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# Shop Manual

# DX380LC-5 Excavator

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Serial Number **10001 and Up**

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# **Track Excavator Maintenance Safety**

**Edition 1**

# SAFETY INSTRUCTIONS

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## WARNING

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### AVOID DEATH OR SERIOUS INJURY

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments repairs or service. Untrained operators and failure to follow instructions can cause death or serious injury.

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## SAFETY MESSAGES

Replace with Safety Messages Section on pages III and IV in the Doosan Operation & Maintenance Manual.

# GENERAL

## Safe Operation is Operator's Responsibility

Only trained and authorized personnel should operate and maintain the machine.

Follow all safety rules, regulations and instructions when operating or performing maintenance on machine.

- Do not operate machine if you are under the influence of drugs or alcohol. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine.
- When working with other personnel on a work site, be sure that all personnel know nature of work and understand all hand signals that are to be used.
- Be sure that all guards and shields are installed in their proper location. Have guards and shields repaired or replaced immediately if damaged.
- Be sure that you understand the use and maintenance of all safety features such as safety lever and seat belt. Use them properly.
- Never remove, modify or disable any safety features. Always keep them in good operating condition.
- Always check for and know the location of underground and overhead utility lines before excavating.
- Failure to use and maintain safety features according to instructions in this manual, Safety Manual and Shop Manual can result in death or serious injury.

## Know Your Machine

Know how to operate your machine. Know the purpose of all controls, gauges, signals, indicators and monitor displays. Know the rated load capacity, speed range, braking and steering characteristics, turning radius and operating clearances. Keep in mind that rain, snow, ice, loose gravel, soft ground, slopes etc., can change operating capabilities of your machine.

## Proper Work Tools and Attachments

Only use work tools and attachments that are recommended by DOOSAN for use on DOOSAN machines. When installing and using optional attachments, read instruction manual for attachment, and general information related to attachments in this manual. Because DOOSAN cannot anticipate, identify or test all attachments that owners may want to install on their machines, contact DOOSAN for written authorization and approval of attachments, and their compatibility with optional kits.

Attachments and attachment control systems that are compatible with the machine are required for safe and reliable machine operation. Do not exceed maximum operating weight (machine weight plus attachment) that is listed on ROPS certification plate.

Make sure that all guards and shields are in place on machine and on work tool. Depending on type or combination of work equipment, there is a potential that work equipment could interfere with the cabin or other parts of machine. Before using unfamiliar work equipment, check if there is any potential of interference, and operate with caution.

While you are performing any maintenance, testing, or adjustments to attachments, stay clear of the following areas: cutting edges, pinch points, and crushing surfaces.

Never use attachment as a work platform or manlift.

Contact your DOOSAN distributor about auxiliary hydraulic kits for attachments installation. If you are in doubt about compatibility of a particular attachment with a machine, consult your DOOSAN distributor.

## Pressurized Fluids

Pressurized air or fluids can cause debris and/or fluids to be blown out. This could result in death or serious injury.

Immediately after operations are stopped, coolant, engine oil, and hydraulic oil are at their highest temperatures and the radiator and hydraulic tank are still under pressure. Always wait for temperature to cool down. Follow specified procedures when attempting to remove caps, drain oil or coolant, or replacing filters. Always wait for temperature to cool down, and follow specified procedures when performing these operations. Failure to do so can result in death or serious injury.

When pressurized air and/or pressurized water is used for cleaning, wear protective clothing, protective shoes, and eye protection. Eye protection includes goggles or a protective face shield.

Pressure can be trapped in a hydraulic system and must be relieved before maintenance is started.

Releasing trapped pressure can cause sudden machine movement or attachment movement. Use caution if you disconnect hydraulic lines or fittings.

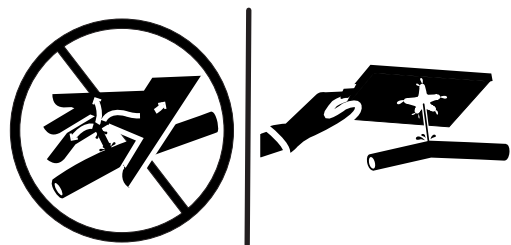


Figure 1

FG018457

High-pressure oil that is released can cause a hose to whip or oil to spray. Fluid penetration can result in death or serious injury. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

Obey all local laws and regulations for disposal of liquids.

To prevent hot coolant from spraying out, stop engine and wait for coolant to cool. Using gloves, slowly loosen cap to relieve pressure.

## Flying or Falling Objects

On work sites where there is a potential hazard that flying or falling objects can hit operator's cabin, select and use a guard to match operating conditions for additional operator protection.

Working in mines, tunnels, deep pits, and loose or wet surfaces, could produce hazard of falling rocks or flying objects. Additional protection for operator's cabin could be required such as an Operator Protection Guard (OPG) or window guards. Contact your DOOSAN distributor for information on available protective guards.

To prevent personnel from being struck by flying objects, keep personnel out of work area.

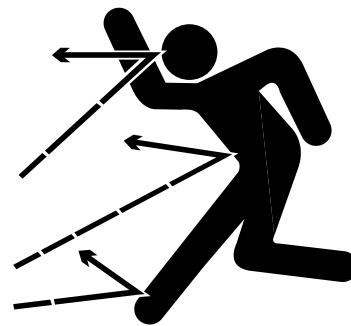


Figure 2

HAOA110L



Figure 3

HAOA100L



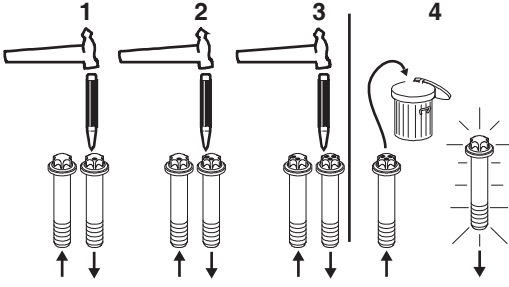
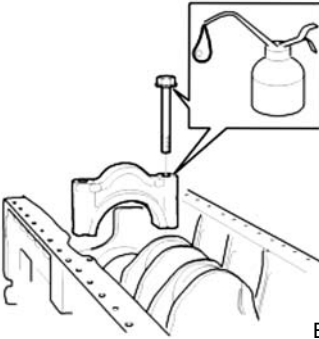
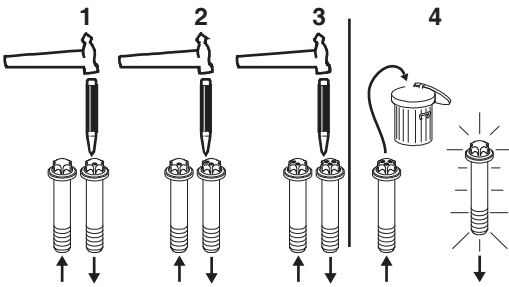
# Engine

Edition 1

# IMPORTANT

Tightening torques for threaded joints in engines.

If the tightening torque is not available in the table for each engine, refer to the special and normal tightening torques tables.

Engine Assembly	
<b>Cylinder Block</b>	
<ul style="list-style-type: none"> <li>Piston cooling nozzle: 23 N.m</li> </ul>	
<b>Main Bearing Cap</b>	
<p><b>NOTE:</b> <i>The screws can only be reused 3 times. Mark the screws each time before fitting.</i></p>          <ul style="list-style-type: none"> <li>Torx screw (M19): 110 N.m + 90°</li> <li>Hexagon screw (M19): 110 N.m + 90°</li> </ul>	 <p style="text-align: right;">EX1301810</p>           <p style="text-align: right;">EX1301811</p>
<b>Connecting Rod Cap</b>	
<p><b>NOTE:</b> <i>The screws can only be reused 3 times. Mark the screws each time before fitting.</i></p>	 <p style="text-align: right;">EX1301810</p>

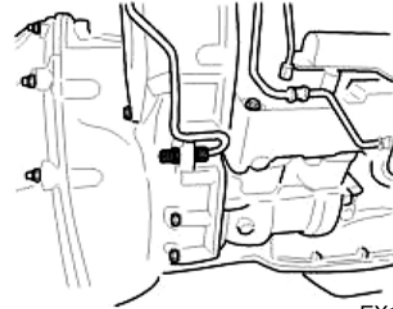
- Torx screw: 50 N.m + 90°
- Check torque: 170 N.m



EX1302070

### Flywheel Housing

- Lead-in union: 40 N.m ±6

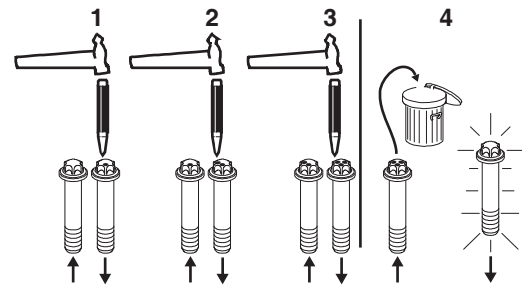


EX1301813

## Cylinder Head and Valve Package

### Cylinder Head

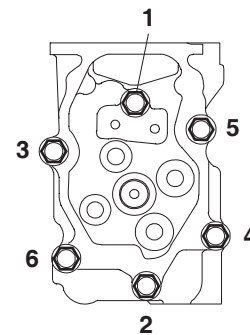
**NOTE:** *The screws can only be reused 3 times. Mark the screws each time before fitting.*



EX1301810

Cylinder head bolt, tightened in four stages

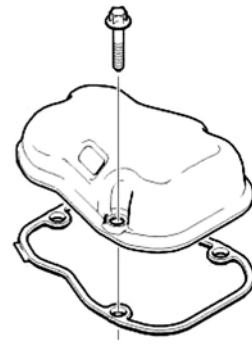
- First stage: 60 N.m
- Second stage: 150 N.m
- Third stage: 250 N.m
- Fourth stage: 90°



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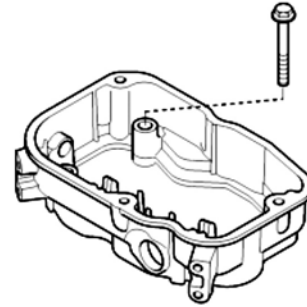
## Rocker Cover

- Rocker cover, upper: 18 N.m



EX1301815

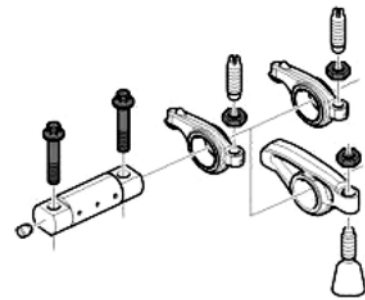
- Rocker cover, lower: 18 N.m



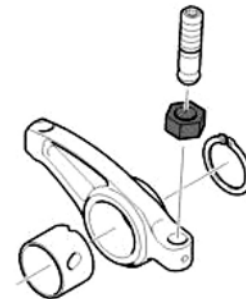
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## Valve Mechanism

- Adjusting screw nut on rocker arm: 35 N.m

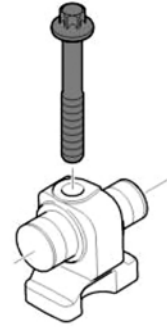


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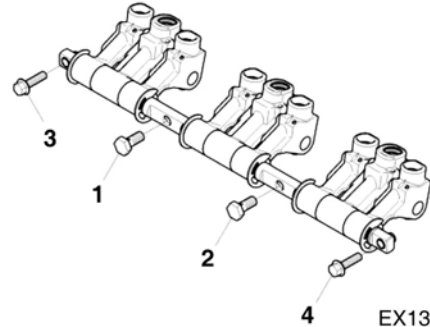
EX1301823

- Screw for rocker arm shaft bearing retainer:  
90 N.m + 60°



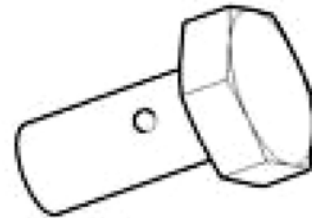
EX1301824

### Roller Tappet Shaft



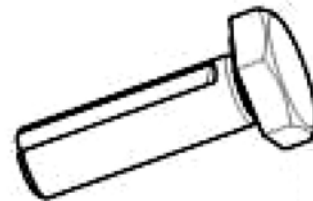
EX1301826

- Banjo screw for roller tappet shaft (engines produced earlier): 33 N.m



EX1301827

- Slotted screw for roller tappet shaft (engines produced later): 40 N.m

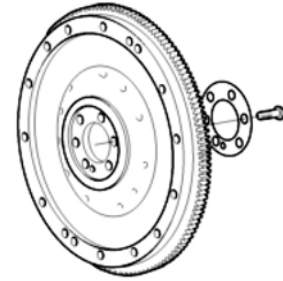


EX1301828

## Crank Mechanism

### Flywheel

- M18 flange screw: 180 N.m + 120°



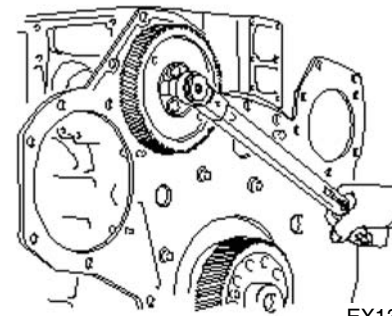
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### Torsion Damper

- Torsion damper hub: 90 N.m + 30°

### Timing Gear

- Intermediate gear: 50 N.m + 60°
- Camshaft gear: 20 N.m + 40°

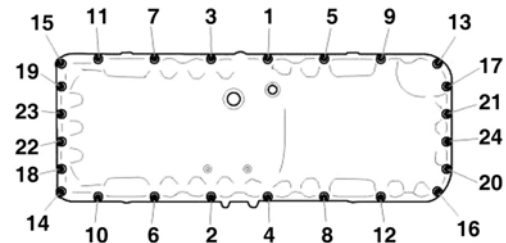


EX1301830

## Lubrication System

### Oil sump

- Cylinder block, 8.8 screw: 26 N.m
- Cylinder block, 10.9 screw: 32 N.m
- Against cylinder block, 8.8 screw with spacer: 26 N.m



EX1301833

### Oil Sump, Plastic

- Oil sump, spring screw: 20 N.m

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