colman Company, Rockford, Illinois.

#### CAUTION

It is recommended that an independent overspeed shutdown device be incorporated in every engine control system.

#### NOTES

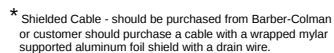
1. If more than one engine is started using the same battery supply, use separate battery supply for each governor. Twist power leads and use shielded leads as shown.
2. Select current transformers to provide 2.5 to 5.0 amps at full rated load. Current transformers require nominal 3.2 VA/PHASE at 2.5 amps; 12.5 VA/PHASE at 5.0 amps
3. Observe current transformer polarity markings when connecting
4. Power switch current rating: 10 amps
5. Phasing of potential to Terminals 1, 2 and 3 is necessary to keep each signal in its correct phase relationship. If the generator voltage is not the same as the voltage rating on Terminals 1, 2 and 3 of the Isochronous Load Sharing Control, a step-down transformer is required. Correct phasing of the transformer leads is necessary. Step-down transformers require nominal 6 VA/PHASE.

6. Ramp switch may be an oil pressure switch, water temperature switch or a manually operated switch. Closing the switch starts the ramping function. Opening the switch returns the engine to idle speed. (Switch rating must be greater than 100 mA.)
7. Ramp switch and connections to Terminals 19, 20 and 21 are required only on ILS Model Nos. DYN2 80101 and DYN2 80105.
8. Standard ramp time is adjustable from 0.5 to 10 seconds. Ramp time adjustment range can be increased to 20 seconds by connecting a 180 mfd (25 Vdc) between Terminals 13 and 19. Capacitor should be a Sprague Type 137D, GE Type 69F, CDE Type TX67 or equivalent.
9. If Ramp Generator function is not being used, the "Idle Speed" Potentiometer in the ILS controller must be set fully clockwise.
10. If Ramp Generator function is not being used, the "Ramp Time" Potentiometer must be set fully counterclockwise.
11. Power Connection, to Terminal 21 on ILS, is not required when ramp generator is **not** being used.
12. If "Load Pulse" function is not being used, the "Load Pulse" Potentiometer must be set fully counterclockwise.
13. Droop/ Isochronous switch is not required if units are always operated in the Isochronous mode.
14. Shielded wires are to be terminated on one end, as shown in the diagram, Figure 1.

#### NOTE

Figure 1 is a point-to-point wiring diagram. Wires are to be connected as shown to ensure proper performance.

## 2



| TABLE OF WIRE SIZES |            |
|---------------------|------------|
| Size - AWG          | Nominal MM |
| 10                  | 6          |
| 12                  | 4          |
| 14                  | 2.5        |
| 18                  | 1.5        |
| 22                  | 1.0        |

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| 12                  | 4          |
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| 18                  | 1.5        |
| 22                  | 1.0        |

# Typical Wiring Diagram When Using a Cummins Controller and EFC Fuel Valve and a DYN2 90200 Auto-Synchronizer

## DYNA II Auto-Synchronizer

The DYNA II Auto-Synchronizer (P/N DYN2 90200) can be used with the Cummins governor and DYNA II Isochronous Load Sharing control to automatically synchronize one generator with another or with a bus. The Auto-Synchronizer eliminates the risk of operator error inherent with manual synchronizing.

Figure 2 illustrates the wiring of two engine generator sets having Cummins governors, DYNA II Isochronous Load Sharing controls and DYNA II Auto Synchronizers. Additional engine generator sets can be paralleled by wiring them at the point designated, PARALLELING LINES TO OTHER SYSTEMS.

### CAUTION

It is recommended that an independent over-speed device be incorporated in every engine control system.

### NOTES FOR AUTO-SYNCHRONIZER

(Also see F-23448)

1. a. Closing a contact between 12 to 13 allows the Auto-Synchronizer to perform as a speed matching unit. The speed and phase of the incoming generator are controlled and a contact is closed to drive a circuit breaker. Once the circuit breaker is closed the contact between 12 and 13 should be opened. Another method would be to use the "Output Hold" dip switch, SW1, on the front of the unit.  
b. Open contacts or no jumper 12 to 13 allows the Auto-Synchronizer to still sense any error, but it does not provide any control or contact closure.
2. Phasing of voltage potential to the Auto-Synchronizer is necessary to keep each signal in its correct phase relationship. If the generator voltage is not the same as the voltage rating of the Auto-Synchronizer, step-down transformers are required. The step-down transformers require a nominal 7 VA/PHASE for the Generator input and 2 VA/PHASE for the Bus input.
3. Connections to terminals 1-3 or 2-3 and 4-6 or 5-6 of the Auto Synchronizer must be the same voltage potential. Applying generator voltage without applying bus voltage may cause the engine to run faster or slower than the desired speed. However, when bus voltage is applied, the Auto-Synchronizer will change engine speed to quickly match the generator to the bus frequency.

### GENERAL SYSTEM NOTES

4. Power switch current rating is 10 amperes.
5. If more than one engine is started using the same battery supply, use a separate battery supply for each governor.
6. If each generator has a separate power supply connect the negative of all power supplies together for a common reference.
7. Use shielded and twisted leads as shown.

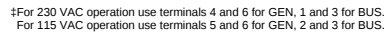
### NOTES FOR ISOCRONOUS LOAD SHARING MODULE (Also see F-16892)

8. Select the ILS current transformers to provide 2.5 to 5.0 amperes at full rated load. Current transformers require nominal 12.5 VA/PHASE at 5.0 amperes.
9. Step-down potential transformers require a nominal 6 VA/PHASE for the ILS.
10. Observe current and potential transformer markings when wiring system because it is necessary to keep each signal in its correct phase relationship to each other.
11. Ramp switch and connections to terminal 20 and 21 of ILS are required only on DYN2 80101 and DYN2 80105.
12. Ramp switch may be an oil pressure, water temperature or manual switch. Closing the switch starts the ramping function. Opening the switch during or after ramping is completed returns the engine to idle speed .
13. Standard "ramp time" is adjustable from 0.5 to 10 seconds. This time can be increased by connecting a 180 mfd (25 Vdc) between terminals 13 and 19 on the ILS. Capacitor should be a Sprague Type 1 37D, GE Type 69F, CDE Type TX67 or equivalent.
14. If the ramp generator function is not being used, set the "idle speed" potentiometer fully clockwise and the "ramp time" potentiometer fully counterclockwise, and it is not necessary to connect power to terminal 21 of ILS.
15. If the "load pulse" function is not being used, set the "load pulse" potentiometer fully counterclockwise.
16. Droop/isochronous switch is not required if the system is always operated in the isochronous mode.
17. Shielded wires are to be terminated on one end, as shown in the diagram.

### NOTE

Figure 2 is a point-to-point wiring diagram. Wires are to be connected as shown to ensure proper performance.

## 4



**Figure 2. Typical Electrical Schematic**

\* 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.

**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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