

Timing Disc Retrofit Installation

Overview

The 65300-6338-A retrofit timing disc kit is used to convert a CAT 330x A engine to utilize a threaded 12mm hall sensor for cam timing for the EMIT Ignition or ECU. This guide shows installation steps.

Install Steps

1. Move engine to TDC compression stroke of cylinder #1
 - a. I.E. timing mark should show 0/TDC and both valve(s) of #1 should be up / loose
2. Pin engine at TDC
3. Remove the round cover on the front timing housing of the engine (just above the alternator)

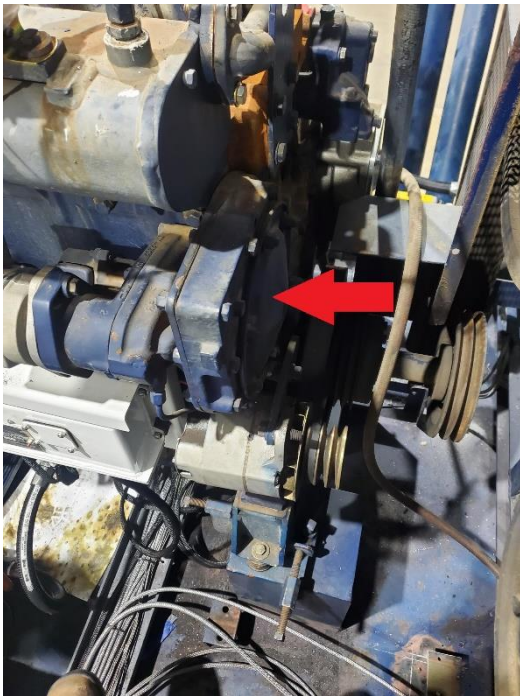


Figure 1 Cover Location



Figure 2 Cover Removed



Installation Guide

65300-6338-A 330xA Timing Disc

4. Add the provided (6) threaded studs into the engine where the cover was positioned. Position a gasket then the provided spacer over the studs with side sensor hole to the outside of the engine (left). (Note: Image below does not show studs)
5. Remove the center bolt of the timing gear and install the timing disc over the gear using the same bolt. Position the X to line up with the sensor location. Tighten to **110 +/- 5 ft-lbs**.



Figure 3. Spacer installed, disc installed and aligned

6. Thread in the hall sensor all the way, then back out one full turn. Tighten jamb nut to keep sensor in place.

7. Place gasket over spacer and reinstall the cover over the studs and add the provided 6 nuts and washers. (Note: Image below shows bolts instead of nuts). Tighten to **20 +/- 5 ft-lbs**.



Figure 4. Cover re-installed

8. Plug harness onto hall sensor and secure harness away from moving parts.
9. Remove pin on flywheel

Setup and Testing

10. Power up system
11. Go to the Ignition home page / tab, Ignition Setup, then Main Setup
12. Go through main setup and select "Cam timing disc hall" as the input type and "Extra 20 deg mark" as the type. Go through to end of setup and save.
13. On the ignition home page/tab go to "Input Information" and crank the engine to see if the first two boxes turn green. If so, it is ready to start. (If not go to troubleshooting)
14. After starting the engine go to Setup – Calibration
 - a. Adjust the calibration until a timing light matches the value shown on the top of the page



Troubleshooting

1. During crank, check if the Input Information page increases the FW Teeth and Index counts. If FW Teeth does not increase, check the flywheel MPU. If the Index does not increase:
 - a. Take out the hall sensor and wave against metal. The input count should increase. If it does not:
 - i. Unplug and check the harness side. Pin B should show 5v to ground. Pin D should show 12v to ground. Pin C should show 0v and also continuity to ground.
 - ii. Shorting pin B to C (center two pins) on harness side should cause Index counts to increase, this validates the wiring and module are ok
 - iii. The sensor should have Brown on D, Blue on C, and Black on B
 - b. If the input count increases on the previous test, try adjusting the spacing so that it is out only $\frac{1}{2}$ turn
2. If the input counts increase but the input information second box doesn't go green:
 - a. Make sure the ignition setup has the index type as mentioned under "Setup and Testing", #12 above
 - b. The sensor may be in too far. Try turning out $\frac{1}{2}$ turn.
3. If the input information page has the first two boxes go green but the engine still does not start:
 - a. Use the Testing – Engine Off / Coil Testing page to test each cylinder to make sure the harness, coils, and plugs for each cylinder are working. Note that the page is in firing order, make sure "cyl" matches the actual cylinder that is sparking during the test.
 - b. Make sure the ignition home page shows "Ready to start" when about to crank. If not, the shutdown pin is still grounded. The Brain may be holding the system in Fault, check the Brain State.