

REPAIR INSTRUCTIONS - OFF VEHICLE

DRAINING FLUIDS AND OIL FILTER REMOVAL

Special Tools

EN-44887: Oil Filter Wrench

For equivalent regional tools, refer to Special Tools.

Removal Procedure

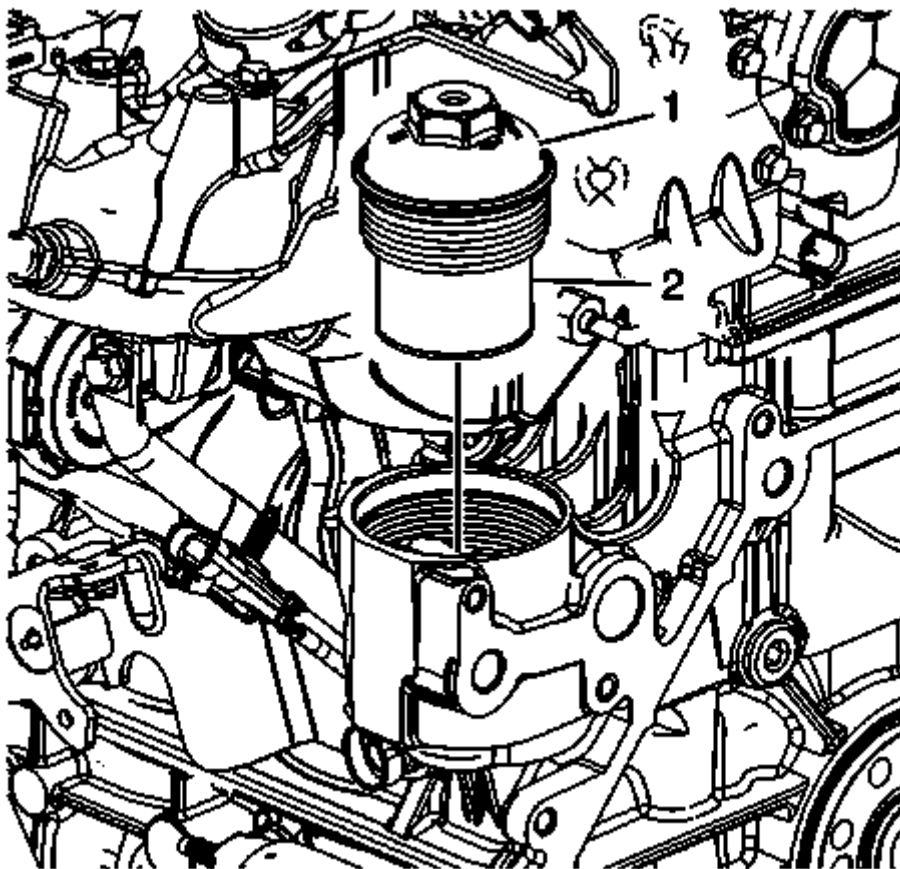


Fig. 340: View of Draining Fluids and Oil Filter
Courtesy of GENERAL MOTORS CORP.

1. Use EN-44887: wrench to remove the oil filter cap (1). Remove the oil pan drain plug and allow the oil to drain out.
2. Remove the oil filter (2) from the cap and discard.
3. Clean the oil filter housing in the engine block.

CAUTION: Refer to Fastener Caution .

4. Install the oil pan drain plug and tighten to 25 N.m (18 lb ft).
5. Remove the water pump drain plug from the water pump and allow the coolant to drain from the water jacket.
6. Apply sealant GM P/N 12346004 (Canadian P/N 10953480) or equivalent to the water pump drain plug.
7. Install the water pump drain plug and tighten to 20 N.m (15 lb ft).
8. If cleaning or repairing the engine block, it is not necessary to reinstall the plugs.

CRANKSHAFT BALANCER REMOVAL**Special Tools**

- **EN-38122-A:** Crankshaft Balancer Holder
- **EN-43653:** Flywheel Holding Tool

For equivalent regional tools, refer to **Special Tools**.

Removal Procedure

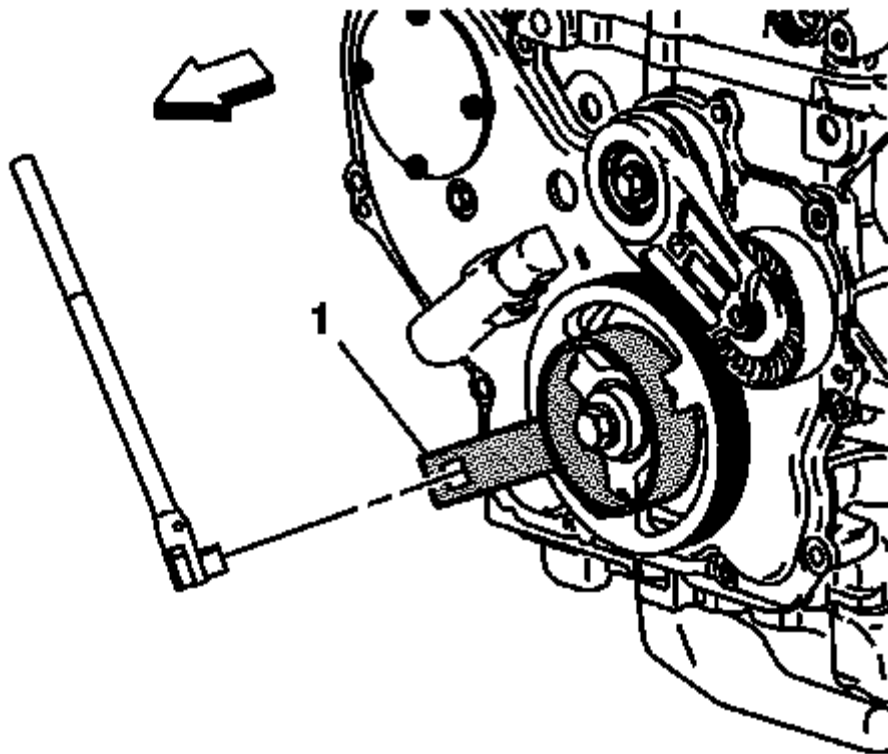


Fig. 341: Identifying J 38122-A
Courtesy of GENERAL MOTORS CORP.

NOTE: EN-43653: flywheel holding tool may be used instead of EN-38122-A: crankshaft balancer holder to prevent crankshaft rotation.

1. Install EN-38122-A: holder (1).
2. Remove the balancer retaining bolt and washer. Use EN-38122-A: holder and a breaker bar to prevent the crankshaft from rotating when loosening the bolt. Discard the bolt.

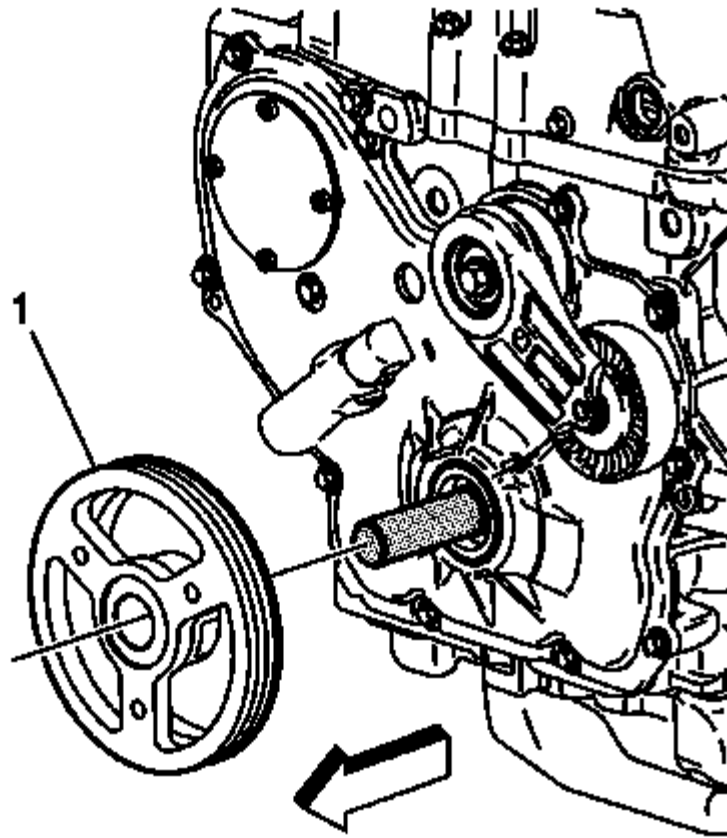


Fig. 342: Identifying Balancer
Courtesy of GENERAL MOTORS CORP.

3. Remove the crankshaft balancer assembly (1) using a universal removal tool.

ENGINE FLYWHEEL REMOVAL

Tools Required

J 38122-A Harmonic Balancer Holder. See **Special Tools**.

Removal Procedure

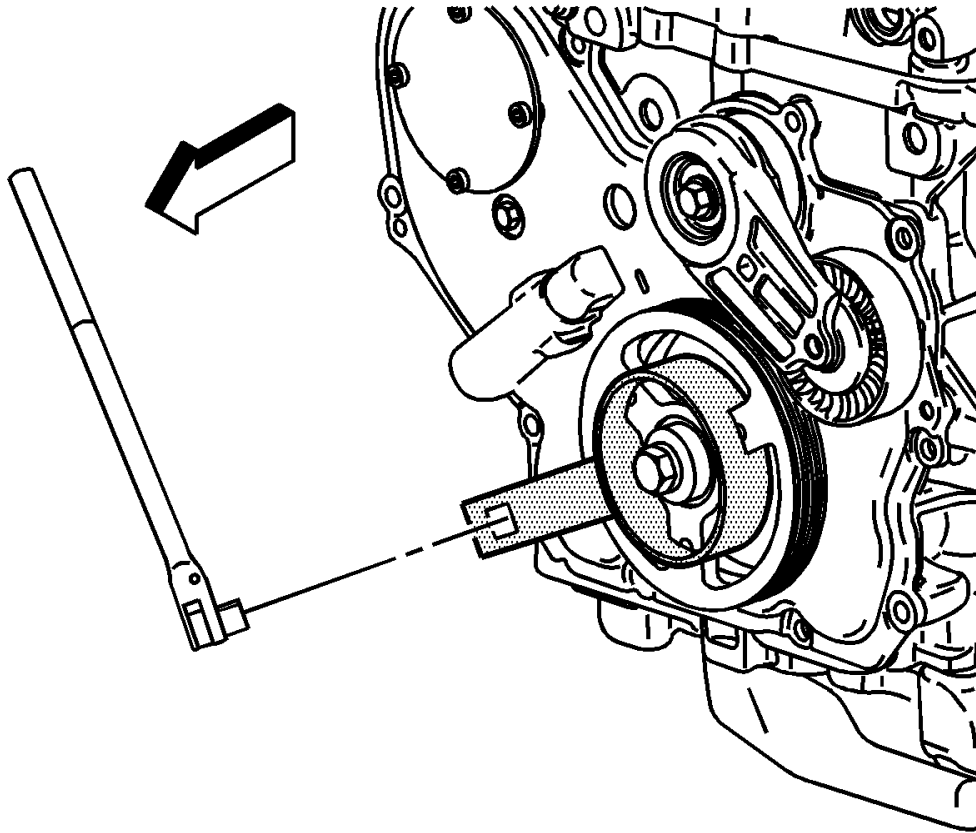


Fig. 343: View Of Harmonic Balancer Holder J38122-A
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: It may be necessary to remove the chamfer (bevel) from the edge of an 18 mm socket in order to get full socket engagement on the thin headed flywheel bolts.
Do not orientate the flywheel to the crankshaft. It is balanced separately from the engine.

1. Remove the flywheel attaching bolt. Use the **J 38122-A** to prevent crankshaft rotation. See **Special Tools**.

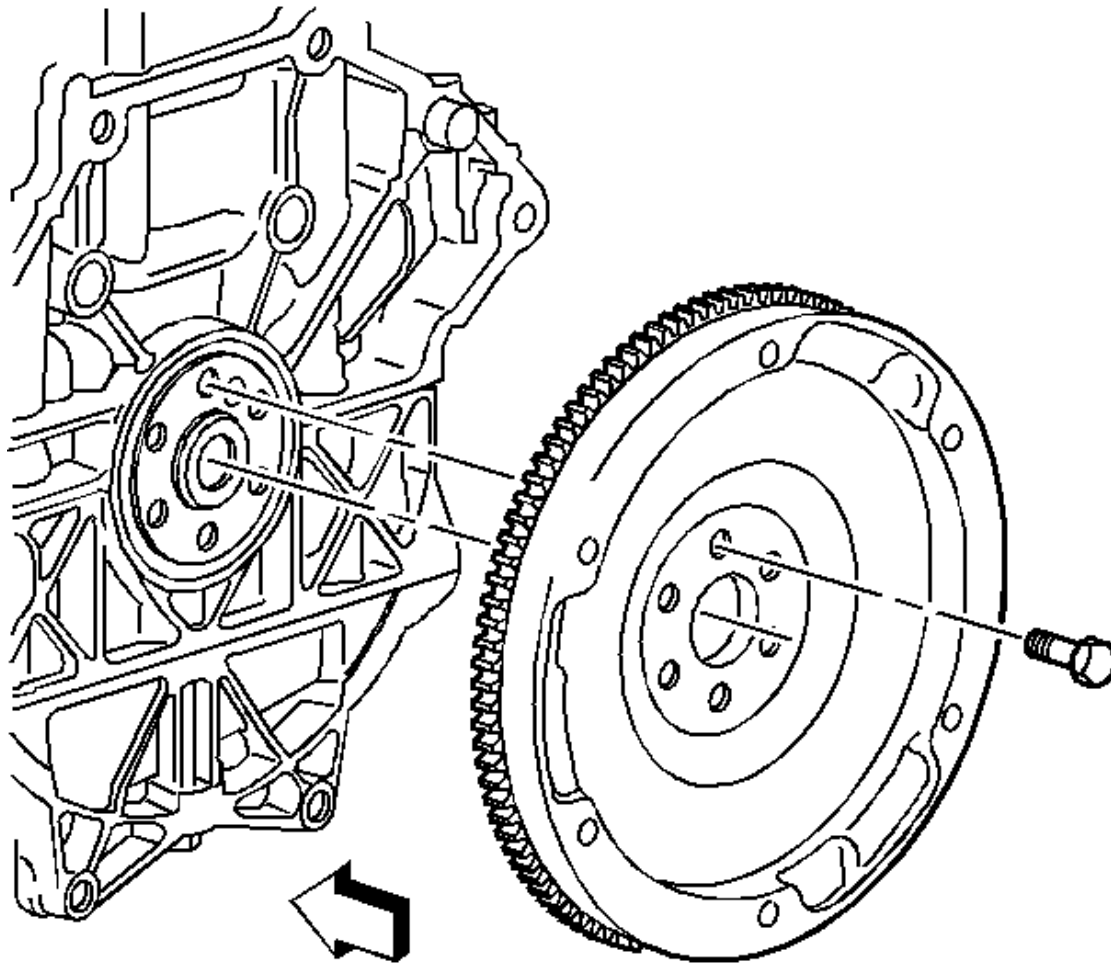


Fig. 344: Identifying Flywheel & Retaining Bolts
Courtesy of GENERAL MOTORS CORP.

2. Remove the flywheel, if the vehicle has a manual transmission.