



Service Information

DYNA Products

Calibration Information for DYNA Load Commander DYN2-94001

There are two different basic types of applications:

SYSTEM I

System I is where the engine generator provides a constant power and the commercial power makes up for the variations in load. This is accomplished by the use of the DYN2-94001 Load Commander with a potentiometer used for setting the level of the power delivered by the engine generator set(s).

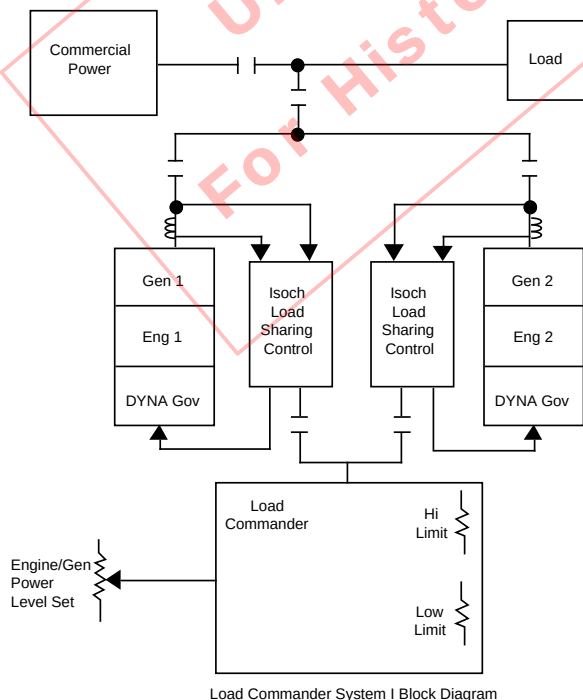
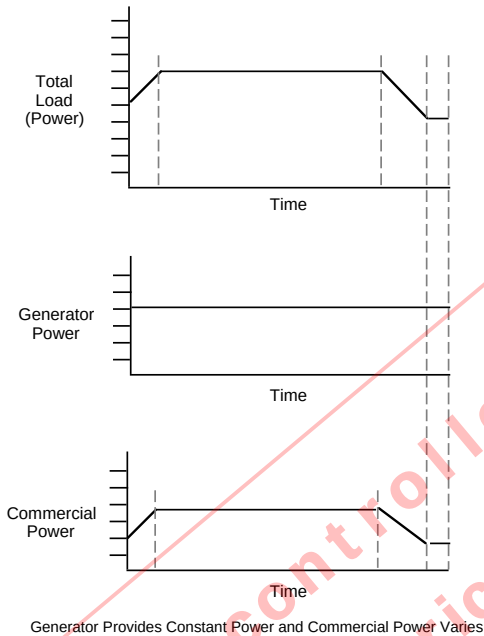


Figure 1

(See Figure 4 for Typical Wiring Diagram)

SYSTEM II

System II is where the commercial power is held constant and the engine generator makes up for the variations in load. This is accomplished by the use of the DYN2-94001 Load Commander and usually a DYN2-94004 Commercial Power Adaptor.

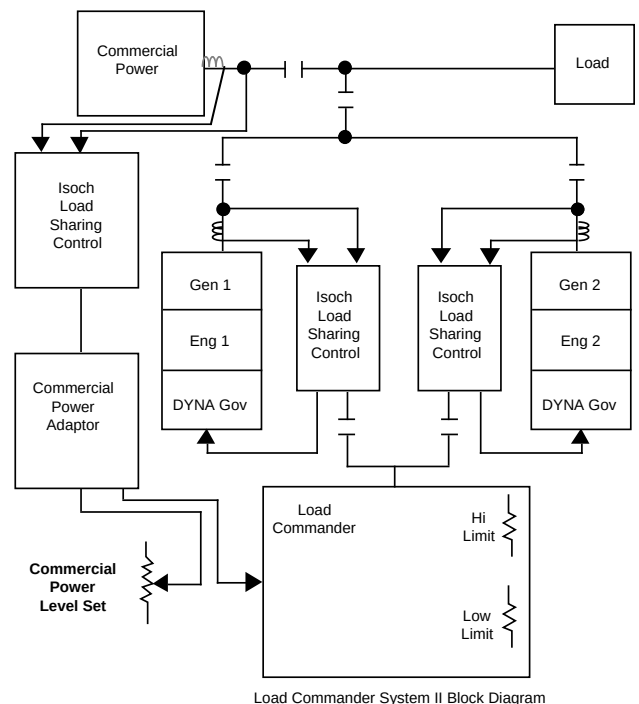
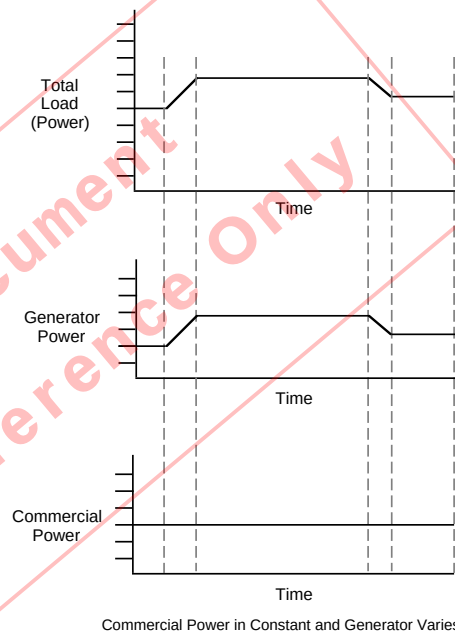


Figure 2

(See Figure 5 for Typical Wiring Diagram)

1.0 GENERAL INFORMATION

1.1 Wire system in accordance with proper wiring diagram. (See Figures 4 and 5 for typical wiring diagram).

1.2 Properly calibrate DYN1 governors on engine generator set(s).

1.3 Properly calibrate DYN2 (ILS) controls on engine generator set(s). Be careful to uniformly set frequency of governor and load GAIN of Isochronous Load Sharing Control. Record voltage of TP1 to TP2 of ILS for full load.

1.4 Make certain that the voltage and droop or stability (GAIN) of the voltage regulators are proper and uniformly calibrated.

1.5 Properly calibrate the Auto-Synchronizer if there is a unit included in the control system.

— CAUTION —

As a safety measure, Barber-Colman recommends that all engines and turbines be equipped with an independent overspeed shutdown device.

— 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.

2.0 SYSTEM I CALIBRATION (See Figure 1)

2.1 Initial Calibration:

2.1.1 Pre-set the **Ramp Time** potentiometer to full CW position. (It is a single turn potentiometer).

2.1.2 Low limit adjustment can be pre-set closely by the following procedure. Determine what percentage load is desired as a low limit. Make the following calculation:

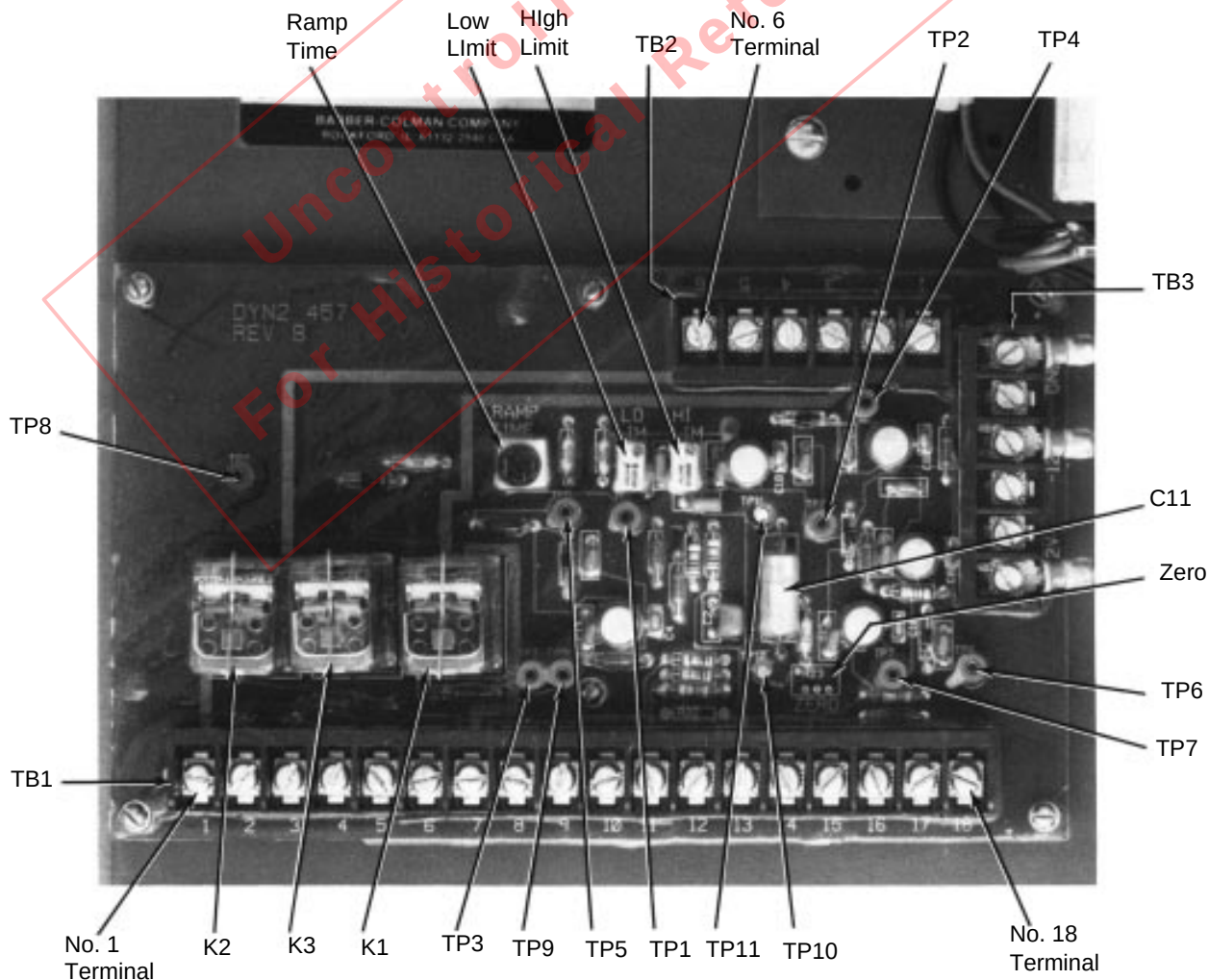
$$VL = \frac{\text{Percentage load at low limit}}{100} \times \frac{\text{Voltage TP1 to TP2 on ILS for 100\% load}}{2}$$

Energize the Load Commander. Place the (+) lead of a DVM in TP5 and the (-) lead in TP8. Turn the **Low Limit** adjustment to provide voltage **VL** determined above.

2.1.3 High limit adjustment can be pre-set closely by the following procedure. Determine what percentage load is desired for the high limit. Make the following calculation:

$$VH = \frac{\text{Percentage load at high limit}}{100} \times \frac{\text{Voltage TP1 to TP2 on ILS for 100\% load}}{2}$$

Energize the Load Commander. Place the (+) lead of a DVM in TP4 and the (-) lead in TP8. Turn the **High Limit** adjustment to provide voltage **VH** determined above.



2.2 Set the **Generator Load Set** potentiometer fully CCW (minimum position).

2.3 Start an (the) engine generator set and parallel it with the commercial power. (The commercial power must be supplying some power to the load).

2.4 The power supplied by the engine generator set should be the amount determined by the **Low Limit**. If the power level is not proper for the Low Limit, adjust the **Low Limit** to provide the proper power level.

2.5 Close the **Ramp Switch** to cause the power to ramp up.

2.6 Slowly turn the **Generator Load Set** potentiometer clockwise to increase the amount of power delivered by the engine generator set. One must make certain that sufficient load is being used so that power is not exported.

2.7 Checking **High Limit** can be accomplished by turning the **Generator Load Set** potentiometer clockwise until there is no further increase in power being delivered by the engine generator. If this level is not the proper value for the High Limit, turn the **HIGH LIMIT** adjustment to provide the proper power level. If the limit cannot be reached, one must make certain that the engine does not have a mechanical limit which prevents developing the power desired.

2.8 After setting the High Limit, turn the **Generator Load Set** potentiometer to the desired value.

2.9 With the **Generator Load Set** potentiometer at the desired power level (someplace above the Low Limit), place the **Ramp** switch in the Down position. If it is automatic, open the lead between 12 and 16 on the Load Commander. The power produced by the engine generator should ramp down to the level set by the Low Limit.

2.10 Place the **Ramp** switch in the Up position (or reconnect 12 to 16). The power produced by the engine generator should ramp up to the level determined by the **Generator Load Set** potentiometer.

2.11 If it is desired to speed up the ramp, turn the **Ramp Time** adjustment counterclockwise. If it is desired to slow the ramp time, a capacitor must be soldered across test point terminals TP10 to TP11. Positive terminal of capacitor must be connected to TP11. Capacitor C11 is 15 mfd. Adding 15 mfd. will approximately double the present ramp time. The capacitor added must be a low leakage type equivalent to Barber-Colman part number CYZR-636-120.

2.12 The Load Commander is now properly calibrated.

NOTE: If for any reason the GAIN of the Isochronous Load Sharing Control is changed, the Load Commander will have to be recalibrated.

3.0 SYSTEM II CALIBRATION

First check GENERAL INFORMATION

3.1 Remove the leads to terminals 2 and 8 of the Load Commander coming from the DYN2-94004. Temporarily connect a 5k ohm potentiometer to 1, 2 and 3 of the Load Commander. Connect CW to 1, wiper/slider connection to 2,

CCW to 3 and shield to 4. (The Commercial Power Set potentiometer from the DYN2-94004 can be used).

3.2 Calibrate the DYN2-94001 as described for System I calibration.

3.3 Calibrate the Isochronous Load Control, which is monitoring the Commercial Power, to 9.00 VDC on TP1 to TP2 for 100 percent commercial power unless otherwise directed.

3.4 Set the **GAIN** adjustment in the DYN2-94004 to the counterclockwise position (It is a 1 turn potentiometer). See Figure 4.

3.5 Reconnect the leads from the DYN2-94004 to 2 and 8 on the Load Commander. Also, reconnect the 5K ohm potentiometer to the DYN2-94004 if it was used for calibrating the DYN2-94001.

3.6 Turn the **Commercial Power Set** potentiometer fully clockwise.

3.7 With the load being powered by the commercial power, start an (the) engine generator and parallel it with the commercial power.

3.8 The power supplied by the engine generator should be at the **Low Limit** when the **Ramp** switch is in the Down position.

3.9 Place the **Ramp** switch to the Up position. The power supplied by the engine generator should still remain at the Low Limit.

3.10 Slowly turn the **Commercial Power Set** potentiometer counterclockwise. The engine generator should start to increase its power output.

3.11 When the engine generator is producing power around 15 percent of its maximum (some value above the low limit), slowly turn the GAIN adjustment of the DYN2-94004 clockwise (increasing the GAIN). Have someone disturb the system by load application and removal or flicking the output lever of the governor. Keep turning the GAIN clockwise until instability is approached. Turn the GAIN adjustment slightly counter clockwise from that position to insure stability under all operating conditions.

3.12 Adjust the **Commercial Power Set** potentiometer to obtain the desired power level on the commercial power bus.

3.13 The Load Commander and Commercial Power Adaptor are now properly calibrated.

Note: If for any reason the GAIN of the Isochronous Load Sharing Control, which is monitoring commercial power, is changed, the Load Commander and Commercial Power Adaptor Will have to be recalibrated.

4.0 HIGH/LOW LIMIT SIGNAL MODULE CALIBRATION

There is no calibration required for the DYN2-94005 High Low Limit Signal Module. It should be wired in accordance with YN-89.

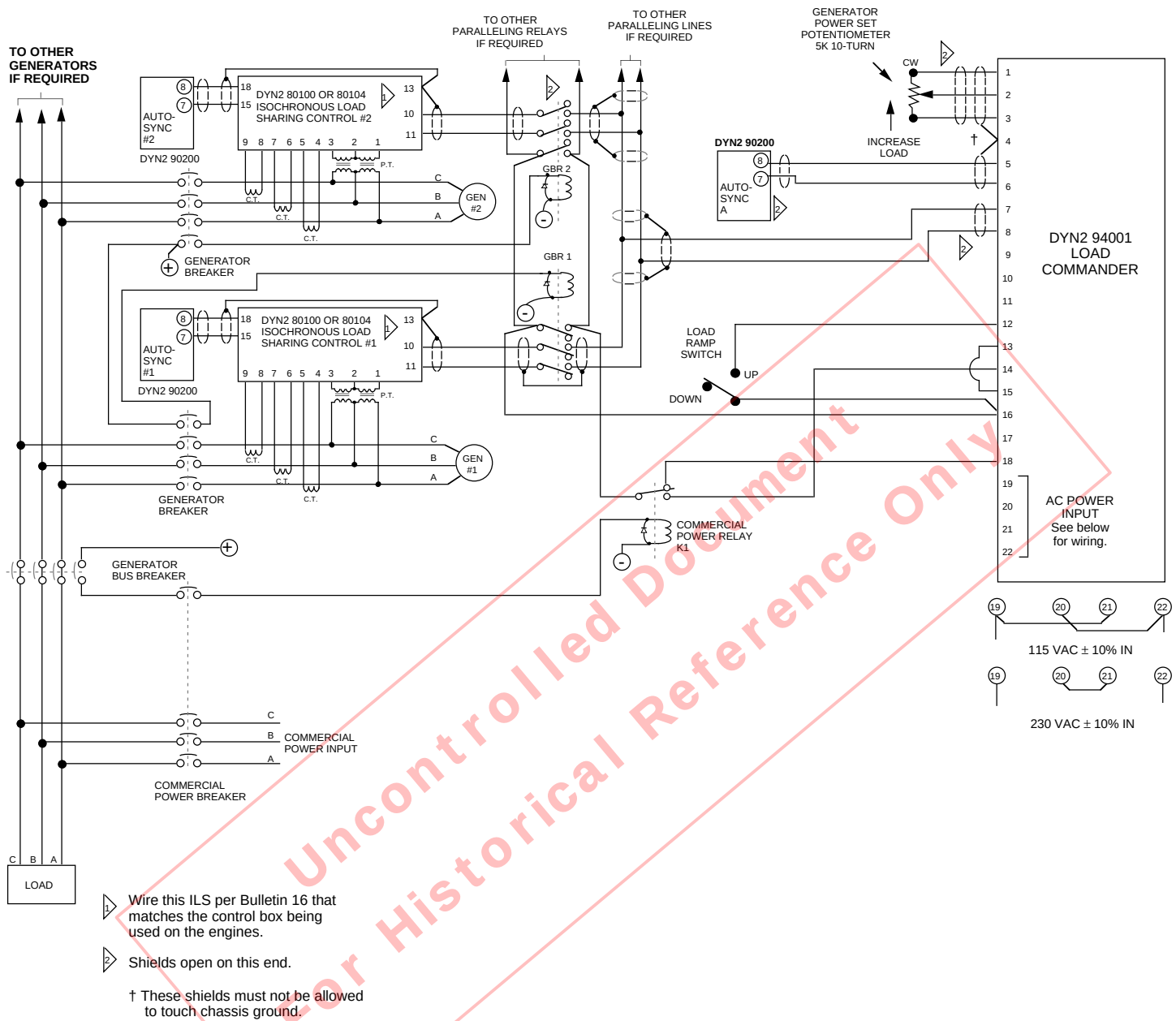


Figure 4. Typical System I Wiring Diagram for Load Commander Using Two Generators (See Figure 1)

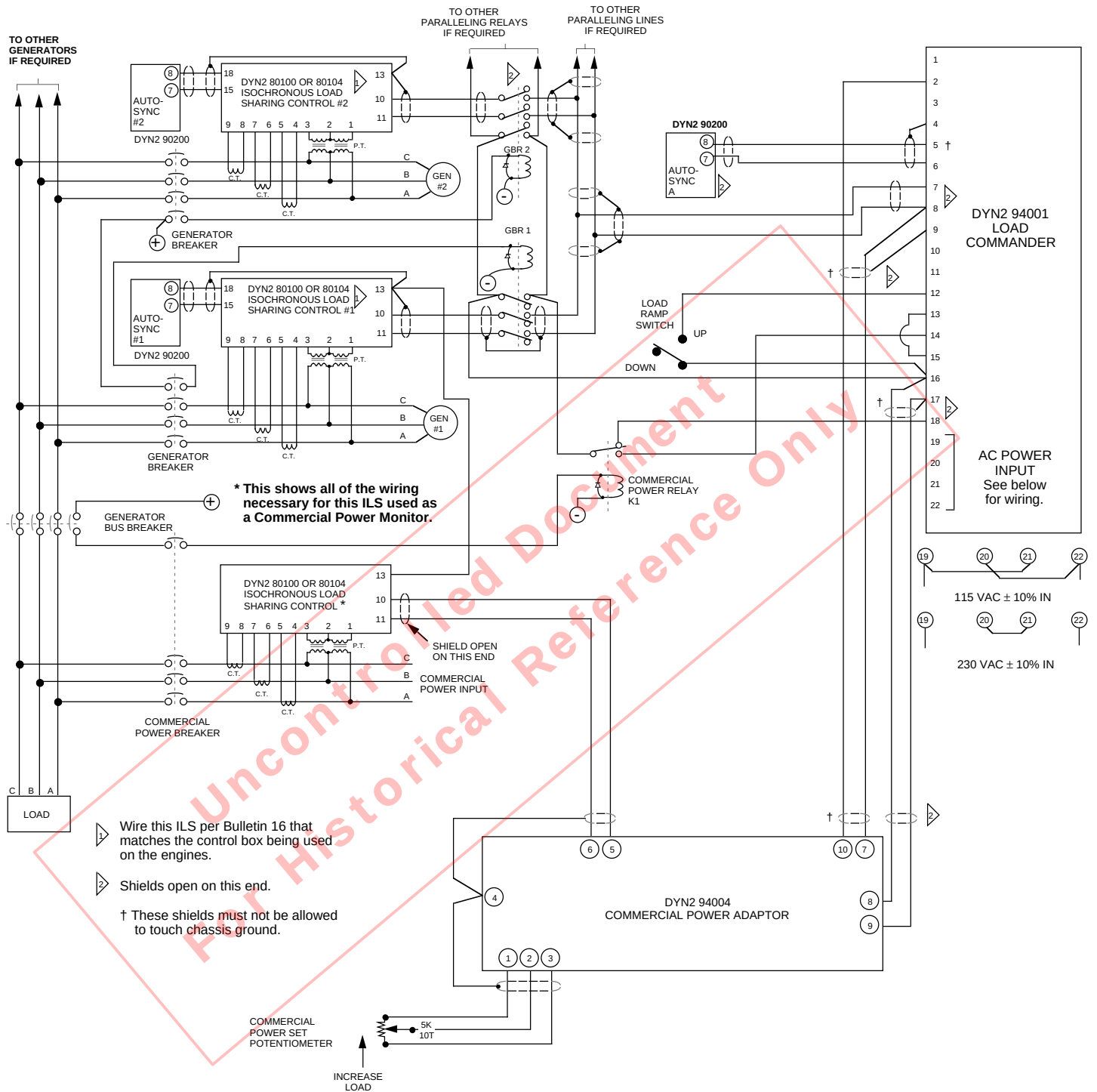


Figure 5. Typical System II Wiring Diagram for Load Commander and Commercial Power Adaptor Using Two Generators (See Figure 2)

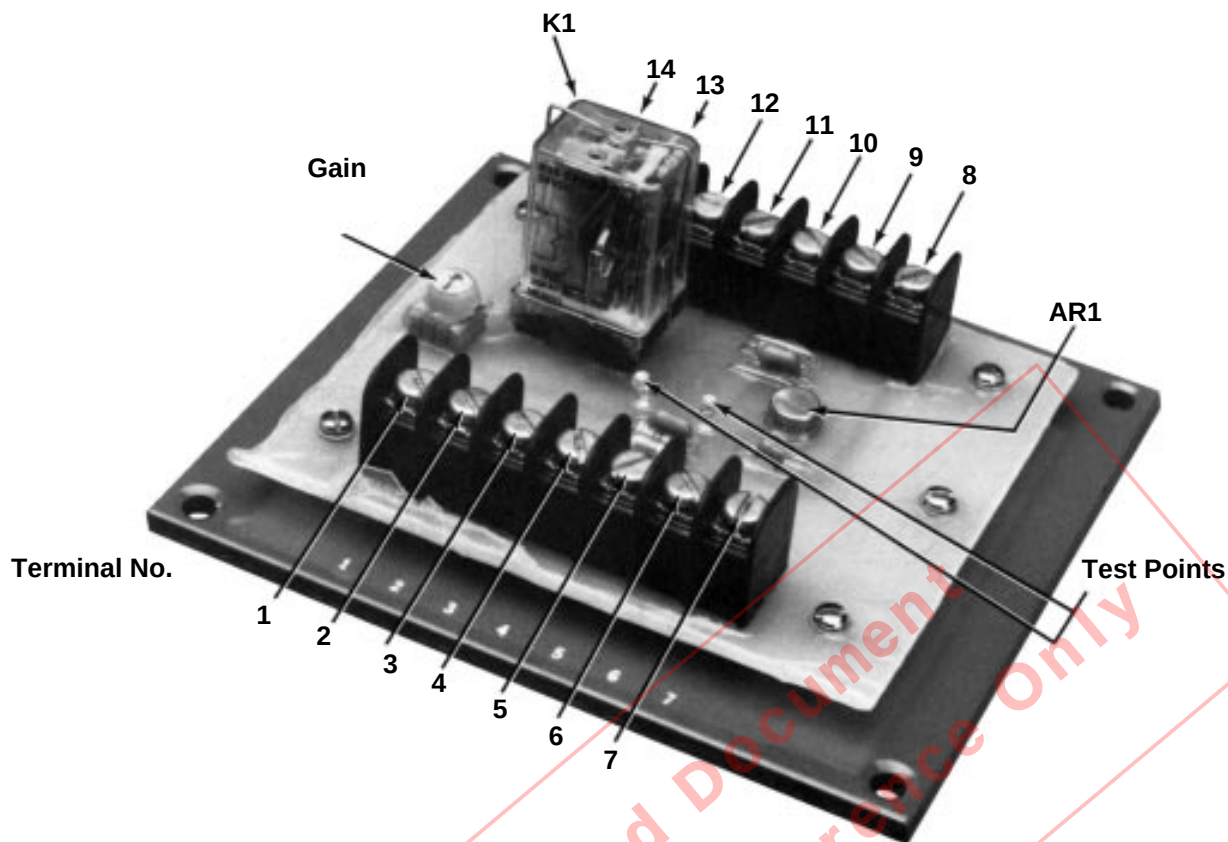


Figure 6. Commercial Power Adaptor DYN2-94004

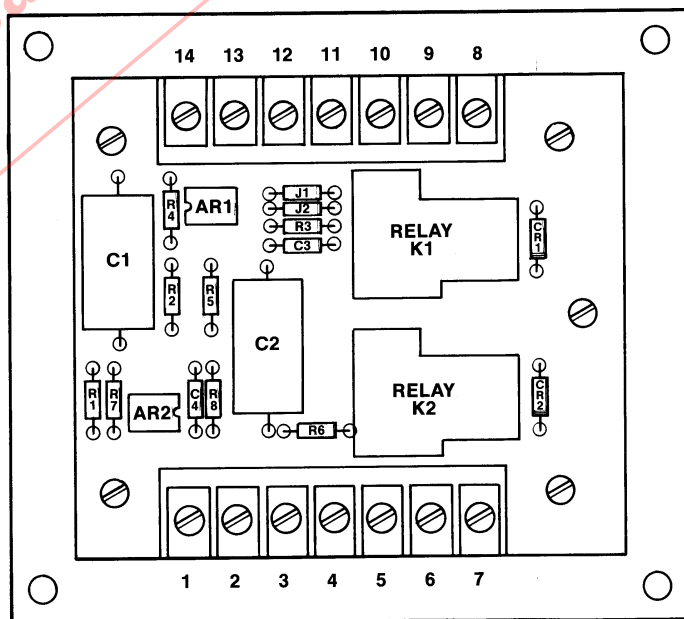


Figure 7. Hi/Low Limit Module DYN2-94005

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