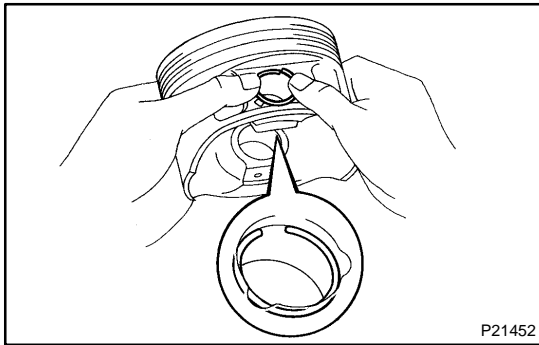


REASSEMBLY

HINT:

- Thoroughly clean all parts to be assembled.
- Before installing the parts, apply new engine oil to all sliding and rotating surfaces.
- Replace all gaskets, O-rings and oil seals with new parts.



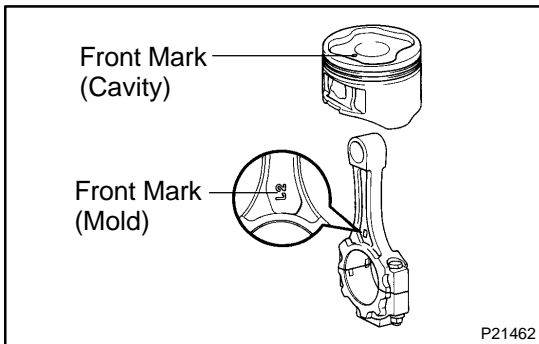
1. ASSEMBLE PISTON AND CONNECTING ROD

- (a) Using a small screwdriver, install a new snap ring at one end of the piston pin hole.

HINT:

Be sure that end gap of the snap ring is not aligned with the pin hole cutout portion of the piston.

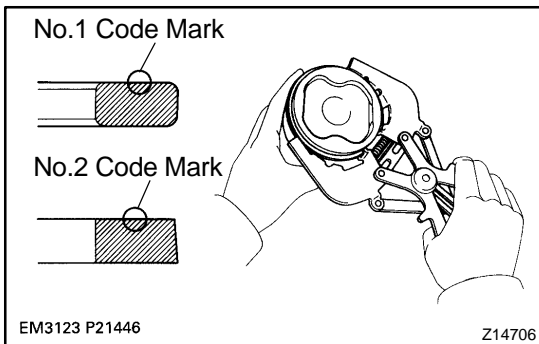
- (b) Gradually heat the piston to about 60°C (140°F).



- (c) Coat the piston pin with engine oil.
 (d) Align the front marks of the piston and connecting rod, and push in the piston pin with your thumb.
 (e) Using a small screwdriver, install a new snap ring on the other end of the piston pin hole.

HINT:

Be sure that end gap of the snap ring is not aligned with the pin hole cutout portion of the piston.

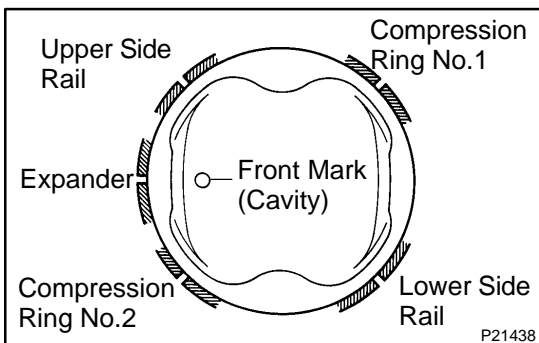


2. INSTALL PISTON RINGS

- (a) Install the oil ring expander and 2 side rails by hand.
 (b) Using a piston ring expander, install the 2 compression rings with the code mark facing upward.

Code mark:

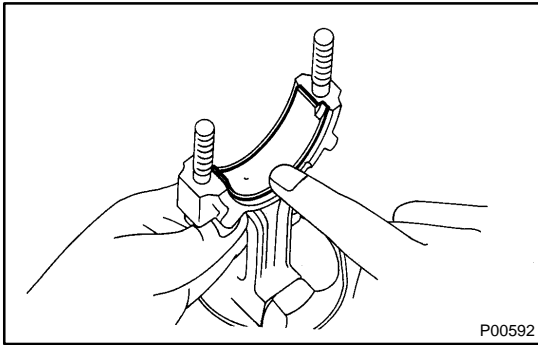
No.1	1R or T
No.2	2R or T



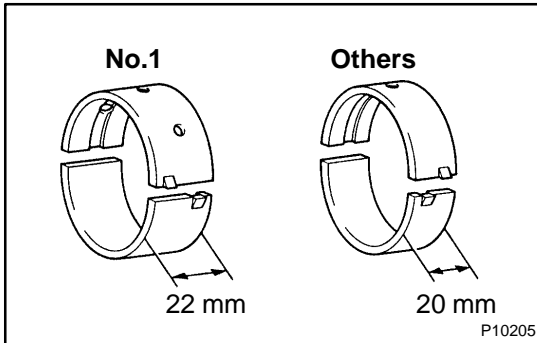
- (c) Position the piston rings so that the ring ends are as shown.

NOTICE:

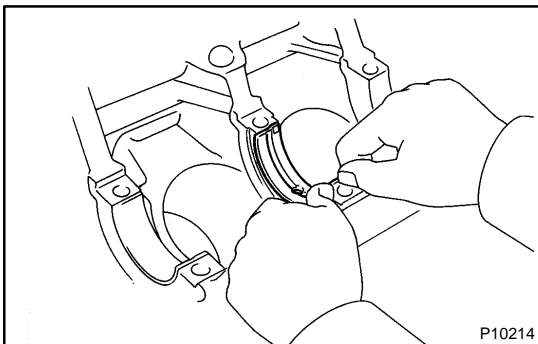
Do not align the ring ends.

**3. INSTALL BEARINGS**

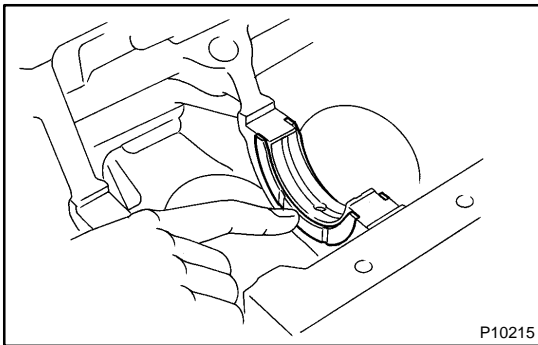
- (a) Align the bearing claw with the groove of the connecting rod or connecting cap.
- (b) Install the bearings in the connecting rod and connecting rod cap.

**4. INSTALL MAIN BEARINGS****HINT:**

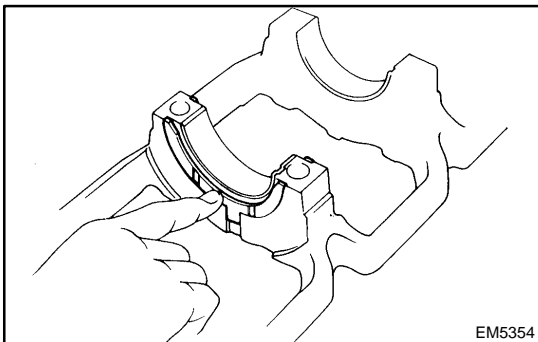
- Main bearings come in widths of 20 mm (0.79 in.) and 22 mm (0.87 in.). Install the 22 mm (0.87 in.) bearings in the No.1 cylinder block journal position with the main bearing caps. Install the 20 mm (0.79 in.) bearings in the other positions.
- Upper bearings have an oil holes; lower bearings do not.



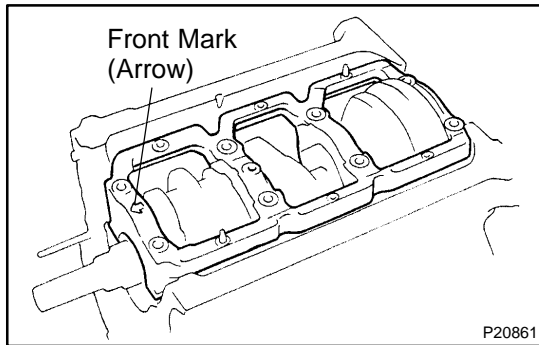
- (a) Align the bearing claw with the claw groove of the main bearing cap or cylinder block.
- (b) Install the bearings in the cylinder block and main bearing cap.

**5. INSTALL UPPER THRUST WASHERS**

Install the thrust washers under the No.2 journal position of the cylinder block with the oil grooves facing outward.

6. PLACE CRANKSHAFT ON CYLINDER BLOCK**7. PLACE MAIN BEARING CAP AND LOWER THRUST WASHERS ON CYLINDER BLOCK**

- (a) Install the thrust washers on the No.2 journal position of the bearing cap with the grooves facing outward.

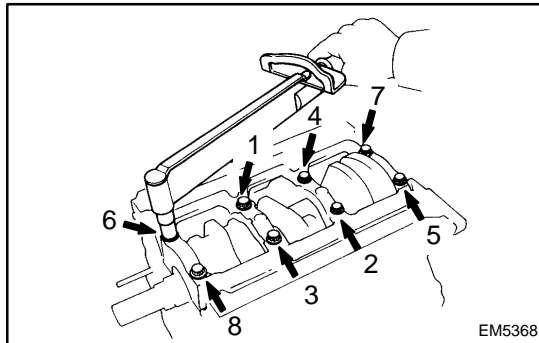


- (b) Install the main bearing cap with the front mark facing forward.

8. INSTALL MAIN BEARING CAP BOLTS

HINT:

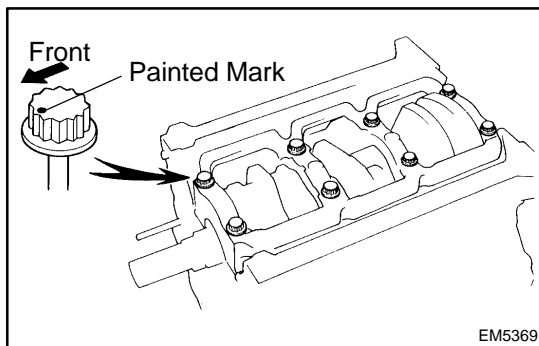
- The main bearing cap bolts are tightened in 2 progressive steps (steps (b) and (d)).
- If any main bearing cap bolt is broken or deformed, replace it.



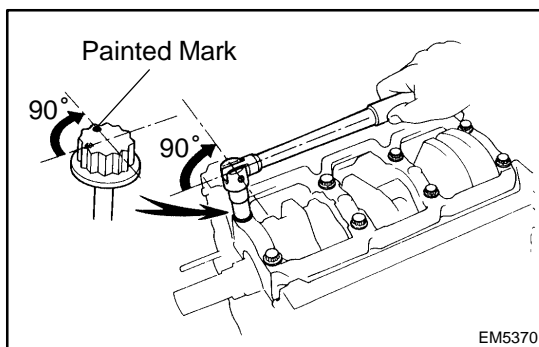
- (a) Apply a light coat of engine oil on the threads and under the heads of the main bearing cap bolts.
- (b) Install and uniformly tighten the 8 main bearing cap bolts in several passes, in the sequence shown.

Torque: 61 N·m (625 kgf·cm, 45 ft·lbf)

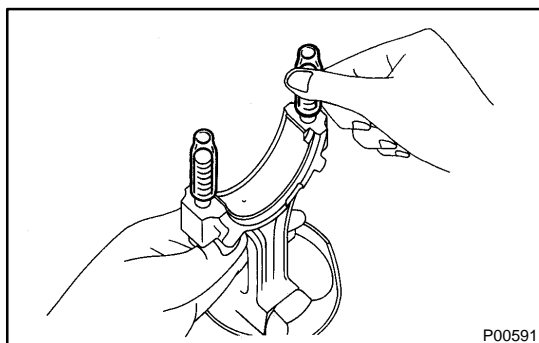
If any one of the main bearing cap bolts does not meet the torque specification, replace the cap bolt.



- (c) Mark the front of the main bearing cap bolt with paint.

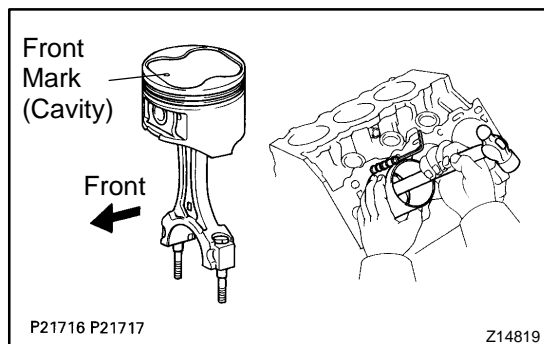


- (d) Retighten the main bearing cap bolts by 90° in the numerical order shown.
- (e) Check that the painted mark is now at a 90° angle to the front.
- (f) Check that the crankshaft turns smoothly.
- (g) Check the crankshaft thrust clearance. (See page [EM-81](#))

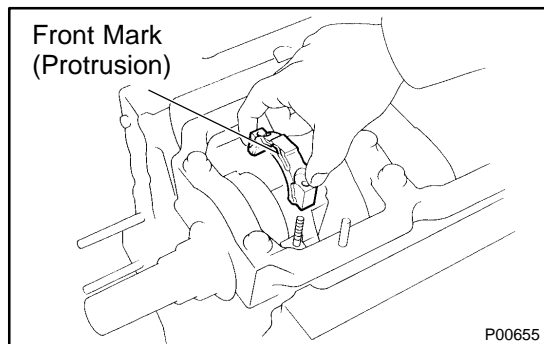


9. INSTALL PISTON AND CONNECTING ROD ASSEMBLIES

- (a) Cover the connecting rod bolts with a short piece of hose to protect the crankshaft from damage.

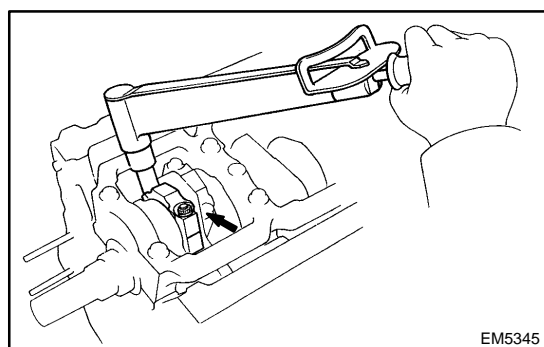


- (b) Using a piston ring compressor, push the correctly numbered piston and connecting rod assemblies into each cylinder with the front mark of the piston facing forward.



10. PLACE CONNECTING ROD CAP ON CONNECTING ROD

- (a) Match the numbered connecting rod cap with the connecting rod.
 (b) Install the connecting rod cap with the front mark facing forward.



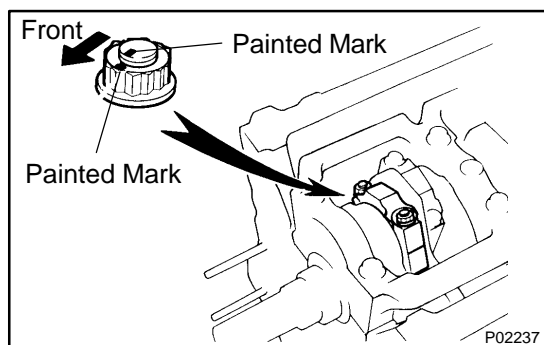
11. INSTALL CONNECTING ROD CAP NUTS

HINT:

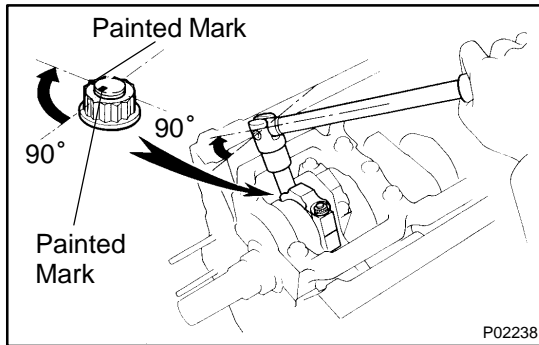
- The connecting rod cap nuts are tightened in 2 progressive steps (steps (b) and (d)).
 - If any connecting rod bolt is broken or deformed, replace it.
- (a) Apply a light of engine oil on the threads and under the nuts of the connecting rod cap.
 (b) Install and alternately tighten the nuts of the connecting rod cap in several passes.

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

If any one of the connecting rod cap nuts does not meet the torque specification, replace the cap nut.



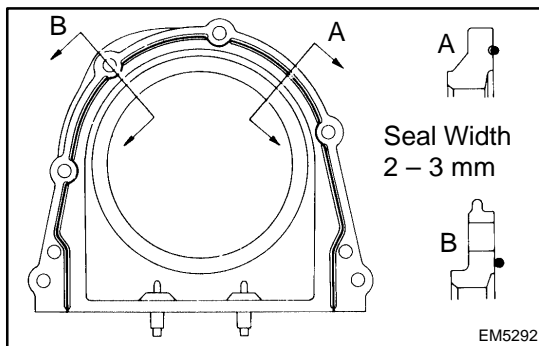
- (c) Mark the front of the connecting rod cap nut and bolt with paint.



- (d) Retighten the connecting rod cap nuts 90° as shown.
- (e) Check that the painted mark is now at a 90° angle to the front.
- (f) Check that the crankshaft turns smoothly.
- (g) Check the connecting rod thrust clearance (See page [EM-81](#)).

12. INSTALL REAR OIL SEAL RETAINER

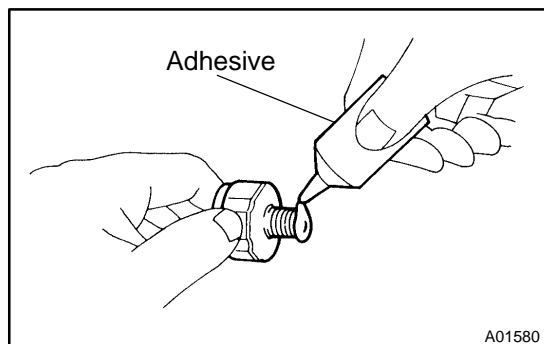
- (a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the retainer and cylinder block.
 - Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces and sealing groove.
 - Thoroughly clean all components to remove all the loose material.
 - Using a non-residue solvent, clean both sealing surfaces.



- (b) Apply seal packing to the oil seal retainer as shown in the illustration.

Seal packing: Part No.08826-00080 or equivalent

- Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening.
 - Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
 - Immediately remove nozzle from the tube and reinstall cap.
- (c) Install the oil seal retainer with the 6 bolts.
Torque: 8 N·m (80 kgf·cm, 71 in.-lbf)
13. **INSTALL OIL PUMP (See page [LU-14](#))**
 14. **w/Oil Cooler:**
INSTALL OIL COOLER (See page [LU-20](#))
 15. **INSTALL COOLANT DRAIN COCK**
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
 16. **INSTALL RH AND LH ENGINE MOUNTING BRACKETS**
Torque: 44 N·m (440 kgf·cm, 32 ft·lbf)
 17. **INSTALL OIL FILTER UNION**
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)
 18. **INSTALL OIL FILTER (See page [LU-2](#))**

**19. INSTALL OIL PRESSURE SWITCH**

- (a) Apply adhesive to 2 or 3 threads of the oil pressure switch.

Adhesive:

Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

- (b) Using SST, install the oil pressure switch.

SST 09816-30010

Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)

20. INSTALL GENERATOR ADJUSTING BAR

Torque: 42 N·m (420 kgf·cm, 31 ft·lbf)

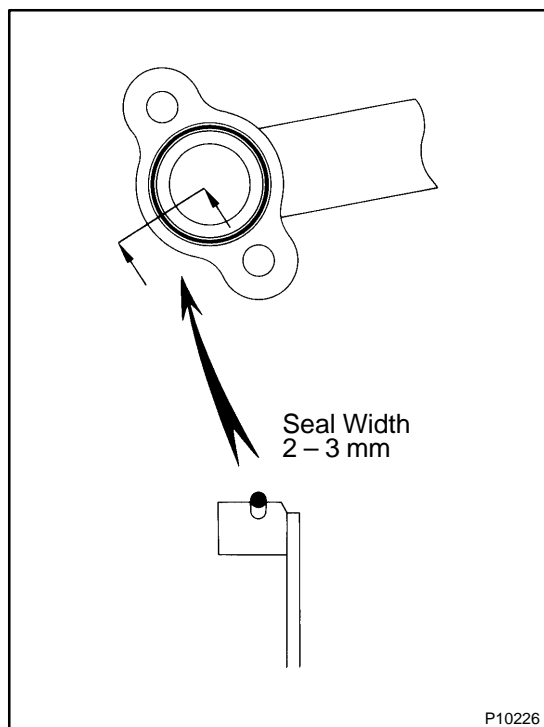
21. INSTALL WATER PUMP (See page CO-8)**22. INSTALL KNOCK SENSORS (See page SF-58)****23. INSTALL NO.2 IDLER PULLEY BRACKET**

Torque: 38 N·m (380 kgf·cm, 28 ft·lbf)

24. INSTALL WATER BYPASS PIPE WITH KNOCK SENSOR WIRE

- (a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the bypass and cylinder block.

- Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces and sealing groove.
- Thoroughly clean all components to remove all the loose material.
- Using a non-residue solvent, clean both sealing surfaces.



- (b) Apply seal packing to the groove of the bypass pipe.

Seal packing: Part No. 08826-00100 or equivalent

- Install a nozzle that has been cut to a 2 – 3 mm (0.08 – 0.12 in.) opening.

HINT:

Avoid applying an excessive amount to the surface.

- Parts must be assembled within 5 minutes of application. Otherwise the material must be removed and reapplied.
- Immediately remove nozzle from the tube and reinstall cap.

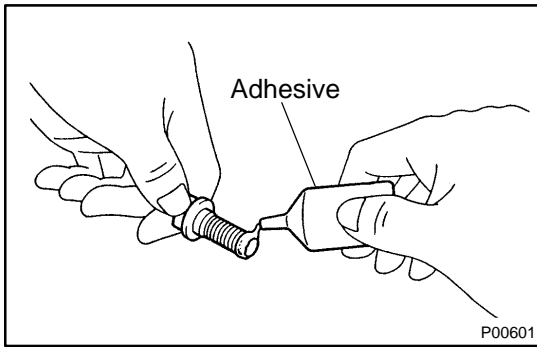
- (c) Install the bypass pipe with the 2 bolts and nut.

Torque: 8.5 N·m (85 kgf·cm, 75 in.-lbf)

- (d) Connect the 2 knock sensor connectors.

25. INSTALL CYLINDER HEADS (See page EM-52)**26. INSTALL PULLEYS AND TIMING BELT (See page EM-19)****27. REMOVE ENGINE STAND****28. INSTALL REAR END PLATE**

Torque: 7.5 N·m (75 kgf·cm, 66 in.-lbf)

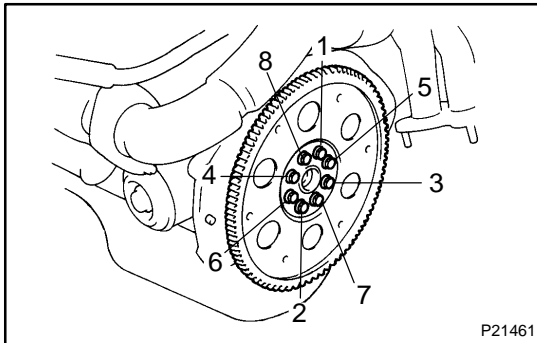
**29. A/T:****INSTALL DRIVE PLATE**

- (a) Apply adhesive to 2 or 3 threads of the mounting bolt end.

Adhesive:

Part No. 08833-00070, THREE BOND 1324 or equivalent

- (b) Install the front spacer, drive plate and rear spacer on the crankshaft.



- (c) Install and uniformly tighten the 8 mounting bolts in several passes, in the sequence shown.

Torque: 83 N·m (850 kgf·cm, 61 ft·lbf)

30. M/T:**INSTALL FLYWHEEL (See step 29)**

Torque: 85 N·m (850 kgf·cm, 63 ft·lbf)