

**INSTALLATION INSTRUCTIONS**

Original Issue Date: **7/97**

Model: **35/50/65COZ, 30/40/50CFOZ**

Market: **Marine**

Subject: **Power Take-Off Kits PA-344267, PA-344268, PA-344269, PA-344270, PA-344271, PA-344272, PA-344273, PA-344274, PA-344304**

Use these kit instructions to install the power take-off (PTO) adaptor and one of three PTOs. Choose the power take-off adaptor kit according to generator set mount type.

Kit Selection	
Generator Set Mount Type	PTO Adaptor Kit
Vibromount	PA-344274
Hydrolastic	PA-344304

**NOTE**

Three-groove pulley PTO kit (PA-344267) does not use a PTO adaptor kit.

On all generator sets with an installed sound shield, install a new sound shield front panel (344428 on 35-50 kW units or 344429 on 65 kW units) before installing a PTO adaptor kit. Kohler Co. offers three types of PTOs. Refer to the chart below.

Kit Selection				
Kit No.	PTO Type	PTO Options		
		Volt	SAE Spline	Clutch Model No.
PA-344270	Electric clutch	12	B	
PA-344271		12	C	
PA-344272		24	B	
PA-344273		24	C	
PA-344268	Over-center mechanical clutch			C-106SP
PA-344269				C-108HP
PA-344267	Three-groove pulley			



**Accidental starting.  
Can cause severe injury or death.**

Disconnect battery cables before working on generator set (disconnect negative lead first and reconnect it last).

**Disabling generator set. Accidental starting can cause severe injury or death.** Turn generator set master switch to OFF position, disconnect power to battery charger, and remove battery cables (remove negative lead first and reconnect it last) to disable generator set before working on the generator set or connected equipment. The generator set can be started by an automatic transfer switch or remote start/stop switch unless these precautions are followed.

**⚠ WARNING**

**Rotating parts.  
Can cause severe injury or death.**

Do not operate generator set without all guards, screens, and covers in place.

**Servicing generator set when operating. Exposed moving parts can cause severe injury or death.** Keep hands, feet, hair, clothing, and test leads away from belts and pulleys when generator set is running. Replace guards, screens, and covers before operating generator set.

# Power Take-Off Adaptor Kit Installation

1. Place the generator master switch in the OFF position.
2. Disconnect generator set engine starting battery, negative (-) lead first.
3. Refer to the assembly drawing in Figure 1 to identify kit components and their relative positions.

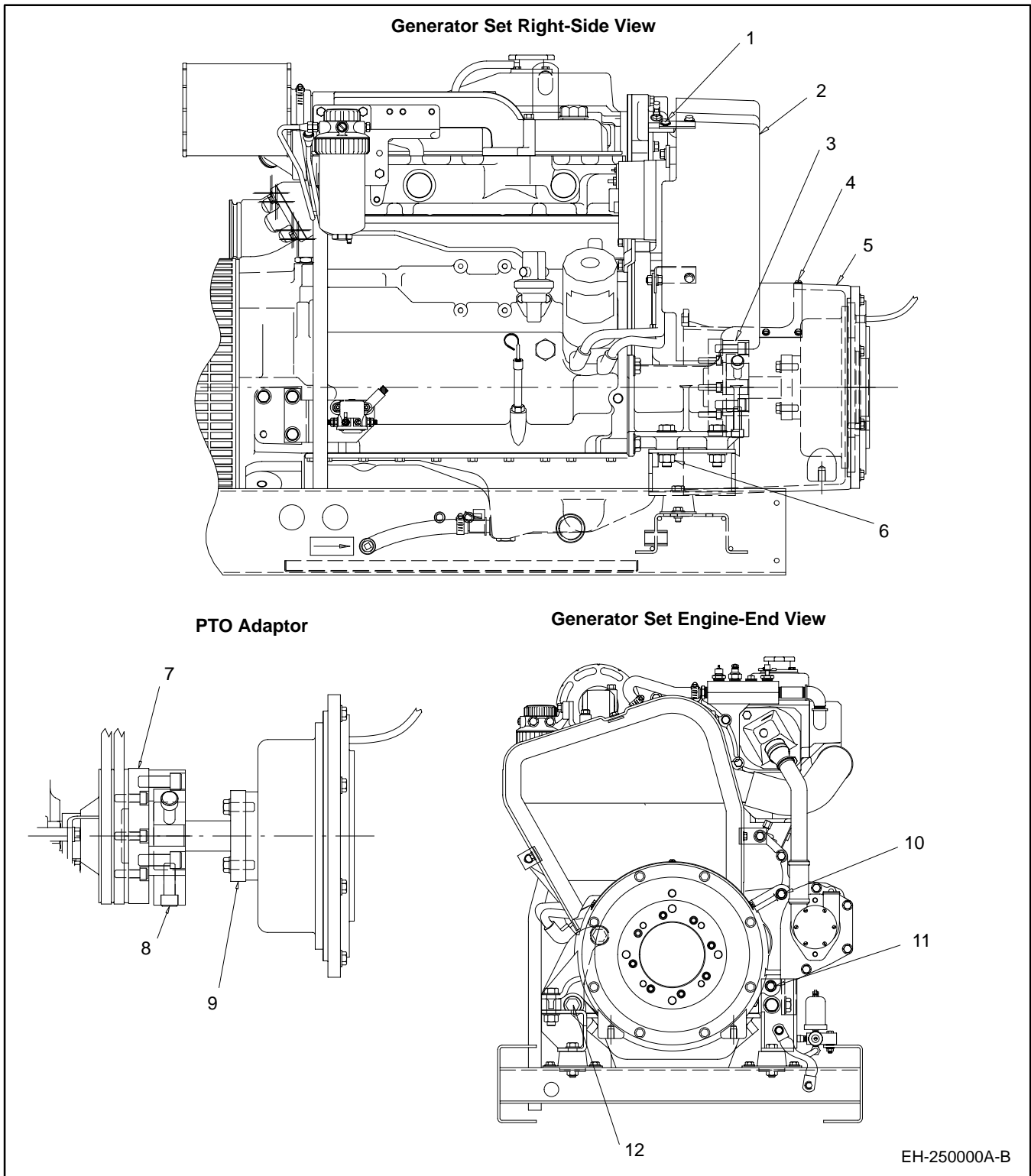
## NOTE

Three-groove pulley PTO kit (PA-344267) does not require a PTO adaptor kit.

4. Use lifting eyes to lift engine.
5. Remove and discard engine bracket support (R.H. side only) and belt guard.
6. Mount PTO housing (344279) and secure to engine with 2 screws (X-6021-1) and 2 washers (X-25-15). Torque to 135 ft. lbs. (183.1 Nm).
7. Remove existing screws in gear housing at seawater pump and replace with new screws (X-6238-13 and X-6238-1). Torque to 28 ft. lbs. (38.0 Nm).
8. For generator sets with standard vibromounts, proceed with step 8a. For generator sets with hydrostatic mounts, skip to step 9.
  - a. Mount PTO engine support (344303) on engine.
  - b. Secure PTO engine support with 2 screws (X-6021-6), 4 washers (X-25-15), and 2 nuts (X-85-3). Torque to 135 ft. lbs. (183.1 Nm).
  - c. Skip to step 10.
9. For generator sets with hydrostatic mounts, secure support with screw (X-6021-5) and washer (X-25-15). Torque to 135 ft. lbs. (183.1 Nm).
10. Create a mounting platform suitable for supporting the pump/clutch/bracket assembly. Make sure the platform also allows for alignment of the clutch center line to the power source shaft line within 3 degrees.
11. Secure the PTO drive hub (344231) on engine crankshaft pulley with 4 screws (X-55-42). Torque to 28 ft. lbs. (38.0 Nm). See Figure 1.
12. Attach flexible coupling (344239) inside PTO drive hub with screws supplied with coupling. Torque to 105 ft. lbs. (142.4 Nm).
13. Mount PTO clutch drive hub (344232) to flexible coupling (344239). Torque screws to 105 ft. lbs. (142.2 Nm)
14. Install belt guard (344280). Retain guard (344302), 5 washers (X-25-40), and 5 screws (X-73-5) for later installation.
15. Install remaining kit items later in this instruction sheet. Proceed with installation instructions for electrical clutch or over-center mechanical clutch PTO kit.

## Power Take-Off Adaptor Kits

Parts List				
Kits: PA-344274, PA-344304			Unique Parts	
Qty.	Description	Common Parts	PA-344274	PA-344304
	Washer, plain		(6) X-25-15	(3) X-25-15
5	Washer, plain	X-25-40		
4	Screw, hex socket head	X-55-42		
5	Screw, r.h.m., 1/4-20	X-73-5		
2	Nut, hex		X-85-3	
2	Screw, H.C.	X-6021-1		
	Screw, H.C.		(2) X-6021-6	(1) X-6021-5
1	Screw, H.C.	X-6238-13		
1	Screw, 3/8-16	X-6238-1		
1	Hub, PTO drive	344231		
1	Hub, PTO clutch drive	344232		
1	Coupling, flexible	344239		
1	Housing, power take-off	344279		
1	Guard, belt	344280		
1	Guard, power take-off	344302		
1	Support, PTO engine		344303	



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| <ul style="list-style-type: none"> <li>1. Belt guard existing hardware</li> <li>2. Belt guard (344280)</li> <li>3. Flexible coupling. See PTO adaptor detail.</li> <li>4. Power take-off guard (344302), 5 washers (X-25-40), 5 screws (X-73-5)</li> <li>5. Power take-off housing (344279)</li> <li>6. With standard vibromounts only: power take-off support (344303), 2 screws (X-6021-6), 4 washers (X-25-15), 2 nuts (X-85-3). With hydrolastic mounts only: 1 screw (X-6021-5), 1 washer (X-25-15).</li> </ul> | <ul style="list-style-type: none"> <li>7. Power take-off drive hub (344231), 4 screws (X-55-42)</li> <li>8. Flexible coupling (344239)</li> <li>9. Power take-off clutch drive hub (344232)</li> <li>10. Gear housing screw (X-6238-13)</li> <li>11. Gear housing screw (X-6238-1)</li> <li>12. Gear housing screws (2) (X-6021-1) and washers (2) (X-25-15)</li> </ul> |
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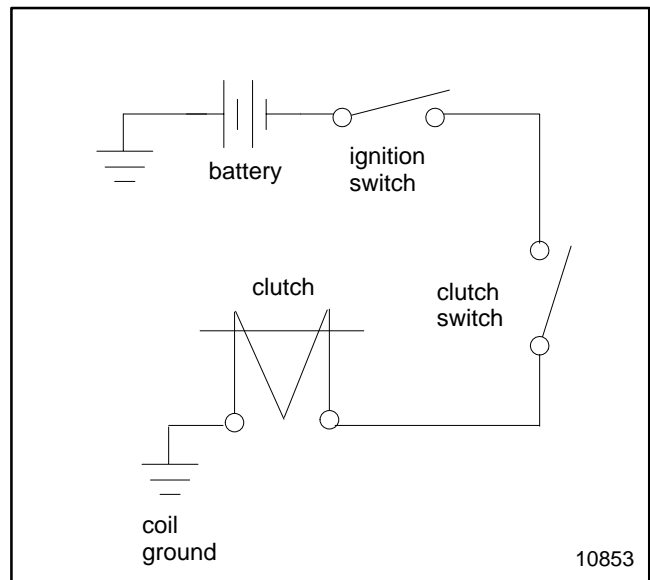
**Figure 1. Power Take-Off Adaptor Kit (PA-344274 and PA-344304)**

## Electric Clutch Power Take-Off Kit Installation

Install one of the 12- or 24-volt electric clutch power take-off kits per unit's voltage requirements. Follow instructions below.

Kit No.	Volt	SAE
PA-344270	12	B SPLINE
PA-344271	12	C SPLINE
PA-344272	24	B SPLINE
PA-344273	24	C SPLINE

1. Refer to the assembly drawing in Figure 1 and Figure 4 to identify kit components and their relative positions.
2. Mount clutch mounting plate (344246 or 344247) to clutch face (344240, 344241, 344242, or 344243). Secure with 8 screws (X-55-29). Torque to 28 ft. lbs. (38.0 Nm).
3. Mount the electric clutch on the mounting housing and secure with 8 screws (X-6238-4) and 8 washers (X-801-3). Torque to 28 ft. lbs. (38.0 Nm).
4. Mount the electric clutch on the PTO clutch drive hub (344232). Secure hardware with 4 screws (X-6024-9) and 4 washers (X-801-6). Torque hardware to 50 ft. lbs. (67.8 Nm).
5. Position the clutch with bracket assembly on the mounting platform and align bracket assembly with PTO adaptor kit. Secure the clutch to the PTO adaptor. Use shims as necessary between the bracket and mounting platform to ensure close alignment. Zero degrees vertical and horizontal alignment between the electric clutch and PTO adaptor is optimum.
6. Confirm that the controller master switch is in the OFF position.
7. Verify generator set engine starting battery is disconnected.
8. Wire clutch as shown in Figure 2.



**Figure 2. Electric Clutch Wiring Diagram**

9. Place the generator master switch in the RUN position.
10. Reconnect generator set engine starting battery, negative (-) lead last.
11. Engage and disengage the electric clutch 20 or more times while listening to the armature plate snap firmly against the rotor. If the armature plate does not snap firmly against the rotor, check electrical connections to ensure the generator set is supplying voltage within specifications. DO NOT make any mechanical adjustments on the electric clutch.
12. Install power take-off guard (344302) on housing (344279). Secure with 5 washers (X-25-40) and 5 screws (X-73-5). See Figure 1.
13. Refer to Figure 3 to identify torque specifications for tool use.

**Mechanical**

$$T = \frac{5250 \times \text{HP}}{\text{RPM}}$$

T = Torque (ft. lbs.)  
 HP = Horsepower  
 RPM = Speed of clutch, revolutions per minute

**Fluid Power**

$$T = \frac{\text{CIR} \times \text{PSI}}{75.4}$$

CIR = Cubic inch per revolution (Hydraulic Pump)  
 PSI = Pounds per square inch

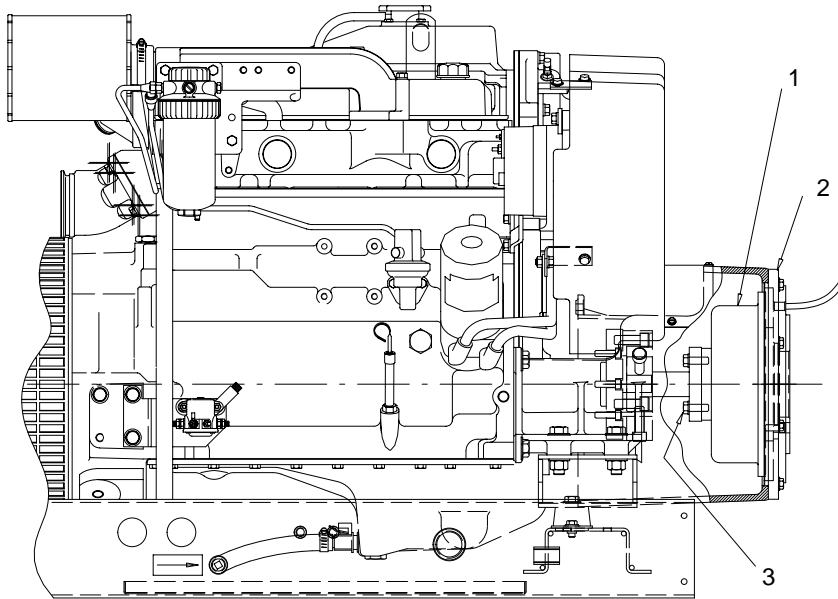
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**Figure 3. Torque Requirements for Machine Applications**

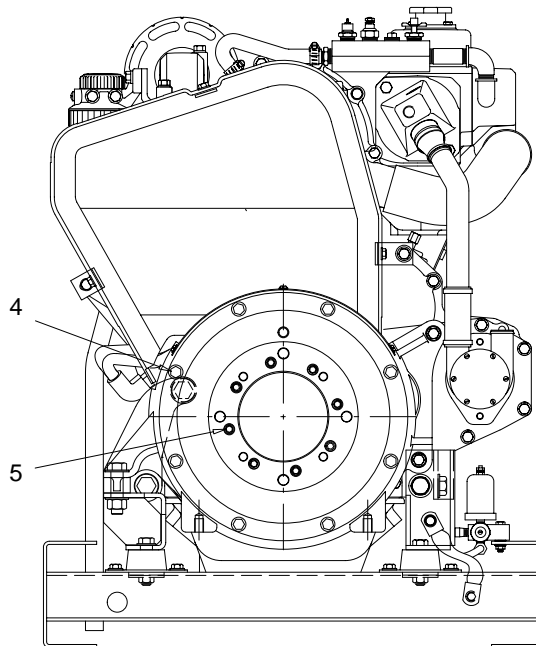
**Electric Clutch Power Take-Off Kits**

Parts List						
Kits: PA-344270, PA-344271, PA-344272, PA-344273			Unique Parts			
Qty.	Description	Common Parts	PA-344270	PA-344271	PA-344272	PA-344273
8	Screw, hex. socket head	X-55-29				
8	Washer, hardened	X-801-3				
4	Washer, hardened	X-801-6				
4	Screw, hex. cap	X-6024-9				
8	Screw, 3/8-16	X-6238-4				
1	Clutch, electric		344240	344241	344242	344243
1	Plate, clutch mounting		344246	344247	344246	344247

### Generator Set Right-Side View



### Generator Set Engine-End View



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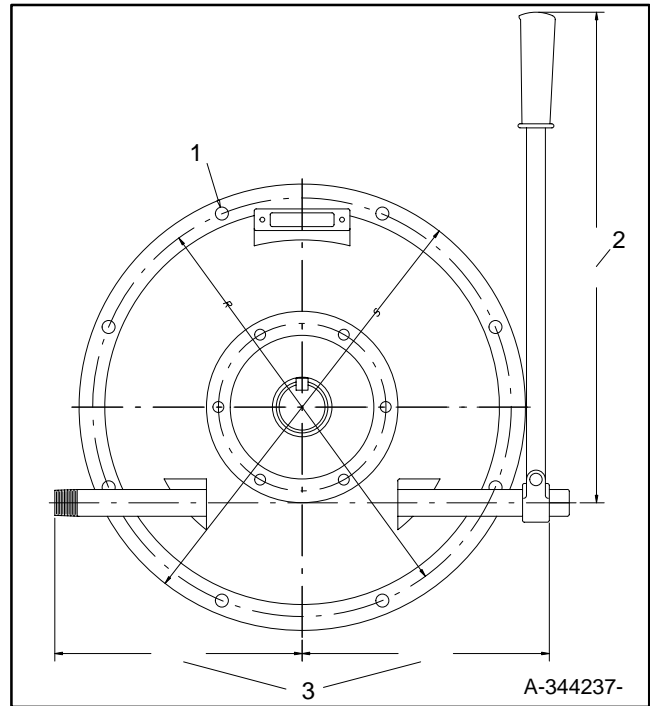
1. Electric clutch (344240 for 12-volt SAE B SPLINE, 344241 for 12-volt SAE C SPLINE, 344242 for 24-volt SAE B SPLINE or 344243 for 24-volt SAE C SPLINE)
2. Clutch mounting plate (344246 SAE B SPLINE or 344247 SAE C SPLINE)

3. 4 screws (X-6024-9) and 4 washers (X-801-6)
4. 8 screws (X-6238-4) and 8 washers (X-801-3)
5. 8 screws (X-55-29)

**Figure 4. Electric Clutch Power Take-Off Kits (PA-344270, PA-344271, PA-344272, and PA-344273)**

## Over-Center Mechanical Clutch Kit Installation (PA-344268 and PA-344269)

1. Refer to the assembly drawing in Figure 1 and Figure 6 to identify kit components and their relative positions.
2. Place two guide studs in the PTO housing to help align the PTO. Position PTO flywheel (344233 or 344234) on the drive hub.
3. Secure PTO flywheel to drive hub with 4 screws (X-6024-3) and 4 washers (X-801-6). Torque to 44 ft. lbs. (59.7 Nm).
4. For a 6.50-inch diameter clutch, install drive ring (344235) on the flywheel. Secure with 6 screws (X-125-24) and 6 washers (X-801-4). Torque to 16 ft. lbs. (21.7 Nm).
5. For an 8.0-inch diameter clutch, install drive ring (344236) to the flywheel. Secure with 6 screws (X-6238-4) and 6 washers (X-801-3). Torque to 28 ft. lbs. (38.0 Nm).
6. Install PTO assembly (A-344237 or A-344238) in position as shown in Figure 5.
7. Use a soft hammer to tap the end of the output shaft to release any end thrust.
8. Install PTO assembly with the face of the PTO housing to the bottom of the pilot bore in the flywheel. Secure with 8 screws (X-6238-4) and 8 washers (X-801-3). Torque to 28 ft. lbs. (38.0 Nm).
9. Clutch should produce a distinct pressure when engaged. If engaging the clutch does not produce a distinct pressure, increase clutch pressure by turning the adjusting yoke and attached parts clockwise (facing engine). To decrease clutch pressure, turn the adjusting yoke and attached parts counterclockwise.
10. After adjusting clutch pressure, pull the 3/32-in. holding pin from the adjusting lock pin and engage the lock pin in the nearest tooth opening provided in the floating plate. A new clutch may require numerous adjustments. Relocate the hand lever, if necessary, after clutch adjustment. The lever should fall rearward from vertical with the clutch disengaged.
11. Install power take-off guard (344302) on housing (344279). Secure with 5 washers (X-25-40) and 5 screws (X-73-5). See Figure 1.
12. Reconnect generator set engine starting battery, negative (-) lead last.



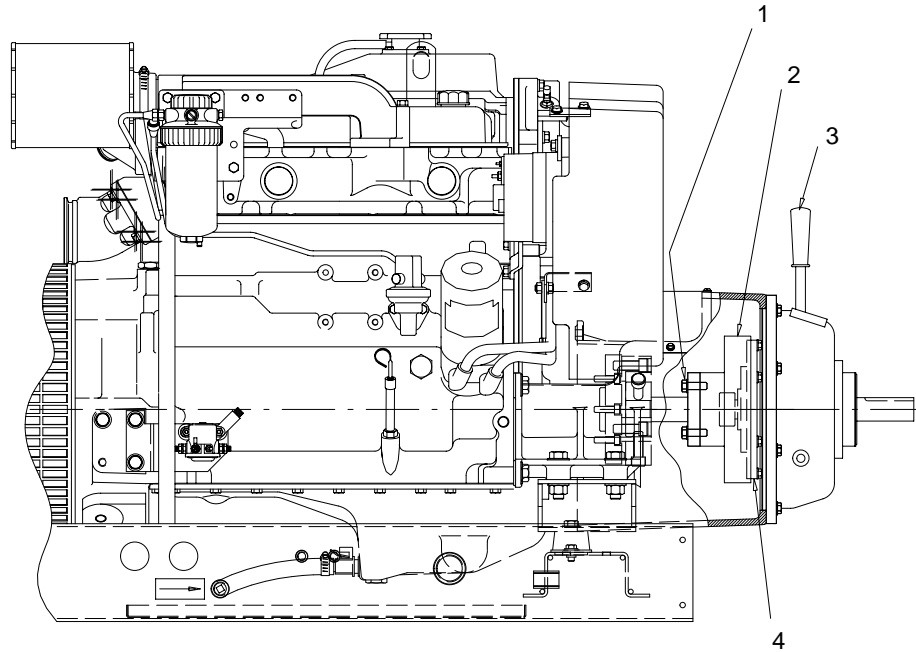
1. 0.41-in. diameter
2. 15.38-in. reference
3. 7.75-in. reference

**Figure 5. PTO Assembly**

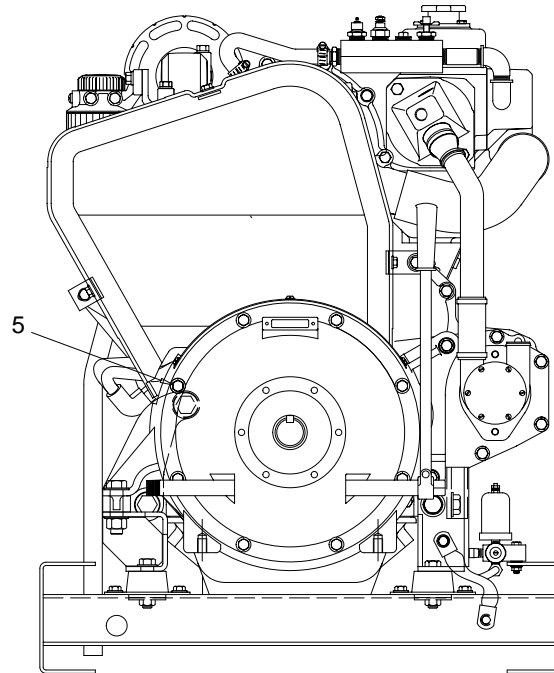
### Overcenter Mechanical Clutch Kits

Parts List				
Kits: PA-344268, PA-344269			Unique Parts	
Qty.	Description	Common Parts	PA-344268	PA-344269
6	Screw, H.C.		X-125-24	
4	Screw, H.C.	X-6024-3		
	Screw, 3/8-16		(8) X-6238-4	(14) X-6238-4
	Washer, hardened		(8) X-801-3	(14) X-801-3
6	Washer, hardened		X-801-4	
4	Washer, hardened	X-801-6		
1	Flywheel, PTO		344233	344234
1	Ring, drive		344235	344236
1	Assembly, power take-off		A-344237	A-344238

### Generator Set Right-Side View



### Generator Set Engine-End View



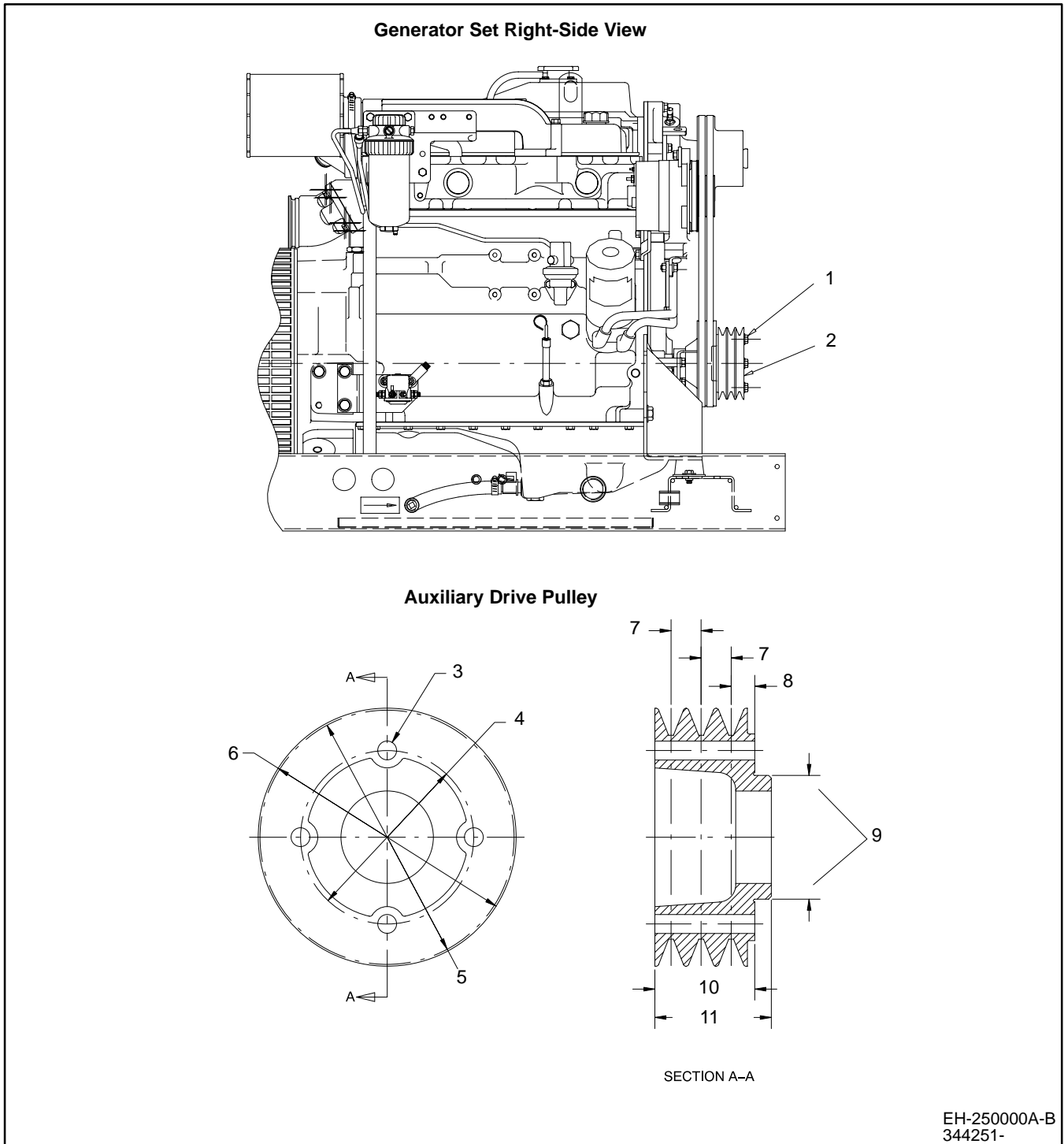
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1. 4 screws (X-6024-3) and 4 washers (X-801-6)
2. Power take-off flywheel, 6.50-in. diameter clutch (344233) or 8.0-in. diameter clutch (344234)
3. Power take-off assembly, 6.50-in. diameter clutch (A-344237) or 8.0-in. diameter clutch (A-344238)
4. For 6.50-diameter clutch: drive ring (344235), 6 screws (X-125-24), 6 washers (X-801-4). For 8.00-diameter clutch: drive ring (344236), 6 screws (X-6238-4), 6 washers (X-801-3)
5. 8 3/8-16 screws (X-6238-4) and 8 washers (X-801-3)

**Figure 6. Over-Center Mechanical Clutch Kit (PA-344268, PA-344269)**

## Three-Groove Pulley Power Take-off Kit Installation (PA-344267)

1. Refer to the assembly drawing in Figure 7 to identify kit components and their relative positions.
2. Mount auxiliary drive pulley (344251) on crankshaft pulley. Secure with 4 screws (X-6238-8) and 4 washers (X-801-3). Torque to 28 ft. lbs. (38.0 Nm).



- |                                                |                                        |
|------------------------------------------------|----------------------------------------|
| 1. 4 screws (X-6238-8) and 4 washers (X-801-3) | 7. 0.65-in. reference, V-belt location |
| 2. Auxiliary drive pulley (344251)             | 8. 0.51-in. reference                  |
| 3. 0.390-0.430-in. diameter                    | 9. 2.675±.001-in. reference            |
| 4. 3.750-in. diameter                          | 10. 2.16-in. reference                 |
| 5. 5.50-in. P.D. reference                     | 11. 2.52-in. reference                 |
| 6. 5.58-in. diameter                           |                                        |

**Figure 7. Three-Groove Pulley Power Take-off Kit (PA-344267)**

### Three-Groove Pulley Power Take-off Kit

<b>Parts List</b>		
<b>Kit: PA-344267</b>		
<b>Qty.</b>	<b>Description</b>	<b>Parts</b>
4	Washers	X-801-3
4	Screws	X-6238-8
1	Pulley, auxiliary drive	344251

# Notes