Disassembly and Assembly
3406C (PEEC III) TRUCK ENGINE
Media Number -SENR5532-01 **Publication Date -01/05/2004** **Date Updated -17/06/2004**

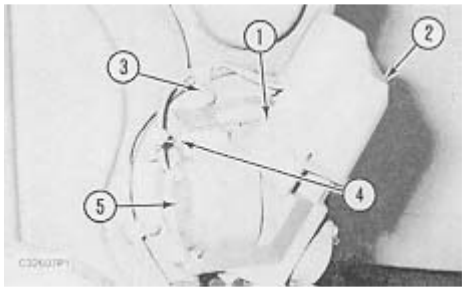
SENR55320006

Timing Advance Unit

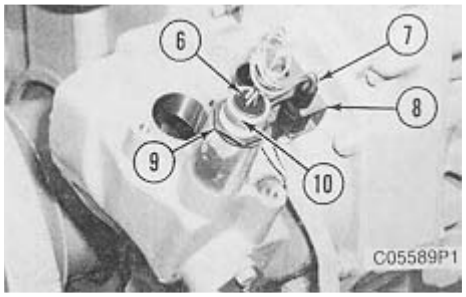
SMCS - 1272-011; 1272-012; 1272-015; 1272-016

Remove Timing Advance Unit

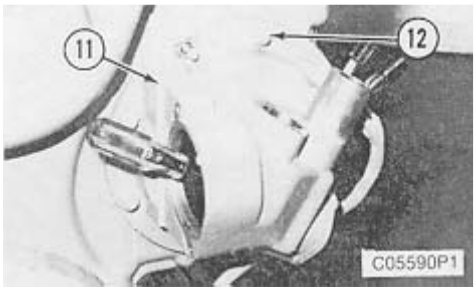
Tools Needed		A
1U5536	Crowfoot Wrench	1



1. Remove three bolts (1). Remove cover (2) and gasket from the timing advance housing. Remove two bolts (4) and clamps. Remove nut (3), disconnect the wiring harness and remove timing solenoid (5).

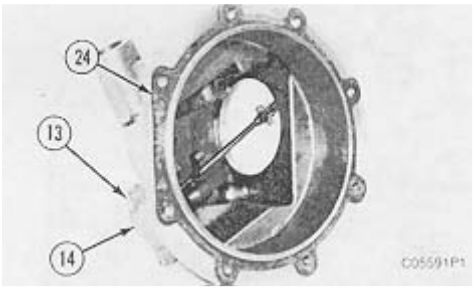


2. Disconnect wiring harness (7). Use tool (A) to loosen locknut (9). Remove collar (10) and bracket (8). Remove timing position sensor (6) and spring from the timing advance housing.

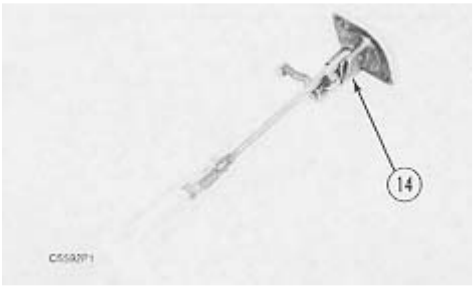


3. Rotate the bellcrank away from the timing advance unit and pin the bellcrank in place using a #2 phillips screwdriver. Remove seven nuts (12) and remove housing (11) and gasket.

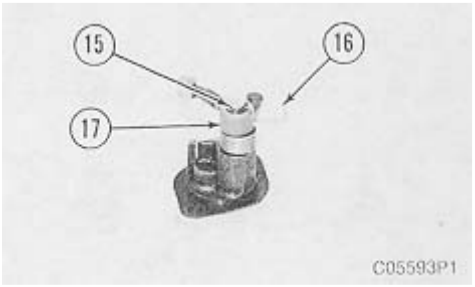
NOTE: The screwdriver must be inserted between the large and small leg of the bellcrank.



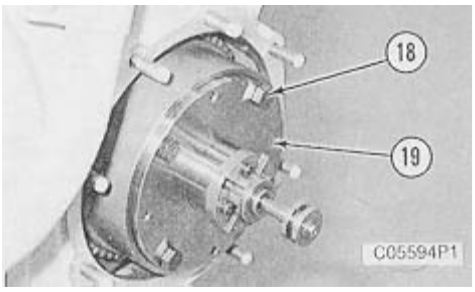
4. Remove two bolts (13). Remove bellcrank assembly (14) (with bellcrank pinned) and gasket.



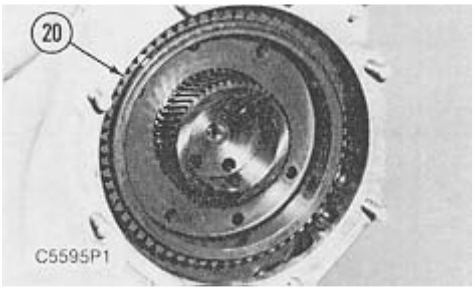
5. Remove the screwdriver from bellcrank assembly (14).



6. Remove retaining ring (15). Remove bellcrank (17) and spring (16).

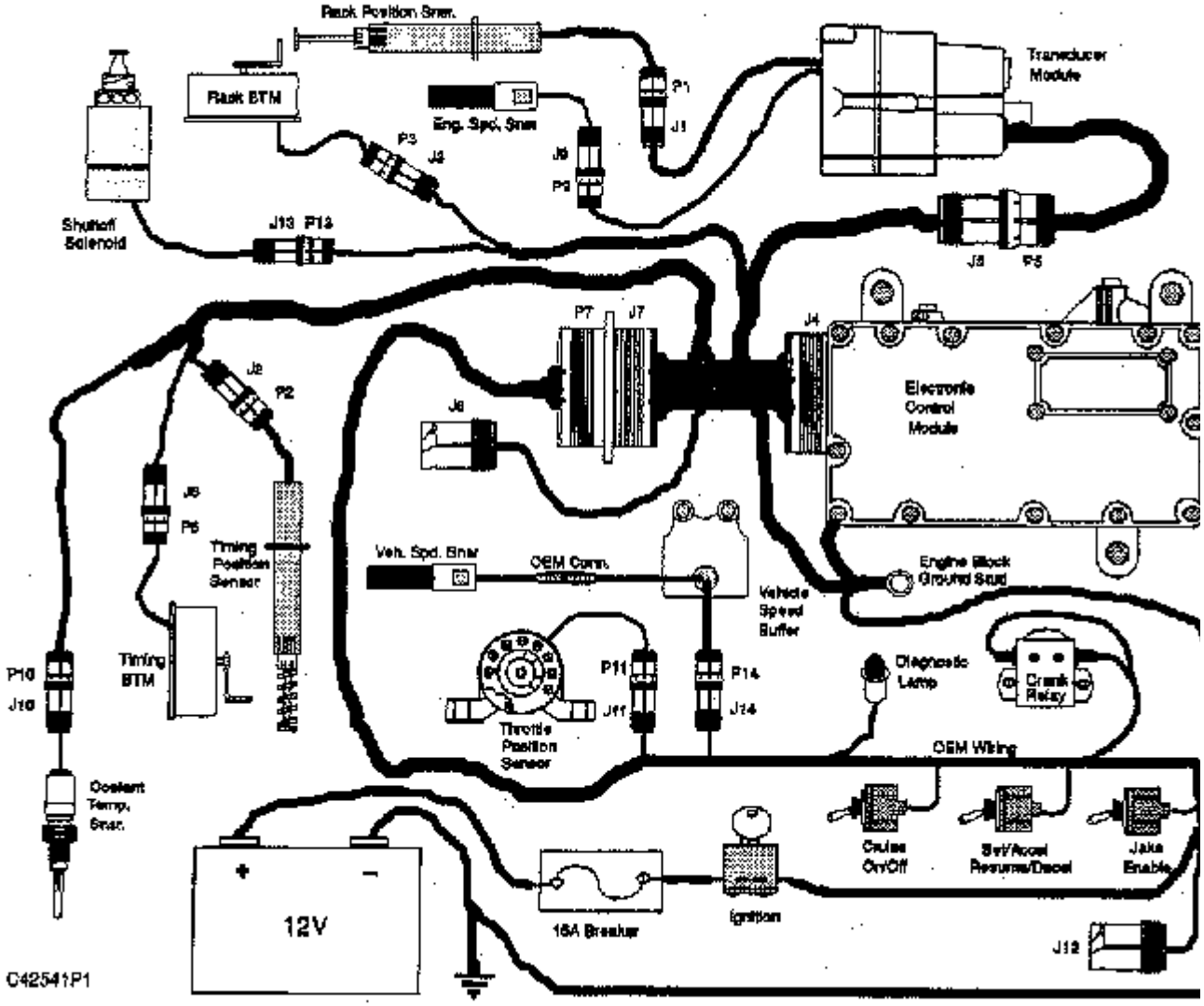


7. Remove four bolts (18) and timing advance unit (19).



8. Remove gear (20) from the fuel injection pump cam assembly.

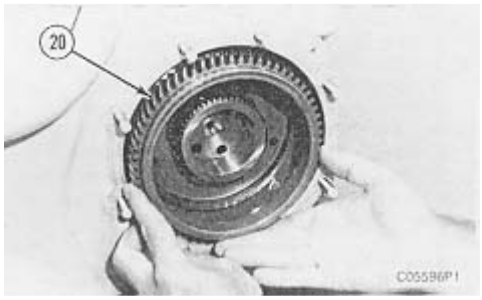
PEEC III System Component Diagram



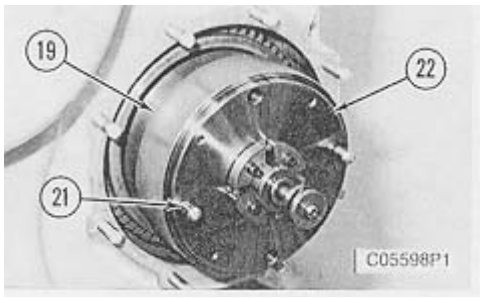
Install Timing Advance Unit

Tools Needed		A	B	C	D	E	F
1U5536	Crowfoot Wrench	1					
1U5425	Timing Gauge Assembly		1				
8T5282	Digital Diagnostic Service Tool Group			1			
8T8697	Electronic Control Analyzer & Programmer				1		
8C5919	Conversion Group				1		
8T5275	Harness				1		
9S9082	Engine Turning Tool					1	
6V4186	Pin*						1

*Part of the Pump And Governor Reconditioning Tool Group And the 6V4096 Governor Adjustment Tool Group.



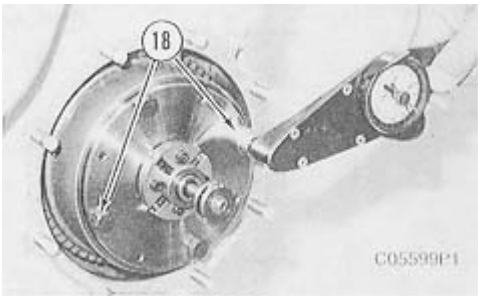
1. Install gear (20) on the fuel injection pump shaft.



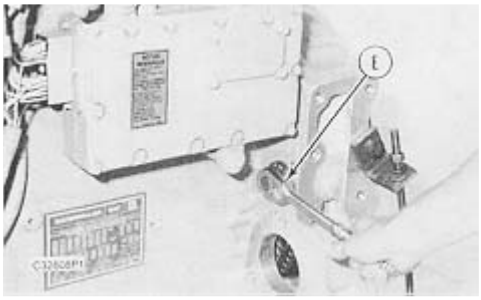
2. Install two 3/8NC guide pins (21) into the fuel injection pump shaft.

3. Lubricate the rubber seal on the fuel injection pump and governor drive hub with engine oil. Install fuel injection pump and governor drive (19) over guide pins (21) on the fuel injection pump shaft.

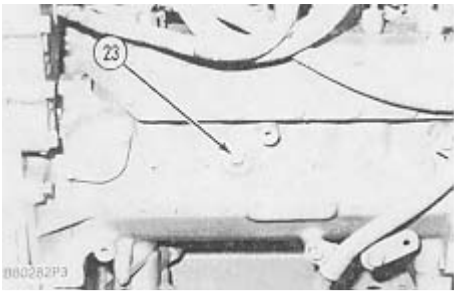
NOTE: Apply pressure on plate (22) when installing fuel injection pump and governor drive.



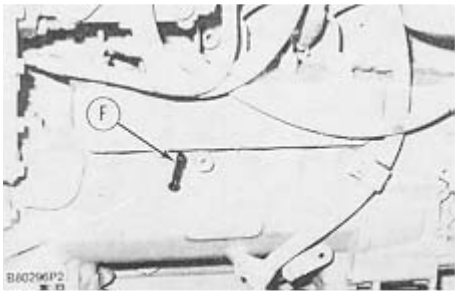
4. Install four bolts (18) hand tight. Tighten two of bolts (18) to a torque of **3 N·m (27 lb.in.).**



5. Put the No. 1 piston at top center on the compression stroke. Make reference to Finding Top Center Compression Position for No. 1 Piston in Testing And Adjusting (Service Manual Form No. SEBR0544). Remove the timing bolt from the flywheel, and use tool (E) to rotate the crankshaft clockwise (opposite direction of normal engine rotation) 45°.



6. Remove plug (23) from the fuel injection pump housing.



7. Install tool (F) in the fuel injection pump housing as shown. Slowly rotate the crankshaft counterclockwise (direction of engine rotation) until the timing pin goes into the slot in the fuel injection pump camshaft.

NOTICE

Too much pressure on the timing pin can damage the fuel injection pump or the timing pin.

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8. Put the timing bolt in the timing hole in the flywheel housing. Rotate the crankshaft counterclockwise (as seen from the flywheel end of the engine) until the fuel pump camshaft is tight against timing pin (F). This removes gear clearance from the drive train. If the bolt can be installed in the timing hole in the flywheel, the timing of the fuel injection pump is correct.

9. If the timing bolt does not go into the timing hole in the flywheel, the timing is not correct. Do the steps that follow to adjust the fuel injection pump timing.

a. Loosen four bolts (18). With tool (F) installed and the timing bolt removed, turn the flywheel clockwise (opposite the direction of engine rotation) a minimum of 45°. The reason for this step is to remove backlash from the timing gears when the engine is put on top center (TC).

b. Tighten two bolts (18) 180° apart, evenly to a torque of 3 N·m (27 lb.in.).

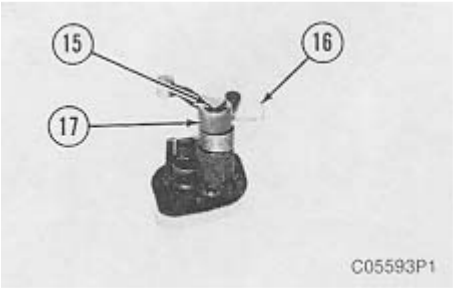
c. Turn the flywheel slowly in the direction of engine rotation until the timing bolt can be installed in the flywheel. The No. 1 piston of the engine is now at top center (TC).

d. Tighten four bolts (18) to a torque of **55 ± 7 N·m (41 ± 5 lb.ft.).** Remove the timing bolt from the flywheel and tool (F) from the fuel injection pump housing.

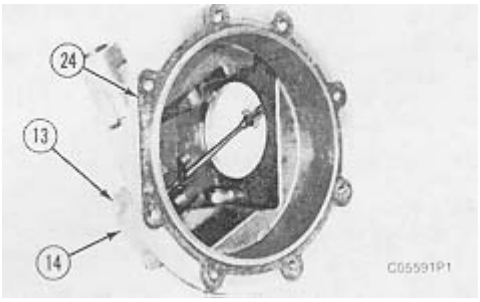
10. Turn the flywheel clockwise (opposite the direction of normal engine rotation) a minimum of 45°. Now, turn the flywheel in the direction of engine rotation until timing pin (F) drops into slot of pump camshaft. Now turn the flywheel more, in the direction of normal engine rotation, until all gear clearance is removed from the drive train and to ensure that the timing actuator power piston is in the fully retracted position (toward the rear of the engine). Check to see that the timing bolt will go into the flywheel.

11. If the timing is not correct, do the procedure in Steps 9a through 9d again.

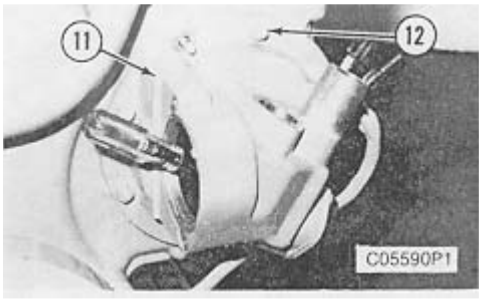
12. If the timing is correct, remove the timing bolt from the flywheel and the timing pin [tool F)] from the fuel injection pump housing.



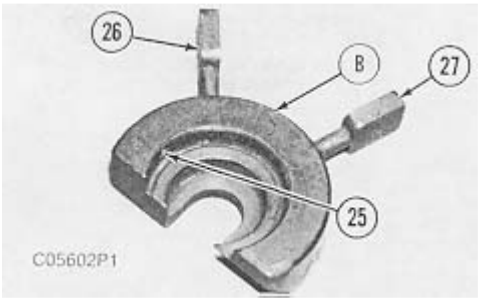
13. Install spring (16), bellcrank (17), and retaining ring (15) on cover assembly (14).



14. Install gasket (24) bellcrank assembly (14) and two bolts (13) on timing advance housing.

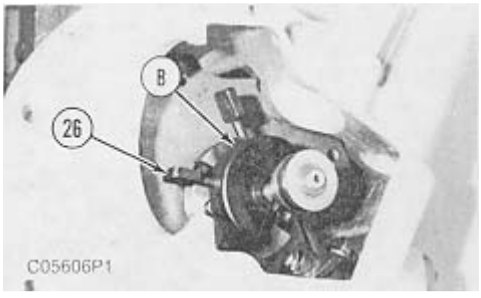


15. Install timing advance housing (11) on the timing gear cover. Remove the screwdriver.

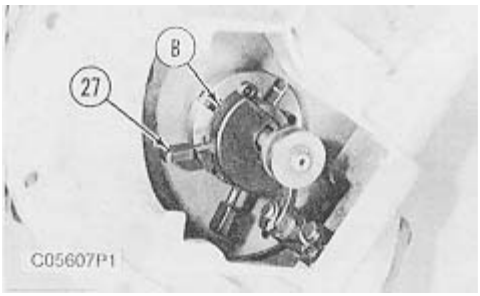


16. Check the position (protrusion) of ball detent (25) in tool (B). It should protrude only slightly into the grooved area.

NOTE: During the following steps, tool (B) and the area of installation cannot be seen. The cutaway views are shown for better photo illustration.



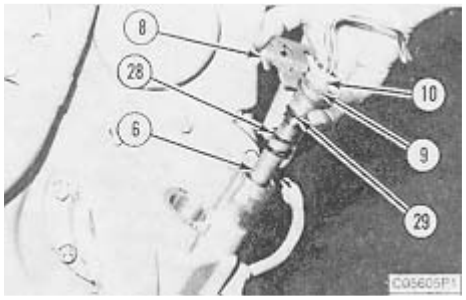
17. Install tool (B) with grooved side toward the engine, between the power piston bearing and bellcrank (17) so that ear (26) is in an approximate 9 o'clock position.



18. Apply a slight hand pressure and push tool (B) towards the engine and rotate counterclockwise slowly until ear (27) is in an approximately 9 o'clock position.

NOTE: A slight resistance as the tool starts to seat can be felt.

19. Continue to rotate tool (B) counterclockwise until ear (27) is in an approximate 6 o'clock position.



20. Carefully install timing position sensor (6), spring (28), damping washer (29), bracket (8), collar (10) and locknut (9). Do not tighten locknut (9) at this time.

21. Connect the wiring harness from the timing position sensor to the wiring harness on the engine. (J2/P2 connector).

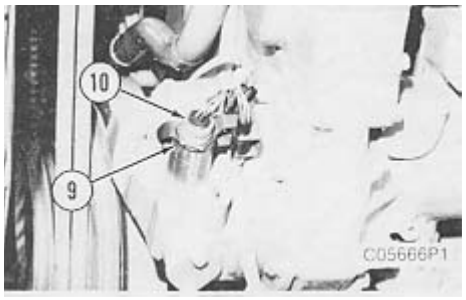
NOTE: Be sure that the harness from the PEEC control module is connected to the engine wiring harness. (J7/P7 connector).

22. Disconnect the PEEC data link connector (the short pigtail out of the top of the PEEC control module - J4/P4 connector) from the truck wiring harness and connect either tool (C) or tool (D) to the PEEC data link connector (J8 connector).

23. Turn power on to the PEEC control module. Select "Timing Position Sensor Calibration" from the main menu of tool (C) or (D). See Special Instructions, Form No's. SEHS8742 and/or SEHS8743.

NOTICE

Do not engage the starter, or damage to the engine will be the result.



24. Adjust collar (10) on timing position sensor until the bar graph on tool (C) or (D) is centered and indicate the timing position sensor is calibrated.

25. Tighten locknut (9) to **55 ± 7 N·m (41 ± 5 lb.ft.).**

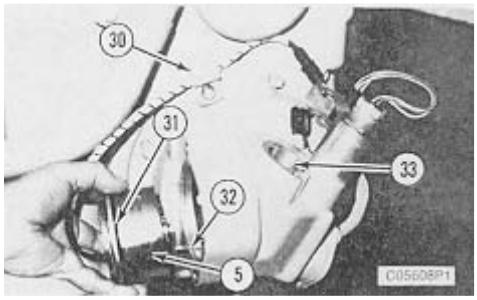
26. Check the timing position calibration reading on tool (C) or (D) to insure that the timing position sensor is still in calibration after tightening the locknut.

27. Turn off power to the PEEC control module.

28. Disconnect tool (C) or (D) from the PEEC control module. Connect the PEEC data link connector (J1 connector) to the truck harness (P1 connector).

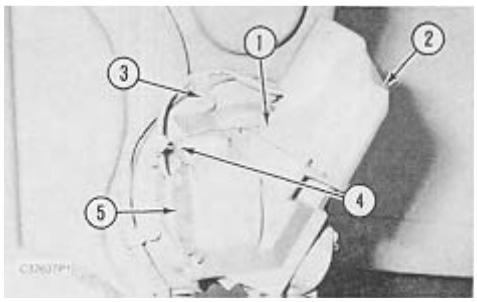
29. Remove tool (B) from between the power piston and the bellcrank.

30. Use tool (E) to rotate the engine in the clockwise direction to release the pressure on tool (F). Remove tool (F).



31. Lubricate o-ring seal (31) with engine oil and install on timing solenoid (5).

32. Install timing solenoid (5) into the timing advance housing. Be sure lever (32) is engaged in the groove of the sleeve. Access port (33) has been provided to visually check the position of lever (32).



33. Install clamps and bolts (4). Install clip and nut (3).

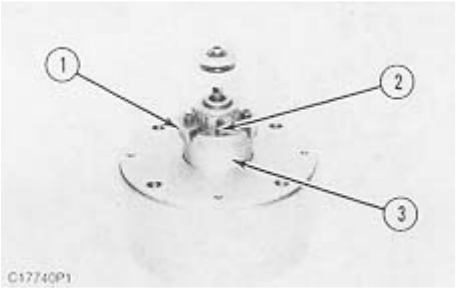
34. Connect the timing solenoid wiring harness (P6 connector) to the engine wiring harness (J6 connector). Install the gasket and cover (2).

Disassemble Timing Advance Unit

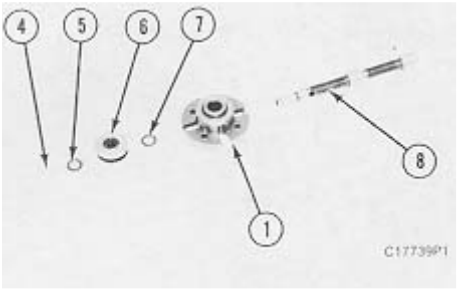
Tools Needed		A
1P1855	Retaining Ring Pliers	1

Start By:

a. remove timing advance unit



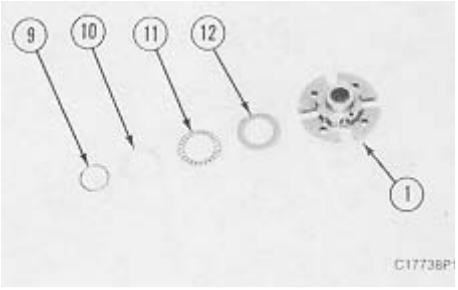
1. Remove bolts (2) that hold sleeve assembly (1) in place on body assembly (3), and remove the sleeve assembly.



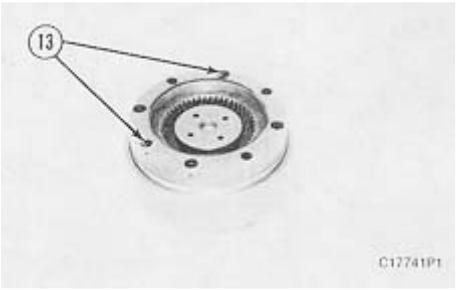
2. Use tool (A), and remove snap ring (4) from spool (8). Remove washer (5) sleeve assembly (6) and washer (7) from spool (8).

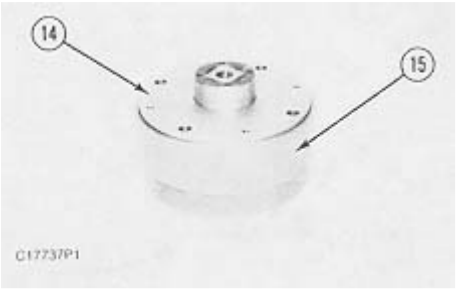
3. If necessary remove the bearing from sleeve assembly (6).

4. Remove spool (8) from sleeve assembly (1).



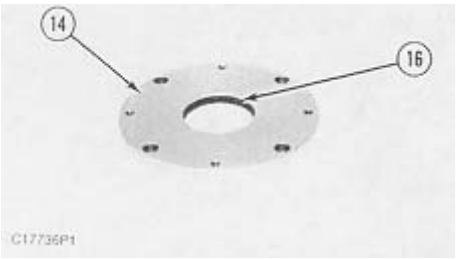
5. Remove ring (9), race (10), bearing (11) and race (12) from sleeve assembly (1).





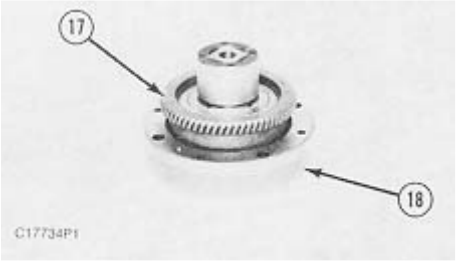
6. Remove four bolts (13) that hold plate (14) in place.

7. Remove plate (14) from ring (15).

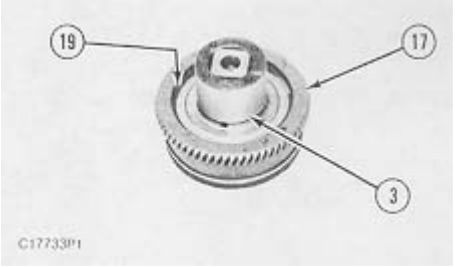


8. Remove seal (16) from plate (14).

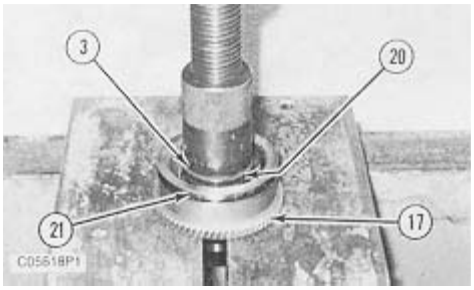
9. Remove ring (15) from carrier (17).



10. Remove carrier (17) from ring (18).



11. Remove ring (19) that holds body assembly (3) in place in carrier (17).



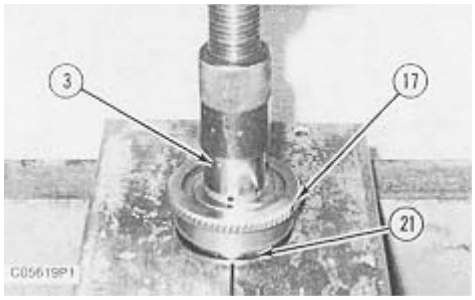
12. Use a press and remove body assembly (3) from carrier (17).

13. Remove seal (20) from the body assembly.

14. Remove seal (21) from the carrier.

Assemble Timing Advance Unit

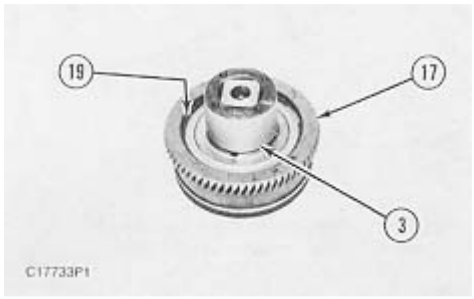
Tools Needed		A
1P1855	Retaining Ring Pliers	1



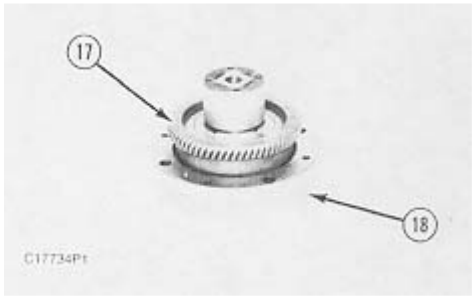
1. Install seal (21) on carrier (17).

2. Install the seal in the groove in body assembly (3). Put clean engine oil on the seals.

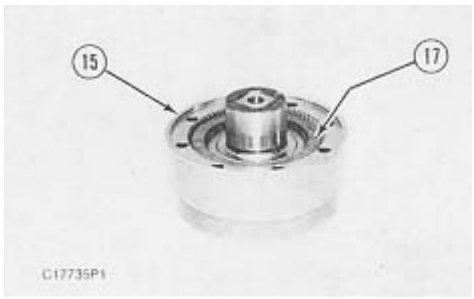
3. Use a press and install body assembly (3) in carrier (17).



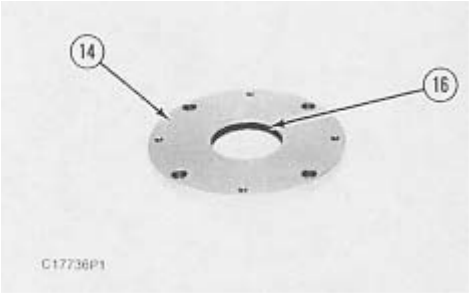
4. Install ring (19) to hold body assembly (3) in position in carrier (17).



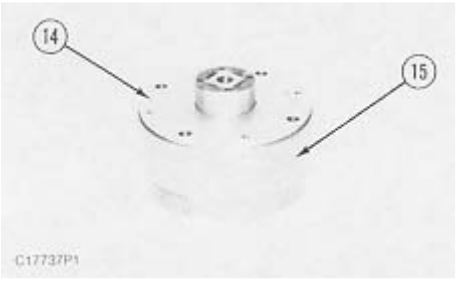
5. Put carrier (17) in position in ring (18).

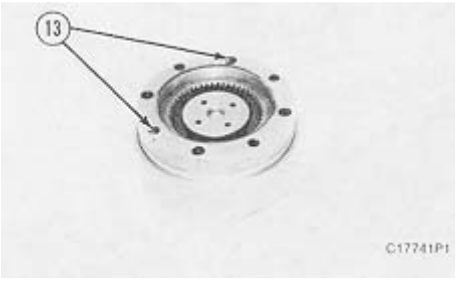


6. Put ring (15) in position on carrier (17).

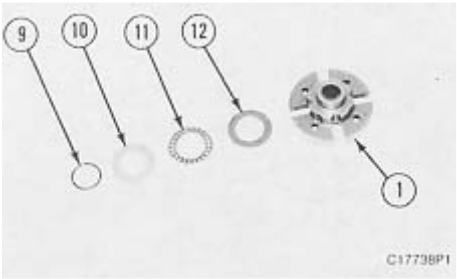


7. Install seal (16) in plate (14). Put clean oil on the seal.

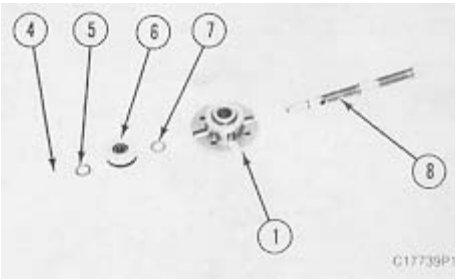




8. Put plate (14) in position on ring (15) and install four bolts (13).



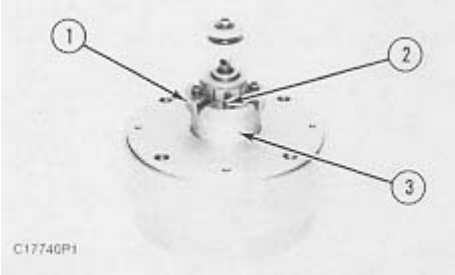
9. Put race (12), bearing (11) and race (10) in position on sleeve assembly (1) and install ring (9).



10. If the bearing was removed from sleeve assembly (6) install the bearing until it is below the surface of the sleeve assembly.

11. Put spool (8) in position in sleeve assembly (1).

12. Put washer (7), sleeve assembly (6) and washer (5) in position on spool (8) and install snap ring (4) with tool (A).



13. Put sleeve assembly (1) in position on body assembly (3), and install four bolts (2).

End By:

a. install timing advance unit.

Fri Oct 29 00:48:12 CDT 2010