



a Siebe company

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 1 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 overspeed 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 between 12 and 13 allows the AutoSynchronizer 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.

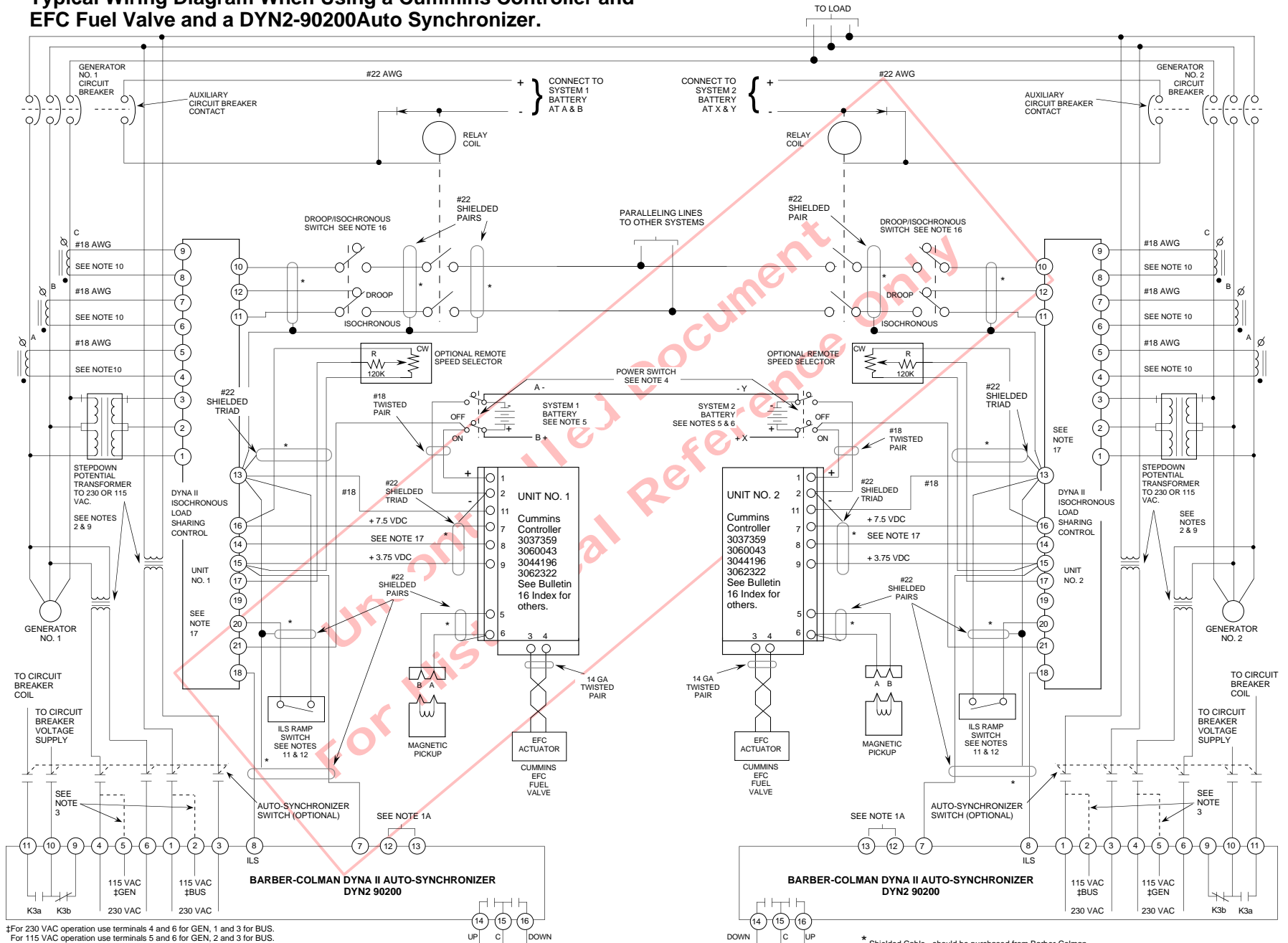
GENERAL SYSTEM NOTES

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. 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, Figure 1.

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



†For 230 VAC operation use terminals 4 and 6 for GEN, 1 and 3 for BUS.
For 115 VAC operation use terminals 5 and 6 for GEN, 2 and 3 for BUS.

CABLE A — DYNK 62-XX (specify length)
CABLE B — E26-22 (specify length)
CABLE C — DYNK 123-XX (specify length)
CABLE D — DYNZ 70-5 (specify length)
CABLE F — E26-29 (specify length)

Figure 1.

* 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.

Typical Wiring Diagram When Using a Cummins Controller and EFC Fuel Valve

DYNA II Auto-Synchronizer With a Cummins Controller

The DYNA II Auto-Synchronizer can be used with the Cummins Controller governor to automatically synchronize one generator with another or with an infinite bus. The Auto-Synchronizer eliminates the risk of operator error inherent with manual synchronizing.

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. Observe transformer polarity markings when connecting.
3. Power switch current rating: 10 amps.
4. If the generator voltage is not the same as the voltage rating of the Auto-Synchronizer, step-down transformers are required. Correct phasing of the transformer leads is necessary. Stepdown transformers require a nominal 10 VA/PHASE for the GEN input to the Auto-Synchronizer, 7 VA/PHASE for the BUS input to the Auto-Synchronizer
5. Resistor Part Numbers:
R1: 121 K — CYZR 932-025
R2: 121 K — CYZR 932-025
R3: 68.1 K — CYZR 932-029
R4: 499K — CYZR 932-015
6. To calibrate the Auto-Synchronizer, refer to Tech Manual F23448-2 .
7.
 - a. Leaving terminals 7 and 8 disconnected allows the Auto-Synchronizer to perform as a sync check relay, with a contact output but no control of the engine/generator speed.
 - b. Closing a contact between 12 and 13 allows the Auto-Synchronizer to perform as a speed matching unit. The speed and phase of the incoming generator are controlled and contact is closed to drive circuit breaker. Once the circuit breaker is closed, the contact between 12 and 13 should be opened. (See Figure 2 for an example of how one would most likely wire Terminals 12 and 13.)
 - c. Open contact or no jumper 11 to 12 or 12 to 13 allows the Auto-Synchronizer to still sense any error but it does not provide any control or contact closures between 9 and 10 or 14,15 and 16.
8. Cummins governor must be operated in the Droop mode when paralleled without the ILS module.
9. Shielded wires are to be terminated on one end, as shown in the diagram, Figure 2.

Typical Wiring Diagram When Using a Cummins Controller and EFC Fuel Valve.

NOTE:

If R1 is changed in value, then R2 must also be changed to the same value. R1 must equal R2.

4

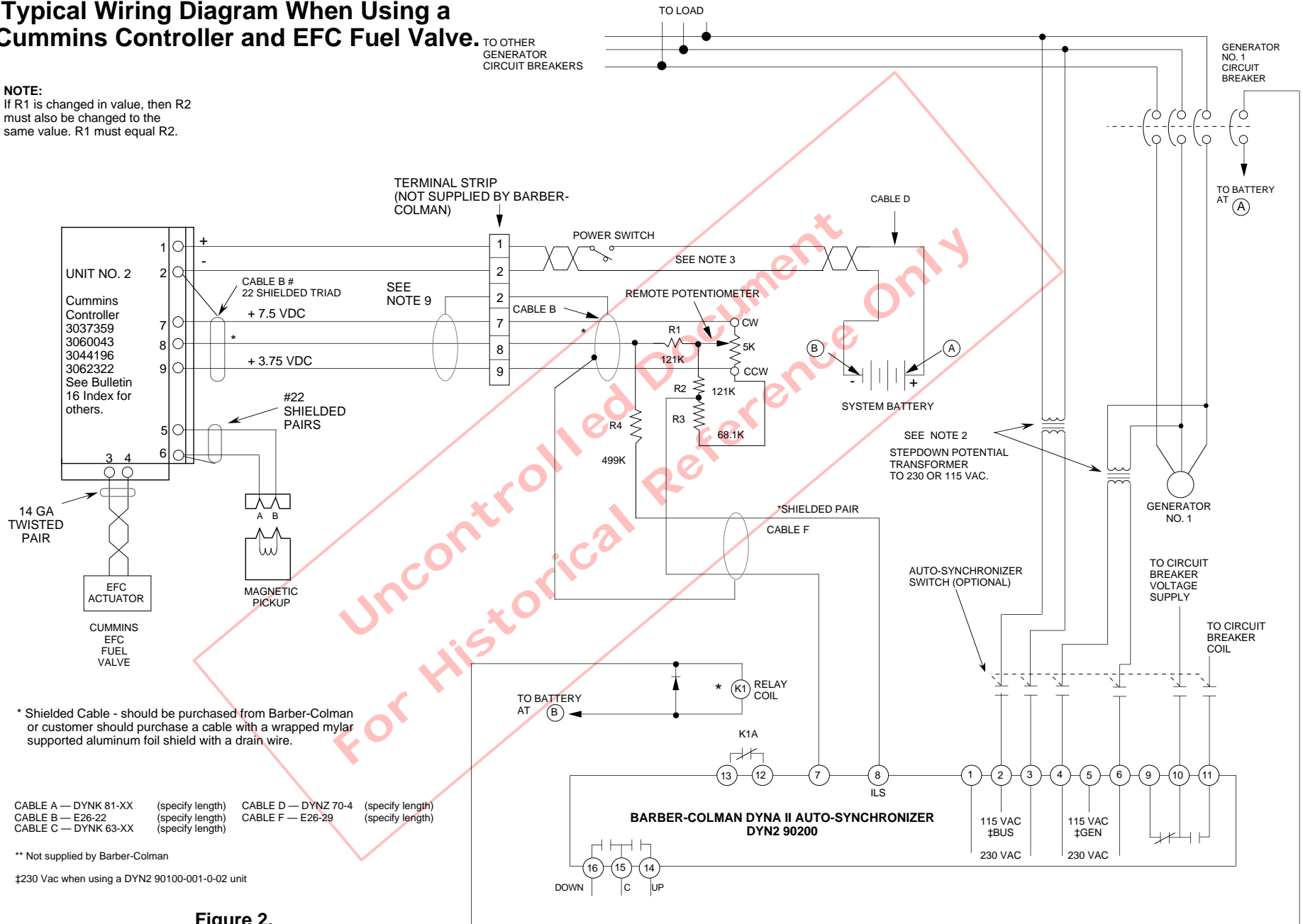


Figure 2.

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.

Uncontrolled Document
For Historical Reference Only

Barber-Colman Company

**AEROSPACE & POWER CONTROLS DIVISION
DYNA Product Group**

1354 Clifford Avenue
P.O. Box 2940
Loves Park, IL U.S.A. 61132-2940

Phone: (815) 637-3000
Fax: (815) 877-0150

In Europe contact: Barber-Colman GmbH
Am neuen Rheinhafen 4, D-6720 Speyer, West Germany
Tel: 06232-1203, Fax: 06232-12155, Telex: 467 627

In Japan contact: Ranco Japan Ltd.
Shiozaki Bldg. 7-1, 2-chome, Hirakawa-Cho, Chiyoda-Ku
Tokyo 102, Japan
Tel: 3261-4293, Fax: 3264-4691, Telex: 0232-2087