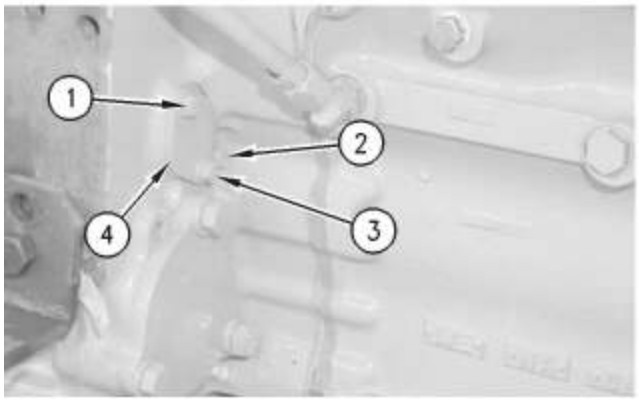
9S-9082	Engine Turning Tool	1

Note: The starting position for all timing procedures is with the No. 1 piston at the top center position on the compression stroke.



Locating the top center position (typical example)

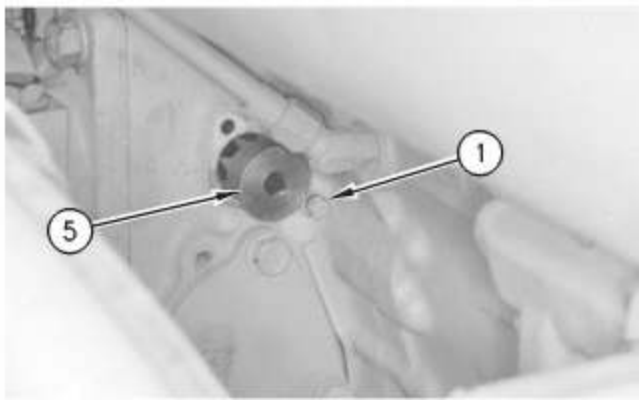
(1) The storage location for the timing bolt

(2) Plug

(3) Bolt

(4) Cover

1. Remove the timing bolt (1), the bolt (3), and the cover (4) .
2. Remove the plug (2) .



The 9S-9082 Engine Turning Tool is installed.

(1) The installed timing bolt

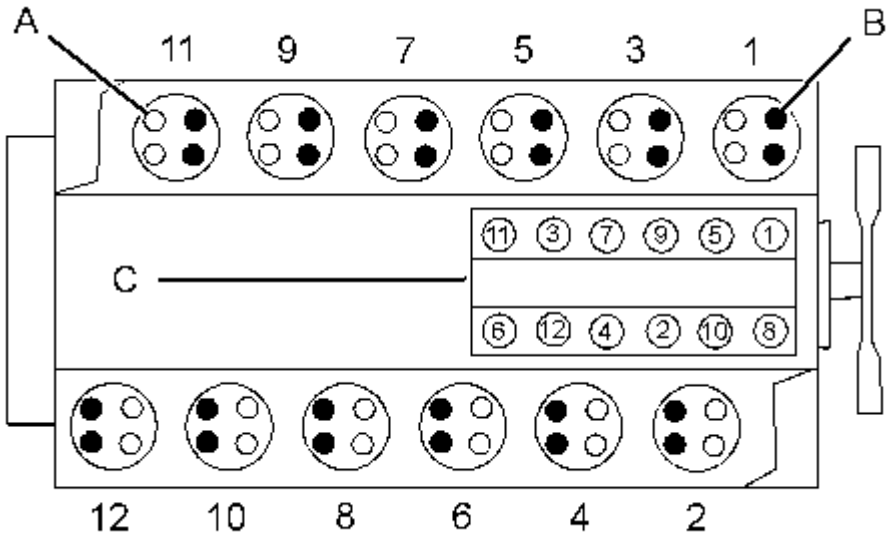
(5) 9S-9082 Engine Turning Tool

3. Install **9S-9082** Engine Turning Tool (5) in the housing.

4. Once plug (2) has been removed, insert the timing bolt (1) through the hole. Hold the timing bolt (1) against the flywheel.

5. Turn the flywheel in the direction of normal engine rotation until the timing bolt engages with the threaded hole. The No. 1 piston is at the top center position on the engine.

   Note: If the flywheel is turned beyond the point of engagement, the flywheel must be turned in the direction that is opposite of normal engine rotation. Turn the flywheel by approximately 30 degrees. Then turn the flywheel in the direction of normal engine rotation until the timing bolt engages with the threaded hole. When the No. 1 piston is at the top center position, this procedure will remove the play from the gears.



Cylinder and valve location

(A) Inlet

(B) Exhaust

(C) Fuel injection pumps

6. Remove the left front valve cover. Look at the valves of No. 1 cylinder. The valves will be closed if the No. 1 piston is on the compression stroke. You can move rocker arms up and down with your hand. If the No. 1 piston is not on the compression stroke, perform the following steps.

7. Remove the timing bolt from the flywheel.

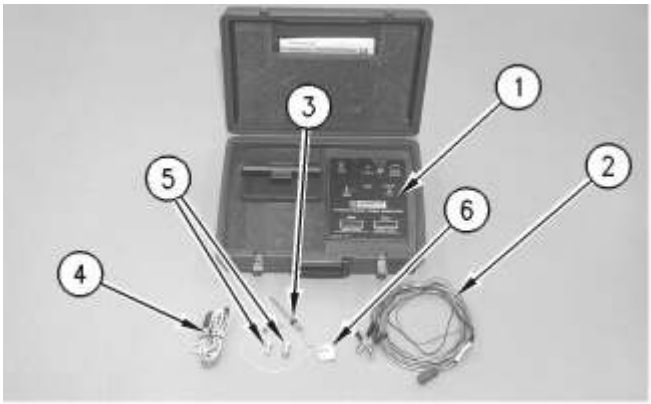
8. Rotate the crankshaft counterclockwise by 360 degrees. Install the timing bolt.

Note: If the flywheel is turned beyond the point of engagement, the flywheel must be turned in the direction that is opposite of normal engine rotation. Turn the flywheel by approximately 30 degrees. Then turn the flywheel in the direction of normal engine

rotation until the timing bolt engages with the threaded hole. When the No. 1 piston is at the top center position, this procedure will remove the play from the gears.

Checking Engine Timing with 8T-5300 Engine Timing Indicator Group and 8T-5301 Diesel Engine Timing Adapter Group

Table 3		
Tools Needed		
8T-5300	Engine Timing Indicator Group	1
8T-5301	Diesel Engine Timing Adapter Group	1



8T-5300 Engine Timing Indicator Group

(1) 8T-5250 Engine Timing Indicator

(2) 5P-7366 Power Cable

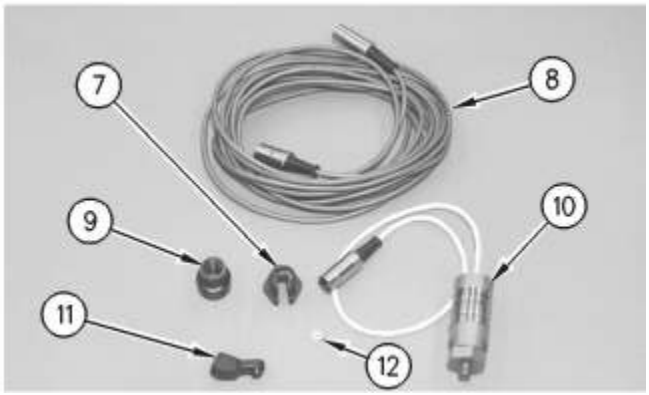
(3) 6V-2197 Magnetic Transducer

(4) 5P-7362 Cable

(5) 5P-7362 Cable, 6V-2199 Transducer Adapter and 6V-3093 Transducer Adapter

(6) 8D-4644 Corner

The **8T-5300** Timing Indicator Group must be used with **8T-5301** Diesel Engine Timing Adapter Group.



8T-5301 Diesel Engine Timing Adapter Group

(7) 5P-7437 Adapter

(8) 6V-2198 Cable

(9) 5P-7436 Adapter

(10) 6V-7910 Transducer

(11) 5P-7435 Adapter

(12) 6V-3016 Washer

When you check for the dynamic timing on an engine without a mechanical advance, Caterpillar Inc. recommends the recording of the calculations for the dynamic timing onto paper. Then, the service person can create a graph of the dynamic advance.

Note: Worksheets are available in pads of fifty. Order one Special Instruction, SEHS8140. See Special Instruction, SEHS8580 for information on calculating the timing curve.

After the timing values are calculated and the timing values are plotted, the dynamic timing should be checked with the **8T-5300** Engine Timing Indicator Group .

1. Operate the engine from 1000 rpm (base rpm) to high idle.

2. Continue running the engine now from high idle to 1000 rpm (base rpm).

   Unstable readings often appear below 1000 rpm.

3. Record the dynamic timing at each 100 rpm and at the specified speeds during acceleration and during deceleration.

4. Finally, plot the results onto the worksheet. Review the plotted values.

Use Special Instruction, SEHS8580 to see the correct specifications for calculating the timing curve.

You can find these specifications in three places: