

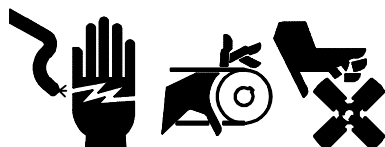
Reactive Droop Compensator Kits for TR Series Generators (Detroit–Diesel Powered)

Kit no.	Model
PA-274565	350–400, 800* ROZD
PA-274566	450–500, 900–1200 ROZD
PA-274567	600–800, 1500 ROZD

* Oversized Generator

The Reactive Droop Compensator is used to distribute the load evenly when two generator sets are used in parallel. These kits should be installed only by a qualified electrician or technician.

WARNING



UNIT STARTS WITHOUT NOTICE! Units with Automatic Transfer Switches start automatically. Turn Generator Master Switch on controller to OFF position, and remove battery cables (remove negative lead first and reconnect it last) to disable generator set before working on any equipment connected to generator.

INSTALLATION (WITH LOCAL MOUNTED VOLTAGE REGULATORS)

1. Place controller main switch to OFF position. Disconnect battery of generator set, negative lead first.
2. Wire reactive droop compensator current transformer as shown in Figure 1.

NOTE

Dot or "H1" mark on current transformer must be toward generator set.

NOTE: (FOR 350KW TO 800KW 10 & 12 LEAD GENERATOR SETS)

Low–Wye connected generator sets require one (1) turn of output leads through current transformer. High–Wye connected generator sets require two (2) turns of output leads through current transformer.

3. Check that the controller main switch is in the OFF position. Reconnect battery, negative lead last. (Repeat installation for units with remote mounted voltage regulators).

TESTING

To test and adjust the reactive droop compensator, proceed as follows. Read the entire procedure before beginning.

1. With the droop adjustment set at minimum (full counterclockwise position (CCW)), record the rpm and voltage at 1/4 load steps to full load on unit #1. Repeat Step 1 for unit #2.
2. Compare the readings and make final adjustments so that the voltage is within 1 volt at each load step and the speed is within 3 rpm or the frequency is within 0.1 Hz for each unit.

3. Check droop compensation on each unit as follows:

- a. With unit #1 operating at the correct speed and voltage, apply a lagging power factor load. This load should preferably be 1/2 to full load and must be inductive, as resistance loads cannot be used.
- b. Observe the voltmeter on unit #1 with the droop adjustment set at minimum. As the droop adjustment is turned clockwise (CW) the voltmeter should show a decrease in voltage. If a larger voltage is obtained when the droop adjustment is turned CW, shut down the system and reverse the direction of the generator load line through current transformer, or reverse transformer leads. Recheck droop.
- c. Set the droop adjustment at a value which is approximately 4% of rated voltage at full load. As an example, the voltage will droop (decrease) 19.2 volts on a 480 volt system at full load or 9.6 volts at one-half load. To determine voltage droop at other than full load, use the following formula.

$\text{Rated Voltage} \times .04 \times \text{Actual Load (expressed as a \% of full load)} = \text{Voltage Droop \%}$
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Note

With full load 0.8 power factor, a droop of 3–5% should be adequate for paralleling.

- d. Repeat Steps a, b, c for unit #2 and be certain the amount of voltage droop is equal at the same load point as on unit #1.

e. With this procedure, the two units will share reactive currents proportionately.

4. In addition to Steps 1–3, it is desirable to use the following procedure to check that the units are sharing the reactive load correctly.

- a. Parallel the units at one-half to full load. Check the Wattmeters to determine that each unit is carrying equal kW load or a load proportional to its capacity. If the loads are incorrect, adjust and recheck the governor throttle control to correctly balance loading.
- b. With the load balanced, check the ammeters to see that equal current is being produced or the current is proportional according to capacity. If the currents are incorrect, adjust the droop adjustment to reduce the current of the unit that has the highest reading. The current should be reduced to an equal division or be proportional.

c. As a result of performing Steps a and b, the governors have been adjusted to balance load and the droop adjustment has been adjusted to balance current. These settings would be optimum for parallel operation.

Note

Voltage must droop on lagging power factor loads (inductive loads). A little change in voltage is acceptable on unity power factor loads (resistance loads).

Part Listing

	PA–274565	PA–274566	PA–274567
Current Transformer	291547	291548	297675

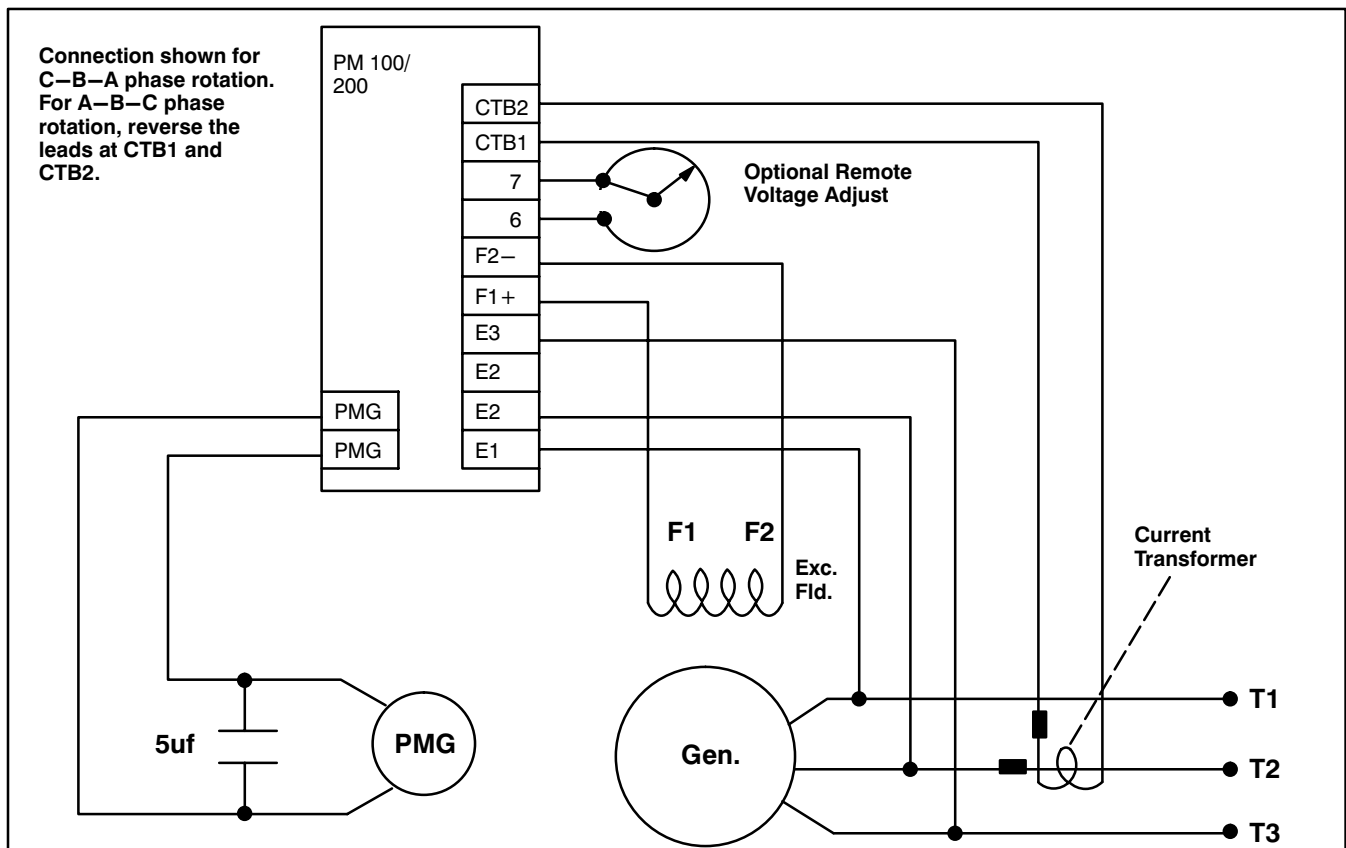


Figure 1. Wiring Diagram

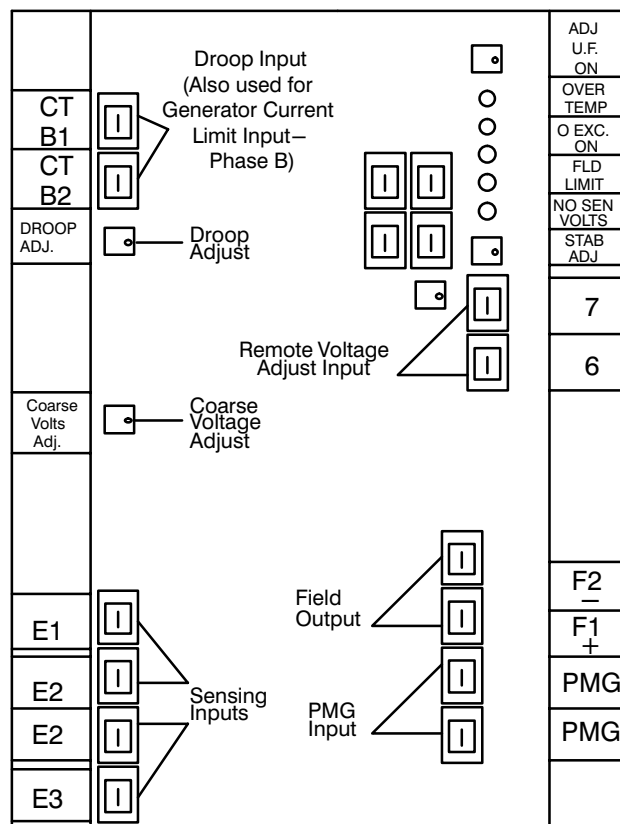


Figure 2. Voltage Regulator Terminal Location