TOYOTA
SERVICE BULLETIN

Group: 01 No.: 04 Date: Aug, 16

RAV4

Corrections to Repair Manual RM01N3E

Please ensure these pages are distributed to all relevant staff for their information; and a copy made available for future reference, with the above repair manual.

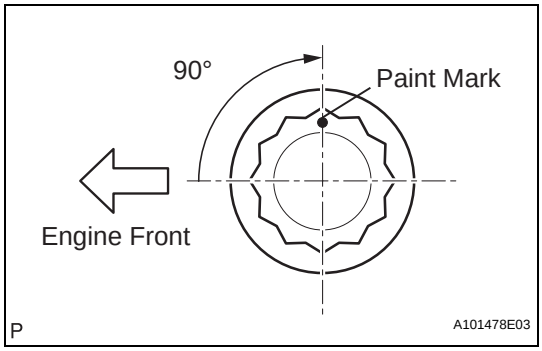
Section	Title	Paragraph
2AZ-FE ENGINE MECHANICAL	ENGINE UNIT	REASSEMBLY (2005/11 - 2007/01)
		REASSEMBLY (2007/01 - 2007/08)
		REASSEMBLY (2007/08 -)

The revised pages listed above are attached.

(The corrected parts are indicated by arrows.)

This bulletin does not cause the Flat Rate Manual to be changed

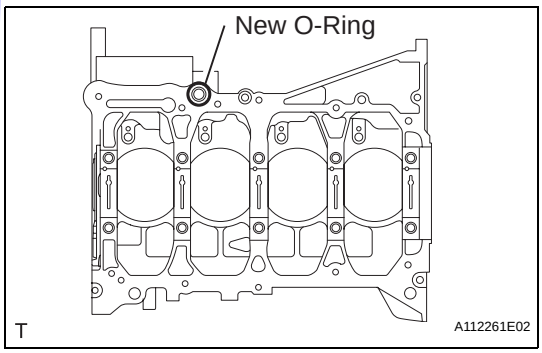
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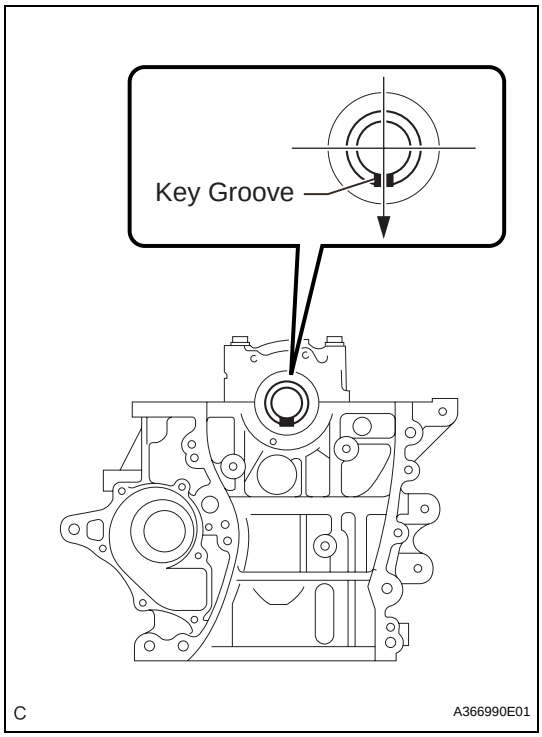
(g) Mark the front of the connecting rod bolts with paint.
(h) Retighten the cap bolts 90°as shown in the illustration.
(i) Check that the crankshaft turns smoothly.

11. INSTALL STIFFENING CRANKCASE ASSEMBLY

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



(b) Place a new O-ring on the cylinder block as shown in the illustration.
(c) Temporarily tighten the pulley set bolt.



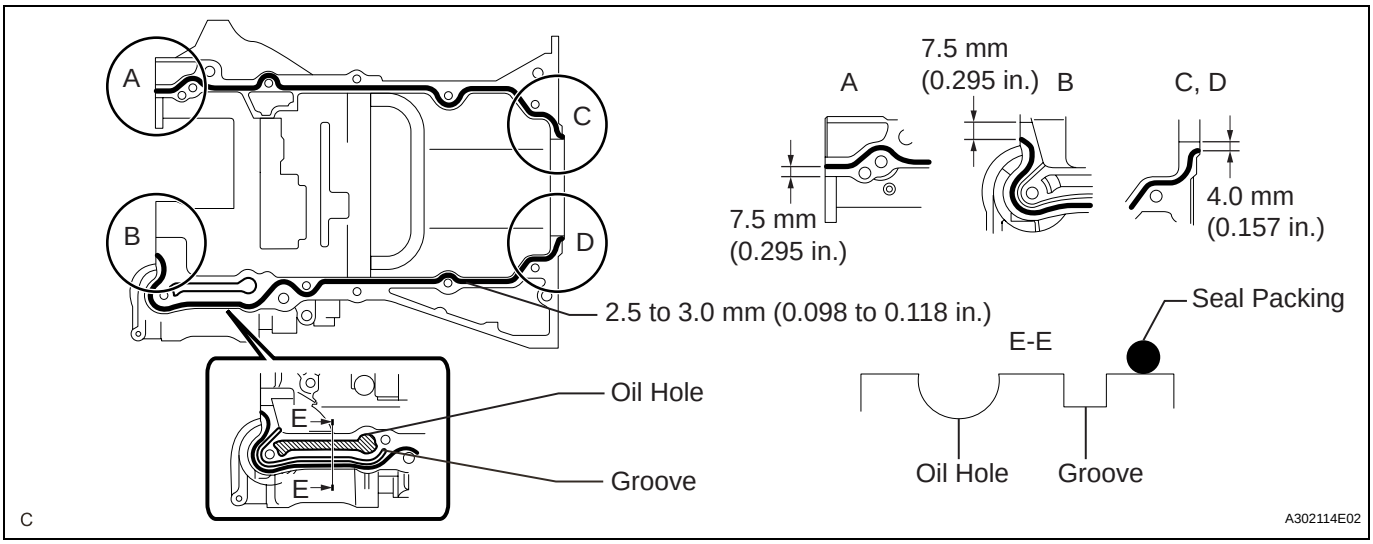
(d) Turn the crankshaft so that the key groove is facing downward.

EM

[Corrected]

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(e) Apply seal packing in a continuous bead (diameter: 2.5 to 3.0 mm (0.098 to 0.118 in.)) to the places shown in the illustration.



Seal packing:
Toyota Genuine Seal Packing Black, Three bond 1207B or Equivalent

NOTICE:

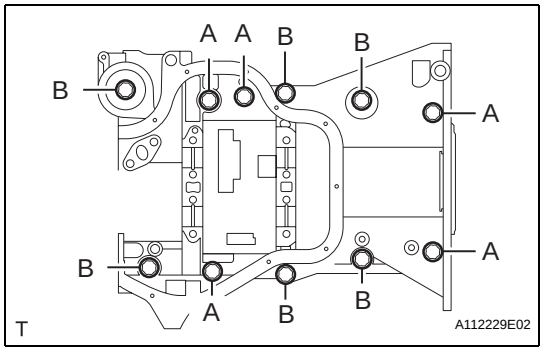
- **Remove any oil from the contact surface.**
- **Ensure that no oil packing enters the oil path. The oil path has a groove to catch excess seal packing. Do not apply seal packing to the oil path side of the groove or to the groove itself, or seal packing may enter the oil path.**
- **Install the stiffening crankcase assembly within 3 minutes and tighten the bolts within 15 minutes of applying seal packing.**
- **Do not add engine oil for at least 2 hours after the installation.**

(f) Install the stiffening crankcase assembly to the cylinder block.

(g) Temporarily install the stiffening crankcase assembly with the 11 bolts.

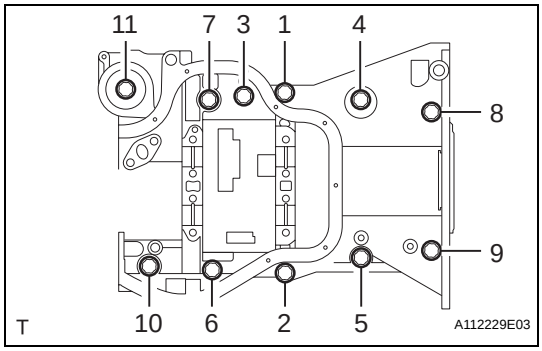
Bolt Length

Item	Bolt Length
Bolt A	112 mm (4.41 in.)
Bolt B	35 mm (1.38 in.)



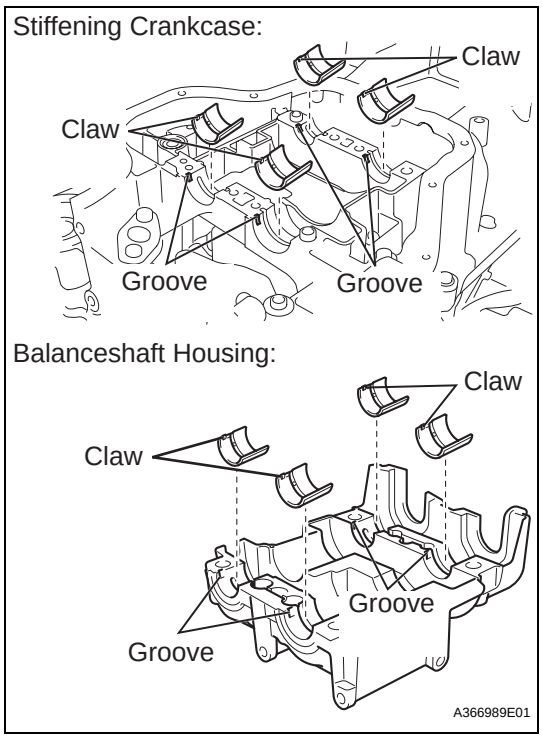
[All corrected]

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(h) Uniformly tighten the bolts.
Torque: 24 N*m (245 kgf*cm, 18 ft.*lbf)

(i) Wipe off the excess seal packing with a clean piece of cloth.

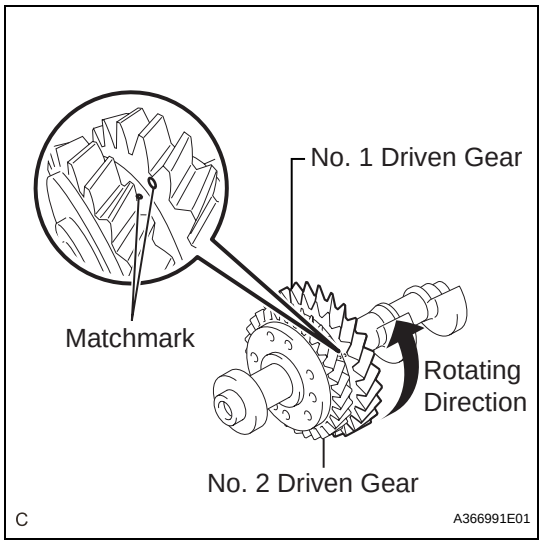


12. INSTALL BALANCE SHAFT BEARING

(a) Clean each No. 1 balanceshaft bearing installation surface and inner and outer surfaces of the No. 1 balanceshaft bearing.
NOTICE:
Do not apply engine oil to the No. 1 balanceshaft bearing installation surface or the outer surface of the No. 1 balanceshaft bearing.

(b) Align the claw of the No. 1 balanceshaft bearing with the groove of the balanceshaft housing and install the 8 No. 1 balanceshaft bearings.

(c) Apply engine oil to the inner surface of the No. 1 balanceshaft bearing.

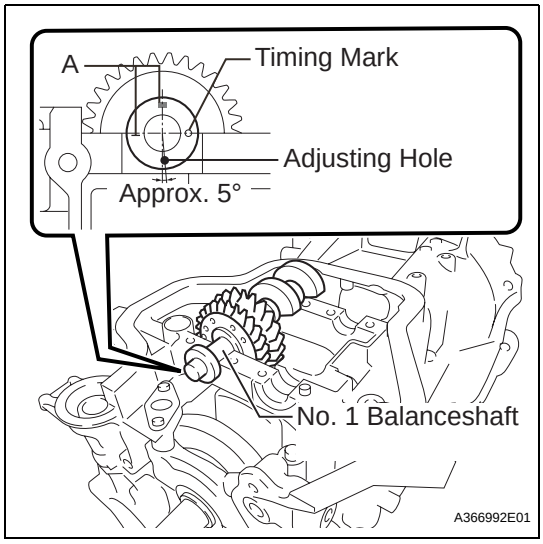


13. INSTALL BALANCE SHAFT

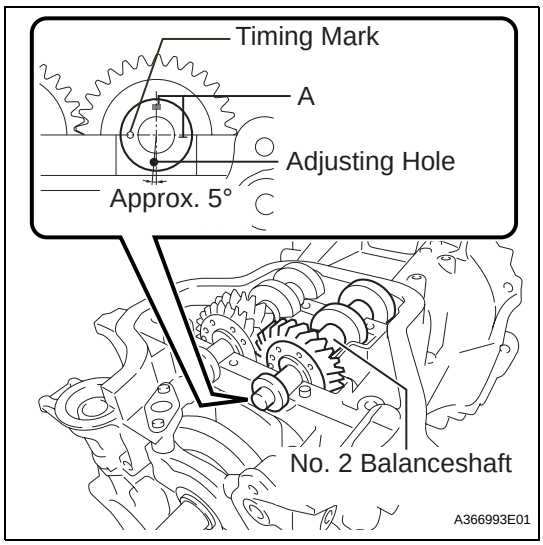
(a) Turn the No. 1 driven gear counterclockwise until it stops, then align the matchmark of the No. 1 driven gear with that of the No. 2 driven gear.

[All corrected]

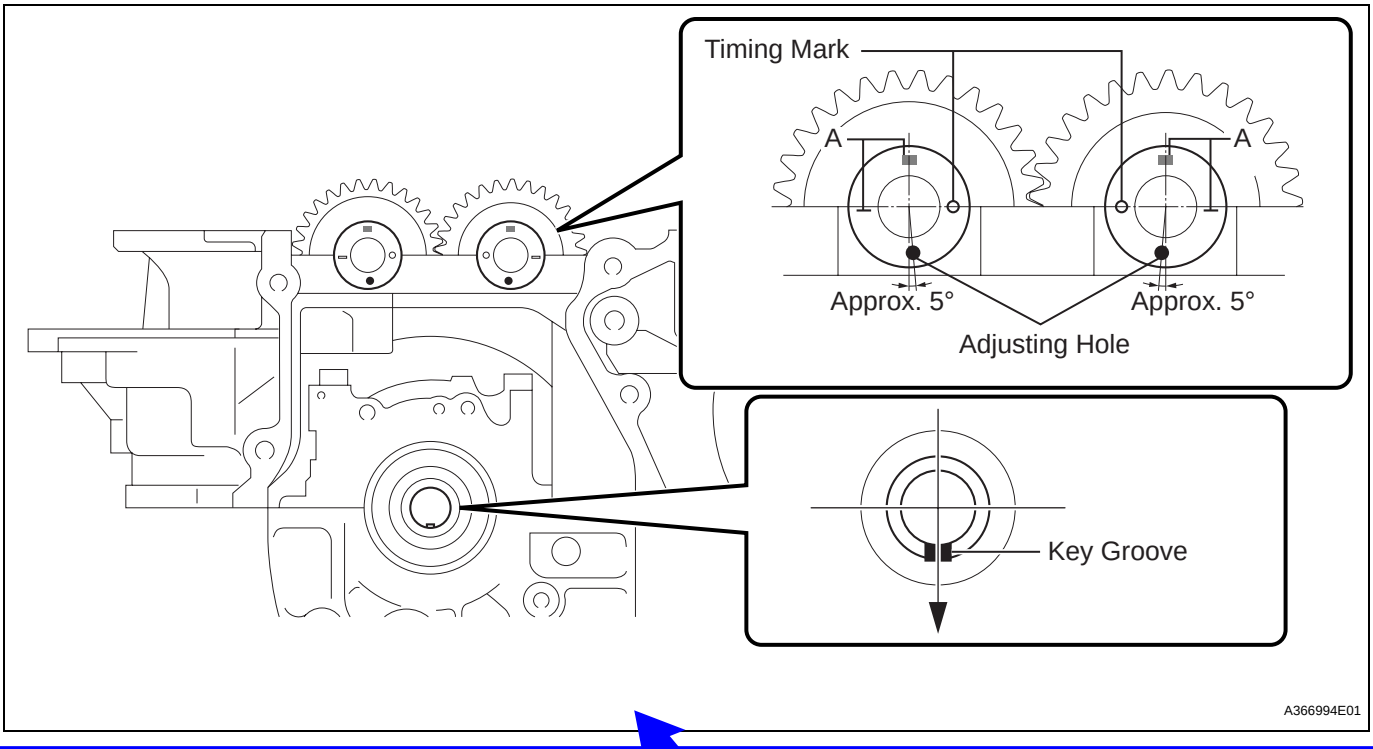
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(b) Install the No. 1 balanceshaft with the timing mark positioned as shown in the illustration. [*1]
HINT:
(A) is not a timing mark.



(c) Install the No. 2 balanceshaft with the timing mark positioned as shown in the illustration.
NOTICE:
Make sure that the key groove of the crankshaft and timing mark of the balanceshafts are positioned as shown in the illustration.



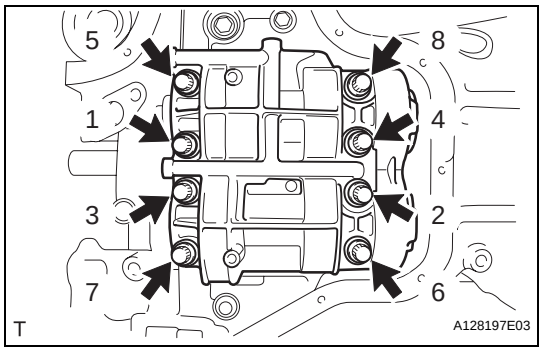
[All corrected]

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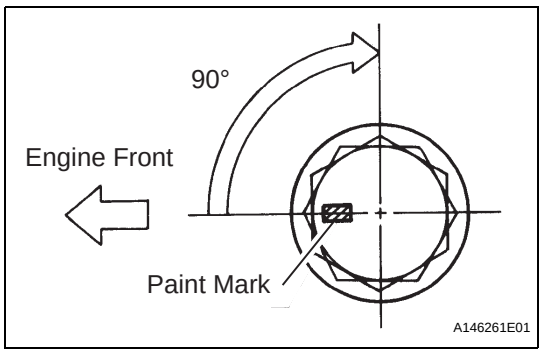
HINT:
(A) is not a timing mark.

(d) Apply a light coat of engine oil under the heads of the balanceshaft housing bolts.

(e) Install the balanceshaft housing bolts.
NOTICE:
The balanceshaft housing bolts are tightened in 2 progressive steps.

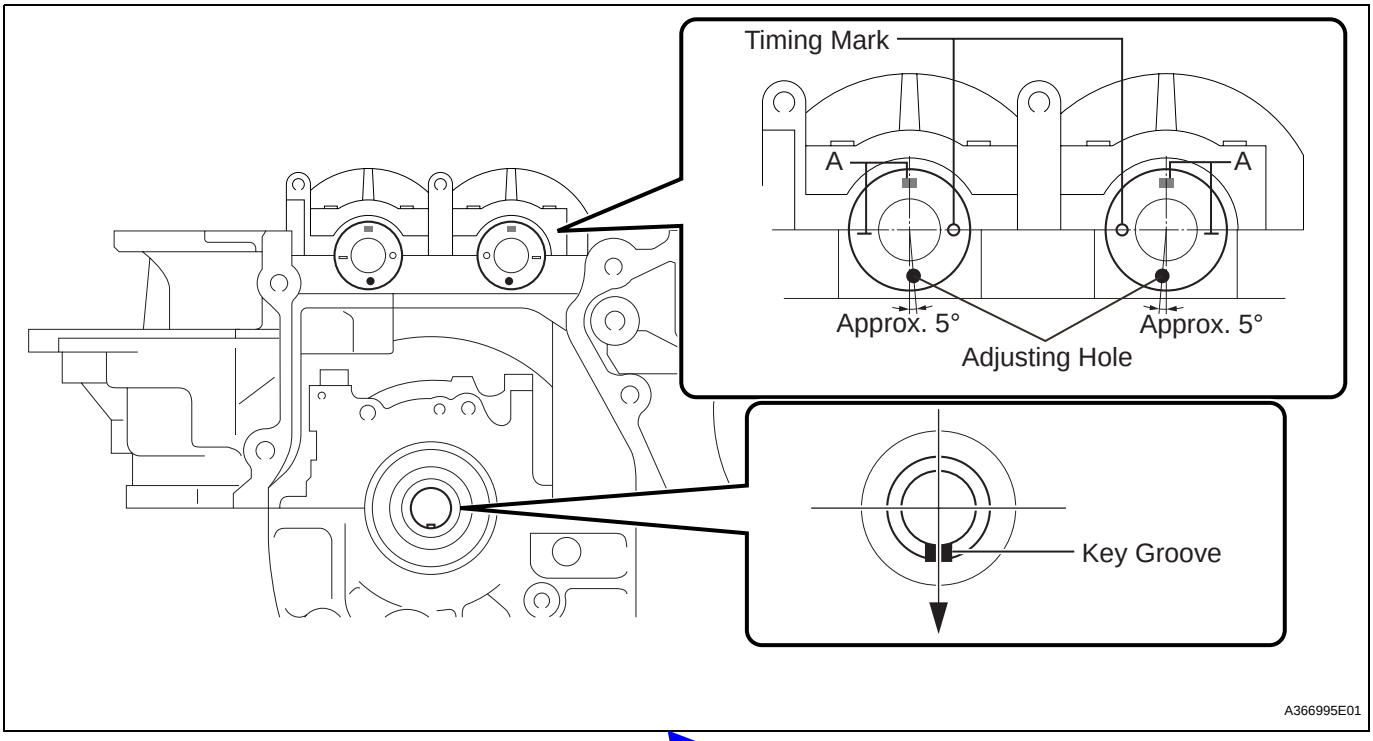


(f) Step 1:
(1) Install and uniformly tighten the 8 bolts in the order shown in the illustration.
Torque: 21.6 N*m (220 kgf*cm, 16 ft.*lbf)



(g) Step 2:
(1) Mark the front side of each balanceshaft housing bolt head with paint.
(2) Tighten the balanceshaft housing bolts 90° in the same order.
NOTICE:
Check that the paint marks are now at a 90° angle to the front.

(h) Turn the crankshaft 360° and check that the timing marks of the balanceshafts are positioned as shown in the illustration with the key groove of the crankshaft facing downward.



[All corrected]

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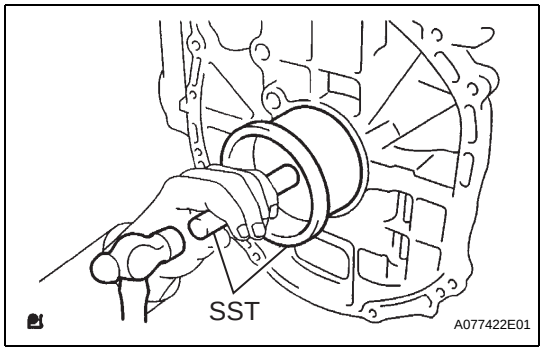
[Corrected]

NOTICE:
If the timing marks are not positioned as shown in the illustration, perform the procedure from step [*1] again.
HINT:
(A) is not a timing mark.

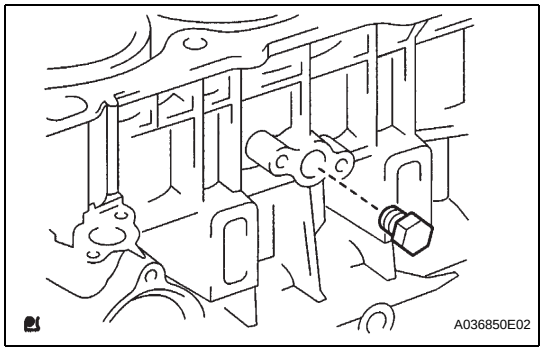
(i) Remove the pulley set bolt.

14. INSTALL ENGINE REAR OIL SEAL

(a) Apply multi-purpose grease to the lip of a new oil seal.
NOTICE:
Keep the lip of foreign objects.

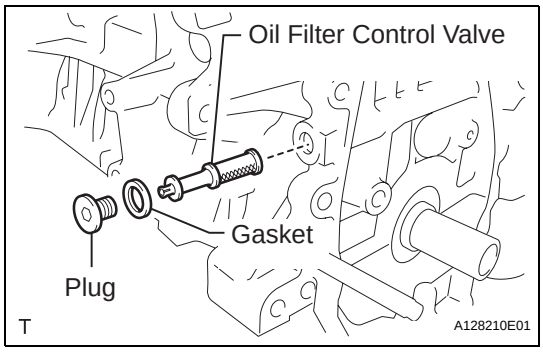


(b) Using SST and a hammer, tap in the new oil seal until its surface is flush with the rear oil seal retainer edge.
SST 09223-15030, 09950-70010 (09951-07100)
NOTICE:
- **Wipe any extra grease off the crankshaft.**
- **Do not tap the oil seal at an angle.**



15. INSTALL NO. 1 TAPER SCREW PLUG (w/o Oil Cooler)

(a) Apply adhesive to 2 or 3 threads of the plug, and install it.
Torque: 26 N*m (265 kgf*cm, 19 ft.*lbf)
Adhesive:
Toyota Genuine Adhesive 1324, Three Bond 1324 or Equivalent
NOTICE:
- **Install the plug within 3 minutes of applying adhesive.**
- **Do not add coolant for at least an hour after installing the plug.**

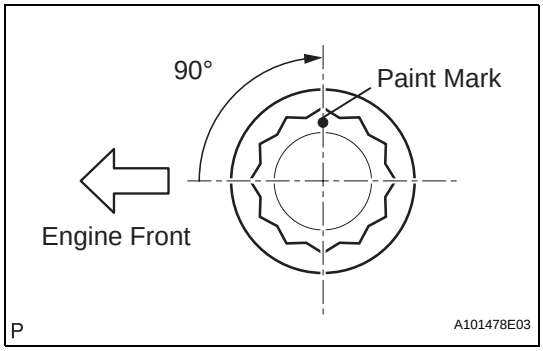


16. INSTALL OIL CONTROL VALVE FILTER

(a) Check that there are no foreign objects on the mesh part of the oil control valve filter.

(b) Using a 6 mm socket hexagon wrench, install a new gasket and the oil control valve filter with the plug.
Torque: 30 N*m (306 kgf*cm, 22 ft.*lbf)

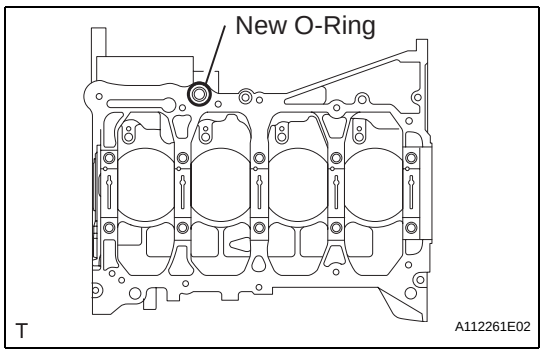
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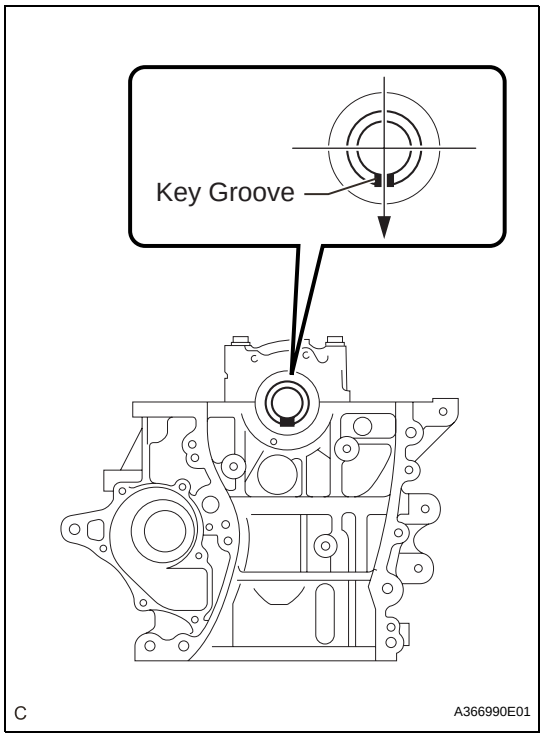
(g) Mark the front of the connecting rod bolts with paint.
(h) Retighten the cap bolts 90°as shown in the illustration.
(i) Check that the crankshaft turns smoothly.

11. INSTALL STIFFENING CRANKCASE ASSEMBLY

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



(b) Place a new O-ring on the cylinder block as shown in the illustration.
(c) Temporarily tighten the pulley set bolt.



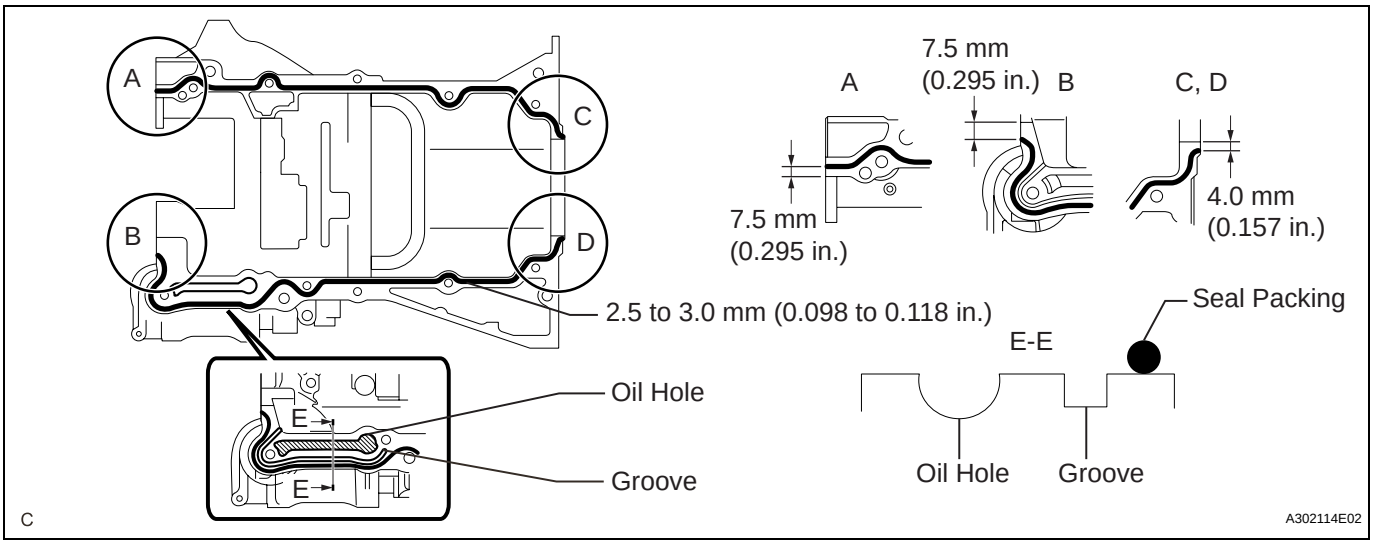
(d) Turn the crankshaft so that the key groove is facing downward.

EM

[Corrected]

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(e) Apply seal packing in a continuous bead (diameter: 2.5 to 3.0 mm (0.098 to 0.118 in.)) to the places shown in the illustration.



Seal packing:
Toyota Genuine Seal Packing Black, Three bond 1207B or Equivalent

NOTICE:

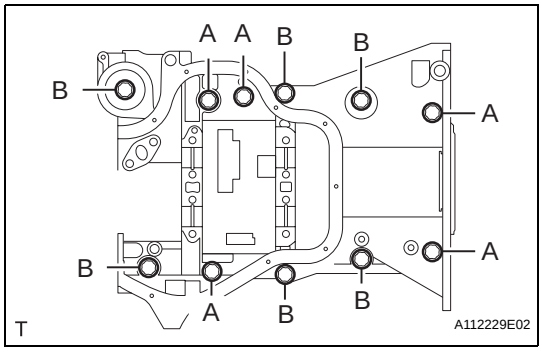
- **Remove any oil from the contact surface.**
- **Ensure that no oil packing enters the oil path. The oil path has a groove to catch excess seal packing. Do not apply seal packing to the oil path side of the groove or to the groove itself, or seal packing may enter the oil path.**
- **Install the stiffening crankcase assembly within 3 minutes and tighten the bolts within 15 minutes of applying seal packing.**
- **Do not add engine oil for at least 2 hours after the installation.**

(f) Install the stiffening crankcase assembly to the cylinder block.

(g) Temporarily install the stiffening crankcase assembly with the 11 bolts.

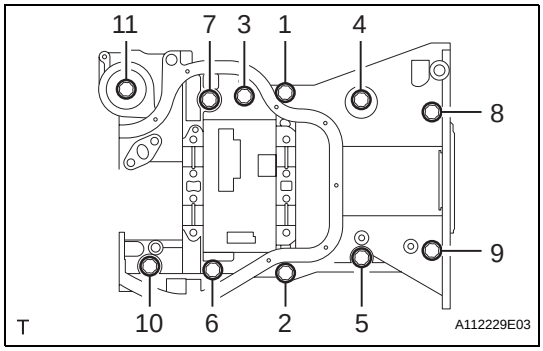
Bolt Length

Item	Bolt Length
Bolt A	112 mm (4.41 in.)
Bolt B	35 mm (1.38 in.)



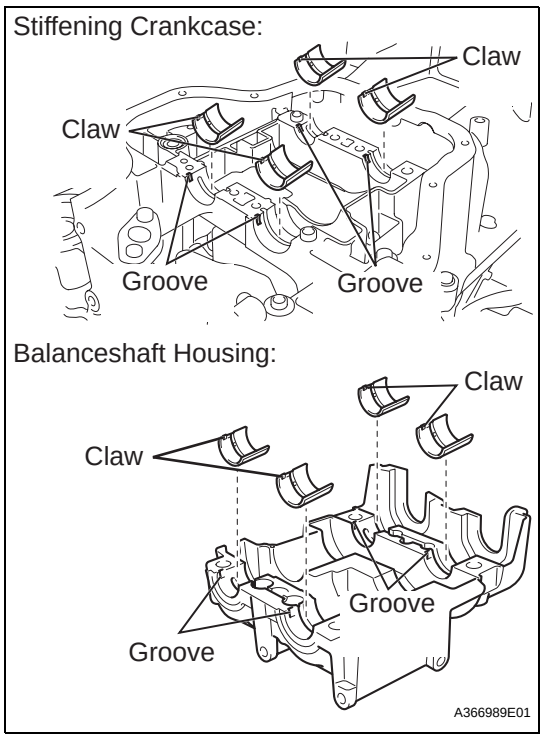
[All corrected]

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(h) Uniformly tighten the bolts.
Torque: 24 N*m (245 kgf*cm, 18 ft.*lbf)

(i) Wipe off the excess seal packing with a clean piece of cloth.

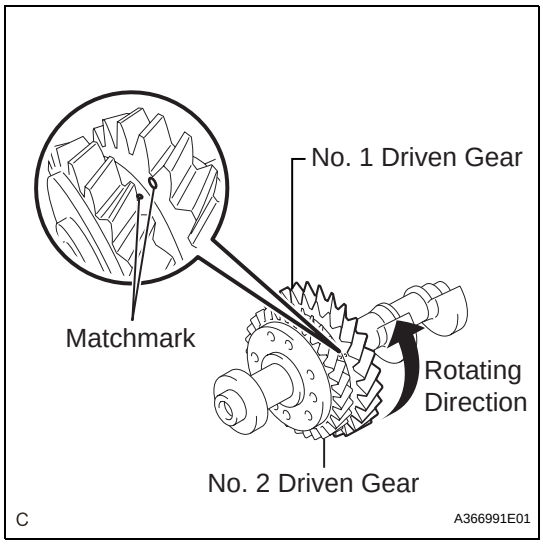


12. INSTALL BALANCE SHAFT BEARING

(a) Clean each No. 1 balanceshaft bearing installation surface and inner and outer surfaces of the No. 1 balanceshaft bearing.
NOTICE:
Do not apply engine oil to the No. 1 balanceshaft bearing installation surface or the outer surface of the No. 1 balanceshaft bearing.

(b) Align the claw of the No. 1 balanceshaft bearing with the groove of the balanceshaft housing and install the 8 No. 1 balanceshaft bearings.

(c) Apply engine oil to the inner surface of the No. 1 balanceshaft bearing.

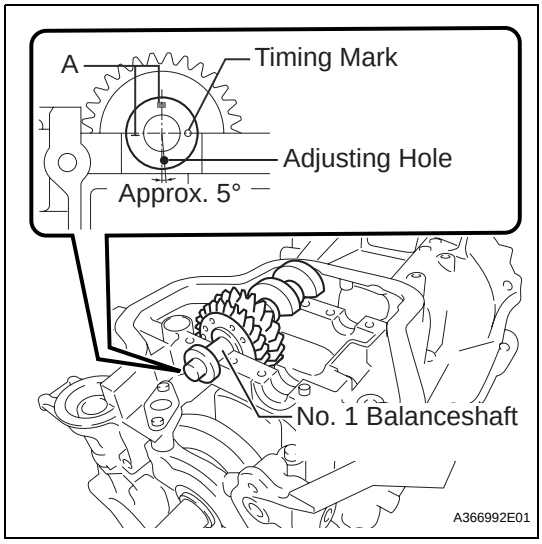


13. INSTALL BALANCE SHAFT

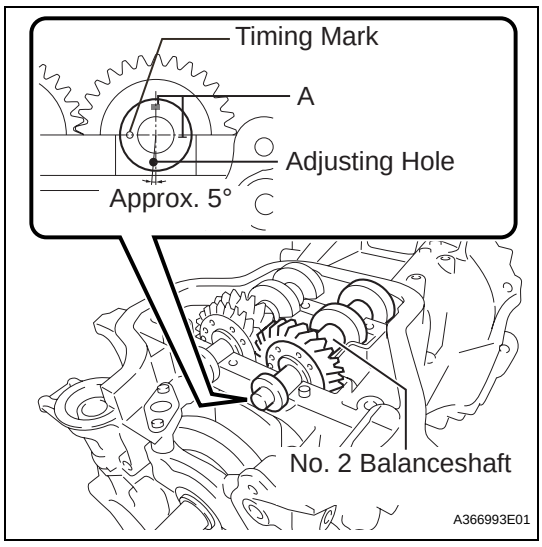
(a) Turn the No. 1 driven gear counterclockwise until it stops, then align the matchmark of the No. 1 driven gear with that of the No. 2 driven gear.

[All corrected]

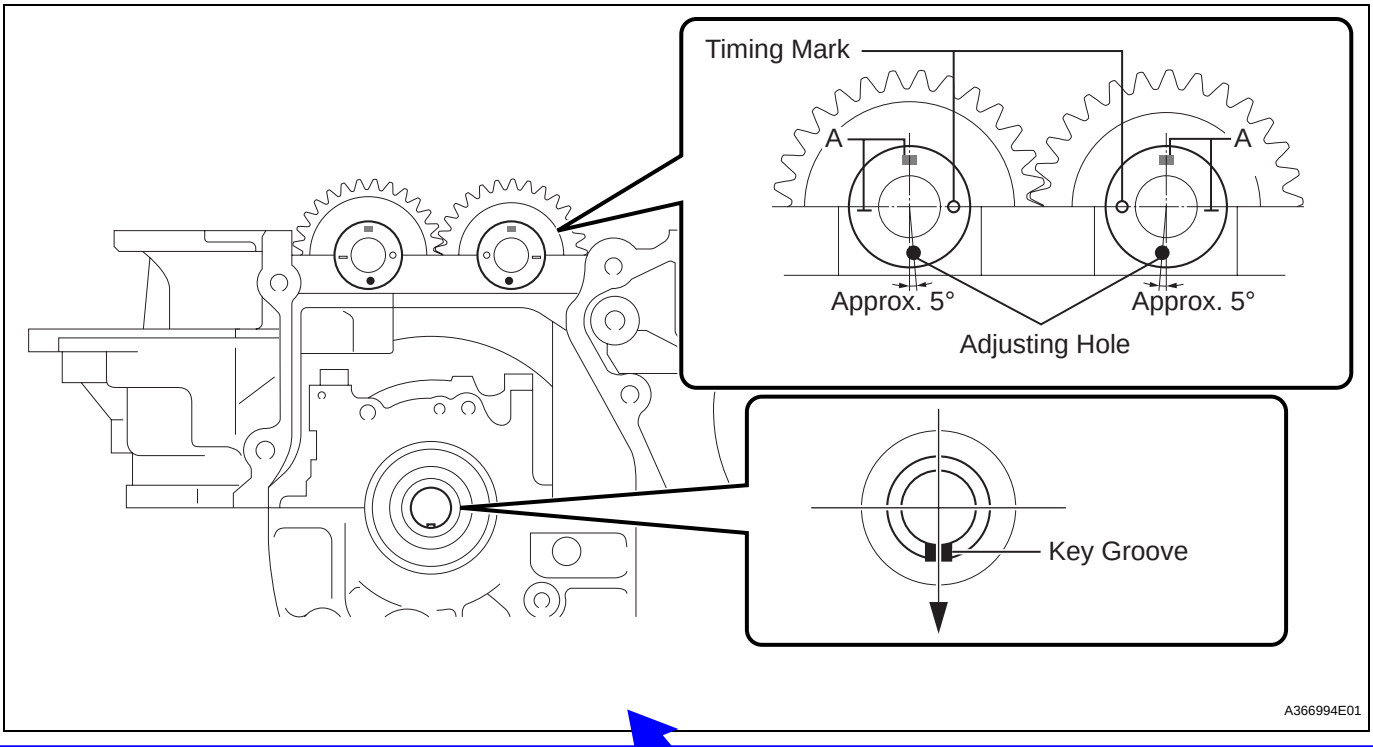
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(b) Install the No. 1 balanceshaft with the timing mark positioned as shown in the illustration. [*1]
HINT:
(A) is not a timing mark.



(c) Install the No. 2 balanceshaft with the timing mark positioned as shown in the illustration.
NOTICE:
Make sure that the key groove of the crankshaft and timing mark of the balanceshafts are positioned as shown in the illustration.



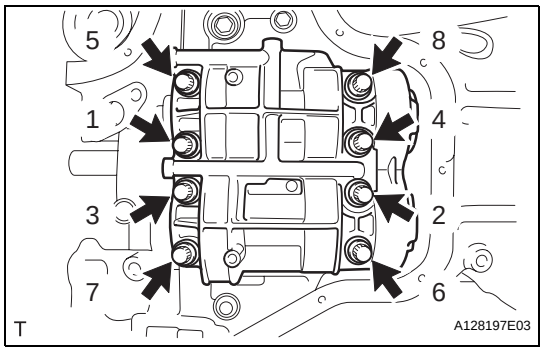
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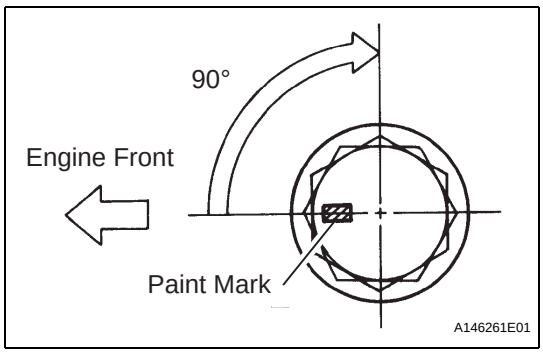
HINT:
(A) is not a timing mark.

(d) Apply a light coat of engine oil under the heads of the balanceshaft housing bolts.

(e) Install the balanceshaft housing bolts.
NOTICE:
The balanceshaft housing bolts are tightened in 2 progressive steps.

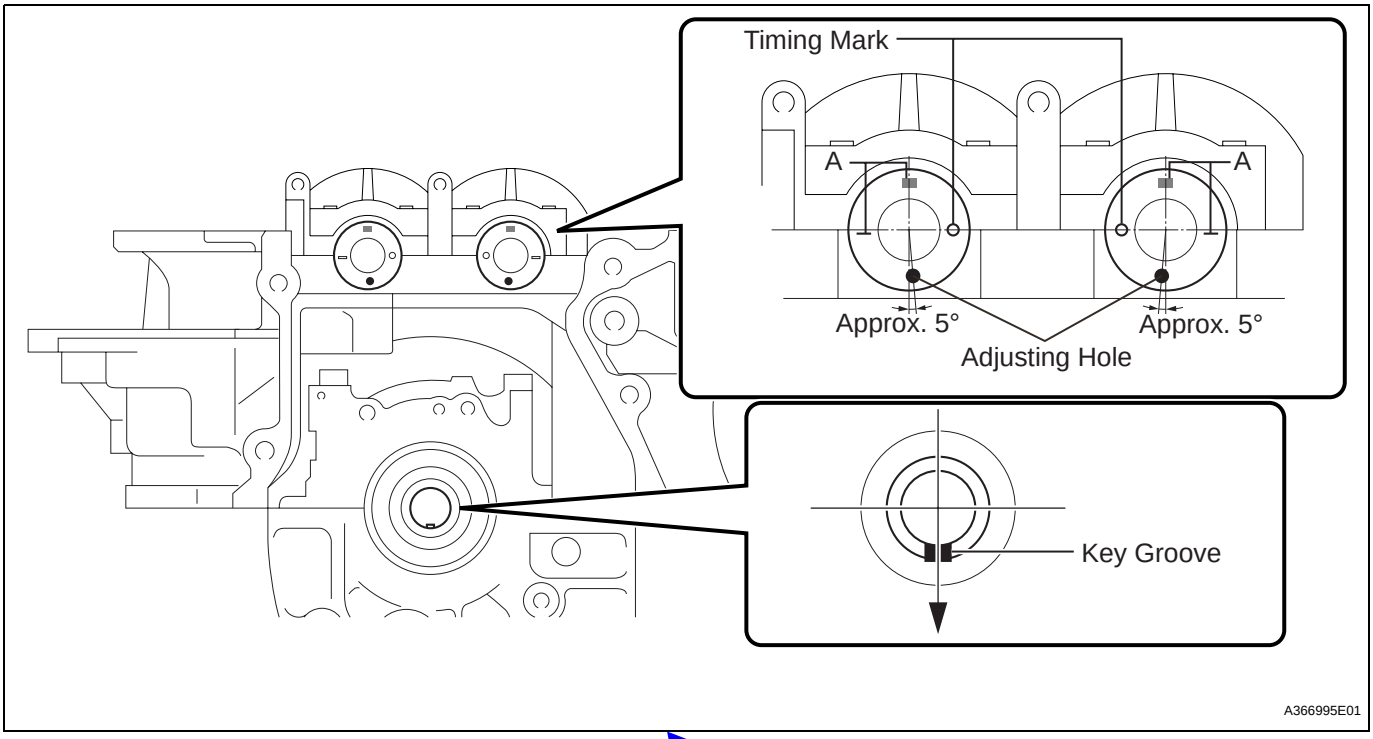


(f) Step 1:
(1) Install and uniformly tighten the 8 bolts in the order shown in the illustration.
Torque: 21.6 N*m (220 kgf*cm, 16 ft.*lbf)



(g) Step 2:
(1) Mark the front side of each balanceshaft housing bolt head with paint.
(2) Tighten the balanceshaft housing bolts 90° in the same order.
NOTICE:
Check that the paint marks are now at a 90° angle to the front.

(h) Turn the crankshaft 360° and check that the timing marks of the balanceshafts are positioned as shown in the illustration with the key groove of the crankshaft facing downward.



[All corrected]

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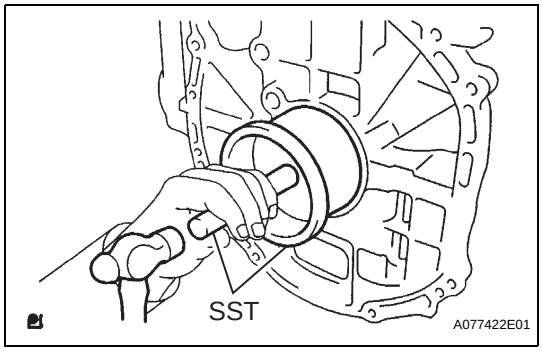
[Corrected]

NOTICE:
If the timing marks are not positioned as shown in the illustration, perform the procedure from step [*1] again.
HINT:
(A) is not a timing mark.

(i) Remove the pulley set bolt.

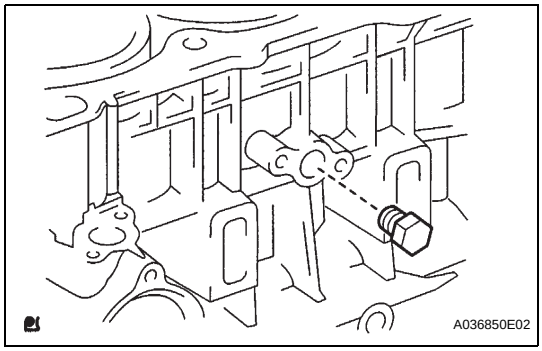
14. INSTALL ENGINE REAR OIL SEAL

(a) Apply multi-purpose grease to the lip of a new oil seal.
NOTICE:
Keep the lip of foreign objects.



(b) Using SST and a hammer, tap in the new oil seal until its surface is flush with the rear oil seal retainer edge.
SST 09223-15030, 09950-70010 (09951-07100)
NOTICE:
- **Wipe any extra grease off the crankshaft.**
- **Do not tap the oil seal at an angle.**

EM



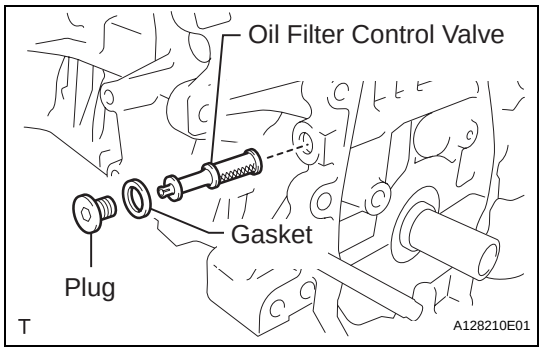
15. INSTALL NO. 1 TAPER SCREW PLUG (w/o Oil Cooler)

(a) Apply adhesive to 2 or 3 threads of the plug, and install it.
Torque: 26 N*m (265 kgf*cm, 19 ft.*lbf)
Adhesive:
Toyota Genuine Adhesive 1324, Three Bond 1324 or Equivalent
NOTICE:
- **Install the plug within 3 minutes of applying adhesive.**
- **Do not add coolant for at least an hour after installing the plug.**

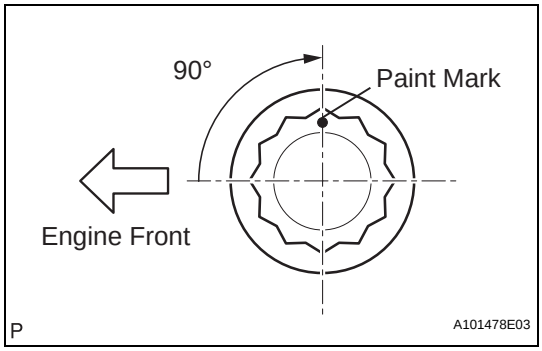
16. INSTALL OIL CONTROL VALVE FILTER

(a) Check that there are no foreign objects on the mesh part of the oil control valve filter.

(b) Using a 6 mm socket hexagon wrench, install a new gasket and the oil control valve filter with the plug.
Torque: 30 N*m (306 kgf*cm, 22 ft.*lbf)



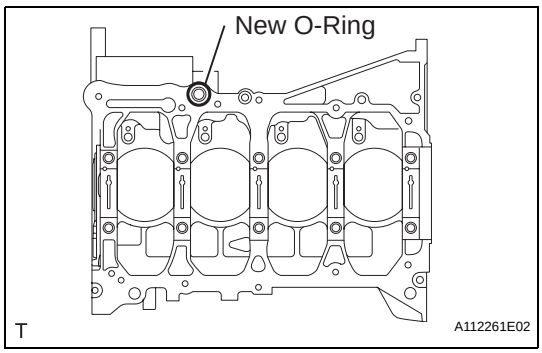
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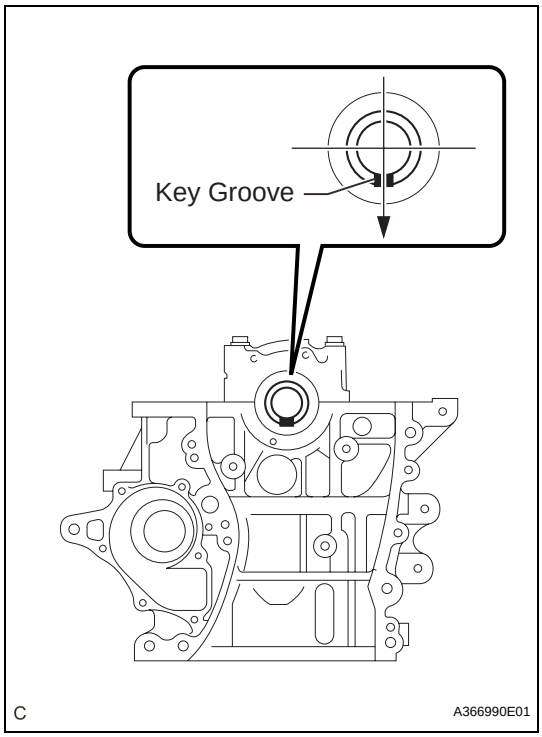
(g) Mark the front of the connecting rod bolts with paint.
(h) Retighten the cap bolts 90°as shown in the illustration.
(i) Check that the crankshaft turns smoothly.

11. INSTALL STIFFENING CRANKCASE ASSEMBLY

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



(b) Place a new O-ring on the cylinder block as shown in the illustration.
(c) Temporarily tighten the pulley set bolt.



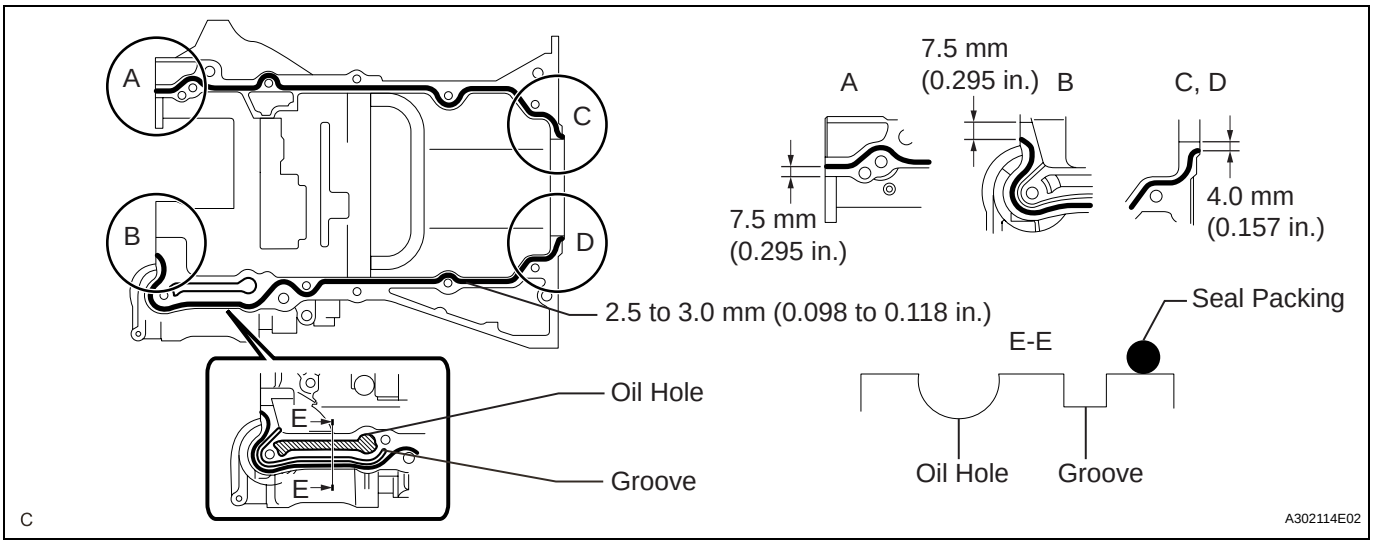
(d) Turn the crankshaft so that the key groove is facing downward.

EM

[Corrected]

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(e) Apply seal packing in a continuous bead (diameter: 2.5 to 3.0 mm (0.098 to 0.118 in.)) to the places shown in the illustration.



Seal packing:
Toyota Genuine Seal Packing Black, Three bond 1207B or Equivalent

NOTICE:

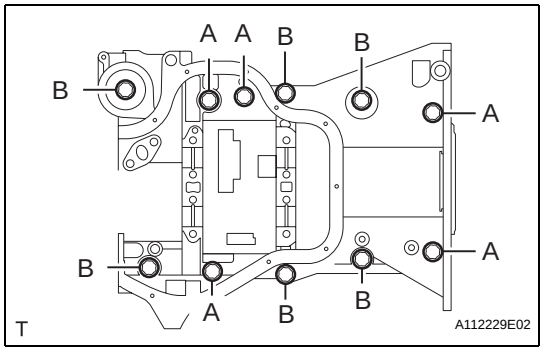
- **Remove any oil from the contact surface.**
- **Ensure that no oil packing enters the oil path. The oil path has a groove to catch excess seal packing. Do not apply seal packing to the oil path side of the groove or to the groove itself, or seal packing may enter the oil path.**
- **Install the stiffening crankcase assembly within 3 minutes and tighten the bolts within 15 minutes of applying seal packing.**
- **Do not add engine oil for at least 2 hours after the installation.**

(f) Install the stiffening crankcase assembly to the cylinder block.

(g) Temporarily install the stiffening crankcase assembly with the 11 bolts.

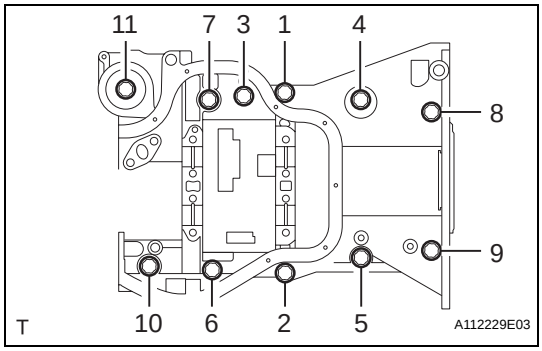
Bolt Length

Item	Bolt Length
Bolt A	112 mm (4.41 in.)
Bolt B	35 mm (1.38 in.)



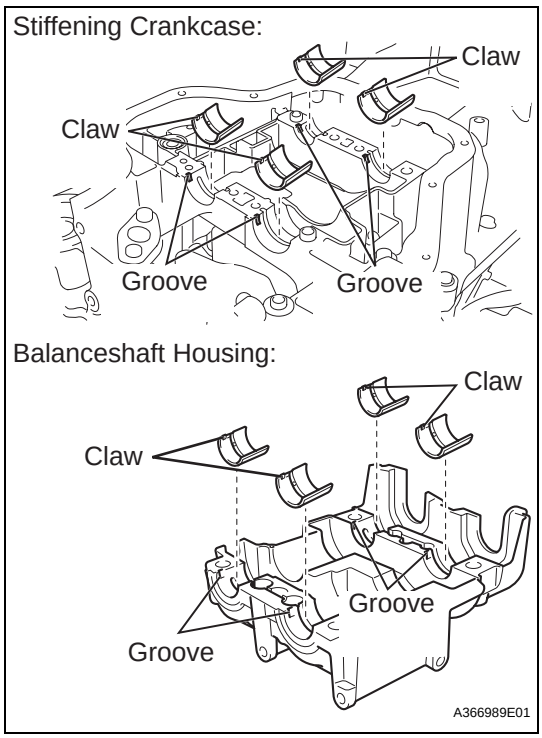
[All corrected]

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(h) Uniformly tighten the bolts.
Torque: 24 N*m (245 kgf*cm, 18 ft.*lbf)

(i) Wipe off the excess seal packing with a clean piece of cloth.



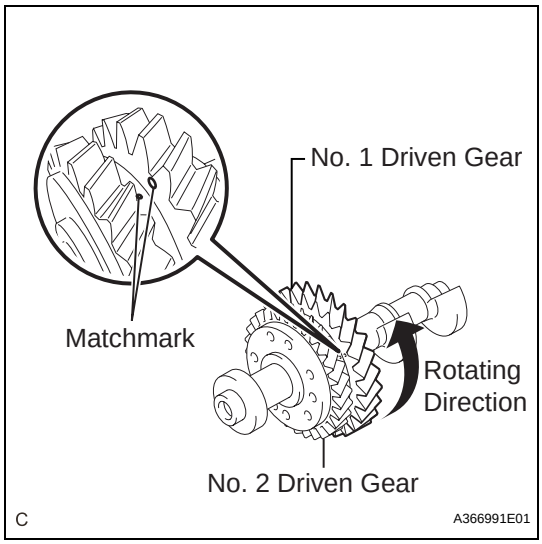
12. INSTALL BALANCE SHAFT BEARING

(a) Clean each No. 1 balanceshaft bearing installation surface and inner and outer surfaces of the No. 1 balanceshaft bearing.
NOTICE:
Do not apply engine oil to the No. 1 balanceshaft bearing installation surface or the outer surface of the No. 1 balanceshaft bearing.

(b) Align the claw of the No. 1 balanceshaft bearing with the groove of the balanceshaft housing and install the 8 No. 1 balanceshaft bearings.

(c) Apply engine oil to the inner surface of the No. 1 balanceshaft bearing.

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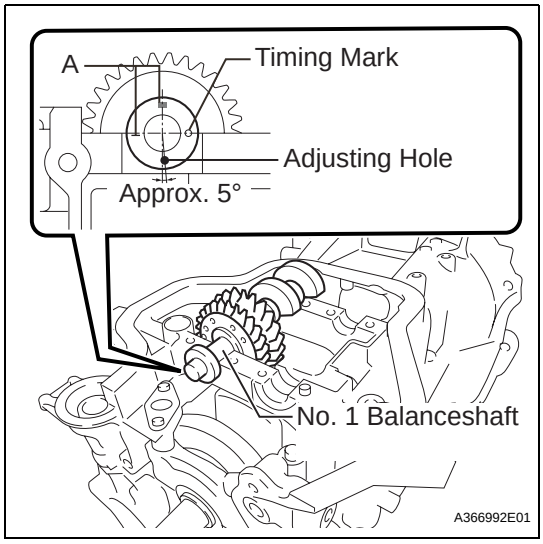


13. INSTALL BALANCE SHAFT

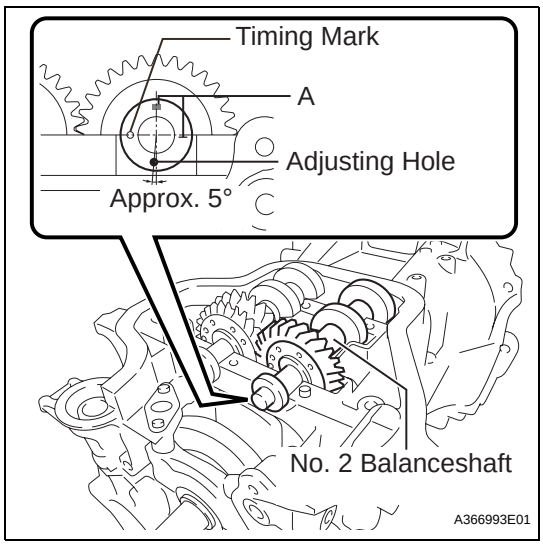
(a) Turn the No. 1 driven gear counterclockwise until it stops, then align the matchmark of the No. 1 driven gear with that of the No. 2 driven gear.

[All corrected]

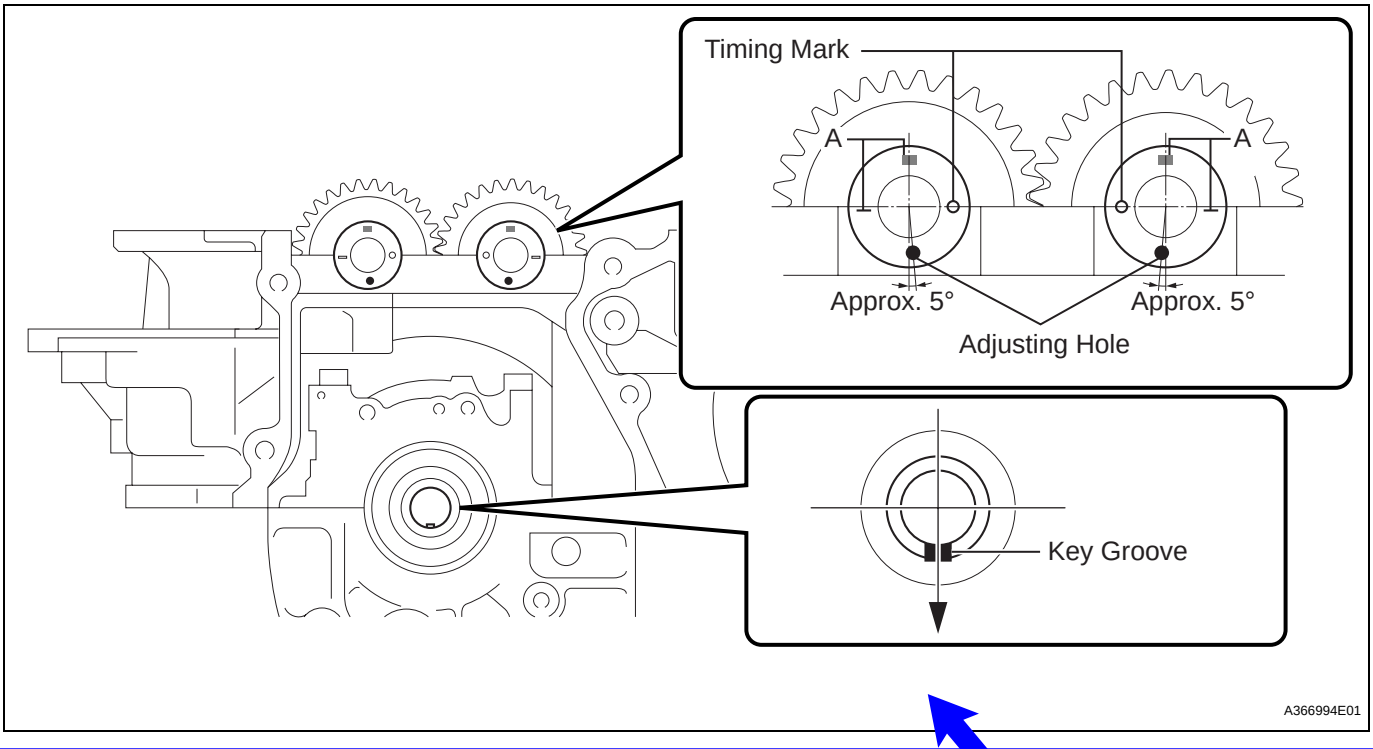
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(b) Install the No. 1 balanceshaft with the timing mark positioned as shown in the illustration. [*1]
HINT:
(A) is not a timing mark.



(c) Install the No. 2 balanceshaft with the timing mark positioned as shown in the illustration.
NOTICE:
Make sure that the key groove of the crankshaft and timing mark of the balanceshafts are positioned as shown in the illustration.



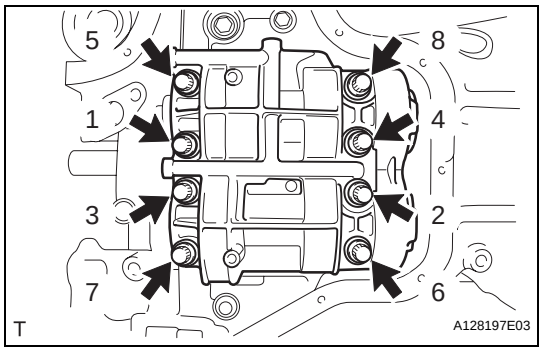
[All corrected]

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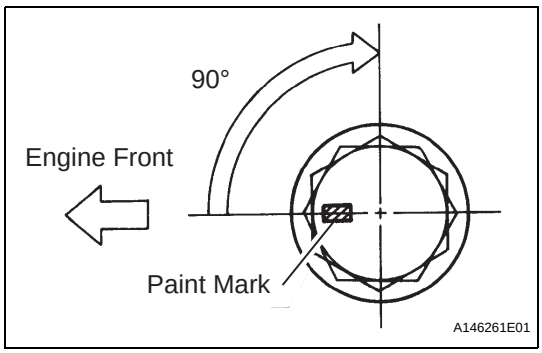
HINT:
(A) is not a timing mark.

(d) Apply a light coat of engine oil under the heads of the balanceshaft housing bolts.

(e) Install the balanceshaft housing bolts.
NOTICE:
The balanceshaft housing bolts are tightened in 2 progressive steps.

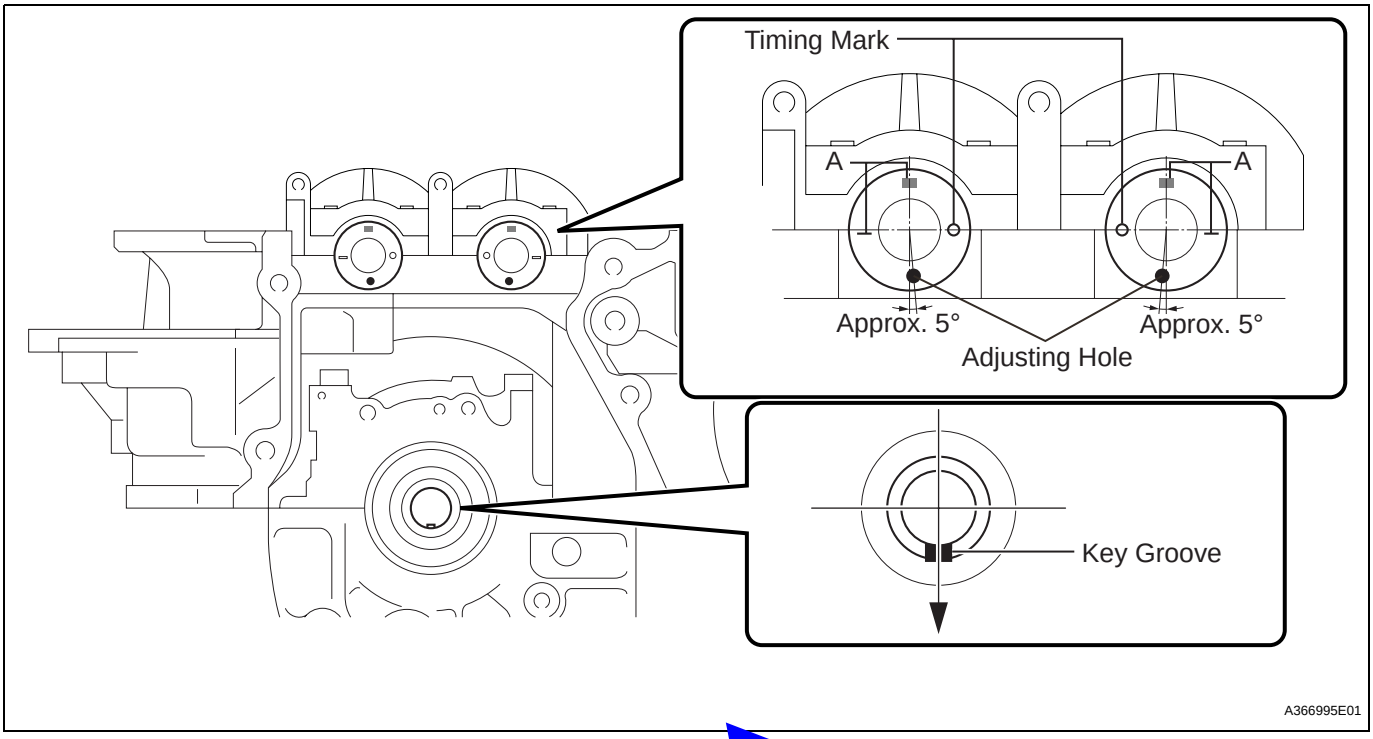


(f) Step 1:
(1) Install and uniformly tighten the 8 bolts in the order shown in the illustration.
Torque: 21.6 N*m (220 kgf*cm, 16 ft.*lbf)



(g) Step 2:
(1) Mark the front side of each balanceshaft housing bolt head with paint.
(2) Tighten the balanceshaft housing bolts 90° in the same order.
NOTICE:
Check that the paint marks are now at a 90° angle to the front.

(h) Turn the crankshaft 360° and check that the timing marks of the balanceshafts are positioned as shown in the illustration with the key groove of the crankshaft facing downward.



[All corrected]

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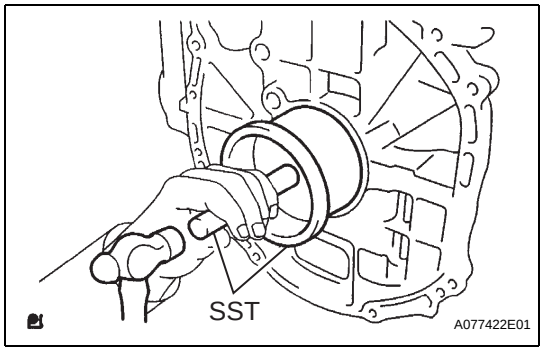
[Corrected]

NOTICE:
If the timing marks are not positioned as shown in the illustration, perform the procedure from step [*1] again.
HINT:
(A) is not a timing mark.

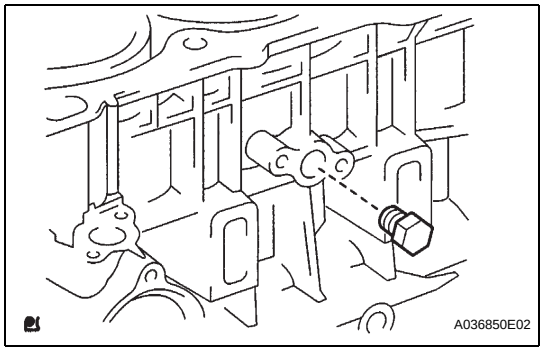
(i) Remove the pulley set bolt.

14. INSTALL ENGINE REAR OIL SEAL

(a) Apply multi-purpose grease to the lip of a new oil seal.
NOTICE:
Keep the lip of foreign objects.

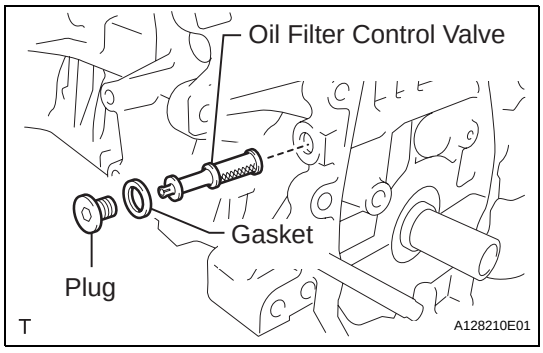


(b) Using SST and a hammer, tap in the new oil seal until its surface is flush with the rear oil seal retainer edge.
SST 09223-15030, 09950-70010 (09951-07100)
NOTICE:
- **Wipe any extra grease off the crankshaft.**
- **Do not tap the oil seal at an angle.**



15. INSTALL NO. 1 TAPER SCREW PLUG (w/o Oil Cooler)

(a) Apply adhesive to 2 or 3 threads of the plug, and install it.
Torque: 26 N*m (265 kgf*cm, 19 ft.*lbf)
Adhesive:
Toyota Genuine Adhesive 1324, Three Bond 1324 or Equivalent
NOTICE:
- **Install the plug within 3 minutes of applying adhesive.**
- **Do not add coolant for at least an hour after installing the plug.**



16. INSTALL OIL CONTROL VALVE FILTER

(a) Check that there are no foreign objects on the mesh part of the oil control valve filter.

(b) Using a 6 mm socket hexagon wrench, install a new gasket and the oil control valve filter with the plug.
Torque: 30 N*m (306 kgf*cm, 22 ft.*lbf)

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