

# **KOHLER** GENERATORS

## **///FASTRESPONSE** **RECONNECTION GUIDE**

## WARNING

Remember that the function of a generator set is to produce electricity and wherever electrical energy is present, there is the potential danger of electrocution. Disconnect starting battery to disable the set before attempting any reconnections.

## Introduction

Most Kohler Fast Response 12 lead generator sets can be field-reconnected to any of the voltages shown in Figures 1 through 6. Not all Fast Response Models have 12 lead generators, and not all model/voltage combinations are available from the factory. The following models are *NOT* RECONNECTABLE:

- All 600 volt models. These are special 6 lead generators.
- Models with 4T10 generators (230 and 260Kw). Different stators are used for wye and delta connected

models. The wye connected models can only be reconnected from 120/208 or 240, to 277/480, and vice versa. Although the generators are 12 lead, wye models should *NOT* be reconnected to delta or vice versa.

### NOTE

Contact factory before reconnecting to any voltage not listed in model specification sheet, or reconnecting models over 100 kW to 120/240 Volt 1 Phase.

# 50 Hertz Operation

All Fast Response models can be changed from 50 Hertz to 60 Hertz and vice versa by resetting the engine governor and overspeed cut-out. Current production models use the same frequency meter. Earlier models used separate meters for 50 and 60 Hertz as shown below:

Part Number	Scale
287595	55-65 Hz
287596	45-55 Hz
287998	45-65 Hz

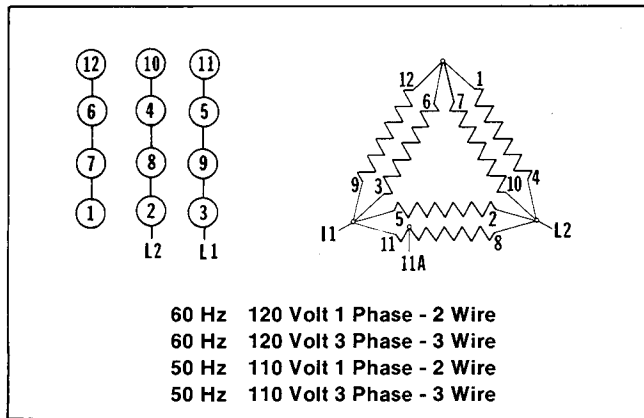


Figure 1

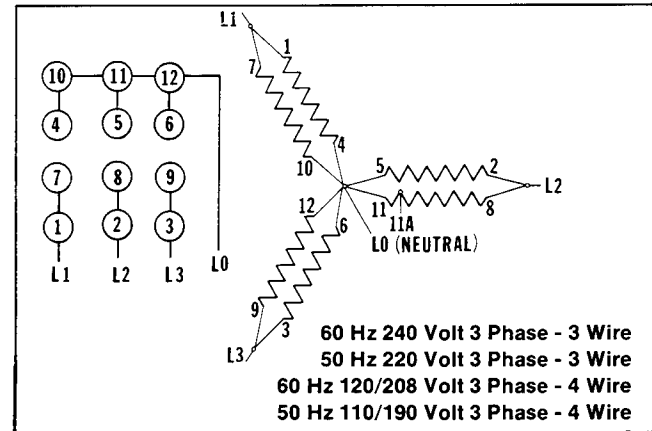


Figure 4

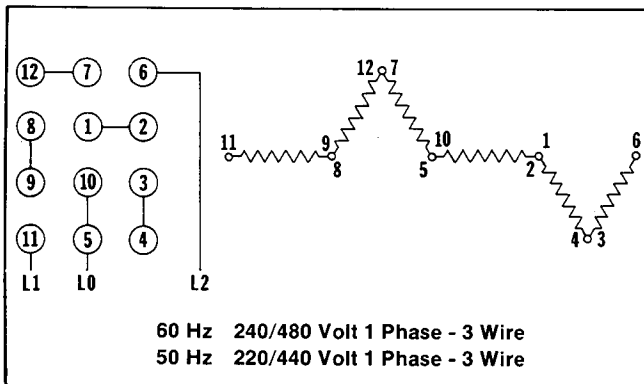


Figure 2

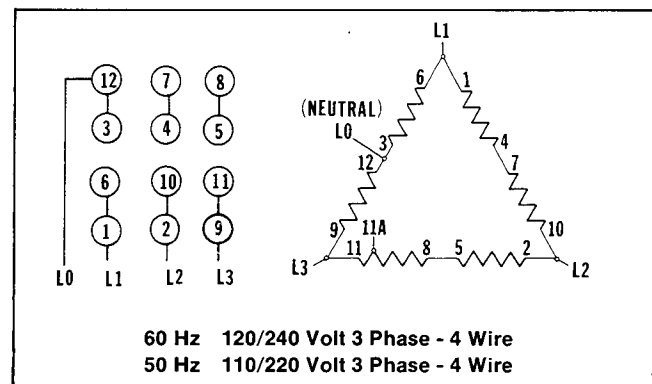


Figure 5

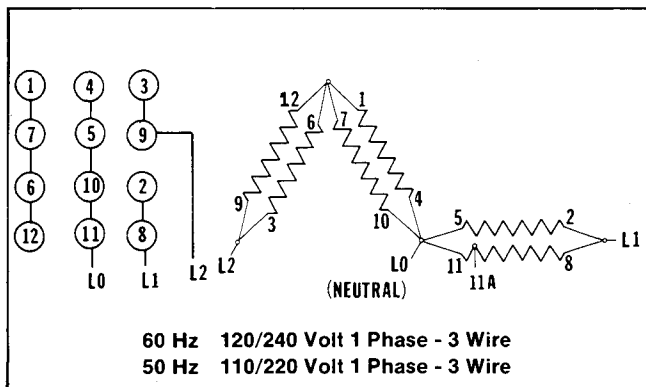


Figure 3

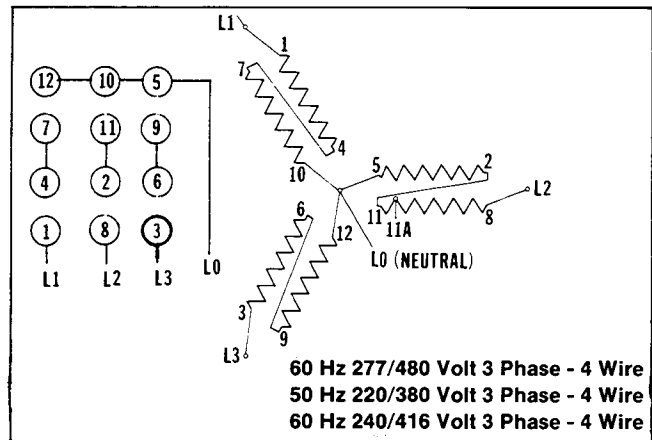


Figure 6

# Reconnection

To reconnect generator from any voltage to another, refer to Table 1.

## NOTE

After completing reconnection provide Kohler Generator Division Service Department with new voltage and phase along with model, spec and serial numbers as found on generator nameplate. This information is needed to update manufacturer's records. Alter generator nameplate to include changes.

Read the voltage your unit is now connected to deliver from the column at the left of the table. Select the voltage you want from those listed across the top of the table. In the square at the intersection of the voltage lines is the group number of the change required. Refer to the paragraphs following for detailed instructions on each group change. Voltages not listed in the table have not been factory supplied, or have been furnished only on special orders. For information on reconnection to or from these voltages, contact factory.

Present Voltage Voltage-Phase (Model Voltage Code)	Reconnection Voltage				
	120/240, 3Ø-(01)*	240, 3Ø-(51)*	120/240, 1Ø-(61)*	277/480, 3Ø-(71)*	120/208, 3Ø-(81)*
120/240, 3Ø, (01)*	0	Group 4	Group 11	Group 6	Group 4
240, 3Ø, (51)*	Group 5	0	Group 9	Group 3	Group 1
120/240, 1Ø, (61)*	Group 10	Group 8	0	Group 13	Group 8
277/480, 3Ø, (71)*	Group 7	Group 2	Group 12	0	Group 2
120/208, 3Ø, (81)*	Group 5	Group 1	Group 9	Group 3	0

\*NOTE: Last two numbers of Model Code denote voltage and phase.

Table 1

## Group 1

### PARTS

**REQUIRED:** None

**CHANGE:** The voltages use the same generator and controller connections. To change voltage, reset voltage adjusting rheostat on face of Decision Maker to the desired voltage.

## Group 2

### PARTS

**REQUIRED:** None

**CHANGE:** Reconnect generator leads as shown in Figure 4. Leave current transformers in their present position. Leads 1, 3 and 8 should go through CT-1, CT-3 and CT-2 respectively. Small leads V0, V1, V2, V3, 8, 11, 8B and 10B remain connected as shown in Figure 7.

## Group 3

### PARTS

**REQUIRED:** None

**CHANGE:** Reconnect generator leads as shown in Figure 6. Leave current transformers in their present position. Leads 1, 3 and 8 should go through CT-1, CT-3 and CT-2 respectively. Small leads V0, V1, V2, V3, 8, 11, 8B and 10B remain connected as shown in Figure 7.

## Group 4

### PARTS

**REQUIRED:** Current transformers, selector switch nameplate (Part No. 284911). See Table 2 for part number of correct current transformers.

**CHANGE:** Reconnect generator leads as shown in Figure 4. Install new current transformers as shown in Figure 7. Small leads V0, V1, V2, V3, 8, 11, 8B and 10B should be connected as shown in Figure 7. Connect lead from upper scale indicating lamp to hourmeter in controller upper cabinet as shown in Figure 11.

## Group 5

### PARTS

**REQUIRED:** Current transformers, selector switch nameplate (Part No. 284908). See Table 2 for part number of correct current transformers.

**CHANGE:** Reconnect generator leads according to Figure 5. Install new current transformers as shown in Figure 8. Small leads V0, V1, V2, V3, 8, 11, 8B and 10B should be connected as shown in Figure 8. Disconnect lead from upper scale indicating lamp to hourmeter in controller upper cabinet as shown in Figure 11.

## Group 6

### PARTS

**REQUIRED:** Current transformers, selector switch nameplate (Part No. 284911). See Table 2 for part number of correct current transformers.

**CHANGE:** Reconnect generator leads according to Figure 6. Install new current transformers and reconnect small leads V0, V1, V2, V3, 8, 11, 8B and 10B as shown in Figure 7. Connect lead from upper scale indicating lamp to hourmeter in controller upper cabinet as shown in Figure 11.

## Group 7

### PARTS

**REQUIRED:** Selector switch nameplate (Part No. 284908) current transformers, safeguard breaker and ammeter as shown in Table 2.

**CHANGE:** Reconnect generator leads as shown in Figure 5. Install current transformers, replace safeguard breaker if required, and reconnect small leads V0, V1, V2, V3, 8, 11, 8B and 10B as shown in Figure 8. Disconnect lead between hourmeter and upper scale indicating lamp as shown in Figure 11.

## Group 8

### PARTS

**REQUIRED:** Selector switch nameplate (Part No. 284911), current transformers, safeguard breaker and ammeter as shown in Table 2.

**CHANGE:** Reconnect generator leads as shown in Figure 4. Install current transformers, replace safeguard breaker if required, and reconnect small leads V0, V1, V2, V3, 8, 11, 8B and 10B as shown in Figure 7. Rewire selector switch in Decision Maker upper cabinet as shown in Figure 11. Replace ammeter if required.

## Group 9

### PARTS

**REQUIRED:** Selector switch nameplate (Part No. 284908), current transformers, safeguard breaker and ammeter as shown in Table 2.

**CHANGE:** Reconnect generator leads as shown in Figure 5. Install current transformers, replace safeguard breaker if required, and reconnect small leads V0, V1, V2, V3, 8, 11, 8B and 10B as shown in Figure 8. Disconnect lead between hourmeter and upper scale indicating lamp as shown in Figure 11.

## Group 10

### PARTS

**REQUIRED:** Selector switch nameplate (Part No. 284908), current transformers, safeguard breaker and ammeter as shown in Table 2.

**CHANGE:** Reconnect generator leads as shown in Figure 5. Install current transformers, replace safeguard breaker if required, and reconnect small leads V0, V1, V2, V3, 8, 11, 8B and 10B as shown in Figure 8. Rewire selector switch and disconnect lead from hourmeter to upper scale indicating lamp in Decision Maker upper cabinet as shown in Figure 11. Replace ammeter if required.

## Group 11

### PARTS

**REQUIRED:** Selector switch nameplate (Part No. 284909), current transformers, safeguard breaker and ammeter as shown in Table 2.

**CHANGE:** Reconnect generator leads as shown in Figure 3. Install current transformers, replace safeguard breaker if required, and reconnect small leads V0, V1, V2, 8, 11, 8B and 10B as shown in Figure 9. Wires V3 and T3 are not used. Rewire selector switch and connect lead from hourmeter to upper scale indicating lamp in Decision Maker upper cabinet as shown in Figure 10. Replace ammeter if required.

## Group 12

### PARTS

**REQUIRED:** Selector switch nameplate (Part No. 284909), current transformers, safeguard breaker and ammeter as shown in Table 2.

**CHANGE:** Reconnect generator leads as shown in Figure 3. Install current transformers, replace safeguard breaker if required, and reconnect small leads V0, V1, V2, 8, 11, 8B and 10B as shown in Figure 9. Wires V3 and T3 are not used. Rewire selector switch in Decision Maker upper cabinet as shown in Figure 10. Replace ammeter if required.

## Group 13

### PARTS

**REQUIRED:** Selector switch nameplate (Part No. 284911), current transformers, safeguard breaker and ammeter as shown in Table 2.

**CHANGE:** Reconnect generator leads as shown in Figure 6. Install current transformers, replace safeguard breaker if required, and reconnect small leads V0, V1, V2, V3, 8, 11, 8B and 10B as shown in Figure 7. Rewire selector switch in Decision Maker upper cabinet as shown in Figure 11. Replace ammeter if required.

**NOTE**

For selector switch nameplate identification refer to Figure 12.

**NOTE**

See Tables 3 and 4 for current transformer and safeguard breaker ratings.

Rating	Generator Model	Voltage	Current Transformer	Safeguard Breaker	Ammeter Scale	Ammeter
30Kw	4N7	208, 240, 480Y	3-246884	X-796-2	150/75	287586
		240Δ	3-246886	X-796-2	150/75	287586
		120/240 1Ø	2-246887	X-796-1	200/100	287588
45Kw	4R4	208, 240, 480Y	3-246885	X-796-1	200/100	287588
		240Δ	3-246887	X-796-1	200/100	287588
		120/240 1Ø	2-246888	X-796-1	250/125	287690
55-75Kw	4R6	208, 240, 480Y	3-246886	X-796-2	300/150	287744
		240Δ	3-246889	X-796-2	300/150	287744
		120/240 1Ø	2-246889	X-796-2	300/150	287744
85-100Kw	4R8	208, 240, 480Y	3-246887	X-796-2	400/200	287589
		240Δ	3-248874	X-796-2	400/200	287589
		120/240 1Ø	2-248875	X-796-1	500/250	287691
125-130Kw	4T5	208, 240, 480Y	3-246888	X-796-2	500/250	287691
		240Δ	3-248875	X-796-2	500/250	287691
150-175Kw	4T7	208, 240, 480Y	3-246889	X-796-6	600/300	287590
		240Δ	3-248876	X-796-6	600/300	287590
230-260Kw	4T10	208, 240, 480Y	3-248875	X-796-2	1000/500	287592
		240Δ	3-X-354-18	X-796-2	1000/500	287592

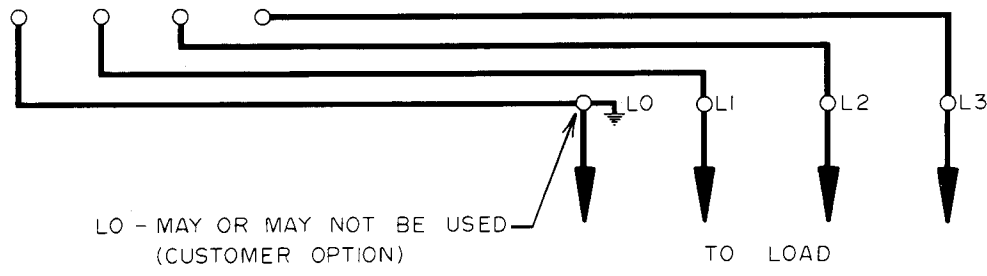
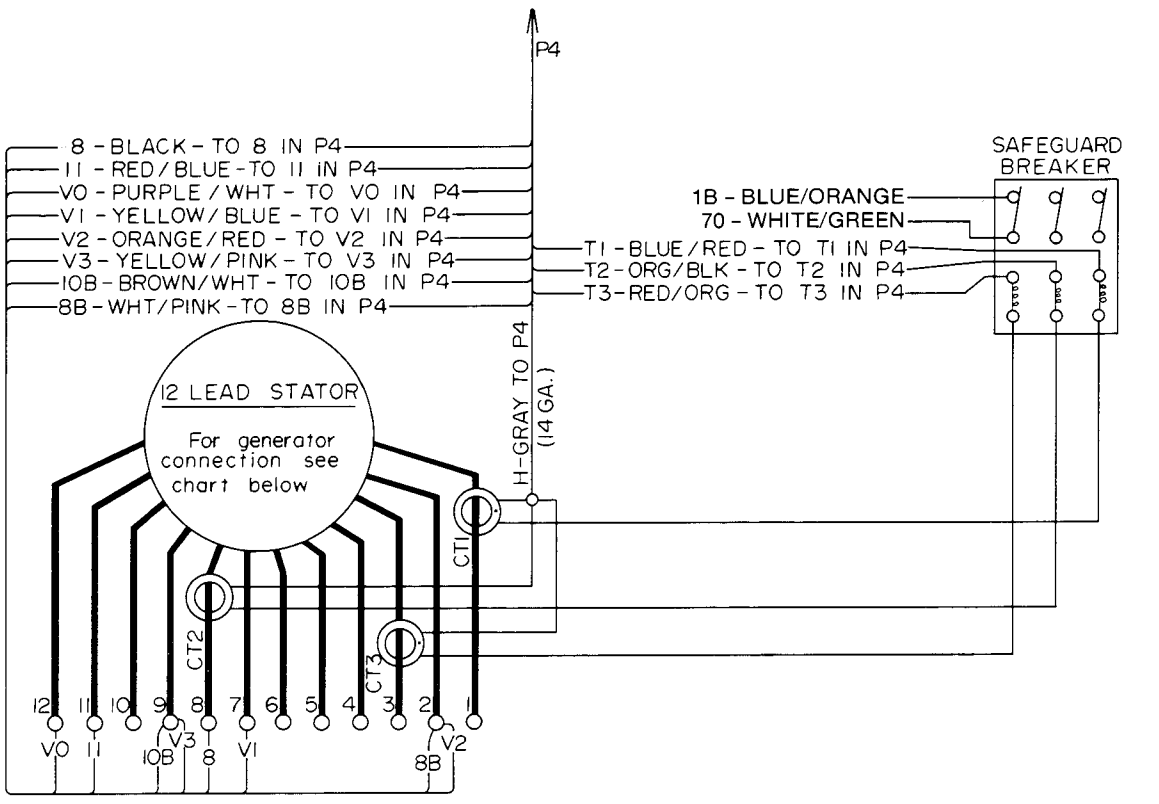
**Table 2**

Current Transformers	
Part Number	Ratio
246884	75-5
246885	100-5
246886	150-5
246887	200-5
246888	250-5
246889	300-5
248874	400-5
248875	500-5
248876	600-5
X-354-18	1000-5

**Table 3**

Safeguard Breakers		
Part Number	Full Load Amps	Trip Amps
X-796-1	4.0	5.0
X-796-2	4.5	5.6
X-796-3	3.5	4.4
X-796-6	5.0	6.3

**Table 4**



**GENERATOR CONNECTIONS**

	L0	L1	L2	L3	Also Connect Together
3Ø-4 Wire 277/480	5, 10, 12	1	8	3	4&7, 2&11, 6&9
3Ø-4 Wire 120/208	4, 5, 6				
3Ø-3 Wire 240	10, 11, 12	1, 7	2, 8	3, 9	

3Ø-4 Wire 277/480  
 3Ø-4 Wire 120/208  
 3Ø-3 Wire 240

If it is not desired to read the neutral on straight 240 volt, disconnect lead V0 from 12

**Figure 7**

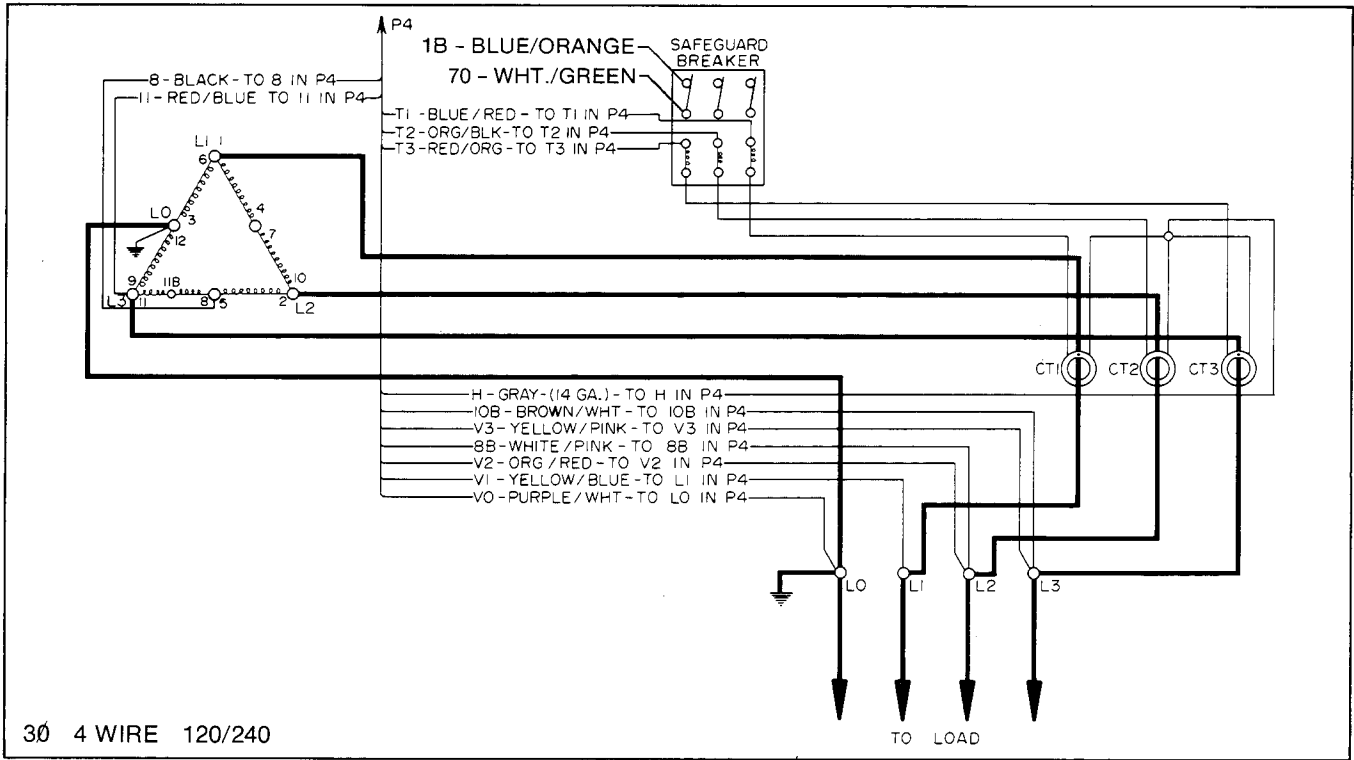


Figure 8

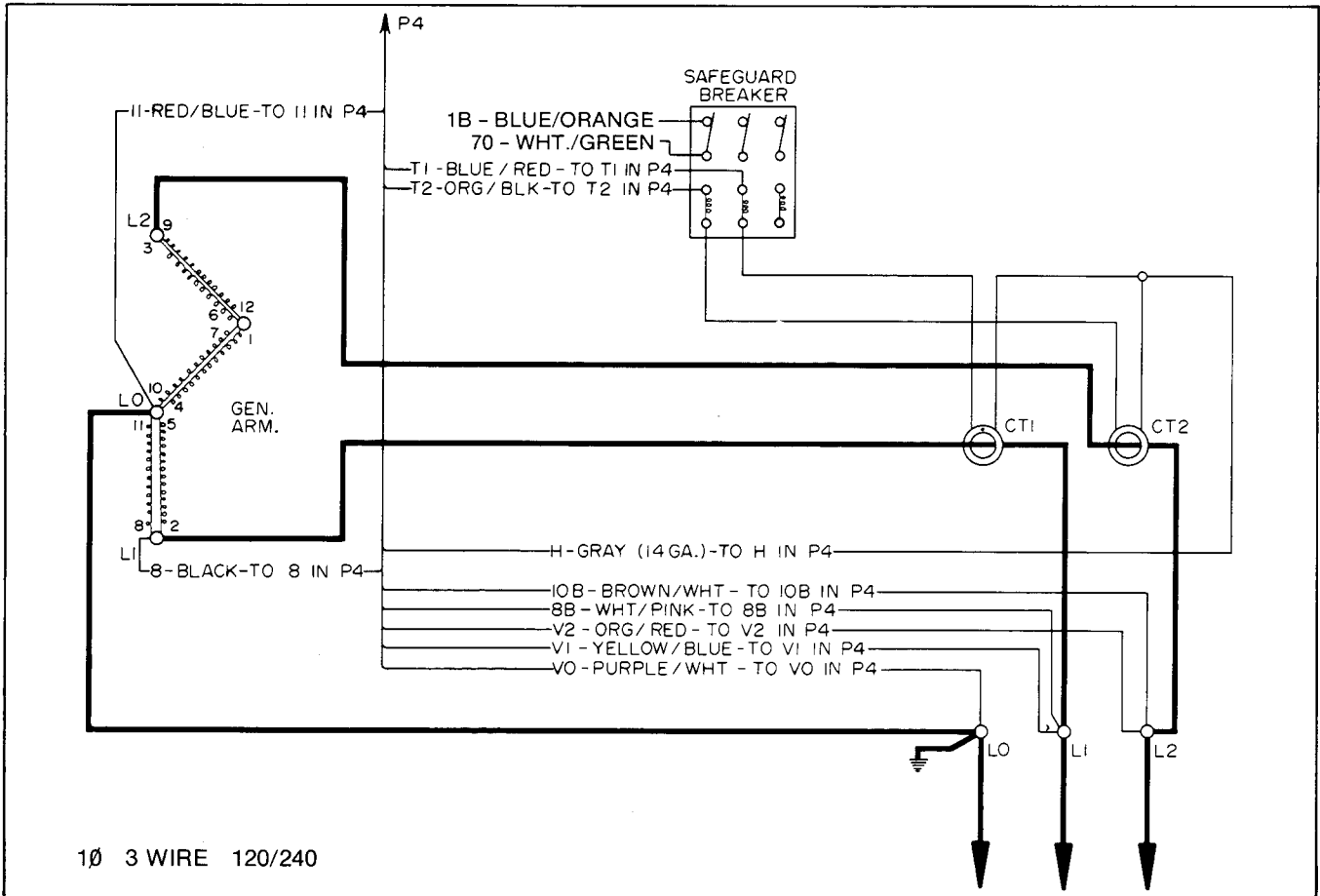


Figure 9

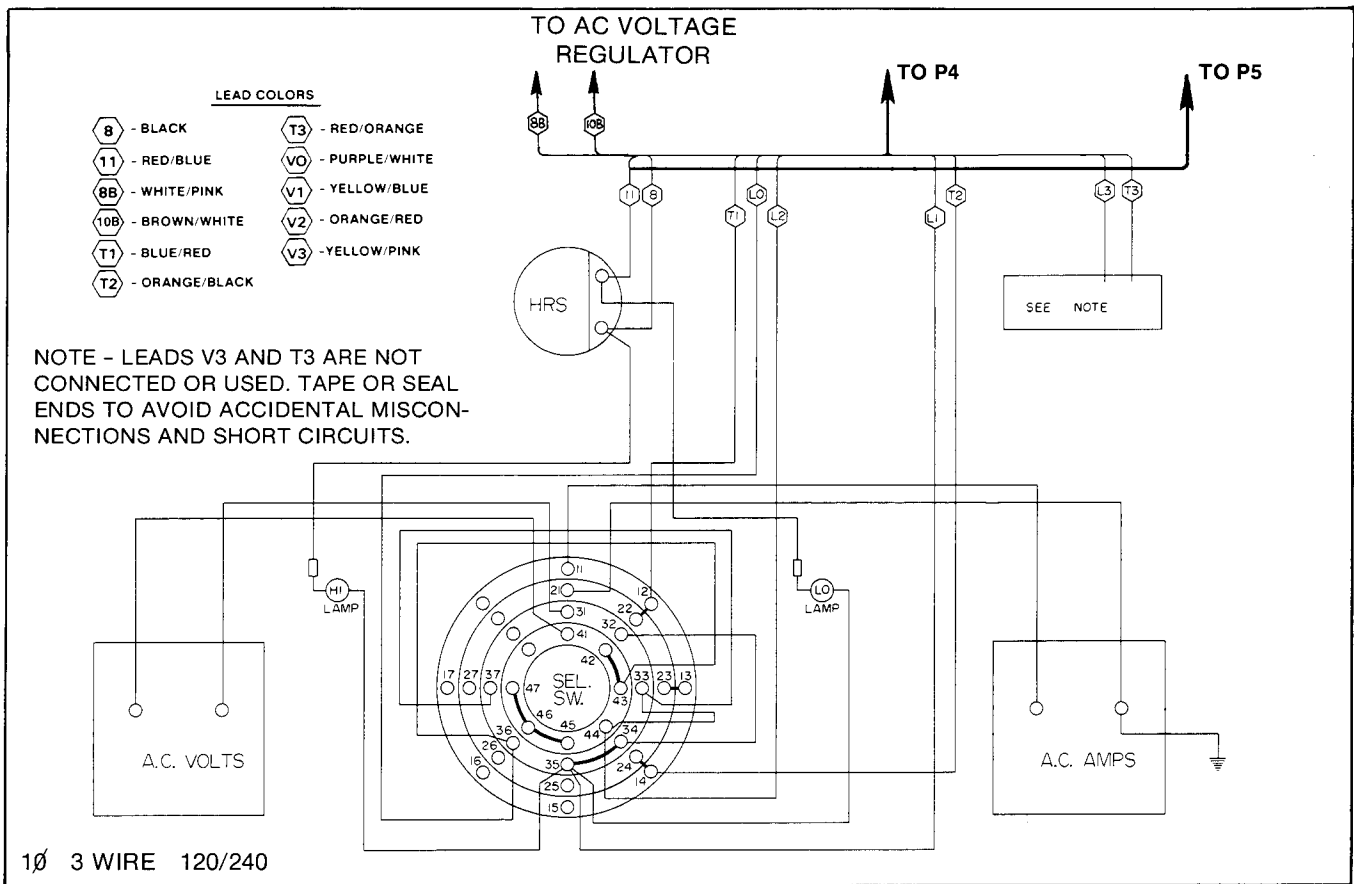


Figure 10

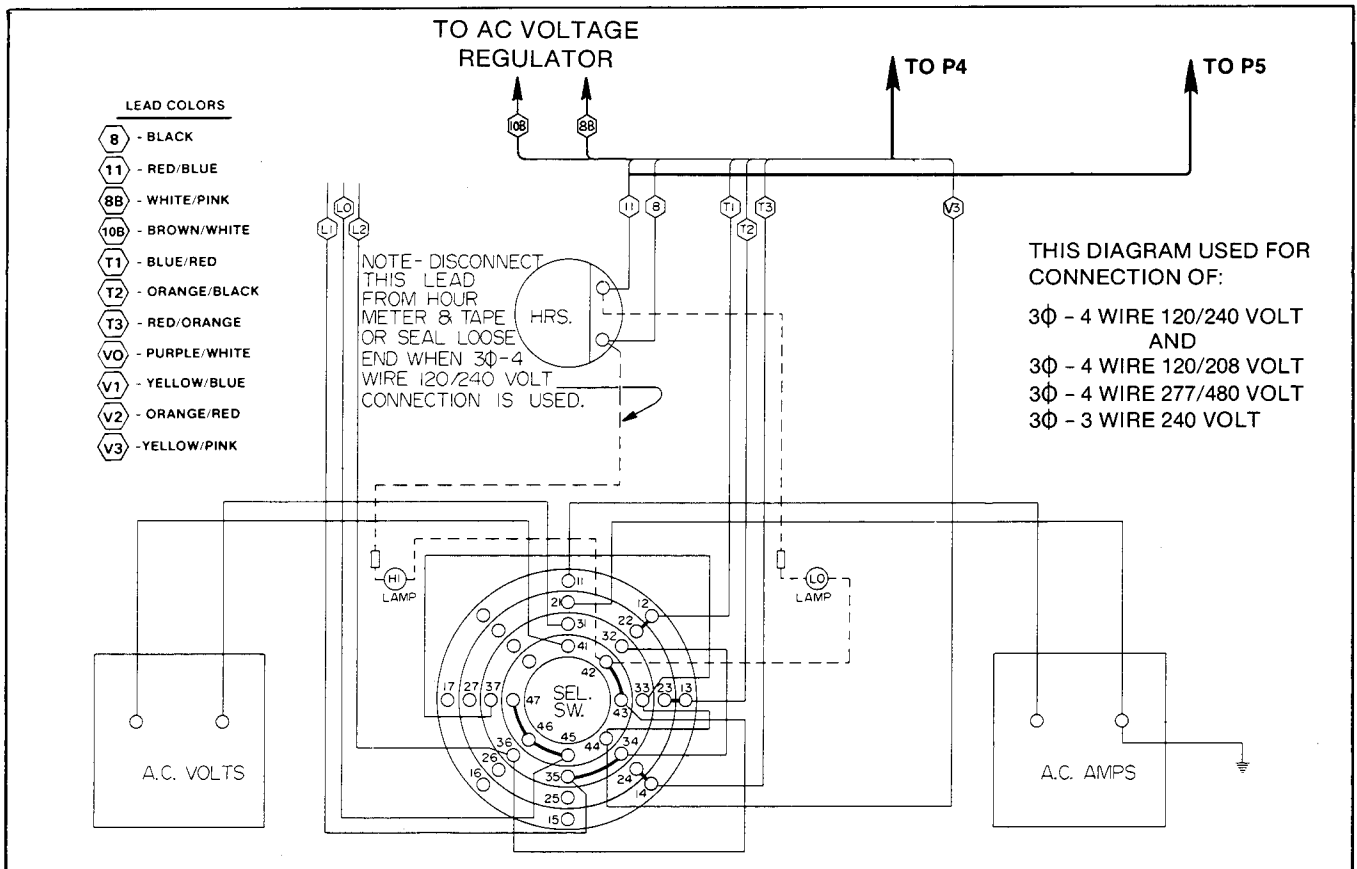


Figure 11

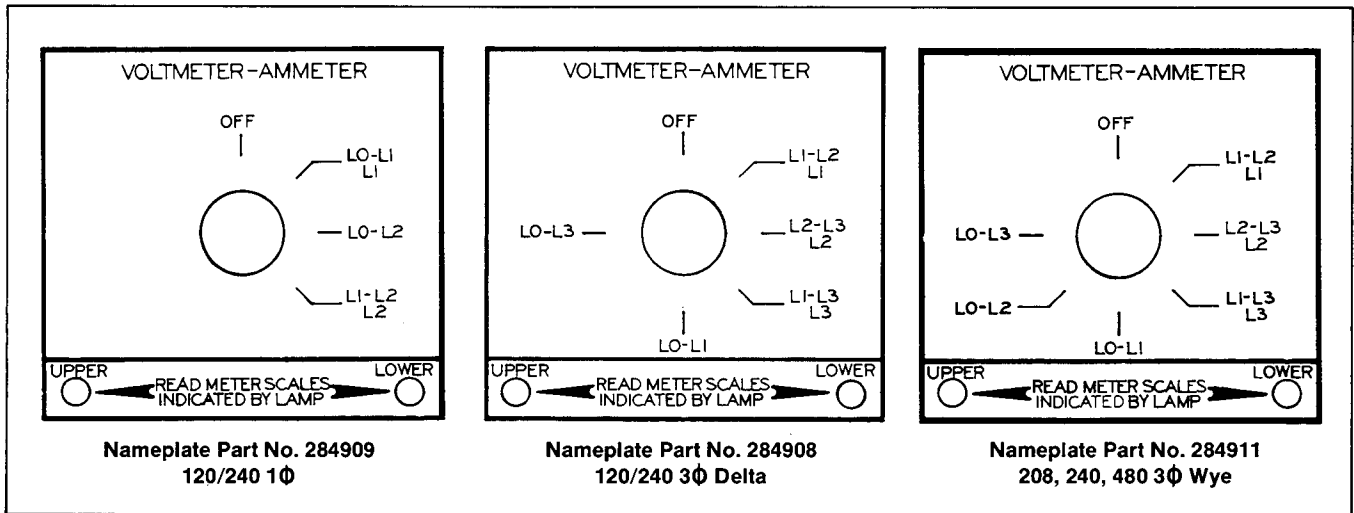


Figure 12

## Voltmeter

The same dual scale (300-600) voltmeter is used on all Fast Response models except 600 volt. On 480 volt connected generators the meter is connected through leads V0, V1, V2, V3 and the selector switch to the neutral and center points of the phase legs. The meter then measures 1/2 the

actual phase-to-phase and phase-to-neutral voltages. Reading the upper or higher scale then gives actual voltage. For all other voltages, the meters are connected as direct reading meters and the 0-300 volt scale is used.

## Ammeters

On all except 208-240 volt wye connected generators, the ammeters and current transformers are connected to read full line current. On 208-240 volt wye connected generators, the current transformers sense only one of two parallel generator windings connected for each phase.

Line current is then read on the bottom or higher numerical scale. On 480 volt wye connected models, the same current transformers are used to sense full line current. The meters are read on the top or lower numerical scale.

## Upper-Lower Scale Indicating Lights

One terminal on the upper scale lamp is connected to controller lead 8, and one terminal of the lower scale lamp is connected to controller lead 11. The remaining terminals of each lamp are connected together and to the selector switch. Reconnecting the control leads when voltage is changed results in the same voltage at the common selector switch terminal and lead 11 for all but the 480 volt con-

nection, causing the lower scale bulb to light. For the 480 volt connection, the voltage at the common selector switch terminal and lead 8 are the same, causing the upper scale bulb to light. The connection from the running time meter to the upper scale indicating lamp must be disconnected on the delta generator connection to prevent both lamps from lighting.

## Voltage Regulator

The voltage regulator sensing leads are 8B and 10B. The regulator is connected for 240 volt sensing, and 8B and

10B provide 208-240 volts to the regulator on all standard connections.