

INSTALLATION INSTRUCTIONS

Original Issue Date: **5/99**

Model: **450-2000 kW (Detroit Diesel Series 2000 and 4000 Engines)**

Market: **Industrial**

Subject: **Current Transformer Kits PA-361821-25, PA-361821-25-SD,
PA-365467-71, PA-365467-71-SD**

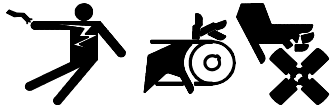
Install the current transformer kit on generator sets requiring a safeguard circuit breaker, and controllers without meters. Current transformer (CT) kits vary with the generator set voltage/frequency. See Figure 1 for kit numbers. Observe the following safety precautions while installing the kit.

kW	Alternator Model	Kit No.
450	5M4160, 5M4162	PA-365467, PA-365467-SD
	5M4270, 5M4272	PA-365468, PA-365468-SD
	5M4024, 5M4027, 5M4028	PA-365471, PA-365471-SD
500	5M4162, 5M4164	PA-365467, PA-365467-SD
	5M4270, 5M4272	PA-365468, PA-365468-SD
	5M4024, 5M4027, 5M4028, 5M4030, 5M4032	PA-365471, PA-365471-SD
600	5M4272, 5M4276	PA-365467, PA-365467-SD
	5M4164	PA-365469, PA-365469
	5M4028, 5M4030, 5M4032	PA-365470, PA-365470-SD
750	5M4276, 5M4278	PA-365467, PA-365467-SD
	5M4038, 5M4166	PA-365469, PA-365469-SD
	5M4032, 5M4034, 5M4036	PA-365470, PA-365470-SD
800	5M4278	PA-365467, PA-365467-SD
	5M4034, 5M4036	PA-365470, PA-365470-SD
	5M4038, 5M4166	PA-365471, PA-365471-SD
900	5M4044, 7M4046	PA-361823, PA-361823-SD
	5M4280	PA-365469, PA-365469-SD
	5M4036	PA-365470, PA-365470-SD
	5M4038, 5M4168	PA-365471, PA-365471-SD

kW	Alternator Model	Kit No.
1000	7M4170	PA-361821, PA-361821-SD
	5M4044, 7M4046, 7M4282, 7M4284	PA-361823, PA-361823-SD
1250	7M4025W, 7M4046W, 7M4048W, 7M4050W, 7M4172W, 7M4174W	PA-361821 PA-361821-SD
	7M4288W	PA-361823 PA-361823-SD
	7M4366W, 7M4368W	PA-361824 PA-361824-SD
1500	7M4050W, 7M4052W, 7M4174W, 7M4176W	PA-361821 PA-361821-SD
	7M4290W	PA-361823 PA-361823-SD
	7M4368W, 7M4370W	PA-361825 PA-361825-SD
1750	7M4292W	PA-361821 PA-361821-SD
	7M4052W, 7M4054W, 7M4058W, 7M4176W	PA-361822 PA-361822-SD
	7M4370W, 7M4374W	PA-361825 PA-361825-SD
2000	7M4292W	PA-361821 PA-361821-SD
	7M4054W, 7M4058W, 7M4176W	PA-361822 PA-361822-SD
	7M4374W	PA-361825 PA-361825-SD

Figure 1. Current Transformer Kits

⚠ WARNING



Accidental starting. Can cause severe injury or death.

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death.

Before working on the generator set or connected equipment, disable the generator set as follows: (1) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.

⚠ DANGER



Hazardous voltage. Will cause severe injury or death.

Disconnect all power sources before opening the enclosure.

(600 volt and above)

Short circuits. Hazardous voltage/current can cause severe injury or death. Short circuits can cause bodily injury and/or equipment damage. Do not contact electrical connections with tools or jewelry while making adjustments or repairs. Remove wristwatch, rings, and jewelry before servicing the equipment.

⚠ WARNING



Hazardous voltage. Moving rotor. Can cause severe injury or death.

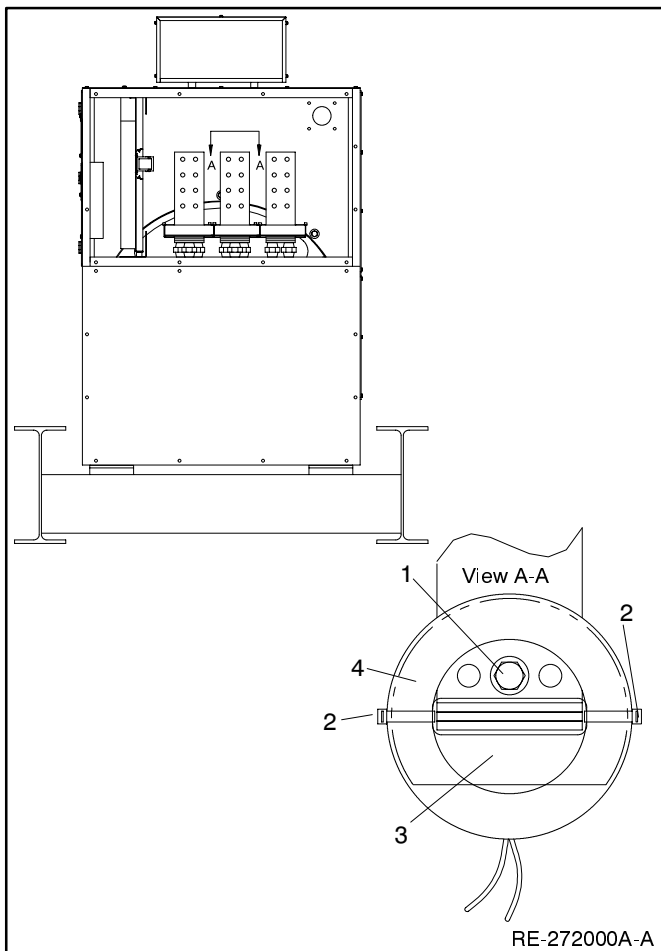
Operate the generator set only when all guards and electrical enclosures are in place.

Installation

1. Place the generator set master switch in the OFF position.
 2. Disconnect the power to the battery charger, if equipped.
 3. Disconnect the generator set engine starting battery(ies), negative (-) lead first.
 4. Remove the junction box upper rear panel. See Figure 2.
 5. Disconnect the required generator load lead(s) for installation of the CTs. See Figure 2 for the CTs installation location on 380–600 V generator sets and Figure 4 for 3300 V & 4160 V generator sets.
 6. **380–600 V.** Remove the existing 1/2-13 bolt from each of the three bus bars. Slide one CT support (361506) onto each bus bar and secure the support to the bus bar with a 1/2-13 x 1.5 in. bolt (X-129-19) and plain 1/2 in. washer (X-25-37). See Figure 2.
- 208–600 V** Secure the top and bottom CT supports (365620 and 365621) to the junction box with two bolts (X-129-17), washers (X-25-26), and nuts (X-6210-12) See Figure 3.
- 3300 V and 4160 V** Secure the CT support (361853) to the junction box with two 3/8-16 x 1.0 in. bolts (X-6238-11), plain washers (X-25-37), and spirallock nuts (X-6210-9). See Figure 4.
7. Secure the CTs to the CT supports installed in step 6.
- 380–600 V.** Install the CT with the dot or HI side toward the generator (down). Secure each CT to a CT support with two 14 in. (355.60 mm) cable ties (X-468-4). See Figure 2.

208–600 V. Install the CT with the dot or HI side toward the generator. Secure each CT to the CT support with two 14 in. (355.60 mm) cable ties (X-468-4). See Figure 4.

3300 V and 4160 V. Install the CT with the dot or HI side toward the generator. Secure each CT to the CT support with two 14 in. (355.60 mm) cable ties (X-468-4). See Figure 4.



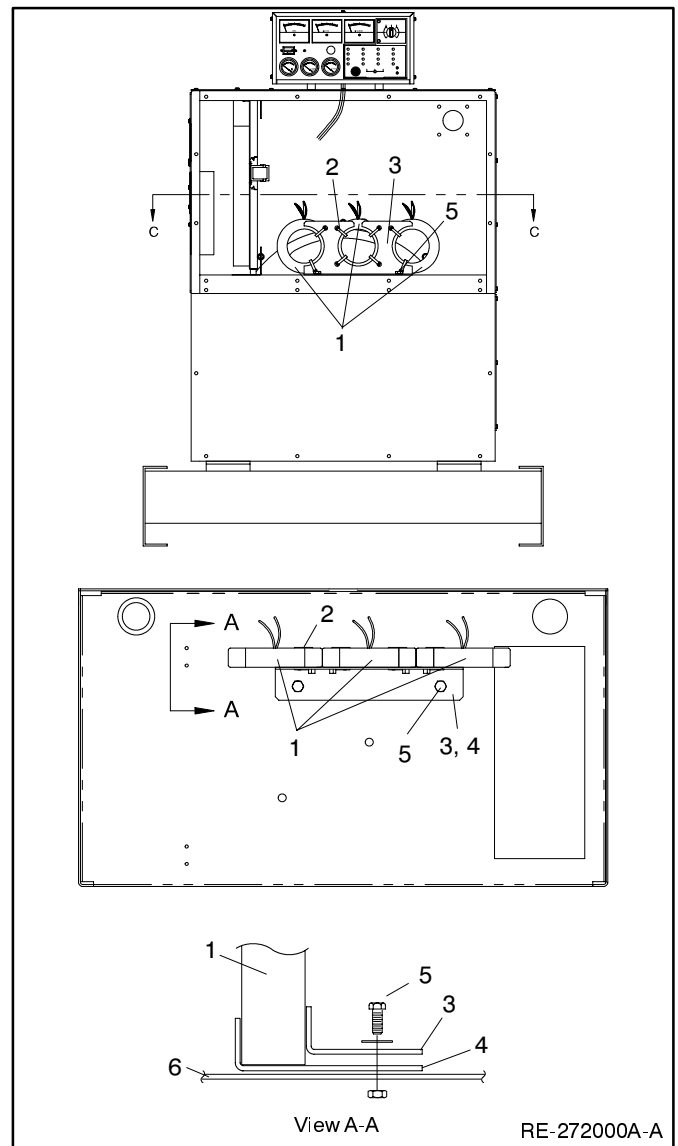
1. 1/2-13 x 1.5 in. bolt (X-129-19) and 1/2 in. plain washer (X-25-37)
2. Cable tie (X-468-4)
3. CT support (361506)
4. CT

Figure 2. 380-600 V CT Installation

8. Remove the two screws securing the inner panel access door to the junction box. See Figure 5.
9. Wire the CTs according to one of the wiring diagrams in Figure 7.

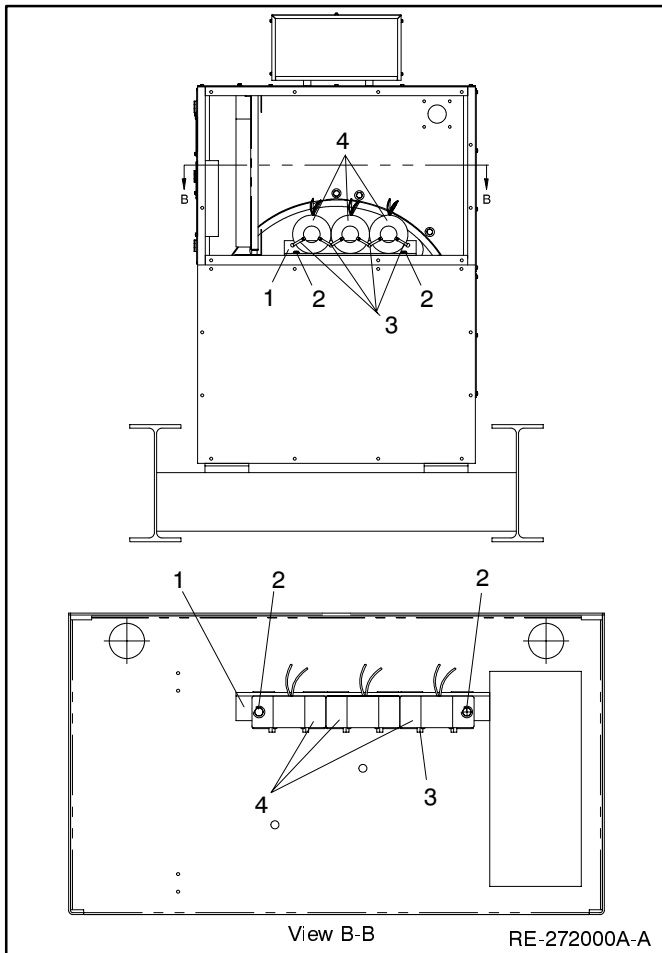
NOTE

Connect the two C0 leads that do not have a connector together with a ring terminal (X-283-22). Install heat shrink (X-6081-3) over the crimped area before connecting leads to terminal strip TB5. See Figure 6.



1. CT
2. Cable tie (X-468-4)
3. Top CT support (365621)
4. Bottom CT support (365620)
5. Bolts (X-129-17), nuts (X-6210-12), and washers (X-25-26)
6. Junction box base

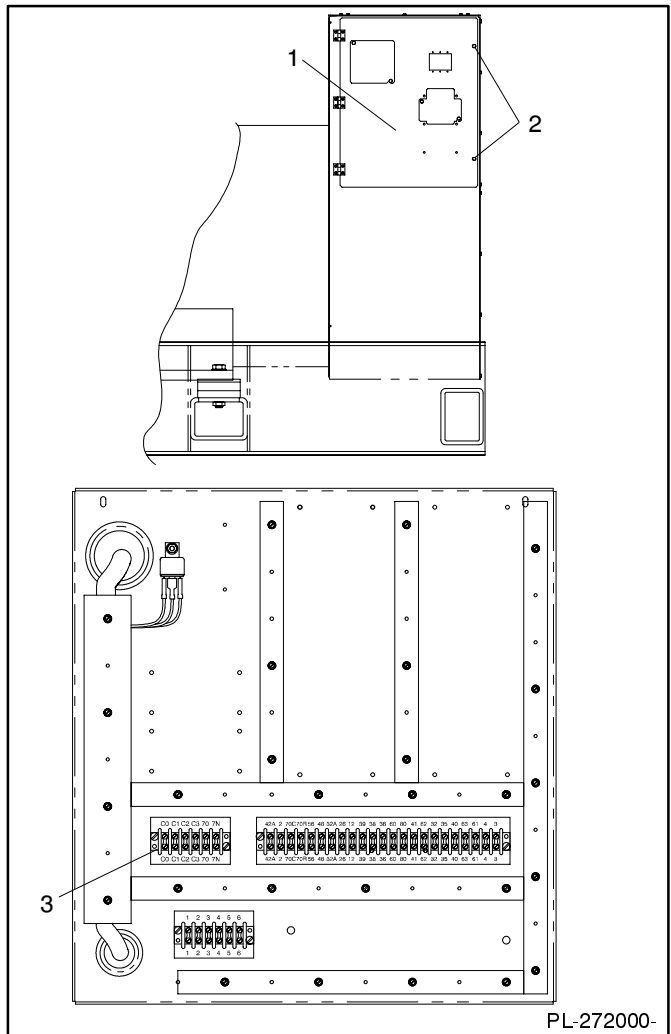
Figure 3. 208-600 V CT Installation



1. CT support (361853)
2. Bolt (X-6238-11), washer (X-25-37), and nut (X-6210-9)
3. Cable tie (X-468-4)
4. CT

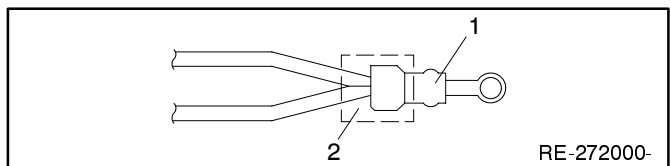
Figure 4. 3300 V and 4160 V CT Installation

10. Reconnect the generator load lead(s) that were disconnected in step 5. See Figure 8 for reconnection diagrams.
11. Check that the generator master switch is in the OFF position.
12. Reconnect the generator set engine starting battery, negative (-) lead last.
13. Reconnect the power to the battery charger, if equipped.



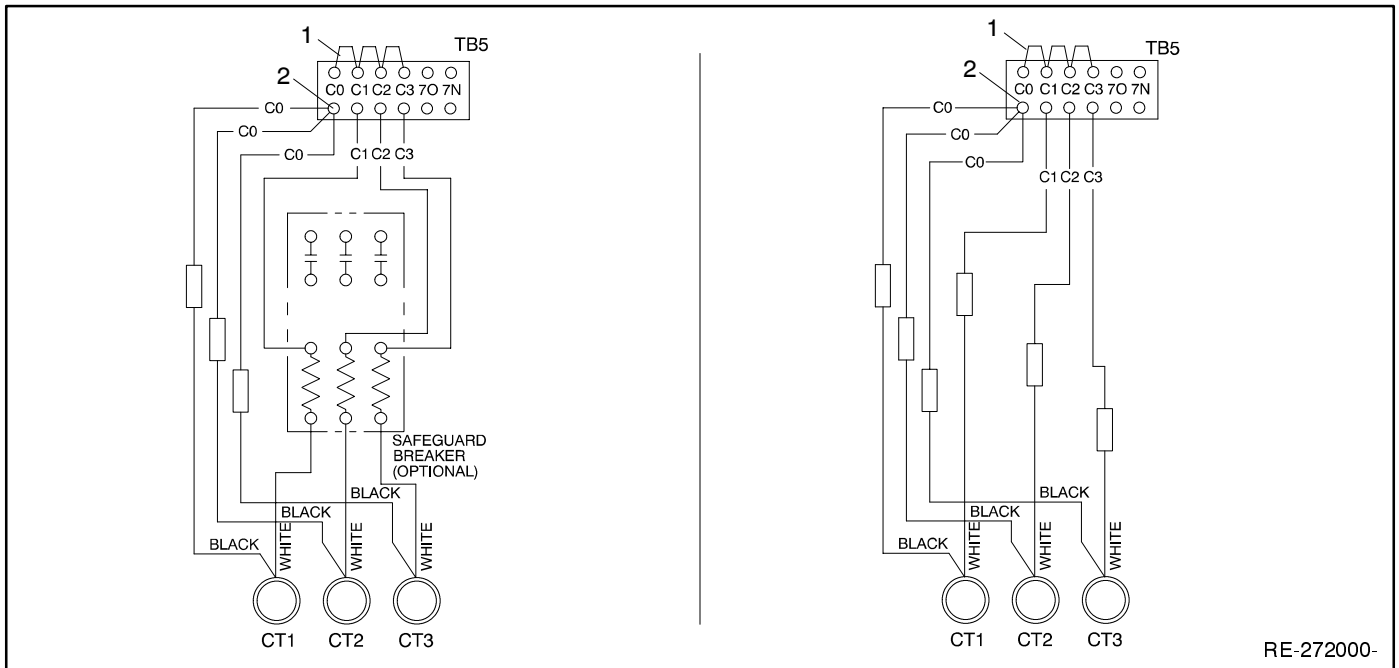
1. Inner panel access door
2. Access door bolts
3. TB5—safeguard terminal strip

Figure 5. Inner Panel



1. Ring terminal (X-283-22)
2. Heat shrink tubing (X-6081-3)

Figure 6. Heat Shrink Installation



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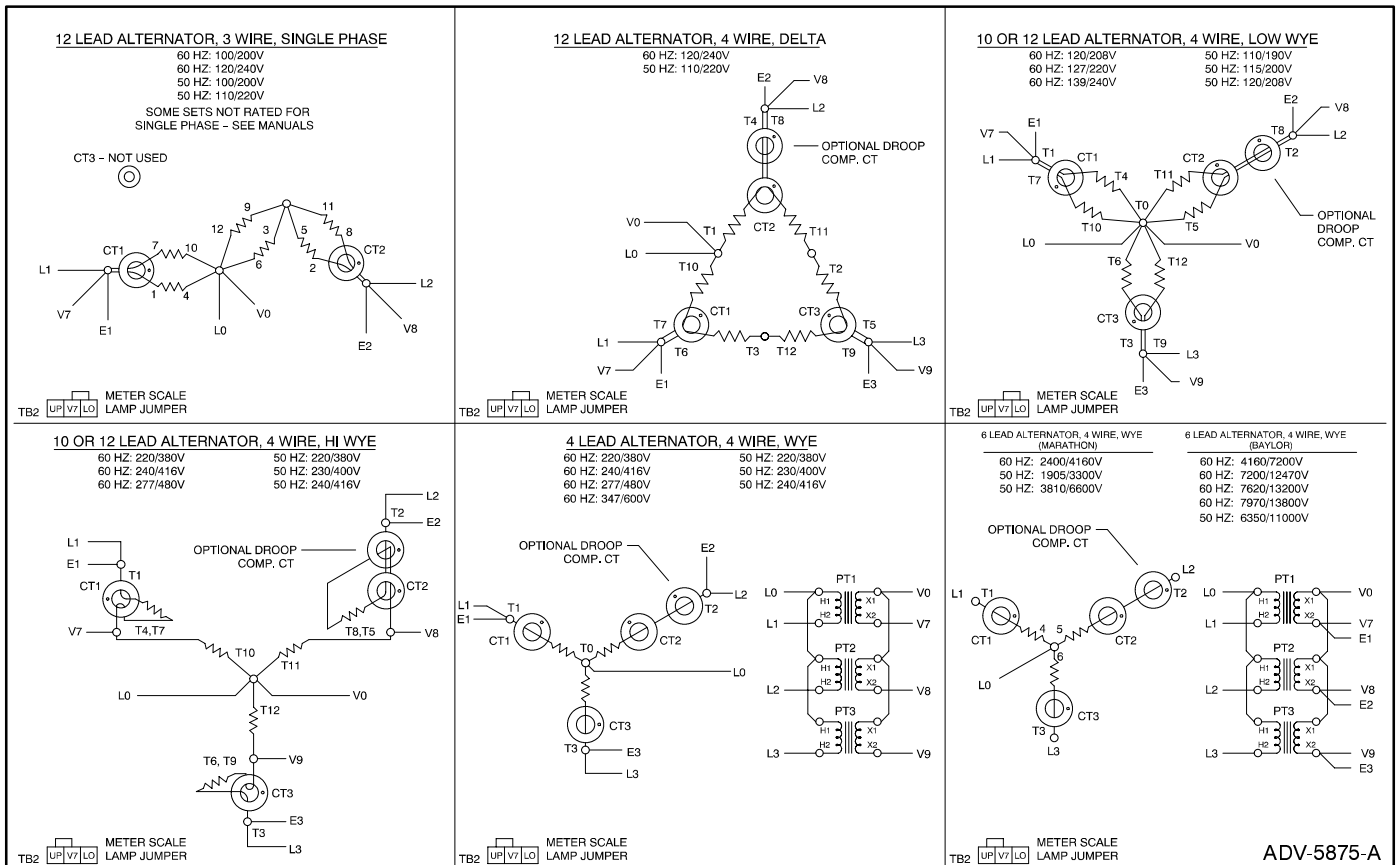
1. Jumper (X-6076-2)

2. Ring terminal (X-283-22) and heat shrink tubing (X-6081-3)

Figure 7. CT Wiring

NOTE

CTs must be installed with the shorting jumpers (X-6076-2) installed. See Figure 7.



ADV-5875-A

Figure 8. Reconnection Diagrams

Current Transformer Kits

Parts List				
Kits: PA-361824, PA-361824-SD, PA-361825, PA-361825-SD			Unique Parts	
Qty.	Description	Common Parts	PA-361824 PA-361824-SD	PA-361825 PA-361825-SD
4	Washer, plain	X-25-37	233951	233952
1	Terminal, ring #6	X-283-22		
6	Tie, cable	X-468-1		
6	Tie, cable	X-468-4		
1	Jumper	X-6076-2		
1	Tubing, heat shrink	X-6081-3		
2	Nut, spiralock	X-6210-9		
2	Screw, h.c.	X-6238-11		
3	Transformer, current			
1	Support, CT	361853		
1	Lead, C0	SWC0-1621-400		
1	Lead, C0	SWC0-1623-400		
1	Lead, C0	SWC0-1625-2204		
1	Lead, C1	SWC1-1620-2204		
1	Lead, C2	SWC2-1622-2204		
1	Lead, C3	SWC3-1624-2204		

Current Transformer Kits

Parts List					
Kits: PA-361821, PA-361821-SD, PA-361822, PA-361822-SD, PA-361823, PA-361823-SD			Unique Parts		
Qty.	Description	Common Parts	PA-361821 PA-361821-SD	PA-361822 PA-361822-SD	PA-361823 PA-361823-SD
4	Screw, 1/2-13 x 1.5 in.	X-129-19	297675	297676	291548
1	Terminal, ring #6	X-283-22			
6	Tie, cable	X-468-1			
6	Tie, cable	X-468-4			
1	Jumper	X-6076-2			
1	Tubing, heat shrink	X-6081-3			
3	Transformer, current				
3	Support, CT	361506			
1	Lead, C0	SWC0-1621-400			
1	Lead, C0	SWC0-1623-400			
1	Lead, C0	SWC0-1625-2204			
1	Lead, C1	SWC1-1620-2204			
1	Lead, C2	SWC2-1622-2204			
1	Lead, C3	SWC3-1620-2204			

Current Transformer Kits

Parts List				
Kits: PA-365467, PA-365467-SD, PA-365468, PA-365468-SD			Unique Parts	
Qty.	Description	Common Parts	PA-365467 PA-365467-SD	PA-365468 PA-365468-SD
2	Screw, 1/2-13 x 1.0 in.	X-129-17	291546	354689
1	Terminal, ring, #6	X-283-22		
6	Tie, cable	X-468-4		
1	Jumper	X-6076-2		
1	Tubing, heat shrink	X-6081-3		
2	Nut, spiralock, 1/2-13	X-6210-12		
3	Transformer, current			
1	Bracket, CT mounting	365620		
1	Bracket, CT mounting	365621		
1	Lead, C0	SWC0-1621-400		
1	Lead, C0	SWC0-1623-400		
1	Lead, C0	SWC0-1625-2204		
1	Lead, C1	SWC1-1620-2204		
1	Lead, C2	SWC2-1622-2204		
1	Lead, C3	SWC3-1624-2204		

Current Transformer Kits

Parts List					
Kits: PA-365469, PA-365469-SD, PA-365470, PA-365470-SD, PA-365471, PA-365471-SD			Unique Parts		
Qty.	Description	Common Parts	PA-365469 PA-365469-SD	PA-365470 PA-365470-SD	PA-365471 PA-365471-SD
2	Screw, 1/2-13 x 1.0 in.	X-129-17	291547	297675	291548
1	Terminal, ring, #6	X-283-22			
6	Tie, cable	X-468-4			
1	Jumper	X-6076-2			
1	Tubing, heat shrink	X-6081-3			
2	Nut, spiralock, 1/2-13	X-6210-12			
3	Transformer, current				
1	Bracket, CT mounting	365620			
1	Bracket, CT mounting	365621			
1	Lead, C0	SWC0-1621-400			
1	Lead, C0	SWC0-1623-400			
1	Lead, C0	SWC0-1625-2204			
1	Lead, C1	SWC1-1620-2204			
1	Lead, C2	SWC2-1622-2204			
1	Lead, C3	SWC3-1624-2204			