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## Typical Wiring Diagram When Using a DYNA 8000 Governor, a DYN2-80108 Series Digital ILS Control and a DYN2-90200 Auto-Synchronizer

### DYNA II Auto-Synchronizer

The DYNA II Auto-Synchronizer (P/N DYN2-90200) can be used with the DYNA 8000 governor and DYNA II Digital 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 DYNA 8000 governors, DYNA II Digital 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.**

#### Notes

1. Systems battery supply — If more than one engine is started using the same battery supply, use a separate battery supply for each system. Twist power leads as shown. 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 0.32 VA / PHASE at 2.5 amps; 1.25 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 1 VA / PHASE.
6. Droop / Isochronous switch is not required if units are always operated in the Isochronous mode.
7. **Digital ILS — Also see F-22396A**  
 DYN2-80108 — 115 / 230 VAC input, 50 / 60 Hz  
 DYN2-80109 — 230 / 480 VAC input, 50 / 60 Hz  
 DYN2-80110 — 230 / 480 VAC input, 400 Hz
8. DYNA 8000 Controllers: DYN1-10653, DYN1-10654 or DYN1-10656; DYN1-10663, DYN1-10664 or DYN1-10666; and DYN1-10683, DYN1-10684 or DYN1-10686.
9. a. DYNA 8000 Actuators: DYNC-11020 & DYNC-11024 Series  
 b. DYNA 8400 Actuators: DYNC-14800 & DYNC-14801 Series
10. If "Load Pulse" function is not being used, the "Load Pulse" Potentiometer must be set fully counterclockwise.

#### Notes for Auto-Synchronizer (Also see F-23448)

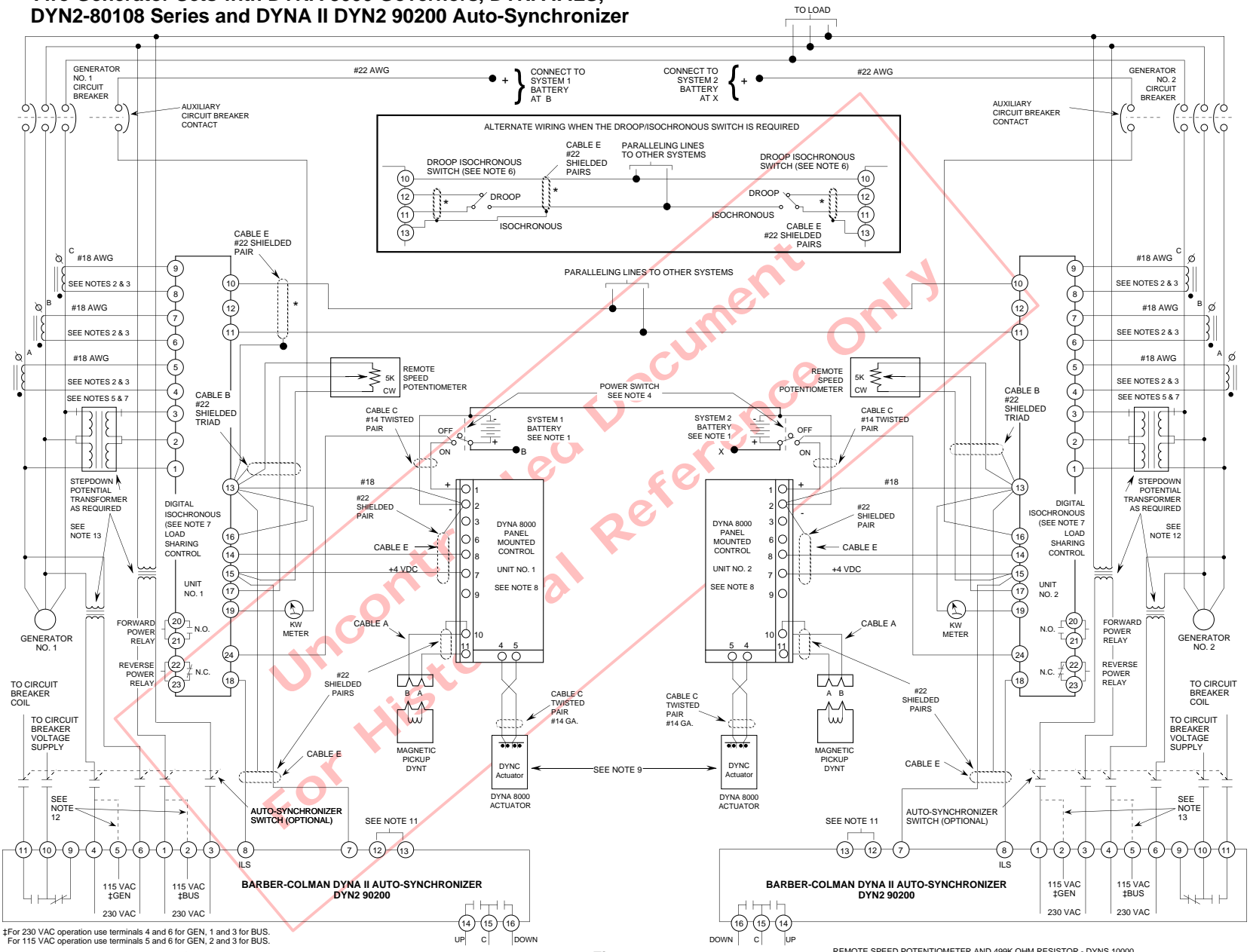
11. a) Closing a contact between 12 to 13 allows the Auto-Synchronizer to perform as a speed matching unit. The speed and phase of the incoming generator are controlled and a contact is closed to drive a circuit breaker. Once the circuit breaker is closed, the contact between 12 and 13 should be opened. 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 Auto-Synchronizer to still sense any error, but it does not provide any control or contact closure.
  12. 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.
  13. 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.
  14. Step down transformers require nominal 10 VA / PHASE.
- \* 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.

For 230 VAC operation, use terminals 4 & 6 for GEN, 1 & 3 for BUS

For 115 VAC operation, use terminals 5 & 6 for GEN, 2 & 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 E — E26-29 (Specify length)

# Two Generator Sets with DYNA 8000 Governors, DYNA II ILS, DYN2-80108 Series and DYNA II 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 — DYNZ 62-XX (specify length) CABLE D — DYNZ 70-5 (specify length)  
 CABLE B — E26-22 (specify length) CABLE E — E26-29 (specify length)  
 CABLE C — DYNK-123-XX (specify length)

**Figure 1.**  
**Typical Electrical Schematic**

REMOTE SPEED POTENTIOMETER AND 499K OHM RESISTOR - DYNS 10000

# Typical Wiring Diagram When Using a Panel Mounted DYN1-10654 Series Controller, a DYN2-80100 Series ILS Control and a DYN2-90200 Auto-Synchronizer

## DYNA II Auto-Synchronizer

The DYNA II Auto Synchronizer (P/N DYN2-90200) can be used with the DYNA 8000 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 DYNA 8000 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)

- 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.
  - Open contacts or no jumper from 12 to 13 allows the Auto-Synchronizer to still sense any error, but it does not provide any control or contact closure.
- 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.
- 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.

For 230 VAC operation use terminals 4 & 6 for GEN, 1 & 3 for BUS.

For 115 VAC operation use terminals 5 & 6 for GEN, 2 & 3 for BUS.

## General System Notes

- Power switch current rating for an 8000 or 8400 actuator is 10 amperes.
- System battery supply — If more than one engine is started using the same battery supply, use a separate battery supply for the DYNA system.

- If each generator has a separate power supply, connect the negative of all power supplies together for a common reference.
- Use shielded and twisted leads as shown.

## Notes for Isochronous Load Sharing Module (Also see F-16892)

- 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.
- Step-down potential transformers require a nominal 6 VA/PHASE for the ILS.
- 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.
- Ramp switch and connections to terminal 20 and 21 of ILS are required only on DYN2 80101 and DYN2 80105.
- 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.
- 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 137D, GE Type 69F, CDE Type TX 67 or equivalent.
- 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.
- If the "load pulse" function is not being used, set the "load pulse" potentiometer fully counterclockwise.
- Droop / Isochronous switch is not required if the system is always operated in the isochronous mode.

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 E — E26-29 (specify length)

Remote Speed Potentiometer — DYNS 10000

\* 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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