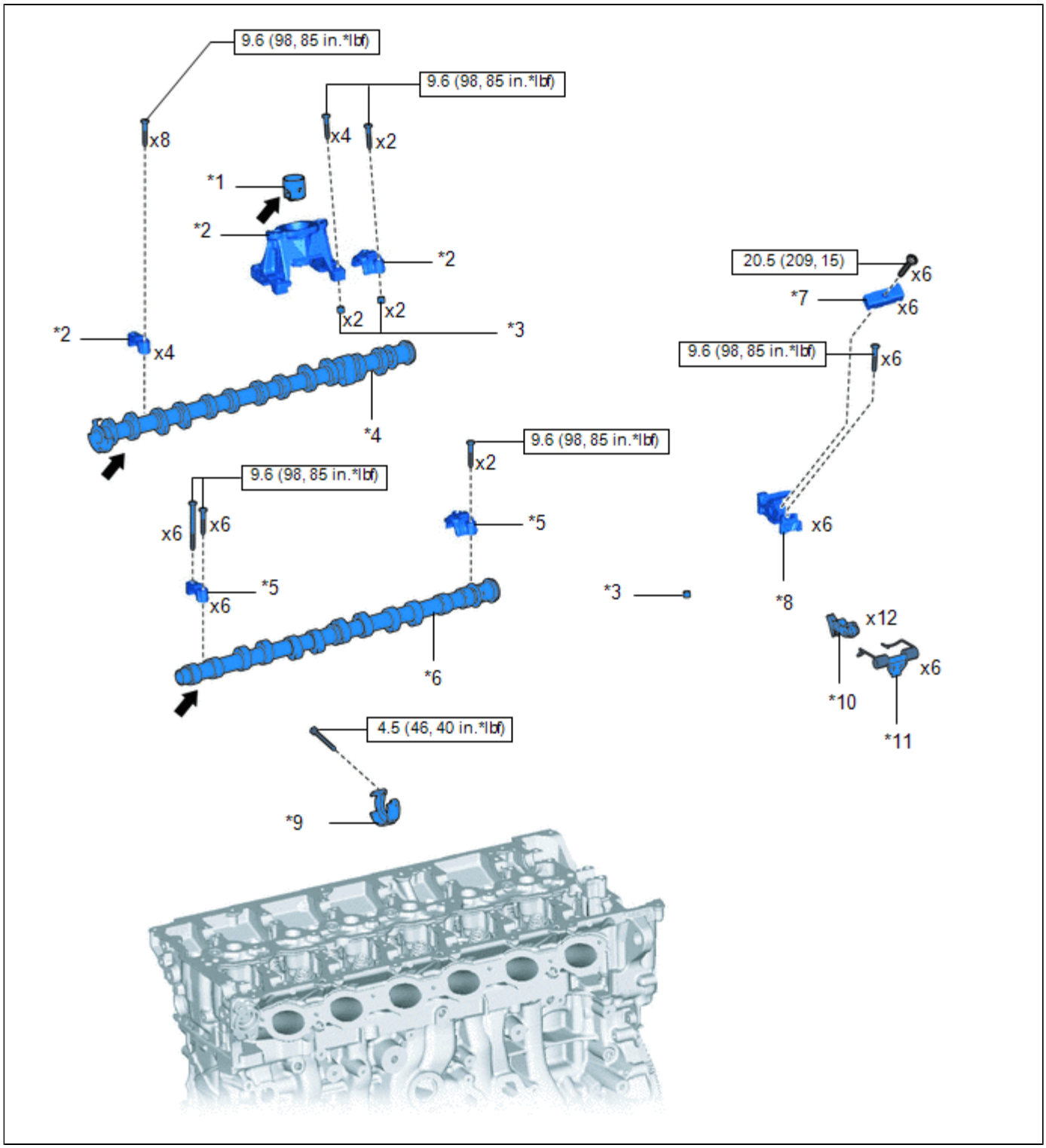
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFL
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CAMSHAFT: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	FUEL PUMP LIFTER ASSEMBLY	*2	EXHAUST CAMSHAFT BEARING CAP

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*3	RING PIN	*4	EXHAUST CAMSHAFT SUB-ASSEMBLY
*5	CAMSHAFT BEARING CAP	*6	INTAKE CAMSHAFT SUB-ASSEMBLY
*7	GATE	*8	BEARING CAP
*9	CAMSHAFT SENSOR WHEEL	*10	INTERMEDIATE LEVER
*11	TORSION SPRING	-	-
	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFM
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CAMSHAFT: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

CAUTION:

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. REMOVE CAMSHAFT TIMING GEAR ASSEMBLY

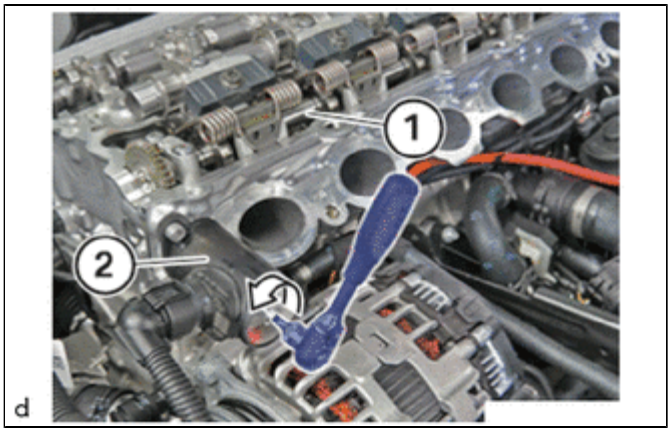
Click here INFO

2. REMOVE CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

Click here INFO

3. ADJUST SERVO MOTOR

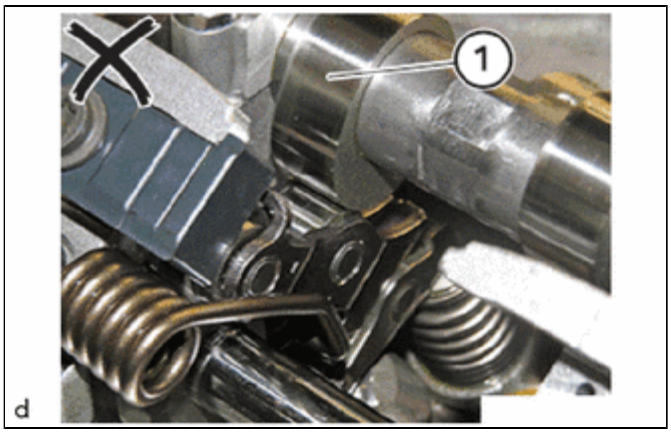
(a) Using 4 mm hexagon wrench, Use servo motor (2) to adjust No. 3 camshaft sub-assembly (1) slowly to minimum lift.



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4. INSPECT AND ADJUST CAMSHAFT

(a) Check position of the intake camshaft sub-assembly on the respective cylinders.



(b) Cam (1) of the intake camshaft sub-assembly runs on the intermediate lever.

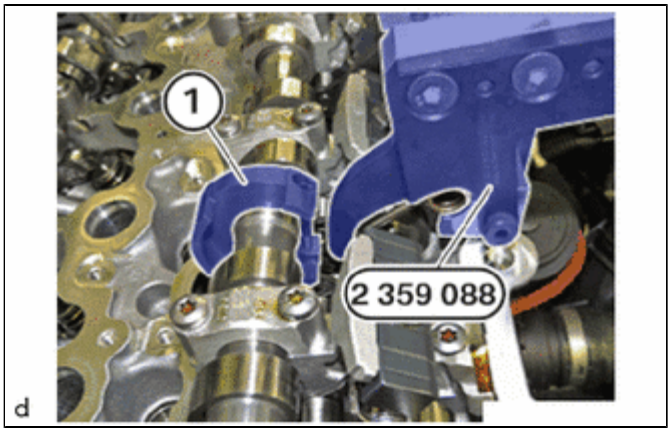
(c) Continue to turn the engine at the crankshaft pulley assembly with the special tool 0 493 380 (11 6 480) in the direction of engine rotation.

SST: 09200-WA190

5. INSPECT AND ADJUST CAMSHAFT (CYLINDERS 3 AND 4)

(a) Check the position of the intake camshaft sub-assembly at cylinders 3 and 4.

To remove the torsion spring on cylinder 3 and 4 the camshaft sensor wheel (1) of the intake camshaft sub-assembly must be positioned as shown.



(b) Camshaft sensor wheel (1) of the intake camshaft sub-assembly is not in the indicated position.

(c) Turn engine on the crankshaft pulley assembly using special tool 0 493 380 (11 6 480) till the camshaft sensor wheel (1) of the intake camshaft sub-assembly is positioned as shown.

SST: 09200-WA190

6. REMOVE TORSION SPRING

CAUTION:

- Spring preload.

  Danger of injury!

  - The use of the specified special tool (tool) is mandatory.
  - The described operation must be carried out properly.
  - Wear safety goggles.

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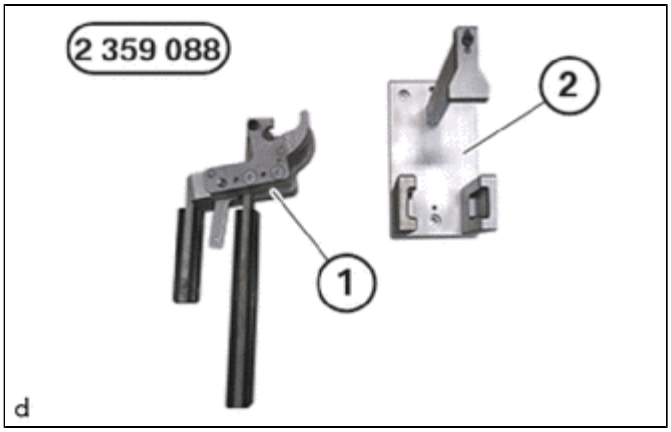
NOTICE:

The description is for one component only. The procedure is identical for all further components.

(a) Have the set of special tools 2 359 088 ready.

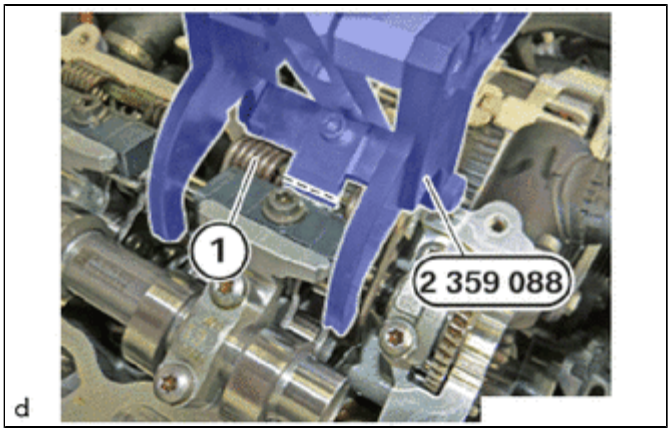
SST: 09200-WA410

Number	Description
1	Clamping lever
2	Mounting for clamping lever (fitting aid)



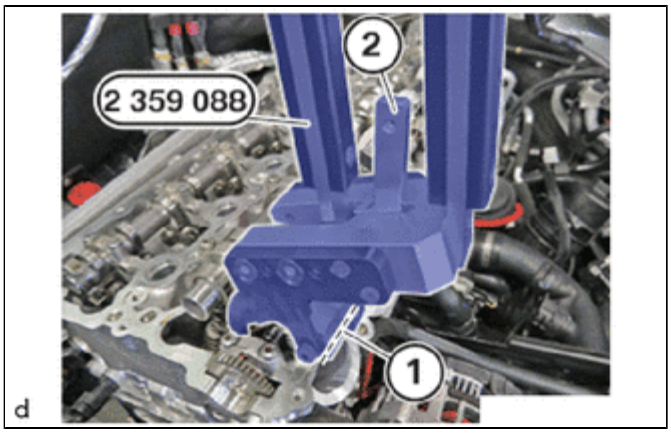
(b) Open the special tool 2 359 088 and position it at the torsion spring (1).

SST: 09200-WA410



(c) Make sure that the special tool 2 359 088 lies flat against the cylinder head in area (1).

SST: 09200-WA410



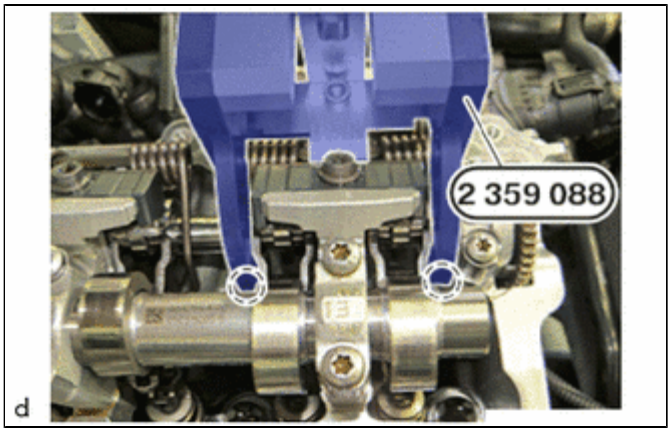
(d) Carefully close the clamping lever of the special tool 2 359 088 until the retaining hook (2) engages.

SST: 09200-WA410

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(e) Check if the special tool 2 359 088 is positioned correctly on the torsion spring.

SST: 09200-WA410



(f) Special tool 2 359 088 is not positioned correctly on the torsion spring.

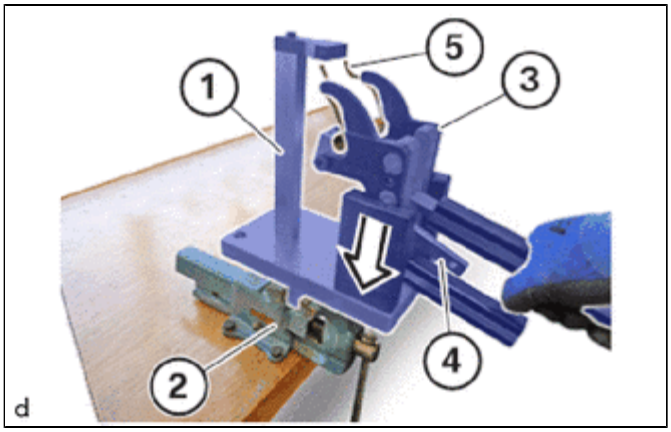
SST: 09200-WA410

(g) Carefully release the clamping lever of the special tool 2 359 088 and repeat the process.

SST: 09200-WA410

(h) Clamp fixture (1) of the special tool 2 359 088 in the vice (2).

SST: 09200-WA410



(i) Position clamping lever (3) of special tool 2 359 088 with pre-tensioned torsion spring (5) in direction of arrow in the mounting (1) of the special tool 2 359 088.

SST: 09200-WA410

(j) Carefully unlock retaining hook (4) of the special tool 2 359 088.

SST: 09200-WA410

(1) The torsion spring (5) is relieved.

(k) Slowly open clamping lever (3) and remove the torsion spring (5).

(l) Repeat the operations for the remaining torsion spring.

7. REMOVE GATE

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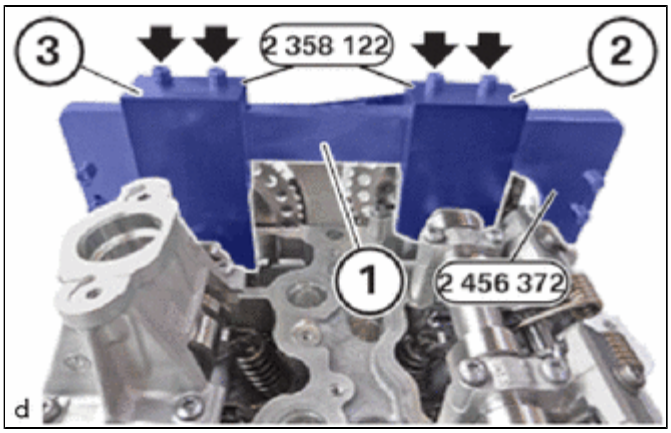
8. REMOVE INTERMEDIATE LEVER

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9. REMOVE SST

(a) Remove bolts (arrows).



(b) Guide the test gauge (2) out of the set of special tools 2 358 122 between the intake camshaft sub-assembly and the basic carrier (1) of the set of special tools 2 456 372 and remove.

SST: 09200-WA380
SST: 09200-WA690

(c) Guide the test gauge (3) out of the set of special tools 2 358 122 between the exhaust camshaft and the basic carrier (1) of the set of special tools 2 456 372 and remove.

SST: 09200-WA380
SST: 09200-WA690

10. REMOVE INTAKE CAMSHAFT SUB-ASSEMBLY

NOTICE:

- Contaminant or foreign body.

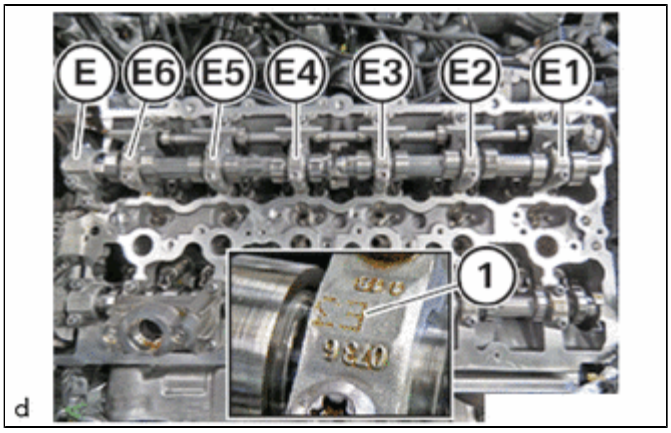
  Contamination can result in malfunctions, operating failure or leaks.

  - Adhere to the utmost cleanliness.
  - Protect components from contamination e.g. by covering.
  - Close off line connections with seal plugs.

(a) Observe the numbering (1) of the camshaft bearing caps.

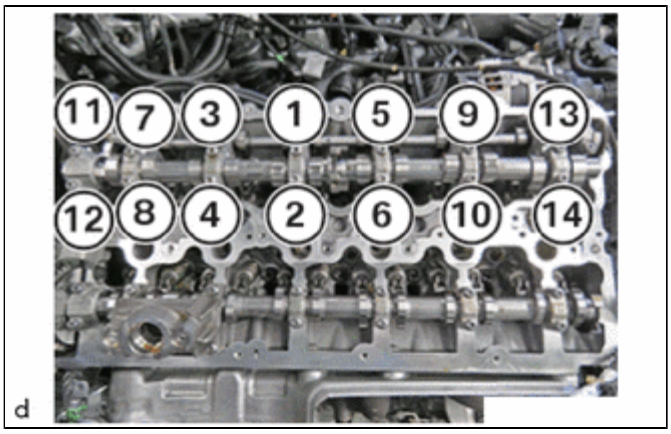
(1) The camshaft bearing caps are numbered from (E1) to (E6).

(2) The camshaft bearing cap (E) is a thrust bearing.

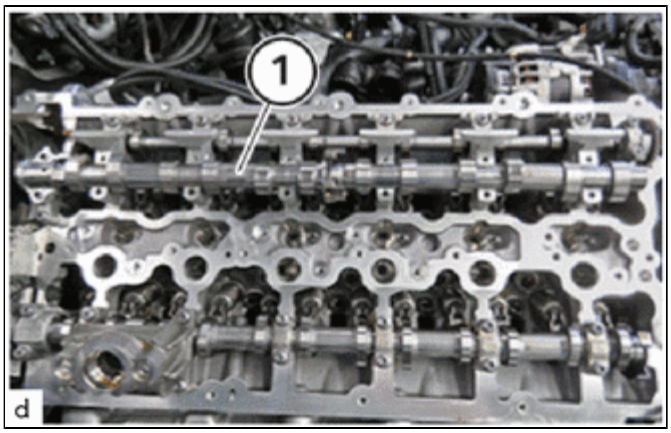


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(b) Release T30 bolts in the right sequence (14) till (1) in semi circle pattern.



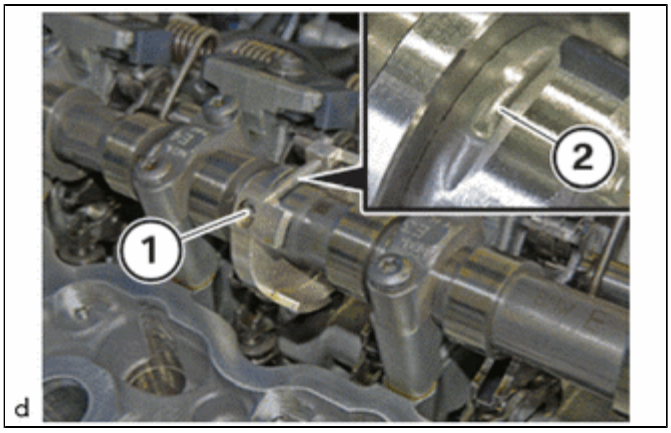
(c) Guide out intake camshaft sub-assembly (1) toward the top and remove it.



11. REMOVE CAMSHAFT SENSOR WHEEL

(a) Rotate intake camshaft sub-assembly, if necessary in the position shown.

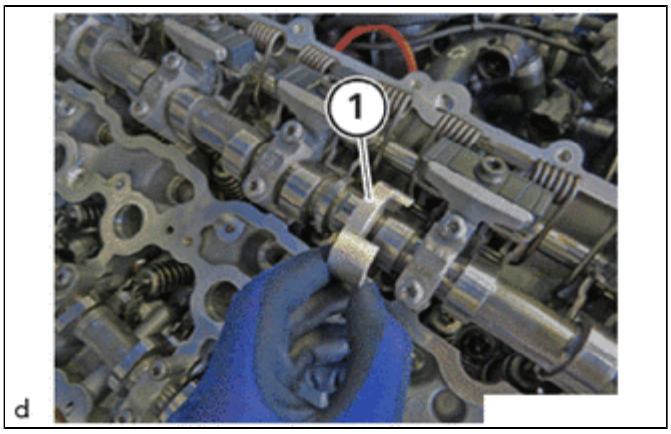
(1) The recess (2) must point upwards.



(b) Using 3 mm hexagon wrench, Loosen bolt (1).

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(c) Slide camshaft sensor wheel (1) in the direction of cylinder 1 and guide it out from the intake camshaft sub-assembly.



12. REMOVE EXHAUST CAMSHAFT SUB-ASSEMBLY

NOTICE:

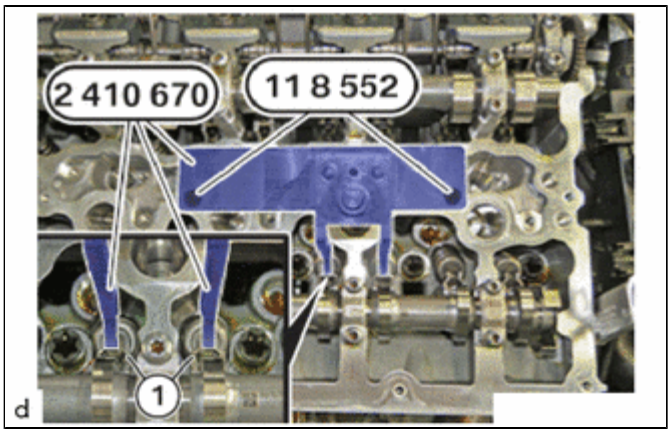
- Contaminant or foreign body.

  Contamination can result in malfunctions, operating failure or leaks.

  - Adhere to the utmost cleanliness.
  - Protect components from contamination e.g. by covering.
  - Close off line connections with seal plugs.

(a) Position the special tool 2 410 670 at cylinder 2 and apply it hand-tight with the special tool 0 495 741 (11 8 552) from the set of special tools 0 495 739 (11 8 550).

SST: 09200-WA500
SST: 09200-WA510

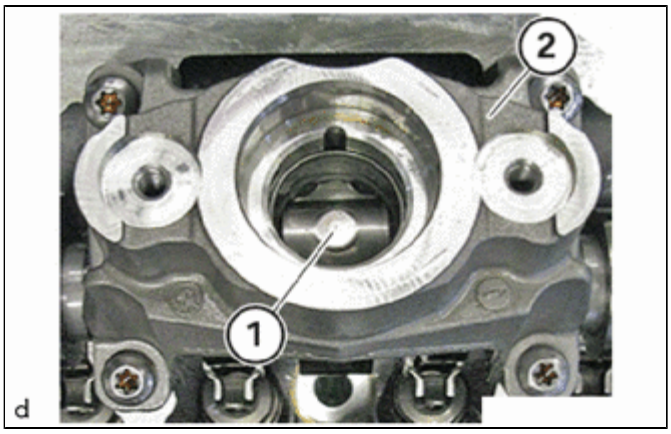


(b) Bolt in both roller cam followers (1) on the 2nd cylinder using the spindle nut of the special tool 2 410 670 up to the limit position.

SST: 09200-WA500

(c) Remove fuel pump lifter assembly (1) from exhaust camshaft bearing cap (2).

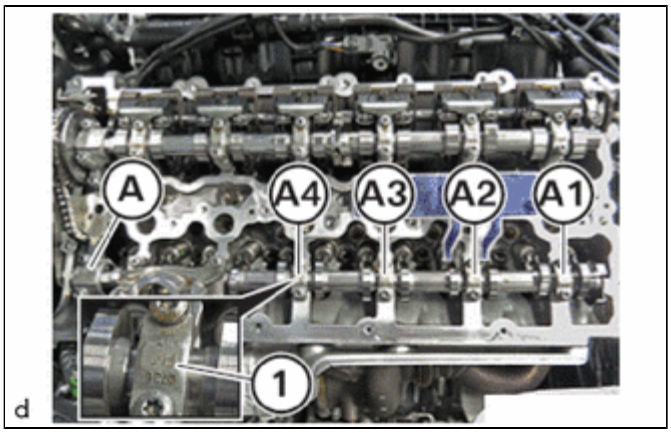
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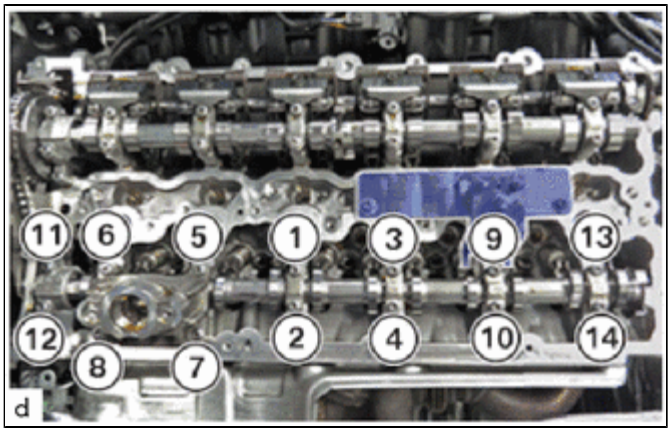
(d) Observe the numbering of the exhaust camshaft bearing caps.

(1) The exhaust camshaft bearing caps are numbered from (A1) to (A4) and are laid down according to their numbering.

(2) The exhaust camshaft bearing cap (A) is a thrust bearing.



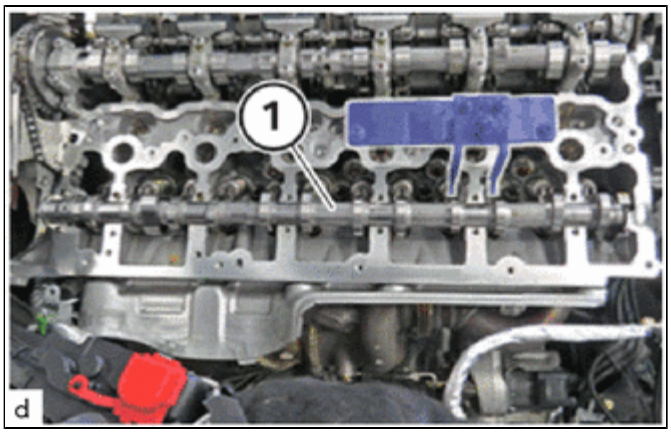
(e) Release T30 bolts in the right sequence (14) till (1) in semi circle pattern.



(f) Guide out and remove the exhaust camshaft bearing caps.

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(g) Guide out exhaust camshaft sub-assembly (1) upwards and remove it.



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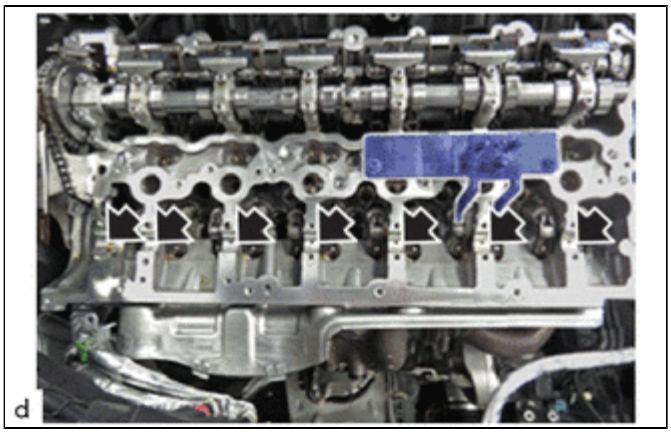
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFN
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CAMSHAFT: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

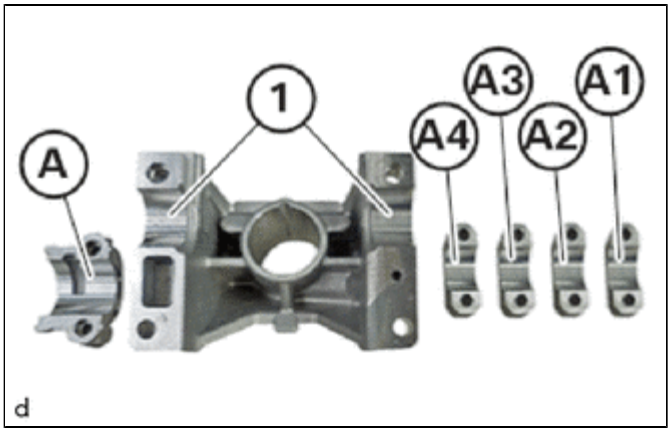
PROCEDURE

1. INSTALL EXHAUST CAMSHAFT SUB-ASSEMBLY

(a) Clean all bearing positions (arrows) and coat with engine oil.



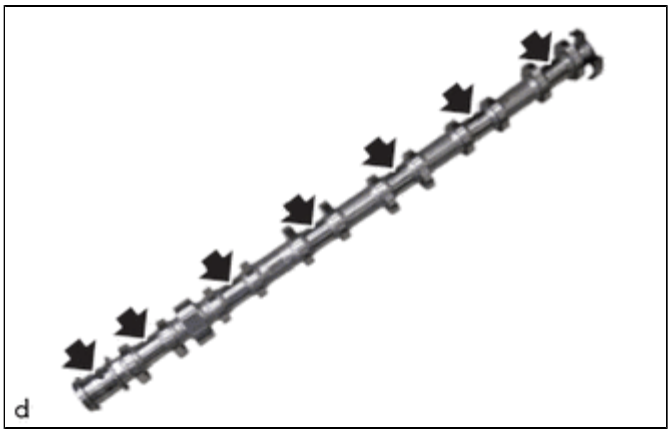
(b) Clean all bearing positions of exhaust camshaft bearing caps (A1), (A2), (A3), (A4) and (A) and coat with engine oil.



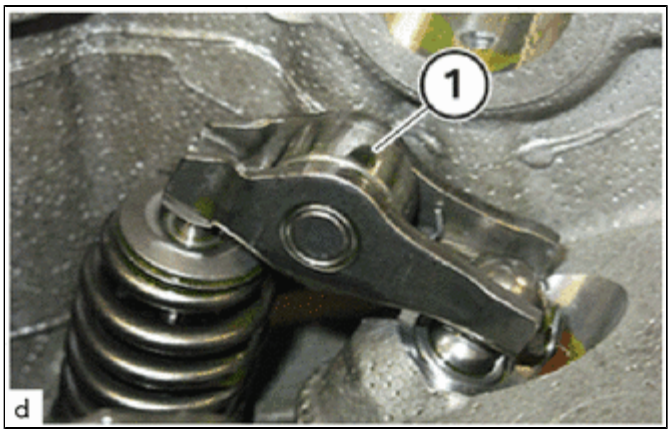
(c) Clean bearing positions (1) of the exhaust camshaft bearing cap and coat with engine oil.

(d) Clean all bearing positions (arrows) of the exhaust camshaft sub-assembly and coat with engine oil.

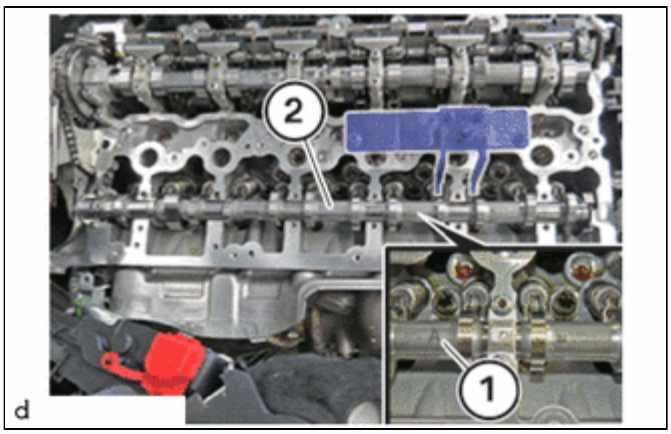
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(e) Check all No. 1 valve rocker arm sub-assembly (1) of the exhaust side for correct fit.

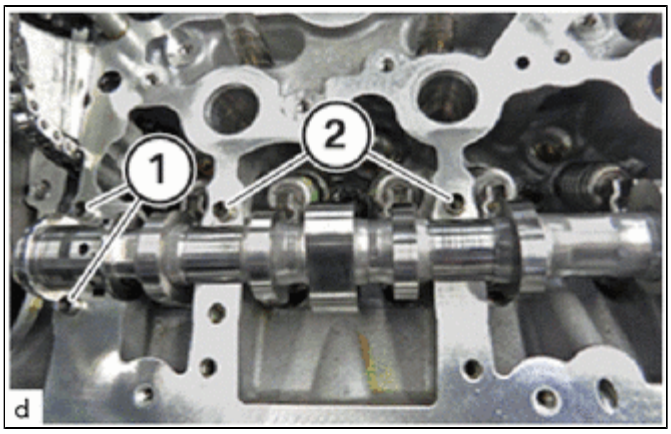


(f) Insert exhaust camshaft sub-assembly (2) in the cylinder head sub-assembly, such that the mark (1) points upwards.



(g) Check the ring pins (1) of the thrust bearing for damage and replace if necessary.

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(h) Check the ring pins (2) of the exhaust camshaft bearing cap for damage and replace if necessary.

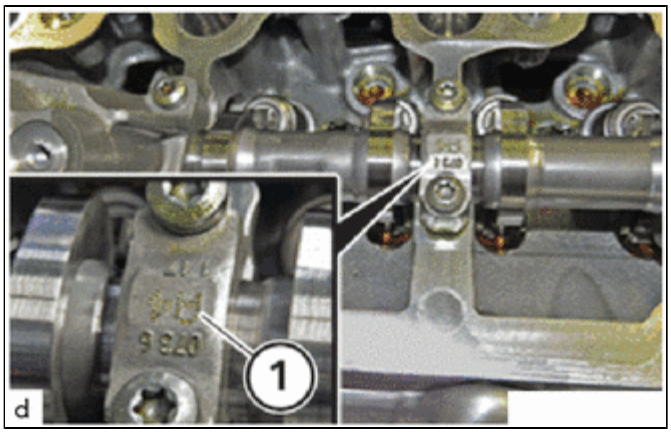
NOTICE:

- Engine damage caused by incorrectly installed bearing shells and bearing supports.

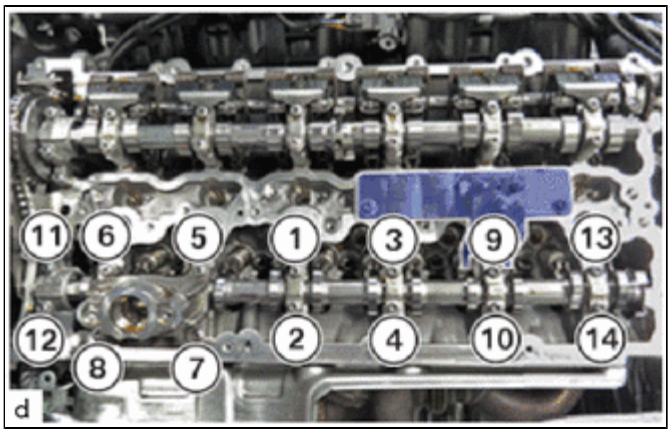
  Engine damage may result from incorrectly installing bearing shells and bearing supports.

  - Always install all bearing shells and bearing supports in the same position from which they were removed.

(i) Replace all exhaust camshaft bearing caps, so that the labelling (1) from the intake side is readable.



(j) Press down the exhaust camshaft bearing caps and hand-tighten the T30 bolts incrementally in the sequence (1) to (14).



(k) Move up all T30 bolts in the sequence (1) to (14) in half rotations.

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Torque:

9.6 N·m {98 kgf·cm, 85 in·lbf}

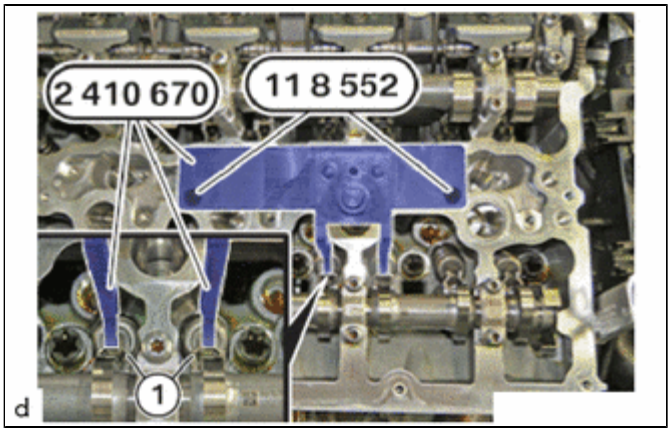
(l) Tighten all T30 bolts in sequence (1) to (14).

Torque:

9.6 N·m {98 kgf·cm, 85 in·lbf}

(m) Release special tool 2 410 670 using the spindle nut.

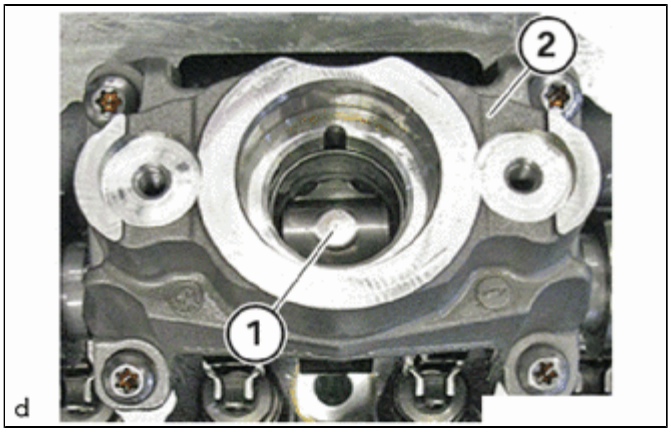
SST: 09200-WA500



(n) Release special tool 0 495 741 (11 8 552) and remove special tool 2 410 670 .

SST: 09200-WA500

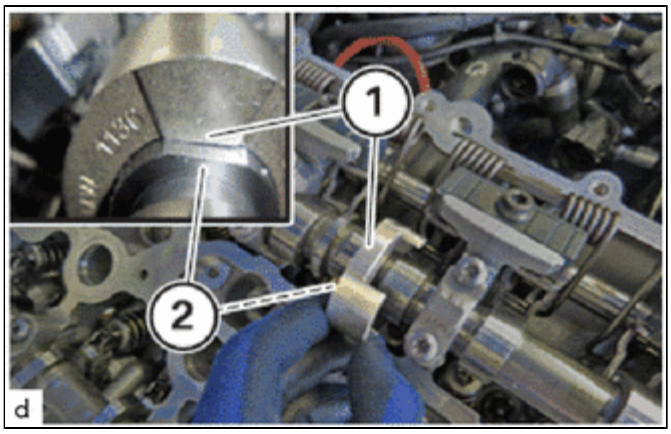
(o) Install fuel pump lifter assembly (1) into the exhaust camshaft bearing cap (2).

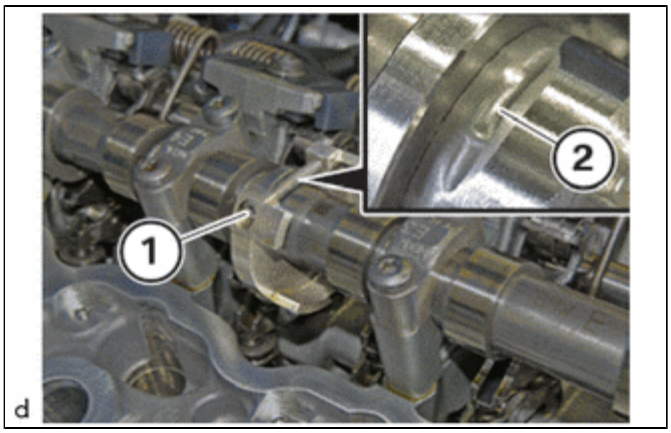


2. INSTALL INTAKE CAMSHAFT SUB-ASSEMBLY

(a) Feed in and position camshaft sensor wheel (1) on the intake camshaft sub-assembly (2).

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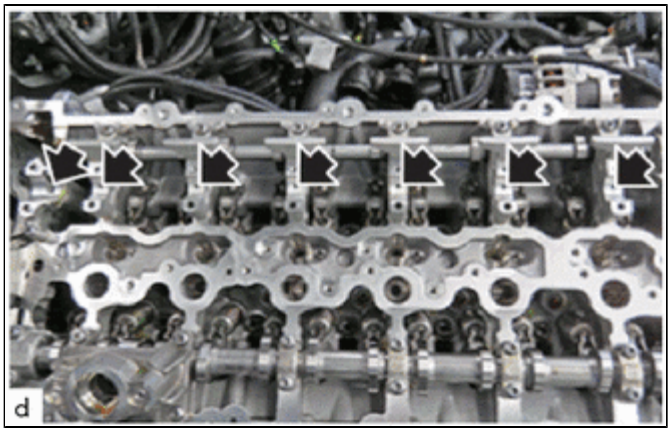
(b) Rotate intake camshaft sub-assembly, if necessary in the position shown.

(1) The recess (2) must point upwards.

(c) Using 3 mm hexagon wrench, Tighten down bolt (1).

Torque:

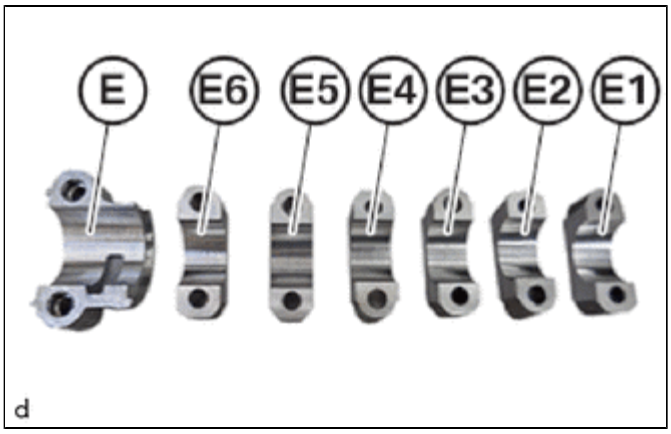
4.5 N·m {46 kgf·cm, 40 in·lbf}



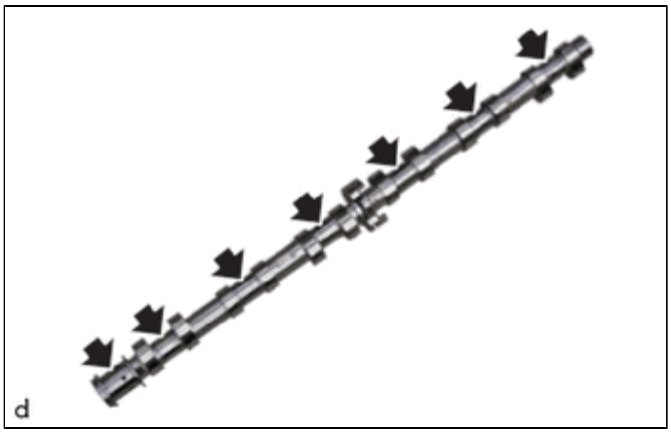
(d) Clean all bearing positions (arrows) and coat with engine oil.

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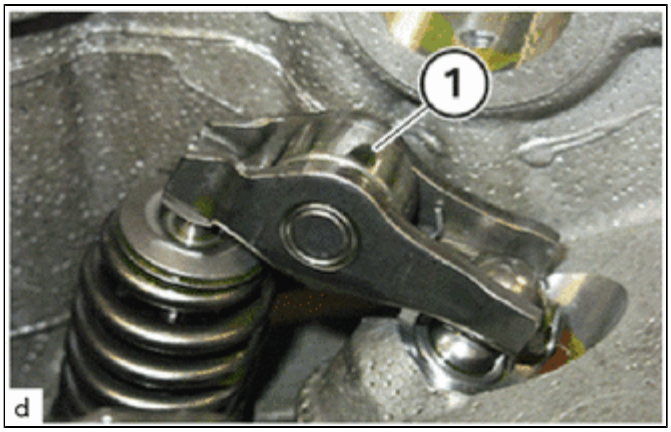
(e) Clean all bearing positions of camshaft bearing caps (E1), (E2), (E3), (E4), (E5), (E6) and (E) and coat with engine oil.



(f) Clean all bearing positions (arrows) of the intake camshaft sub-assembly and coat with engine oil.

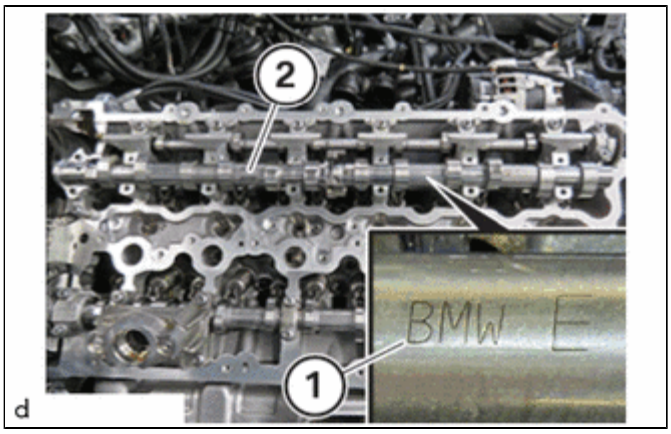


(g) Check all roller cam followers(1) of the intake side for correct fit.

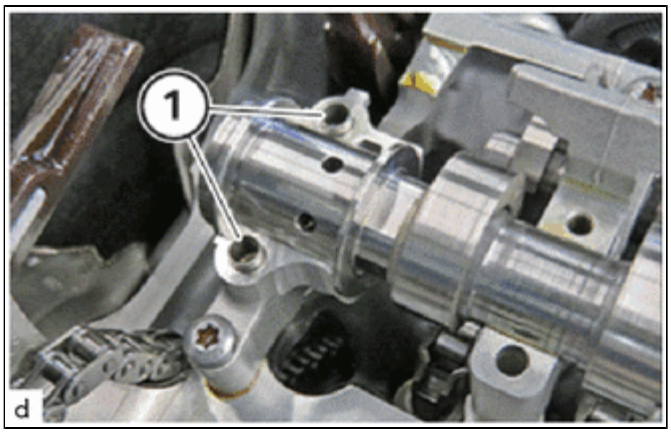


(h) Insert the intake camshaft sub-assembly (2) into the cylinder head sub-assembly so that the mark (1) points up.

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(i) Check the ring pins (1) of the thrust bearing for damage and replace if necessary.



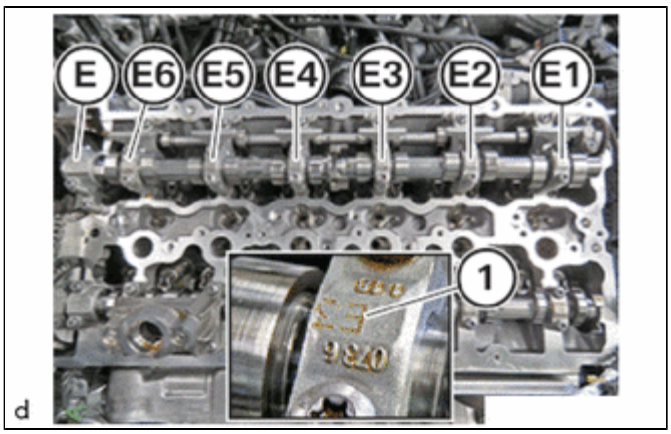
NOTICE:

- Engine damage caused by incorrectly installed bearing shells and bearing supports.

  Engine damage may result from incorrectly installing bearing shells and bearing supports.

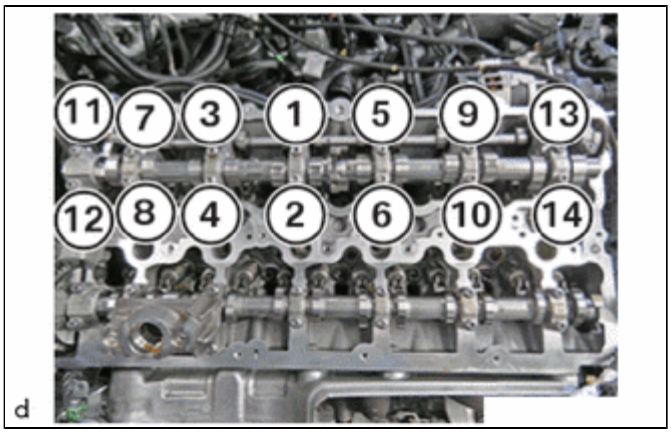
  - Always install all bearing shells and bearing supports in the same position from which they were removed.

(j) Pull in all camshaft bearing caps (E1) to (E6) and the intake camshaft sub-assembly bearing cap (E) and position.



(k) Press down the camshaft bearing caps and hand-tighten the T30 bolts incrementally in the sequence (1) to (14).

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(l) Move up all T30 bolts in the sequence (1) to (14) in half rotations.

Torque:

9.6 N·m {98 kgf·cm, 85 in·lbf}

(m) Tighten all T30 bolts in sequence (1) to (14).

Torque:

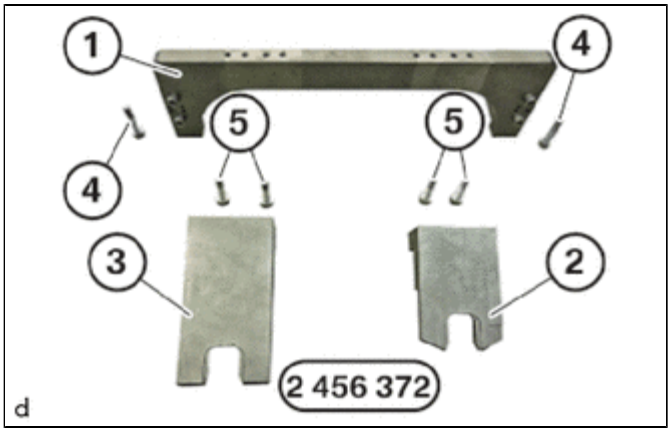
9.6 N·m {98 kgf·cm, 85 in·lbf}

3. ADJUST CAMSHAFT

(a) Have the set of special tools 2 456 372 ready.

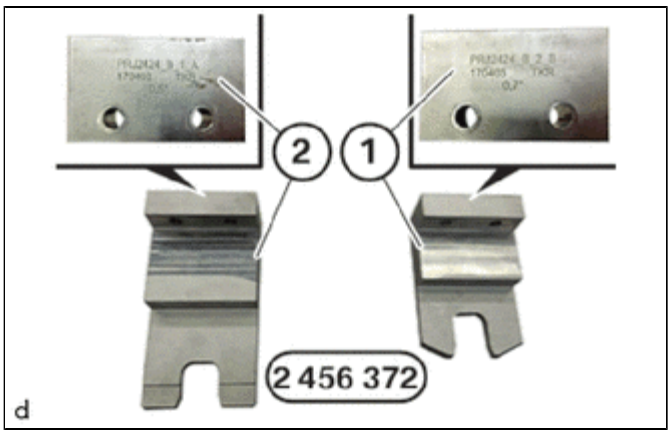
SST: 09200-WA690

Number	Description
1	Basic carrier
2	0.7° setting gauge to adjust the intake camshaft sub-assembly
3	0.5° setting gauge to adjust the exhaust camshaft sub-assembly
4	Basic carrier bolts on cylinder head
5	Bolt gauge on basic carrier



(b) Use the setting gauge 0.7 ° (1) from the set of special tools 2 456 372 to adjust the intake camshaft sub-assembly.

SST: 09200-WA690



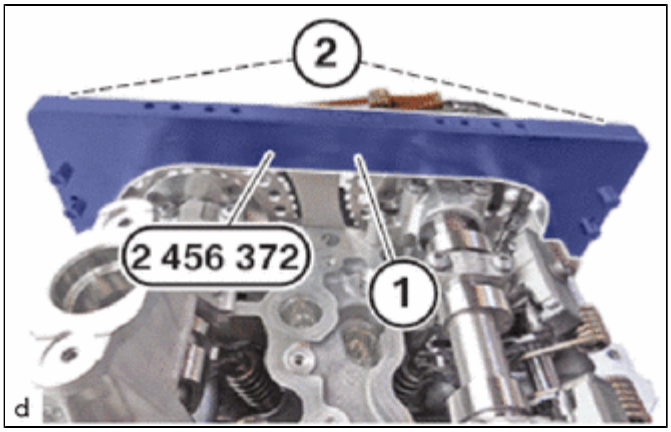
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(c) Use the setting gauge 0.5 ° (2) from the set of special tools 2 456 372 to adjust the exhaust camshaft sub-assembly.

SST: 09200-WA690

(d) Position the basic carrier (1) from the set of special tools 2 456 372 on the cylinder head sub-assembly.

SST: 09200-WA690



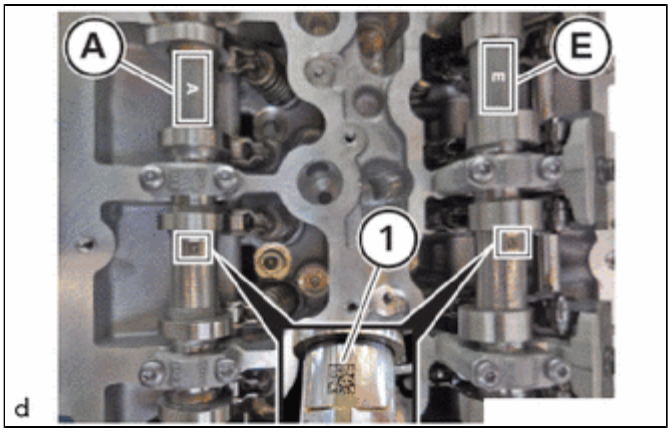
(e) Tighten the bolts (2) from the set of special tools 2 456 372 .

SST: 09200-WA690

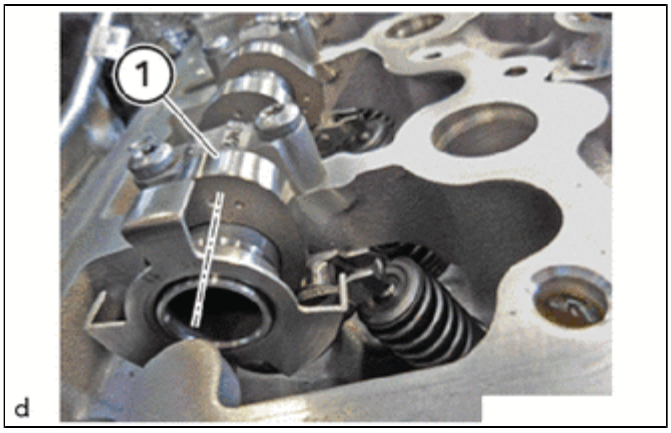
Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(f) Turn the intake camshaft sub-assembly (E) and the exhaust camshaft sub-assembly (A) until the marks (1) can be read from the top.

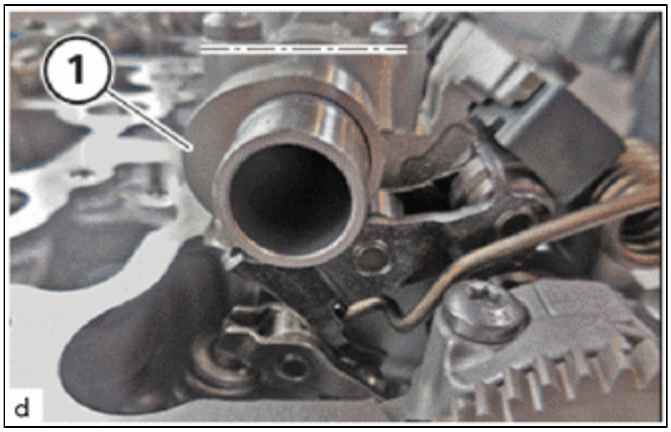


(g) Ensure that the cam (1) on the exhaust camshaft sub-assembly on cylinder 1 points to the inside right at a slight angle.

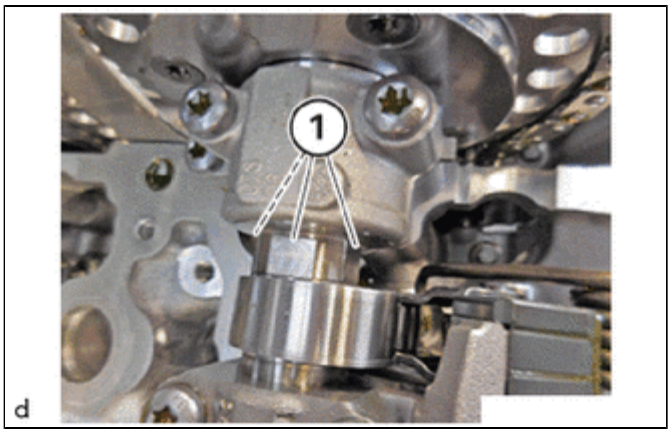


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(h) Ensure that the cam (1) on the intake camshaft sub-assembly on cylinder 1 points to the inside left at an angle.

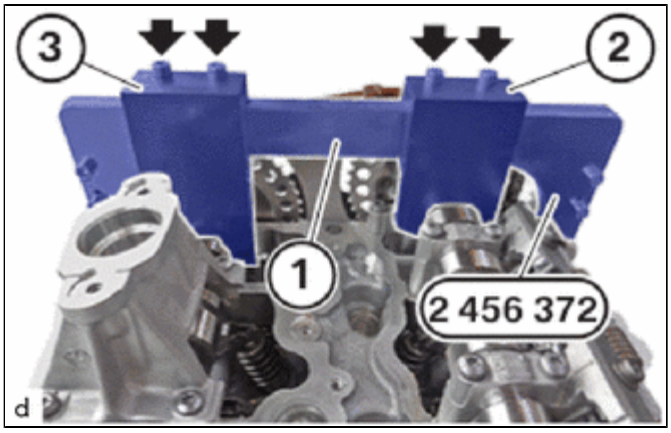


(i) Ensure that the flattened areas (1) on the intake camshaft sub-assembly and the exhaust camshaft sub-assembly point upwards.



(j) Position the setting gauge 0.5 ° (3) from the set of special tools 2 456 372 between the exhaust camshaft sub-assembly and the basic carrier (1) from the set of special tools 2 456 372 .

SST: 09200-WA690



(k) Position the 0.7 setting gauge (2) from the set of special tools 2 456 372 between the intake camshaft sub-assembly and the basic carrier (1) from the set of special tools 2 456 372 .

SST: 09200-WA690

(l) Tighten bolts (arrows).

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Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

4. INSPECT INTERMEDIATE LEVER

Click here INFO

5. INSTALL INTERMEDIATE LEVER

Click here INFO

6. INSTALL GATE

Click here INFO

7. INSTALL TORSION SPRING

Click here INFO

8. INSTALL CAMSHAFT TIMING GEAR ASSEMBLY

Click here INFO

9. INSTALL CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

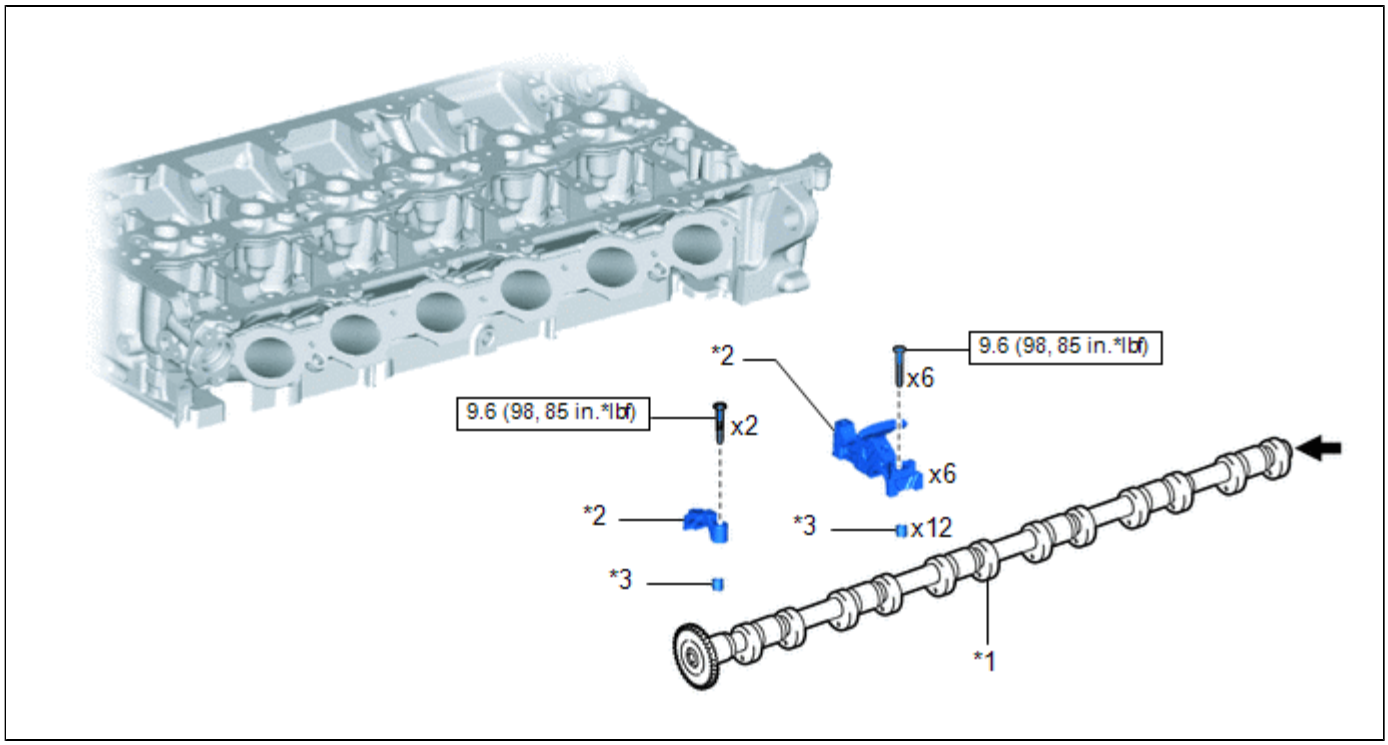
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGS
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CAMSHAFT (for No. 3): COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	NO. 3 CAMSHAFT SUB-ASSEMBLY	*2	BEARING CAP
*3	RING PIN	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	➡	Engine oil

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGT
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CAMSHAFT (for No. 3): REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. REMOVE INTAKE CAMSHAFT SUB-ASSEMBLY

Click here INFO

2. REMOVE NO. 3 CAMSHAFT SUB-ASSEMBLY

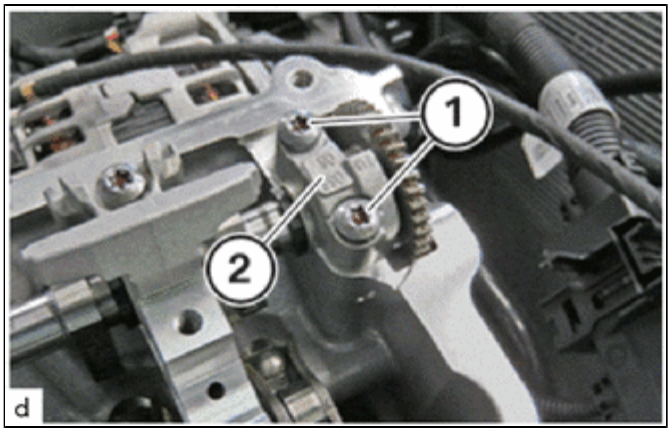
NOTICE:

- Contaminant or foreign body.

  Contamination can result in malfunctions, operating failure or leaks.

  - Adhere to the utmost cleanliness.
  - Protect components from contamination e.g. by covering.
  - Close off line connections with seal plugs.

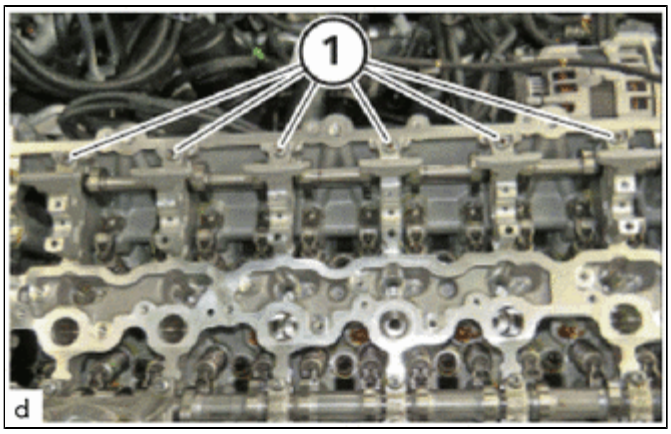
(a) Loosen T30 bolts (1).



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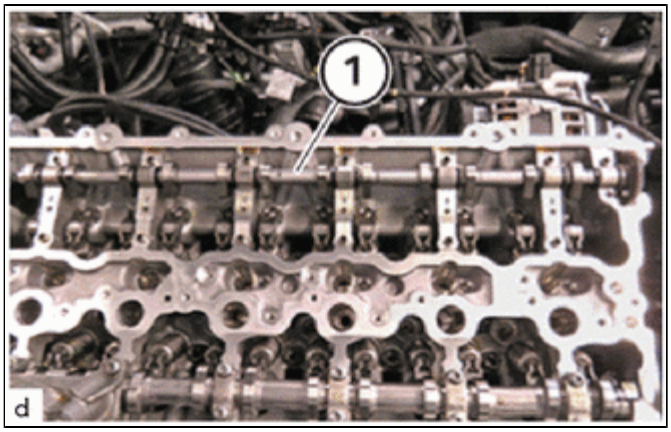
(b) Remove bearing cap (2).

(c) Loosen T30 bolts (1).



(d) Remove all bearing caps.

(e) Guide out the No. 3 camshaft sub-assembly (1) toward the top and remove it.



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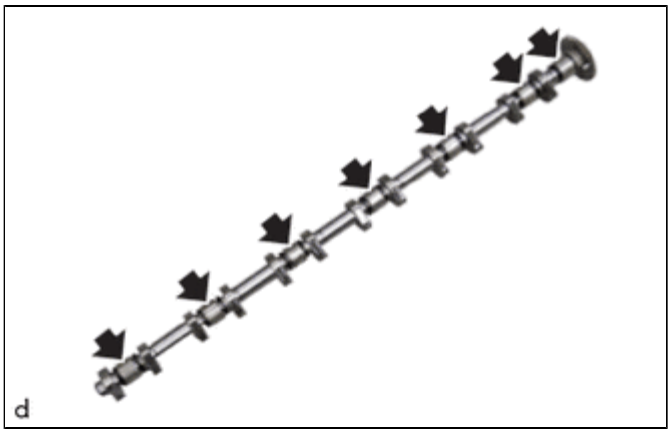
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGU
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CAMSHAFT (for No. 3): INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

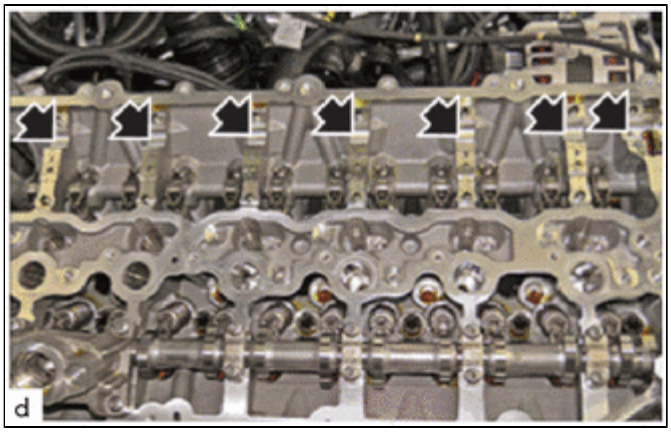
1. INSTALL NO. 3 CAMSHAFT SUB-ASSEMBLY

(a) Check all the needle bearings (arrows) of the No. 3 camshaft sub-assembly for ease of movement.



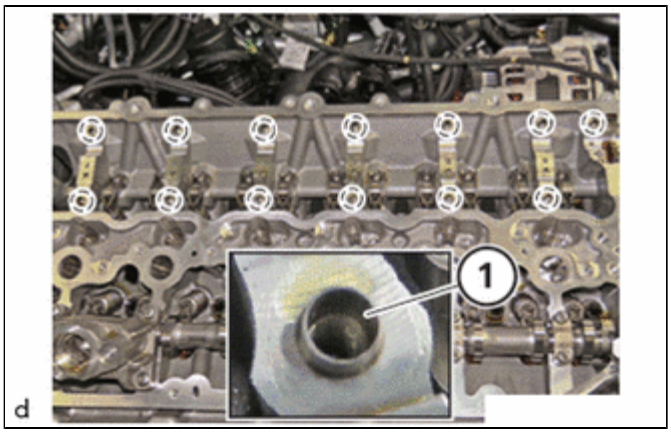
(b) Replace the No. 3 camshaft sub-assembly in case of tight needle bearings.

(c) Clean all the bearing positions (arrows) in the cylinder head sub-assembly and coat them with engine oil.

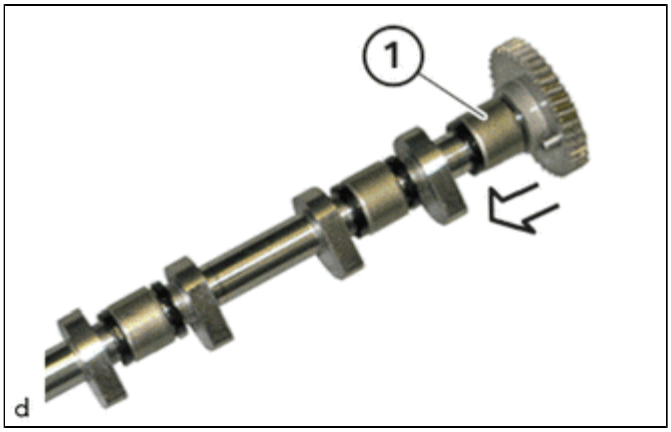


(d) Check all ring pins (marks) (1) for damage and replace them if necessary.

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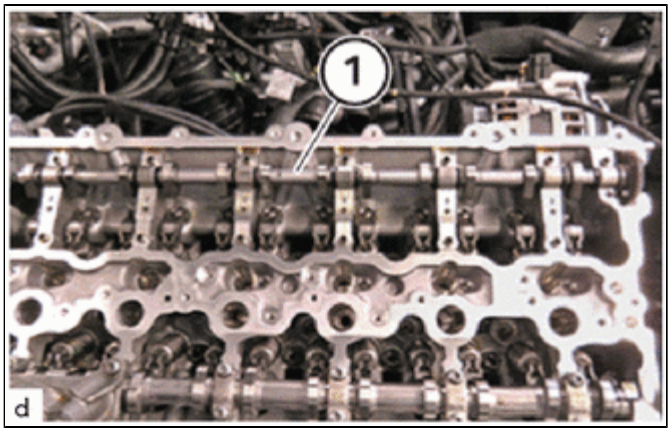


(e) Push needle bearing (1) up to the limit position in direction of arrow before installing the No. 3 camshaft sub-assembly.



(f) Oil all needle bearings of the No. 3 camshaft sub-assembly (1).

(g) Install No. 3 camshaft sub-assembly (1) in the cylinder head sub-assembly.

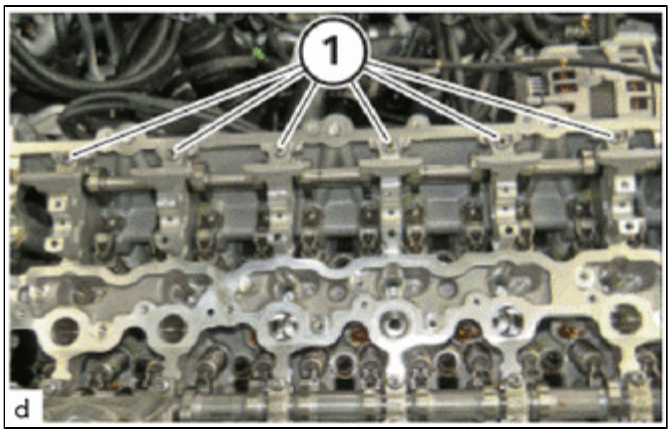


(h) Install the bearing caps.

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HINT:

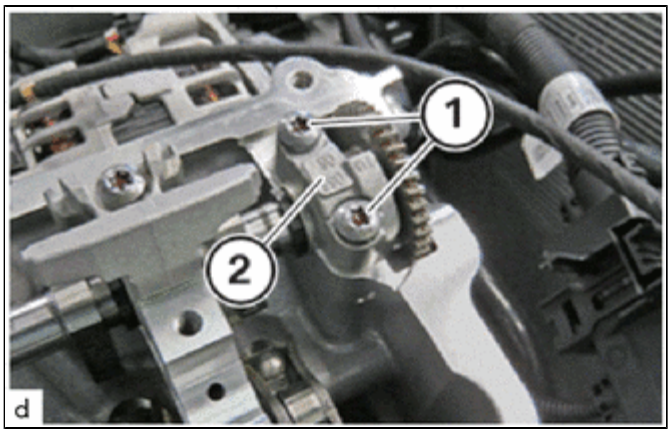
All the bearing caps must be installed again in the position from where the bearing caps were removed.



(i) Tighten the T30 bolts (1).

Torque:

9.6 N·m {98 kgf·cm, 85 in·lbf}



(j) Install bearing cap (1) provided with a limit position.

(k) Tighten the T30 bolts (1).

Torque:

9.6 N·m {98 kgf·cm, 85 in·lbf}

2. INSTALL INTAKE CAMSHAFT SUB-ASSEMBLY

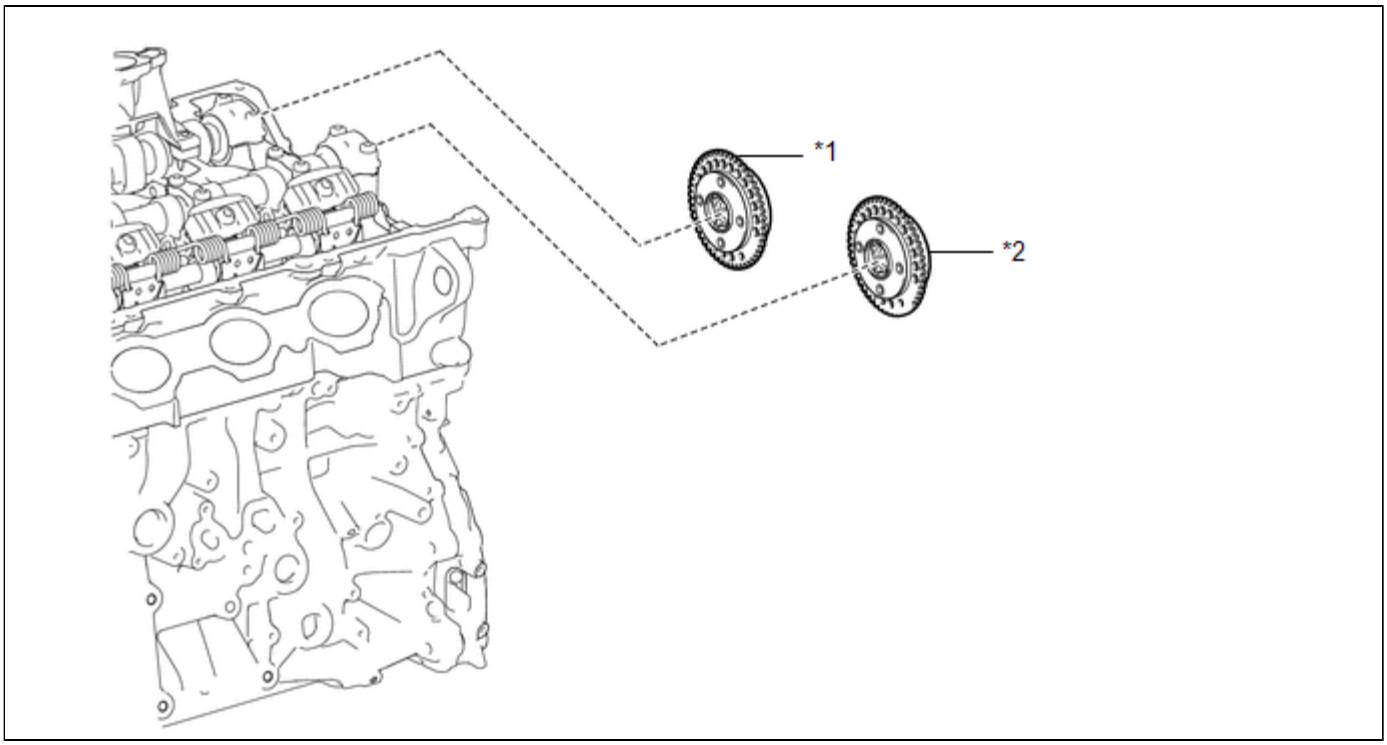
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFC
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CAMSHAFT TIMING GEAR: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY	*2	CAMSHAFT TIMING GEAR ASSEMBLY

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFD
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CAMSHAFT TIMING GEAR: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. REMOVE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

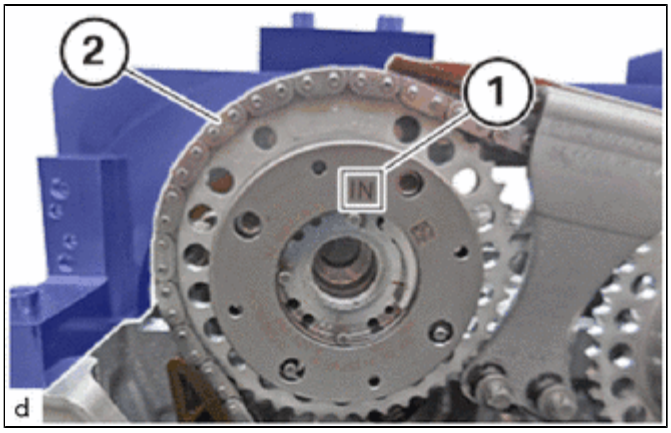
Click here INFO

2. REMOVE CAMSHAFT TIMING GEAR ASSEMBLY

HINT:

The figure shows the rear side of the engine.

(a) Guide out the camshaft timing gear assembly (1) from the chain sub-assembly (2) and remove.



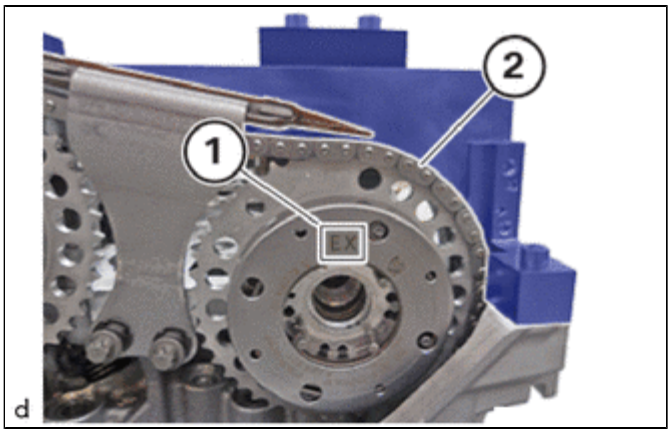
3. REMOVE CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

HINT:

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The figure shows the rear side of the engine.

(a) Guide out the camshaft timing exhaust gear assembly (1) from the chain sub-assembly (2) and remove.



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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFE
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CAMSHAFT TIMING GEAR: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

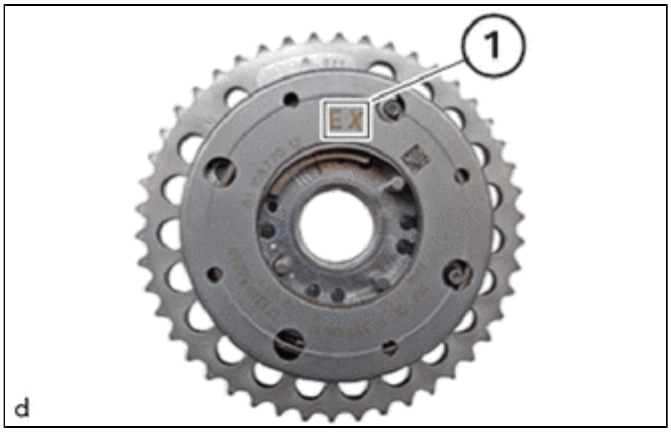
PROCEDURE

1. INSTALL CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

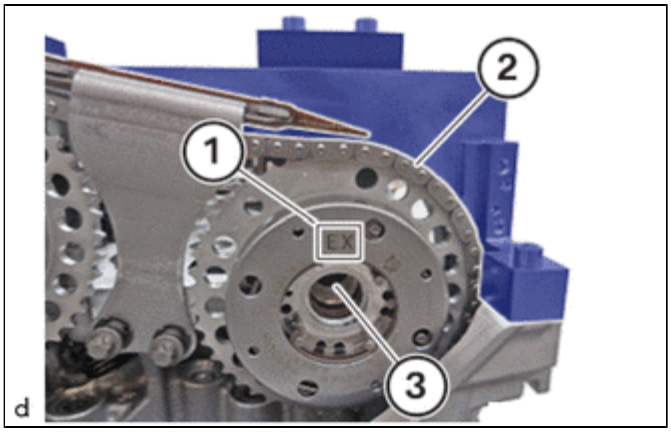
HINT:

The figure shows the rear side of the engine.

(a) Keep camshaft timing exhaust gear assembly (1) marked EX ready.



(b) Feed in camshaft timing exhaust gear assembly (1) in the chain sub-assembly (2) and position on the exhaust camshaft sub-assembly (3).



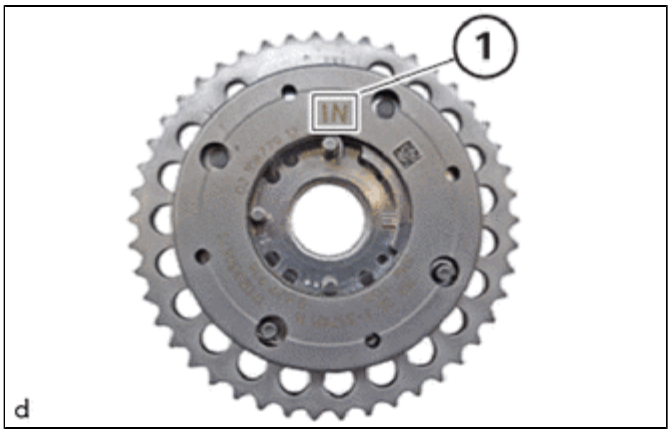
2. INSTALL CAMSHAFT TIMING GEAR ASSEMBLY

HINT:

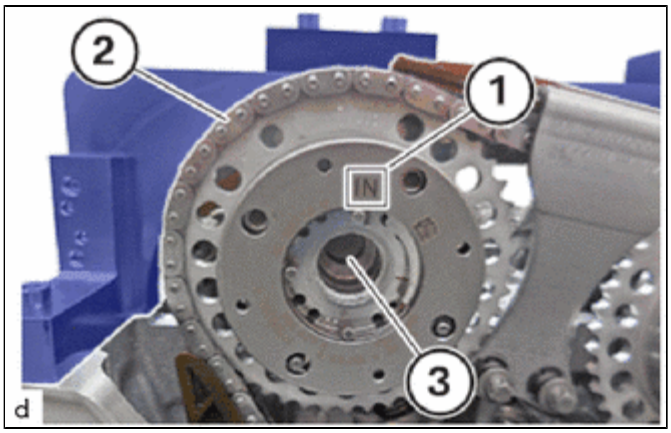
The figure shows the rear side of the engine.

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(a) Keep camshaft timing gear assembly (1) marked IN ready.



(b) Feed in camshaft timing gear assembly (1) in the chain sub-assembly (2) and position on the intake camshaft sub-assembly (3).



3. INSTALL CAMSHAFT TIMING GEAR BOLT ASSEMBLY

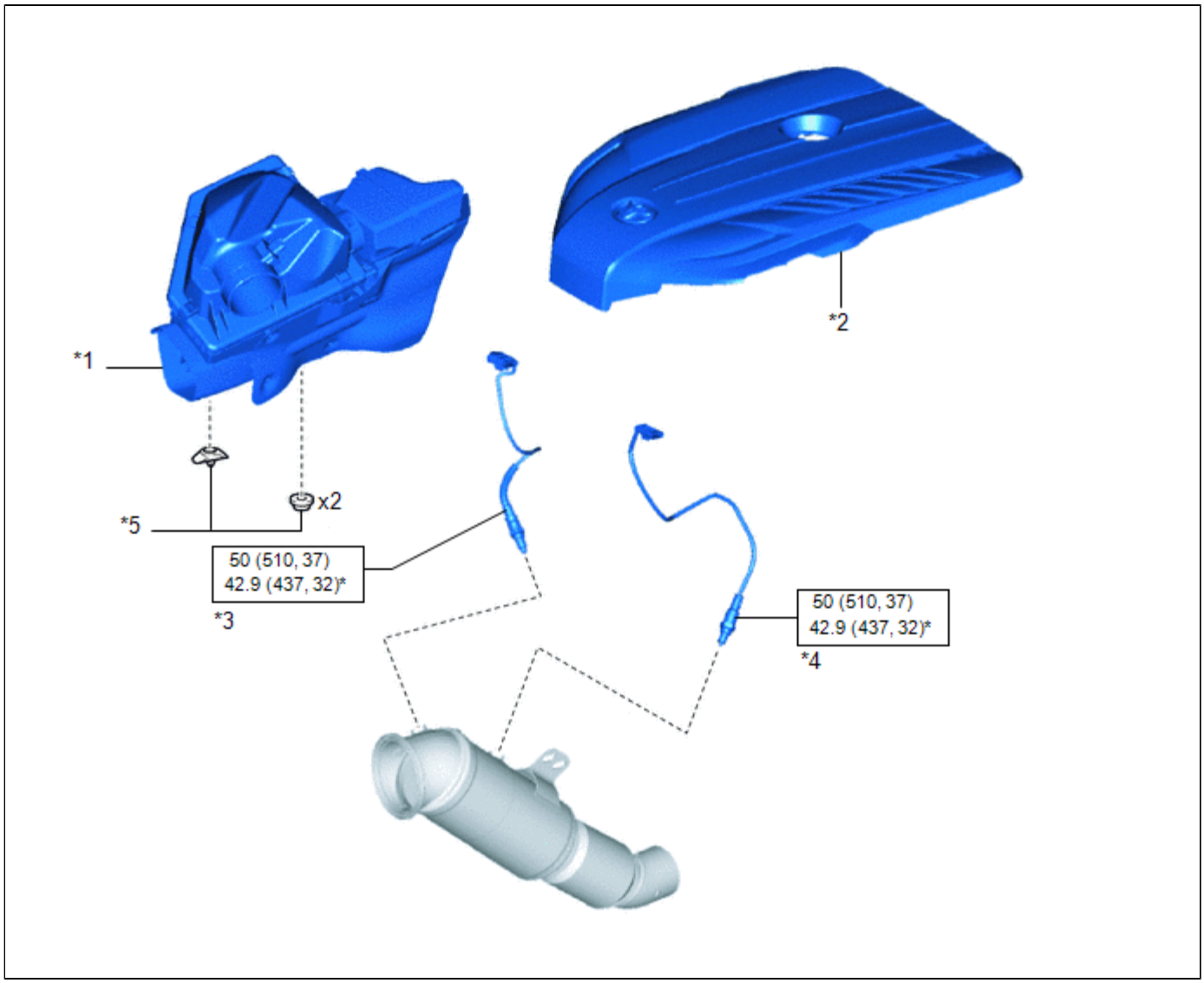
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFI
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CHAIN TENSIONER: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

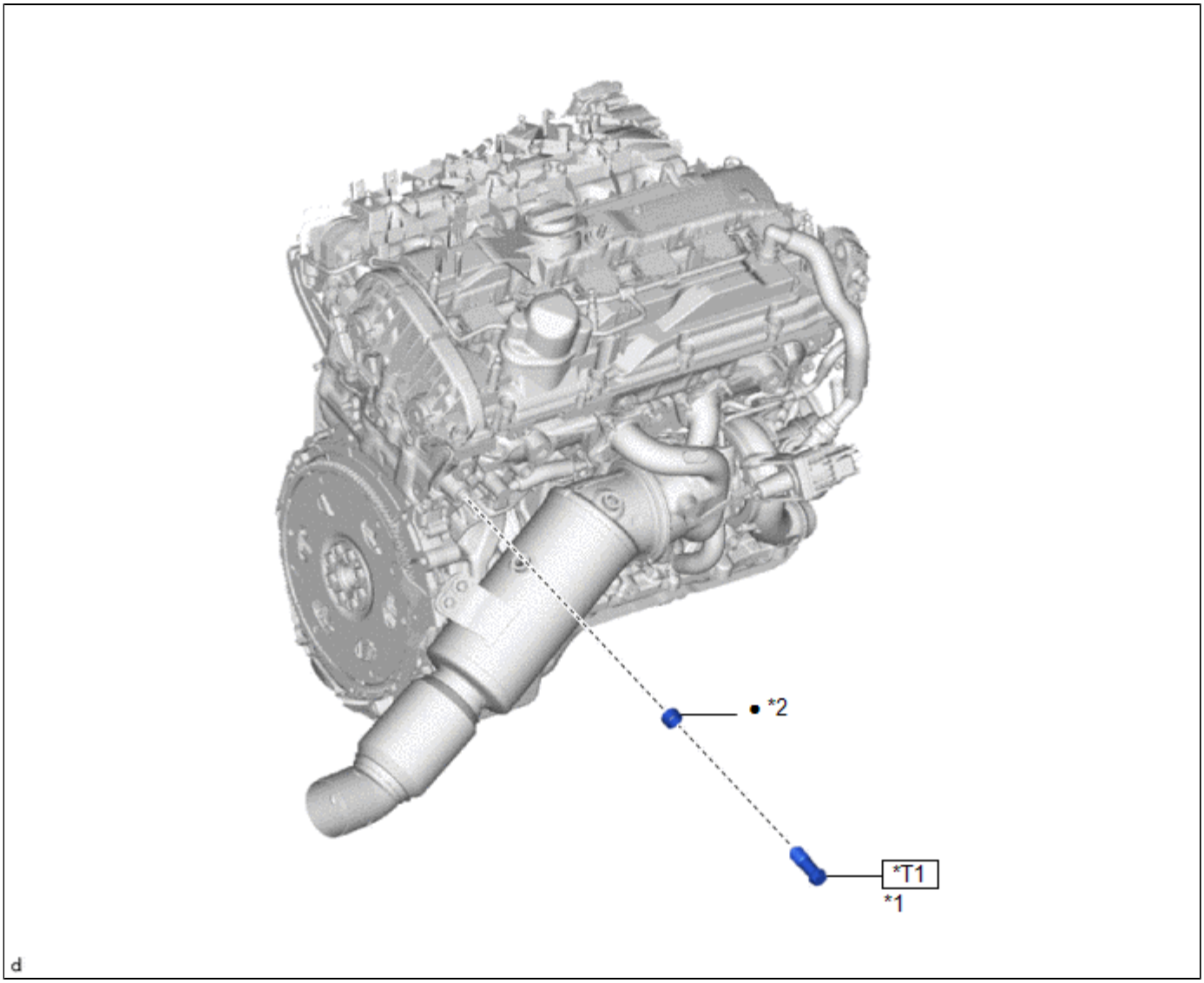
ILLUSTRATION



*1	AIR CLEANER ASSEMBLY	*2	NO. 1 ENGINE COVER SUB-ASSEMBLY
*3	WIDE RANGE AIR FUEL RATIO SENSOR	*4	OXYGEN SENSOR
*5	AIR CLEANER SUPPORT	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	*	For use with SST

ILLUSTRATION

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*1	NO. 1 CHAIN TENSIONER ASSEMBLY	*2	SEALING SLEEVE
□	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st: 20 (204, 15) 2nd: Turn 40°	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFJ
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CHAIN TENSIONER: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

PROCEDURE

1. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

2. REMOVE AIR CLEANER ASSEMBLY

Click here INFO

3. REMOVE WIDE RANGE AIR FUEL RATIO SENSOR

Click here INFO

4. REMOVE OXYGEN SENSOR

Click here INFO

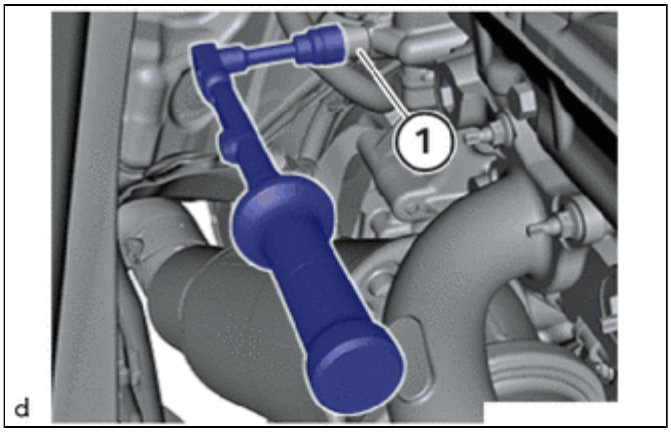
5. REMOVE NO. 1 CHAIN TENSIONER ASSEMBLY

HINT:

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

(a) Have a cloth ready.

(1) A small amount of engine oil emerges during the removal of the No. 1 chain tensioner assembly (1).



(b) Release the No. 1 chain tensioner assembly (1).

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFK
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CHAIN TENSIONER: INSTALLATION; 2020 MY Supra [03/2019 -]		

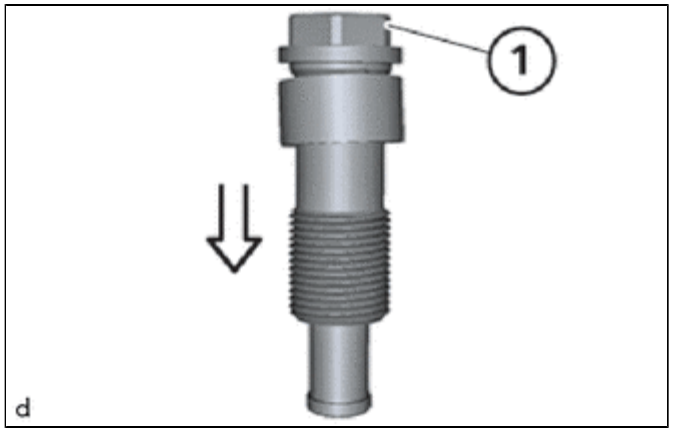
INSTALLATION

PROCEDURE

1. INSTALL NO. 1 CHAIN TENSIONER ASSEMBLY

HINT:

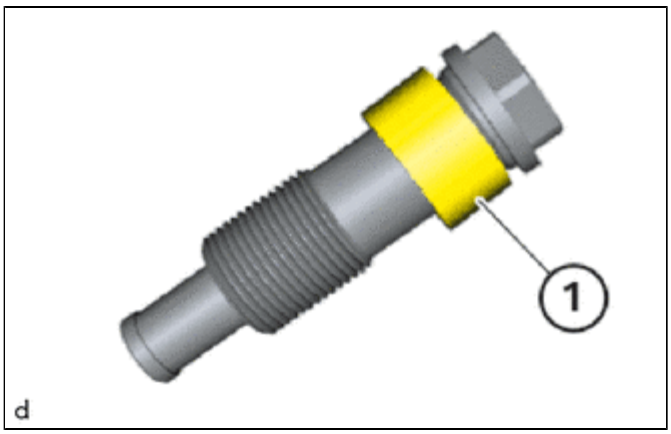
The oil chamber must be drained for reuse of the No. 1 chain tensioner assembly.



(a) Place No. 1 chain tensioner assembly (1) on a level support and slowly compress.

(b) Repeat this procedure twice.

(c) Replace the sealing sleeve (1).

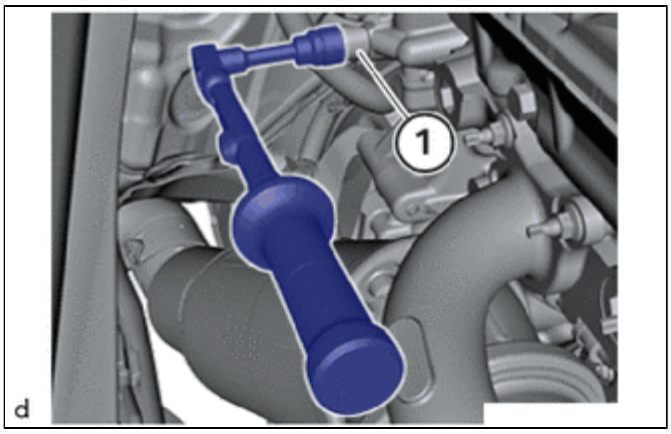


(d) Tighten the No. 1 chain tensioner assembly (1).

Torque:

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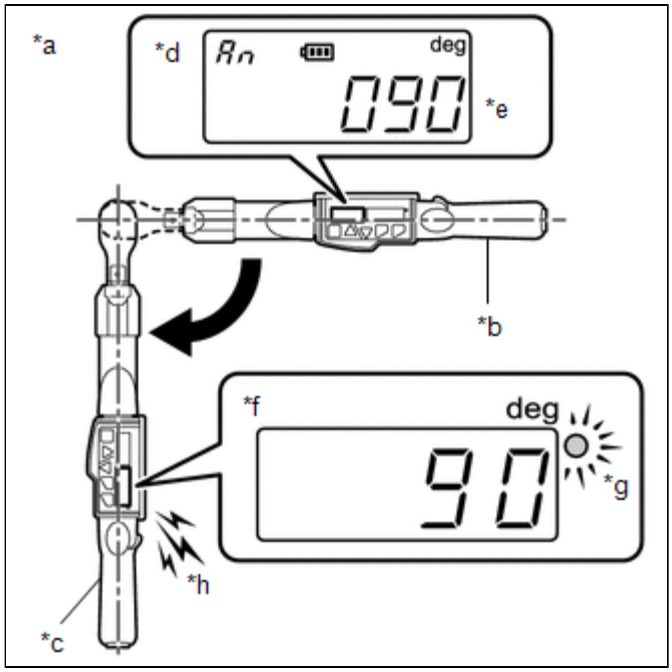
20 N·m {204 kgf·cm, 15 ft·lbf}



(e) Using a digital angle torque wrench, tighten the No. 1 chain tensioner assembly an additional 40°.

HINT:

- When using the digital angle torquewrench, set the wrench to the specifiedtightening angle before use.
- When using the digital angle torquewrench, check the tightening angledisplay while performing the work.
- When tightening reaches the set angle,the buzzer will sound and a blue LEDwill illuminate.



*a	Example
*b	Before Tightening
*c	After Tightening
*d	Set Angle Display
*e	Setting the Specified Angle
*f	Tightening Angle Display
*g	LED Notification
*h	Buzzer Notification

2. INSTALL OXYGEN SENSOR

Click here INFO

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3. INSTALL WIDE RANGE AIR FUEL RATIO SENSOR

Click here INFO

4. INSTALL AIR CLEANER ASSEMBLY

Click here INFO

5. INSTALL NO. 1 ENGINE COVER SUB-ASSEMBLY

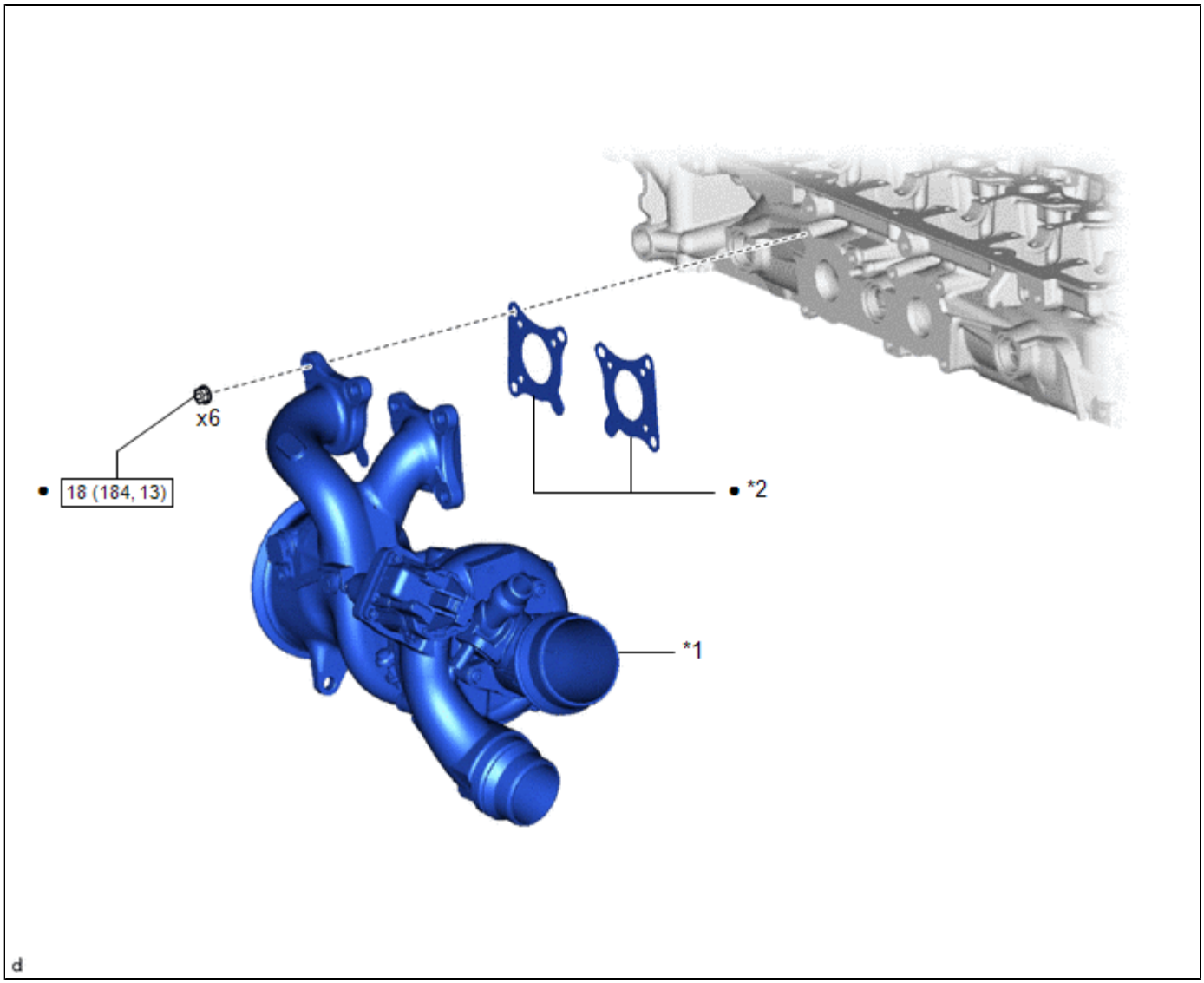
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGD
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): COMPRESSION SPRING: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

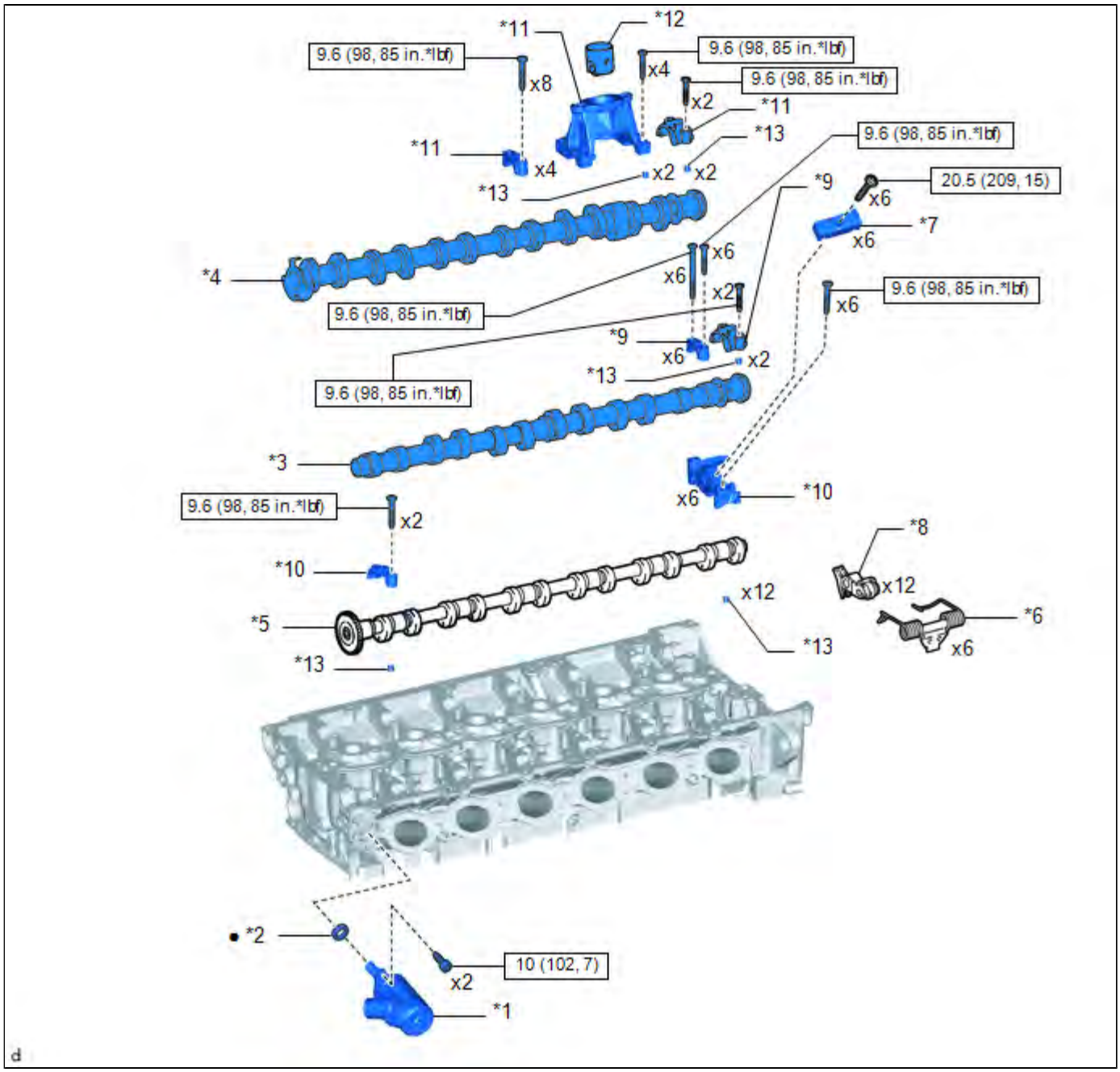
ILLUSTRATION



*1	TURBOCHARGER SUB-ASSEMBLY	*2	EXHAUST MANIFOLD TO HEAD GASKET
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

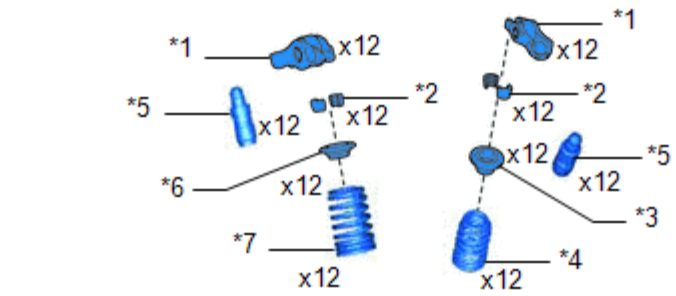
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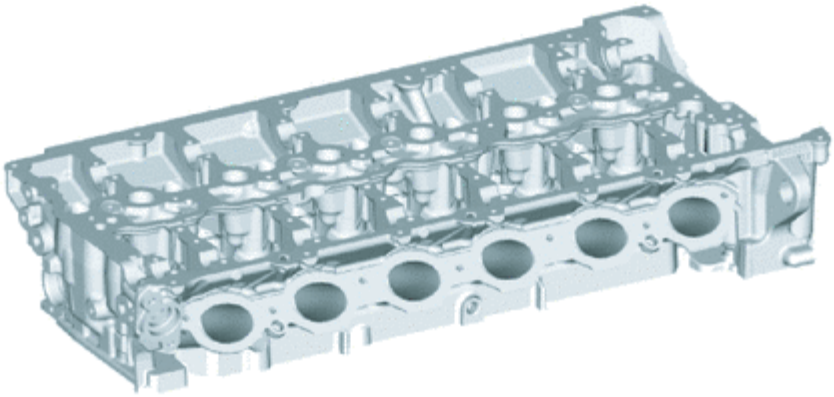


*1	SERVO MOTOR	*2	O-RING
*3	INTAKE CAMSHAFT SUB-ASSEMBLY	*4	EXHAUST CAMSHAFT SUB-ASSEMBLY
*5	NO. 3 CAMSHAFT SUB-ASSEMBLY	*6	TORSION SPRING
*7	GATE	*8	INTERMEDIATE LEVER
*9	CAMSHAFT BEARING CAP	*10	BEARING CAP
*11	EXHAUST CAMSHAFT BEARING CAP	*12	FUEL PUMP LIFTER ASSEMBLY
□	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

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*1	NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY	*2	VALVE SPRING RETAINER LOCK
*3	INTAKE VALVE SPRING RETAINER	*4	INTAKE VALVE COMPRESSION SPRING
*5	VALVE LASH ADJUSTER ASSEMBLY	*6	EXHAUST VALVE SPRING RETAINER
*7	EXHAUST VALVE COMPRESSION SPRING	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGE
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): COMPRESSION SPRING: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. REMOVE CYLINDER HEAD GASKET

Click here INFO

2. REMOVE TURBOCHARGER SUB-ASSEMBLY

Click here INFO

3. ADJUST NO. 3 CAMSHAFT SUB-ASSEMBLY TO MINIMUM LIFT

Click here INFO

4. REMOVE TORSION SPRING

Click here INFO

5. REMOVE GATE

Click here INFO

6. REMOVE INTERMEDIATE LEVER

Click here INFO

7. REMOVE INTAKE CAMSHAFT SUB-ASSEMBLY

Click here INFO

8. REMOVE NO. 3 CAMSHAFT SUB-ASSEMBLY

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Click here INFO

9. REMOVE SERVO MOTOR

Click here INFO

10. REMOVE EXHAUST CAMSHAFT SUB-ASSEMBLY

Click here INFO

11. REMOVE NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

Click here INFO

12. REMOVE VALVE LASH ADJUSTER ASSEMBLY

Click here INFO

13. REMOVE INTAKE VALVE COMPRESSION SPRING

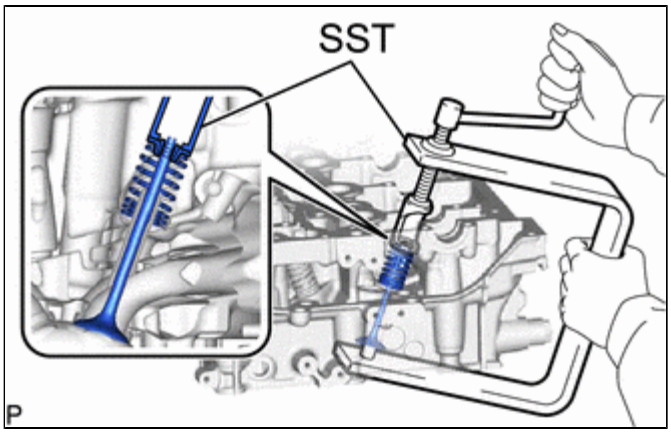
(a) Using SST, compress each compression spring and remove the 12 intake valve spring retainer locks.

SST: 09202-70020

09202-01010

09202-01020

SST: 09202-00021



HINT:

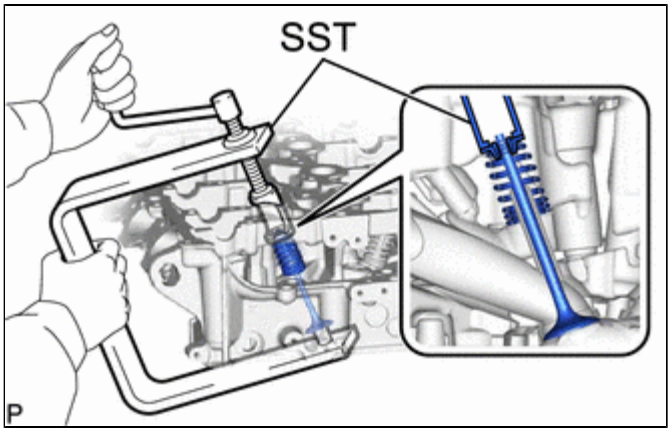
Arrange the removed parts in such a way that they can be reinstalled to their original locations.

(b) Remove the 12 intake valve spring retainers, 12 valve compression spring and from the cylinder head sub-assembly.

HINT:

Arrange the removed parts in such a way that they can be reinstalled to their original locations.

14. REMOVE EXHAUST VALVE COMPRESSION SPRING



(a) Using SST, compress each compression spring and remove the 12 valve spring retainer locks.

SST: 09202-70020

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09202-01010

09202-01020

SST: 09202-00021

HINT:

Arrange the removed parts in such a way that they can be reinstalled to their original locations.

(b) Remove the 12 valve spring retainers, 12 exhaust valve compression spring and from the cylinder head sub-assembly.

HINT:

Arrange the removed parts in such a way that they can be reinstalled to their original locations.

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGF
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): COMPRESSION SPRING: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL EXHAUST VALVE COMPRESSION SPRING

CAUTION:

- Spring preload.

  Danger of injury!

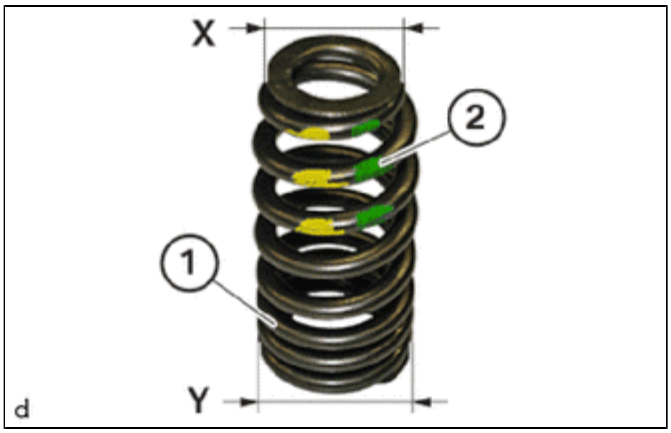
  - The use of the specified special tool (tool) is mandatory.
  - The described operation must be carried out properly.

HINT:

The description is for one component only. The procedure is identical for all further components.

(a) Note the installation position of the exhaust valve compression spring.

(1) Install the exhaust valve compression spring that the larger diameter (Y) points to the lower spring cup.

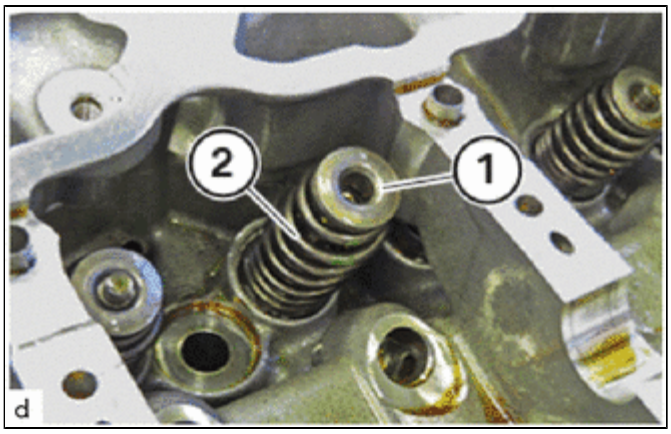


(b) Make sure that the intake valve compression springs are not switched with the exhaust valve compression springs.

(1) The exhaust valve compression springs (1) have been color-coded (2).

(2) Color of the exhaust valve compression springs: green/yellow

(c) Install the exhaust valve compression spring (2) and the exhaust evalve spring retainer (1).



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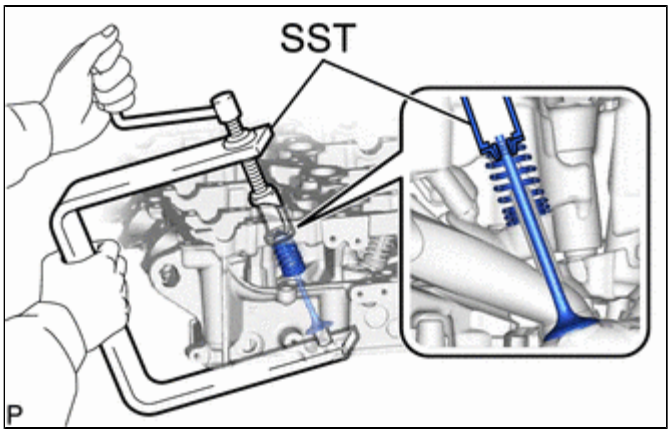
(d) Using SST, compress each exhaust compression spring and install the 12 valve spring retainer locks.

SST: 09202-70020

09202-01010

09202-01020

SST: 09202-00021



HINT:

Wear safety goggles.

2. INSTALL INTAKE VALVE COMPRESSION SPRING

CAUTION:

- Spring preload.

  Danger of injury!

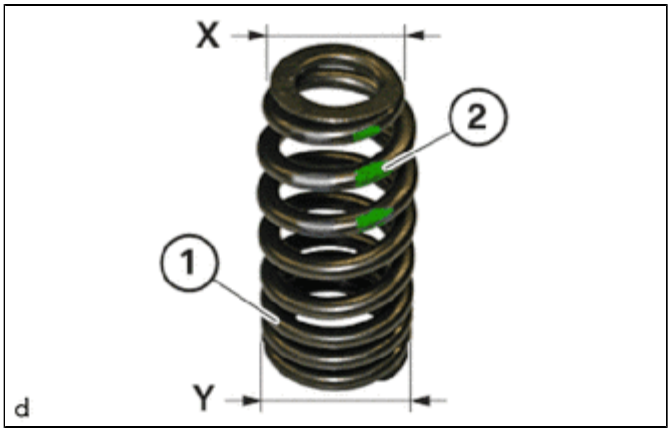
  - The use of the specified special tool (tool) is mandatory.
  - The described operation must be carried out properly.

HINT:

The description is for one component only. The procedure is identical for all further components.

(a) Note the installation position of the intake valve compression spring.

(1) Install the intake valve compression spring such that the larger diameter (Y) points to the lower spring cup.



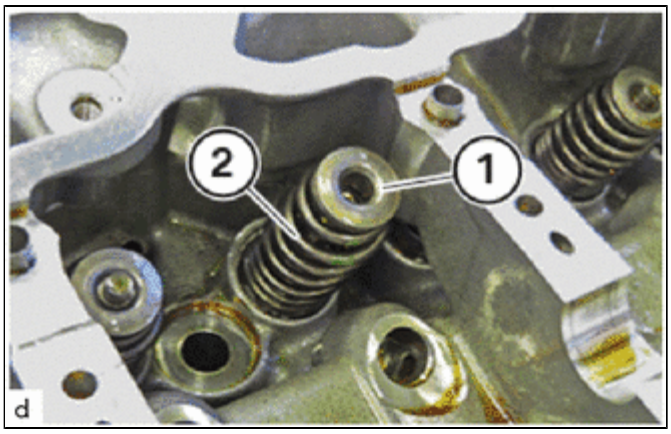
(b) Make sure that the intake valve compression springs are not switched with the exhaust valve compression springs.

(1) The intake valve compression springs (1) have been color-coded (2).

(2) Color of the intake valve compression springs: green

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(c) Install the intake valve compression spring (2) and the intake valve spring retainer (1).



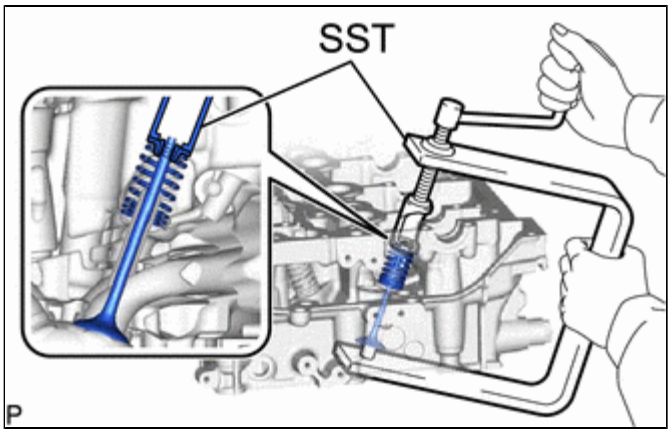
(d) Using SST, compress each intake compression spring and install the 12 valve spring retainer locks.

SST: 09202-70020

09202-01010

09202-01020

SST: 09202-00021



HINT:

Wear safety goggles.

3. INSTALL VALVE LASH ADJUSTER ASSEMBLY

Click here INFO

4. INSTALL NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

Click here INFO

5. INSTALL EXHAUST CAMSHAFT SUB-ASSEMBLY

Click here INFO

6. INSTALL NO. 3 CAMSHAFT SUB-ASSEMBLY

Click here INFO

7. INSTALL INTAKE CAMSHAFT SUB-ASSEMBLY

Click here INFO

8. INSTALL SERVO MOTOR

Click here INFO

9. INSPECT INTERMEDIATE LEVER

Click here INFO

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10. INSTALL INTERMEDIATE LEVER

Click here INFO

11. INSTALL GATE

Click here INFO

12. ADJUST NO. 3 CAMSHAFT SUB-ASSEMBLY TO MINIMUM LIFT

Click here INFO

13. INSPECT AND ADJUST CAMSHAFT

Click here INFO

14. INSTALL TORSION SPRING

Click here INFO

15. INSTALL TURBOCHARGER SUB-ASSEMBLY

Click here INFO

16. INSTALL CYLINDER HEAD GASKET

Click here INFO

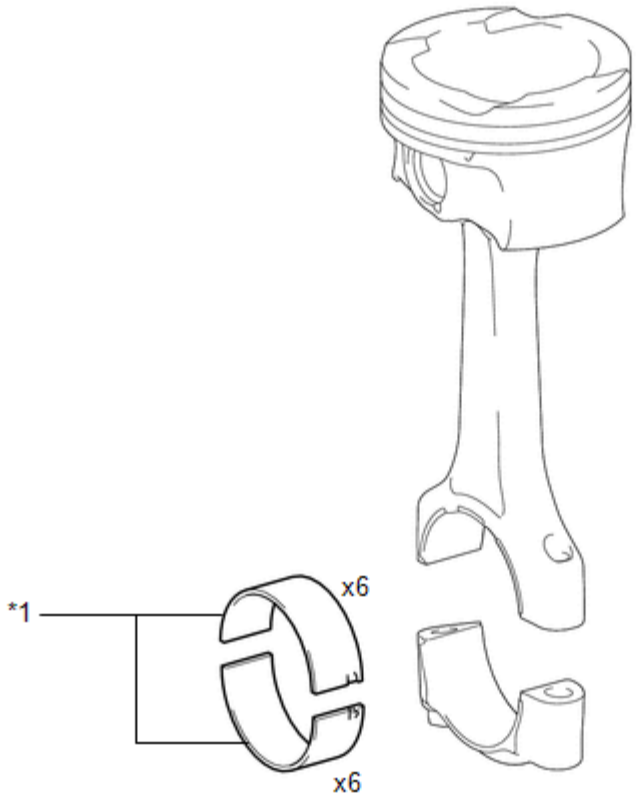


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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGV
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CONNECTING ROD BEARING: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	CONNECTING ROD BEARING	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGW
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CONNECTING ROD BEARING: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

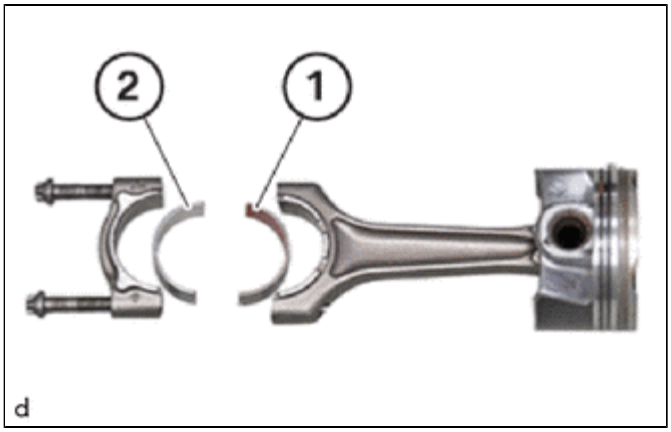
PROCEDURE

1. REMOVE CONNECTING ROD SUB-ASSEMBLY

Click here INFO

2. REMOVE CONNECTING ROD BEARING

(a) Remove the connecting rod bearings (1) and (2).



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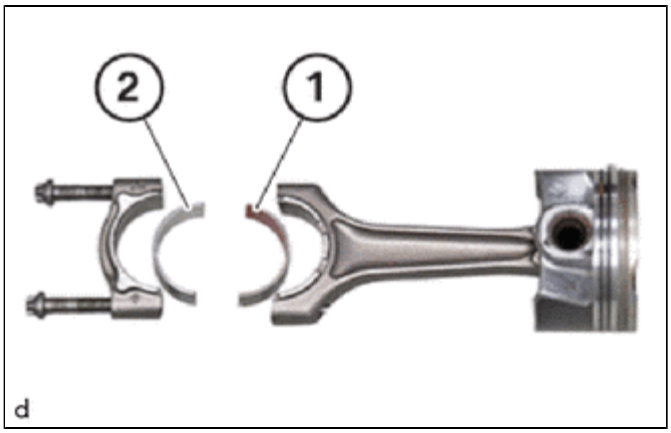
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGX
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CONNECTING ROD BEARING: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL CONNECTING ROD BEARING

(a) Insert the connecting rod bearings (1) and (2).



2. INSTALL CONNECTING ROD SUB-ASSEMBLY

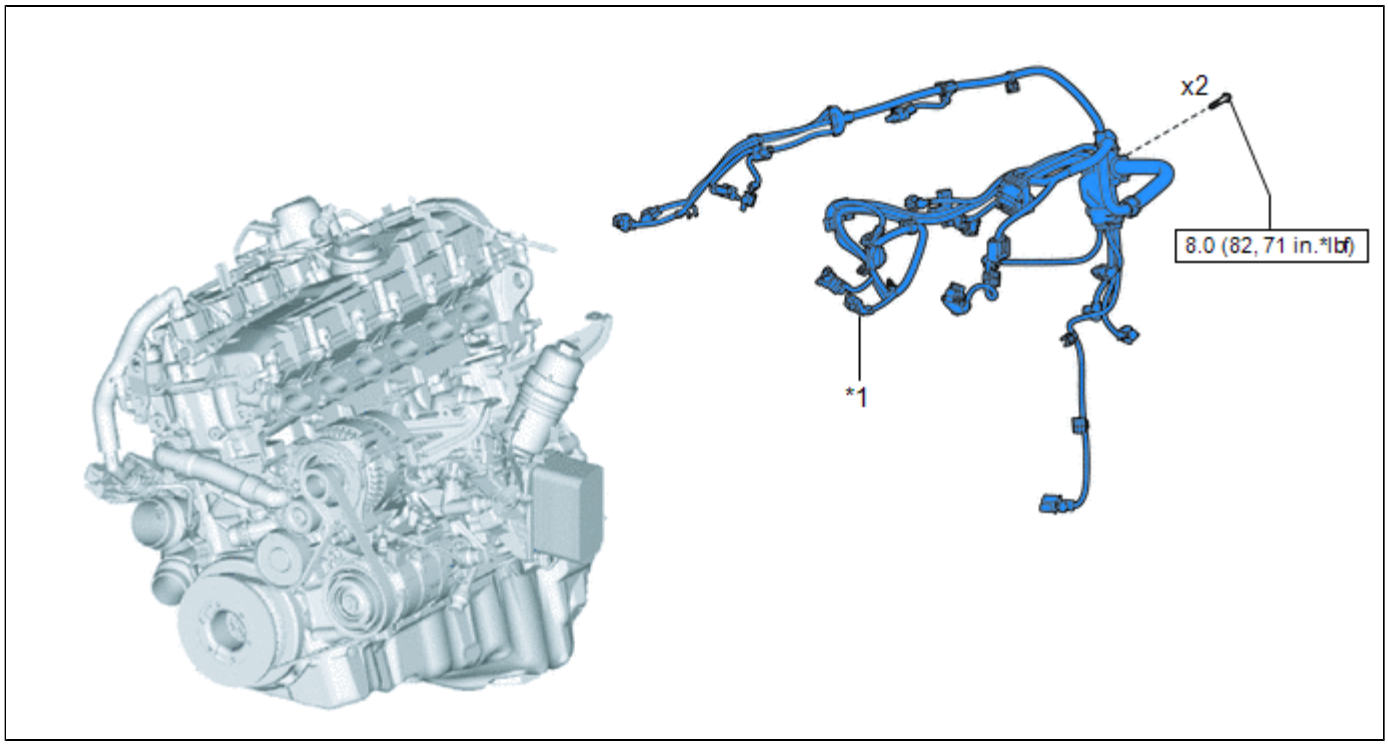
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFR
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CRANKSHAFT: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

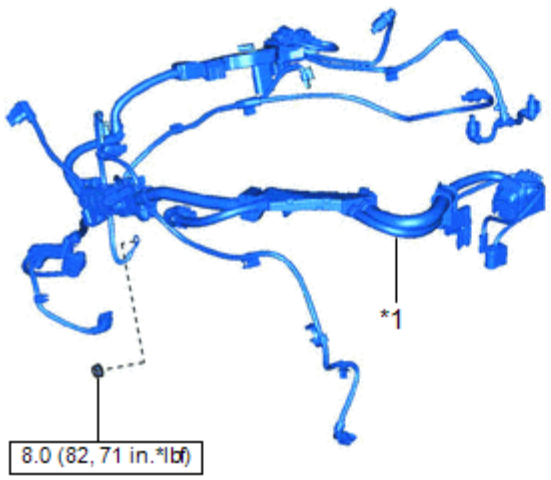
ILLUSTRATION

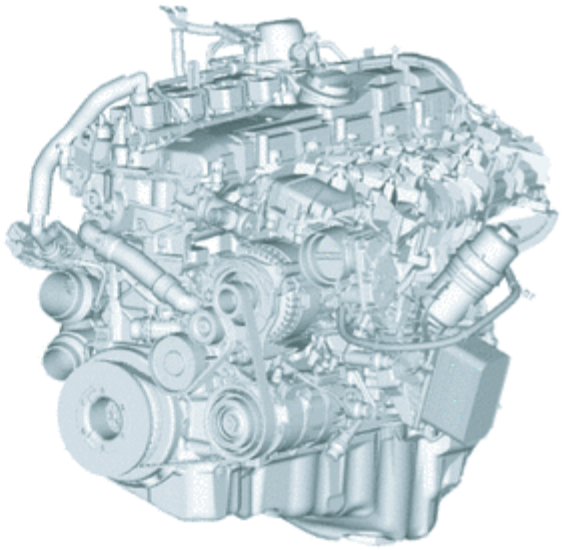


*1	ENGINE WIRE	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

ILLUSTRATION

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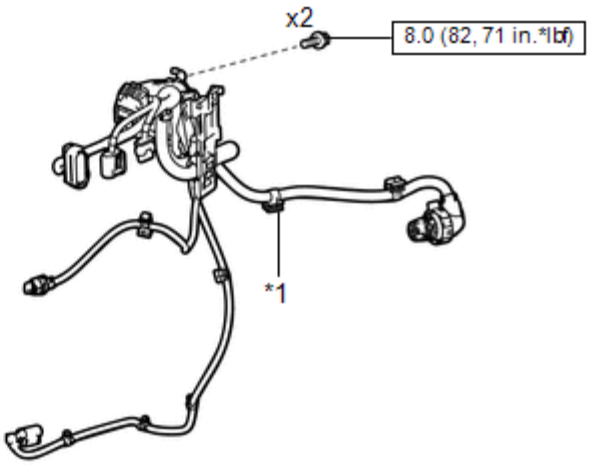




*1	NO. 2 ENGINE WIRE	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

ILLUSTRATION





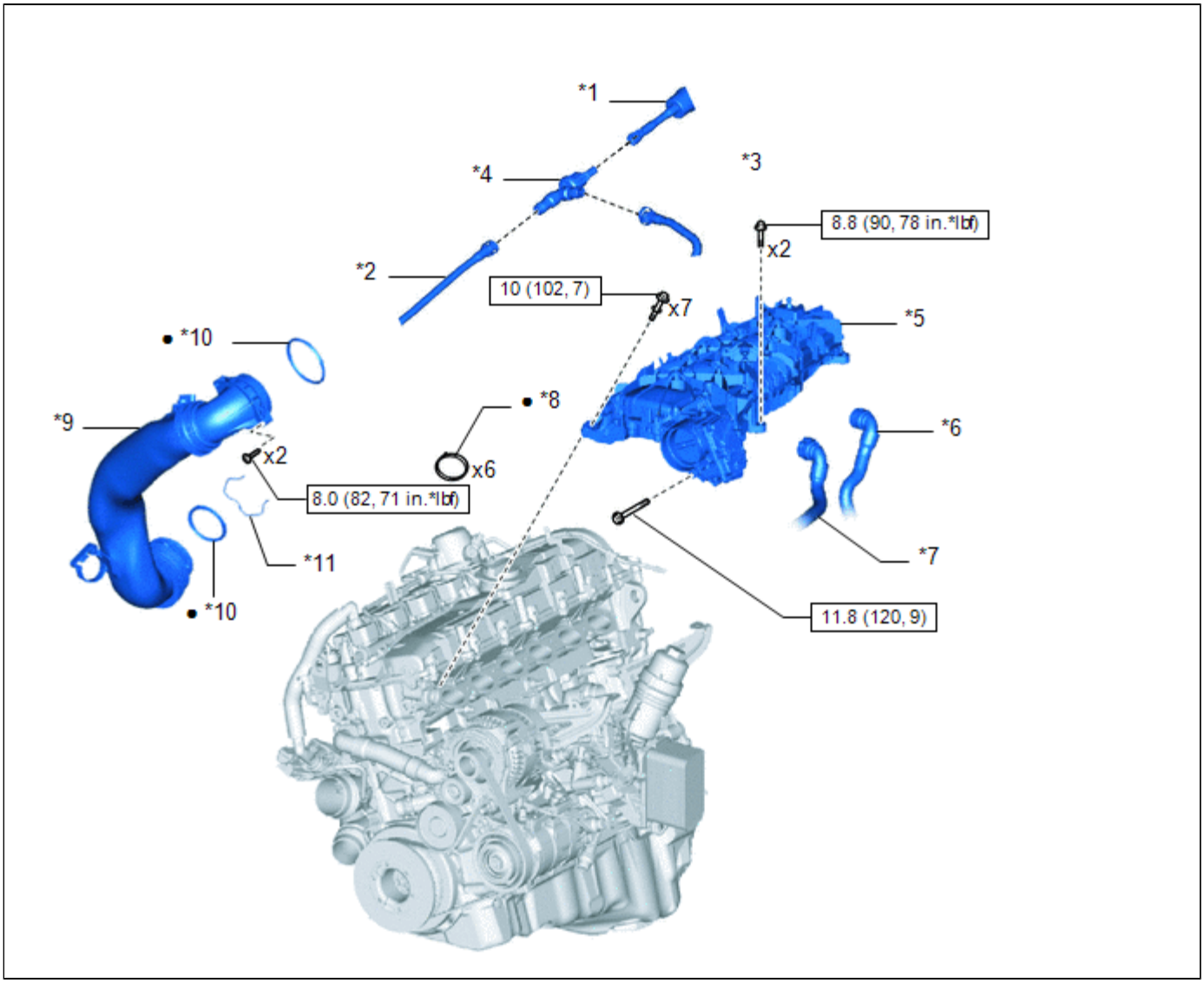
d

*1	TRANSMISSION WIRE	-	-
	N*m (kgf*cm, ft.*lbf): Specified		

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▭	torque	-	-

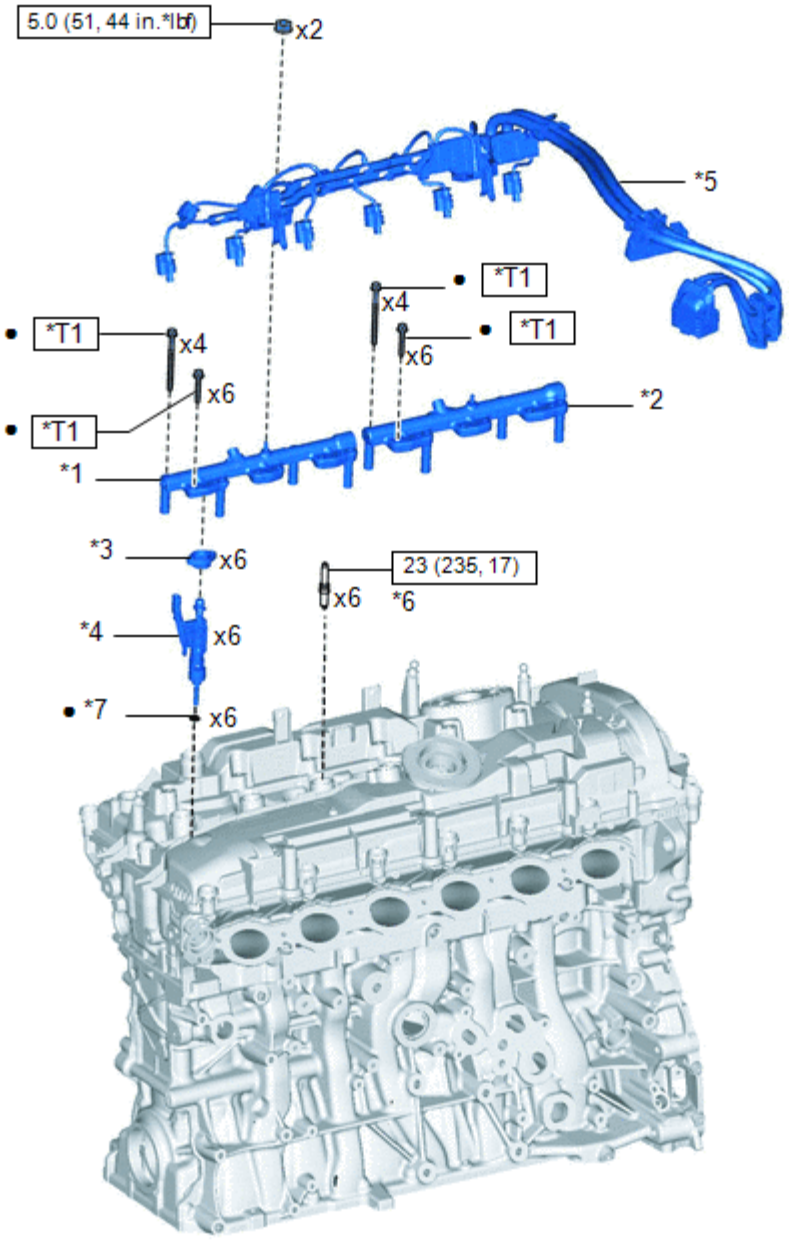
ILLUSTRATION



*1	NO. 2 FUEL VAPOR FEED HOSE	*2	NO. 1 FUEL VAPOR FEED HOSE
*3	NO. 3 FUEL VAPOR FEED HOSE	*4	NO. 1 CHECK VALVE
*5	INTAKE MANIFOLD	*6	NO. 5 WATER BY-PASS HOSE
*7	NO. 7 WATER BY-PASS HOSE	*8	NO. 1 INTAKE MANIFOLD TO HEAD GASKET
*9	NO. 2 AIR CLEANER HOSE	*10	SEALING RING
*11	AIR HOSE CLAMP	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

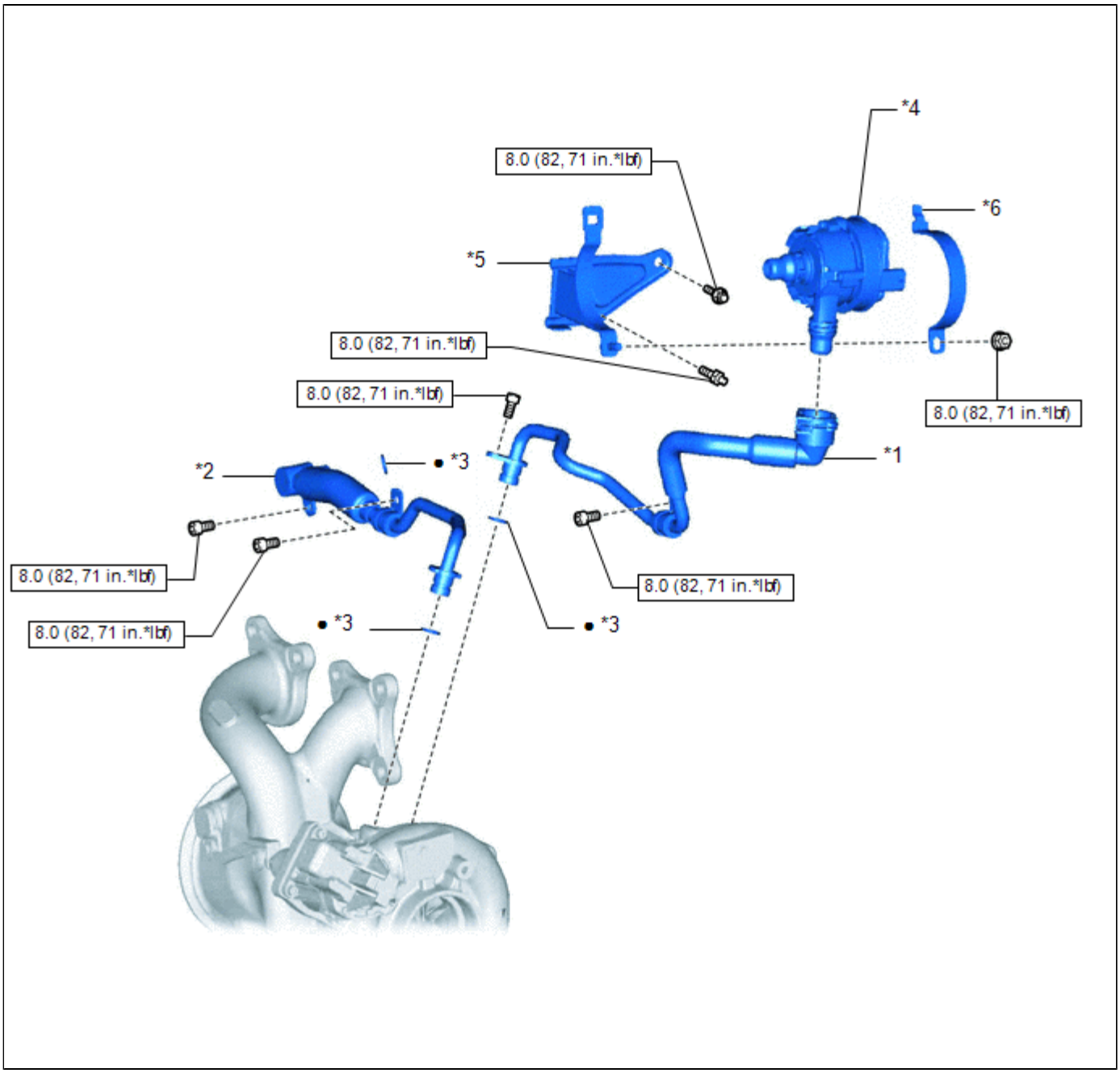
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*1	FUEL DELIVERY PIPE	*2	NO. 2 FUEL DELIVERY PIPE
*3	HOLDER	*4	FUEL INJECTOR ASSEMBLY
*5	NO. 4 ENGINE WIRE	*6	SPARK PLUG
*7	O-RING	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st: 5.0 (51, 44 in.*lbf) 2nd: Turn 90°	-	-

ILLUSTRATION

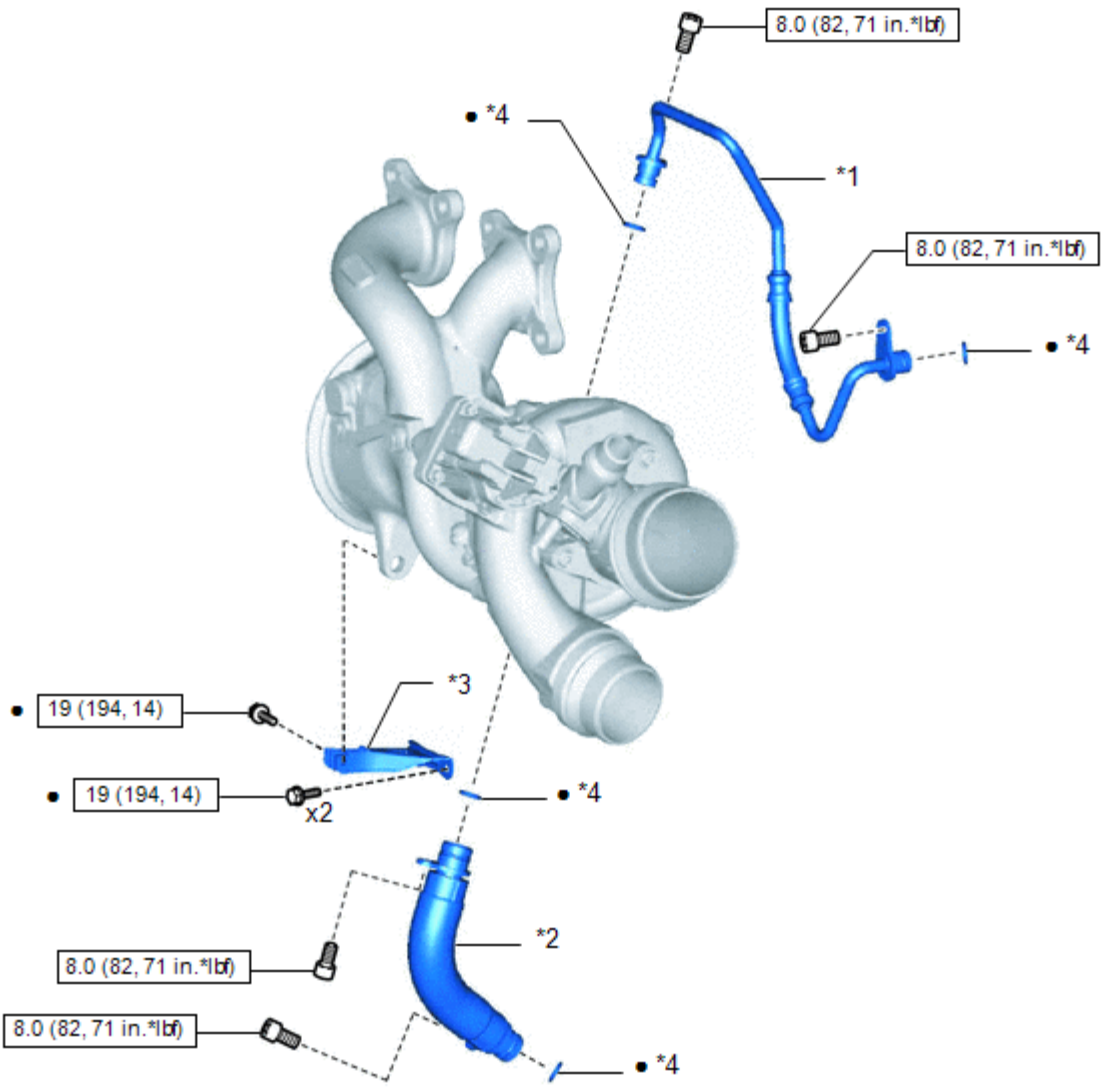
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*1	NO. 1 TURBO WATER PIPE SUB-ASSEMBLY	*2	NO. 2 TURBO WATER PIPE SUB-ASSEMBLY
*3	O-RING	*4	WATER PUMP ASSEMBLY
*5	NO. 1 WATER PUMP BRACKET SUB-ASSEMBLY	*6	NO. 2 WATER PUMP BRACKET SUB-ASSEMBLY
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

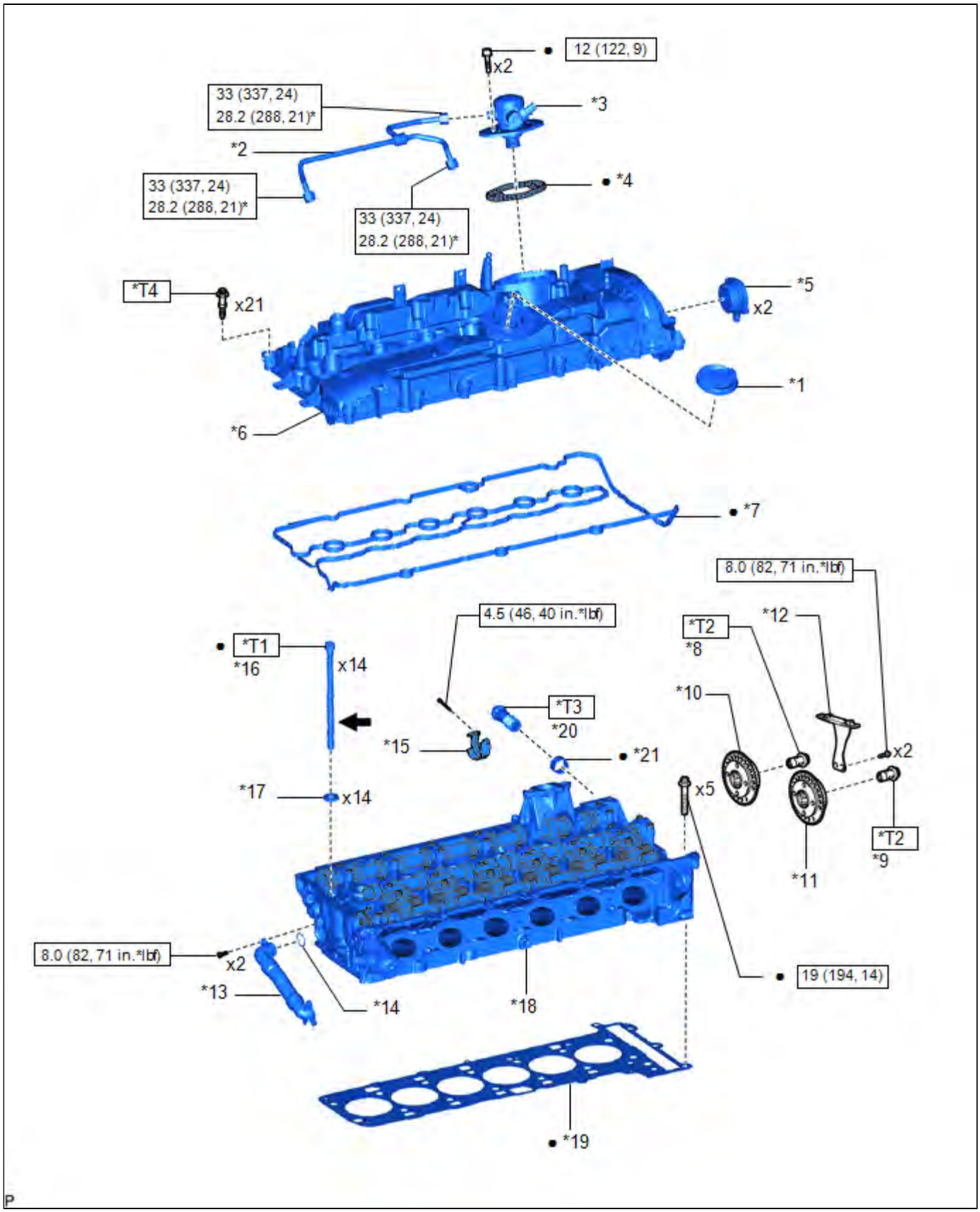
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*1	TURBO OIL INLET PIPE SUB-ASSEMBLY	*2	TURBO OIL OUTLET PIPE
*3	TURBOCHARGER STAY	*4	O-RING
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

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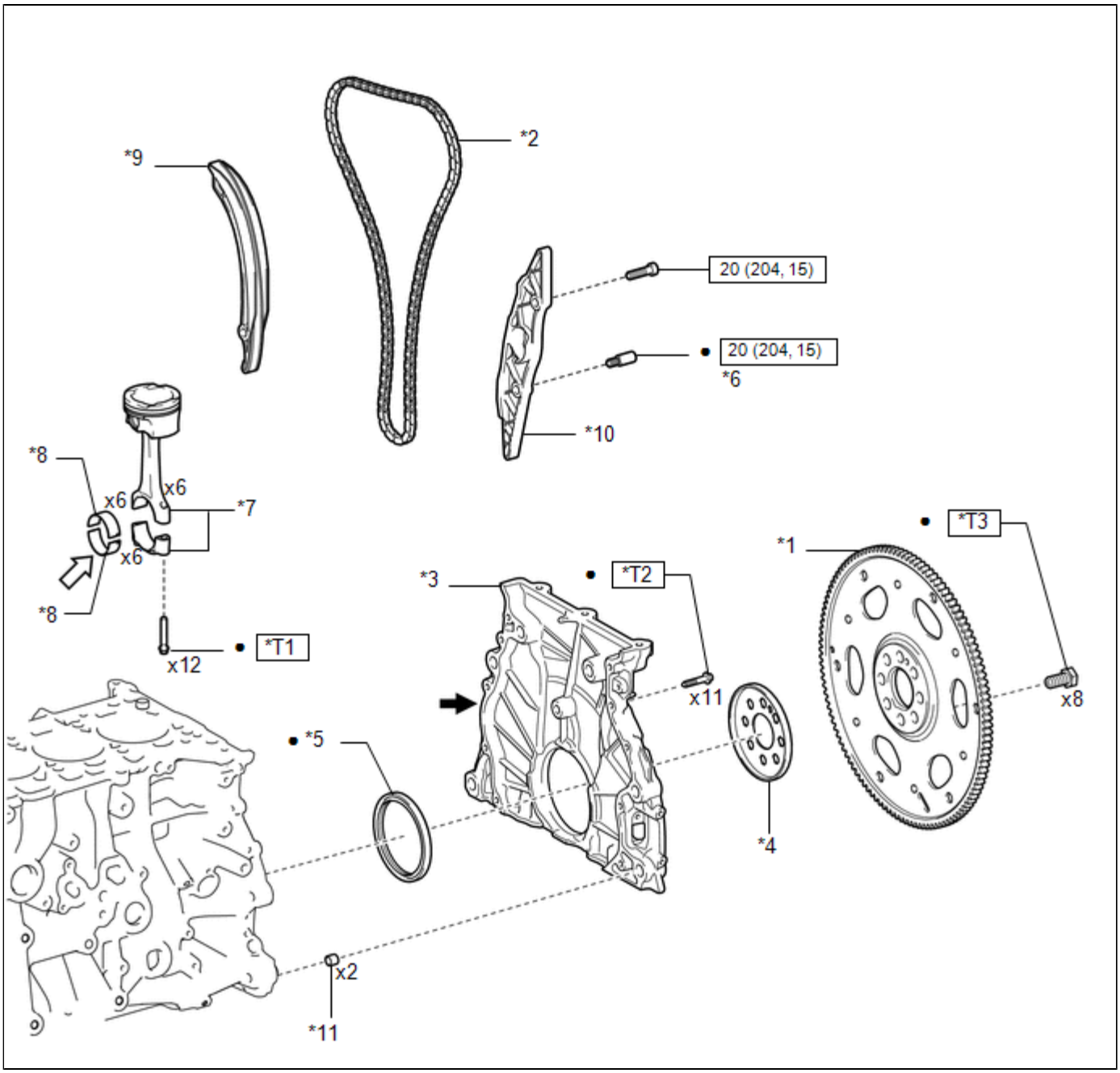
*1	OIL FILLER CAP ASSEMBLY	*2	NO. 1 FUEL PIPE SUB-ASSEMBLY
*3	FUEL PUMP ASSEMBLY	*4	FUEL PUMP SPACER GASKET
*5	CAM TIMING OIL CONTROL SOLENOID ASSEMBLY	*6	CYLINDER HEAD COVER SUB-ASSEMBLY
			EXHAUST CAMSHAFT TIMING GEAR

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*7	CYLINDER HEAD COVER GASKET	*8	CENTER BOLT ASSEMBLY
*9	INTAKE CAMSHAFT TIMING GEAR CENTER BOLT ASSEMBLY	*10	CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY
*11	CAMSHAFT TIMING GEAR ASSEMBLY	*12	CHAIN DAMPER GUIDE
*13	NO. 2 WATER BY-PASS HOSE	*14	O-RING
*15	CAMSHAFT SENSOR WHEEL	*16	CYLINDER HEAD SET BOLT
*17	PLATE WASHER	*18	CYLINDER HEAD SUB-ASSEMBLY
*19	CYLINDER HEAD GASKET	*20	NO. 1 CHAIN TENSIONER ASSEMBLY
*21	SEALING SLEEVE	-	-
	N*m (kgf*cm, ft.*lbf): Specified torque	*	For use with a union nut wrench
•	Non-reusable part		Engine oil
*T1	1st: 30 (306, 22) 2nd: Turn 90° 3rd: Turn 180°	*T2	1st: 10 (102, 7) 2nd: 30 (306, 22) 3rd : 50 (510, 37) 4th : Turn 35°
*T3	1st: 20 (204, 15) 2nd: Turn 40°	*T4	1st: 6.0 (61, 53 in.*lbf) 2nd: 11 (112, 8)

ILLUSTRATION

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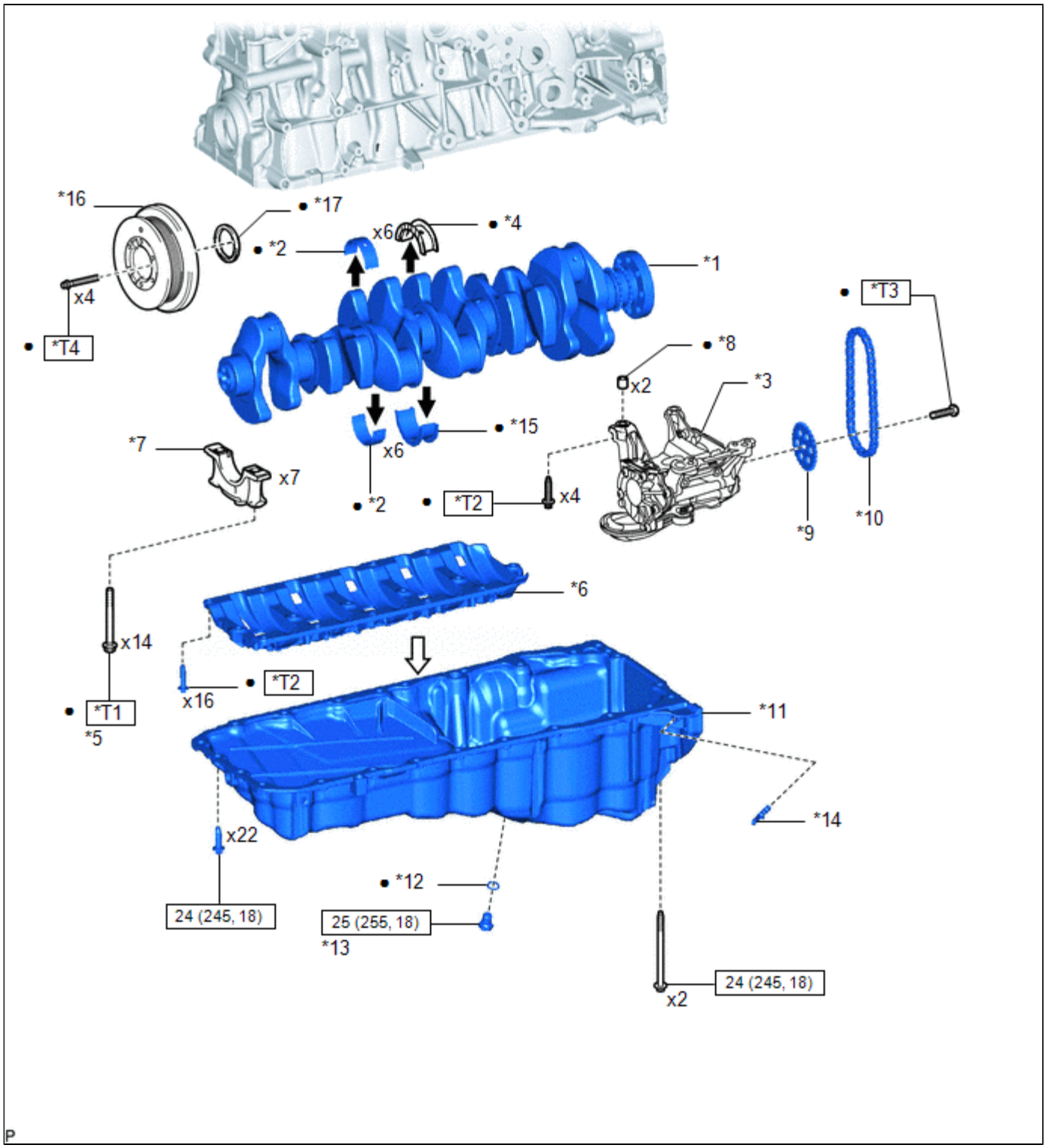
*1	FLYWHEEL SUB-ASSEMBLY	*2	CHAIN SUB-ASSEMBLY
*3	TIMING GEAR CASE	*4	NO. 1 CRANK ANGLE SENSOR PLATE
*5	TIMING CHAIN COVER OIL SEAL	*6	BEARING JOURNAL
*7	PISTON SUB-ASSEMBLY W/PIN	*8	CONNECTING ROD BEARING
*9	CHAIN TENSIONER SLIPPER	*10	NO. 1 CHAIN VIBRATION DAMPER
*11	RING PIN	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
	Loctite 5970 Flange Sealant		Engine oil

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*T1	1st: 20 (204, 15) 2nd: Turn 70° 3rd: Turn 70°	*T2	1st: 8.0 (82, 71 in.*lbf) 2nd: Turn 90°
*T3	1st: 45 (459, 33) 2nd: Turn 40°	-	-

ILLUSTRATION

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*1	CRANKSHAFT	*2	CRANKSHAFT BEARING
*3	OIL PUMP ASSEMBLY	*4	UPPER CRANKSHAFT THRUST WASHER
*5	CRANKSHAFT BEARING CAP SET BOLT	*6	NO. 1 OIL PAN BAFFLE PLATE
*7	CRANKSHAFT BEARING CAP	*8	OIL PUMP SET PIN
*9	CAMSHAFT SPROCKET	*10	OIL PUMP DRIVE CHAIN SUB-ASSEMBLY
*11	OIL PAN SUB-ASSEMBLY	*12	OIL PAN DRAIN PLUG GASKET

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*13	OIL PAN DRAIN PLUG	*14	SEAL CAP
*15	LOWER CRANKSHAFT THRUST WASHER	*16	CRANKSHAFT PULLEY ASSEMBLY
*17	FRONT CRANKSHAFT OIL SEAL	-	-
	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
	Engine oil		Loctite 5970 Flange Sealant
*T1	1st: 25 (255, 18) 2nd: Turn 65° 3rd: Turn 65°	*T2	1st: 15 (153, 11) 2nd: Turn 45°
*T3	1st: 5.0 (51, 44 in.*lbf) 2nd: Turn 90°	*T4	1st: 40 (408, 30) 2nd: Turn 120°

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFS
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CRANKSHAFT: DISASSEMBLY; 2020 MY Supra [03/2019 -]		

DISASSEMBLY

PROCEDURE

1. REMOVE ENGINE ASSEMBLY

Click here INFO

2. REMOVE SPARK PLUG

Click here INFO

3. REMOVE NO. 2 AIR CLEANER HOSE

Click here INFO

4. REMOVE OIL PAN DRAIN PLUG

Click here INFO

5. INSTALL OIL PAN DRAIN PLUG

Click here INFO

6. REMOVE NO. 1 FUEL PIPE SUB-ASSEMBLY

Click here INFO

7. REMOVE FUEL PUMP ASSEMBLY

Click here INFO

8. REMOVE FUEL INJECTOR ASSEMBLY (for Front Side)

Click here INFO

9. REMOVE FUEL INJECTOR ASSEMBLY (for Rear Side)

Click here INFO

10. REMOVE CAM TIMING OIL CONTROL SOLENOID ASSEMBLY

Click here INFO

11. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY

Click here INFO

12. REMOVE INTAKE MANIFOLD

Click here INFO

13. REMOVE OUTLET TURBO OIL PIPE

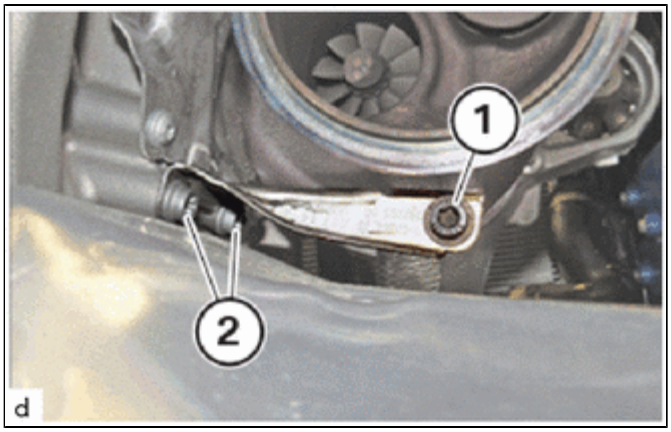
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INFO

14. REMOVE TURBOCHARGER STAY

(a) Loosen T45 bolt (1).



(b) Release T45 bolts (2) and remove the turbocharger stay.

15. SET NO. 1 CYLINDER TO TDC (COMPRESSION)

(a) Turn the engine with the special tool 0 493 380 (11 6 480) to the TDC firing position of cylinder 1.

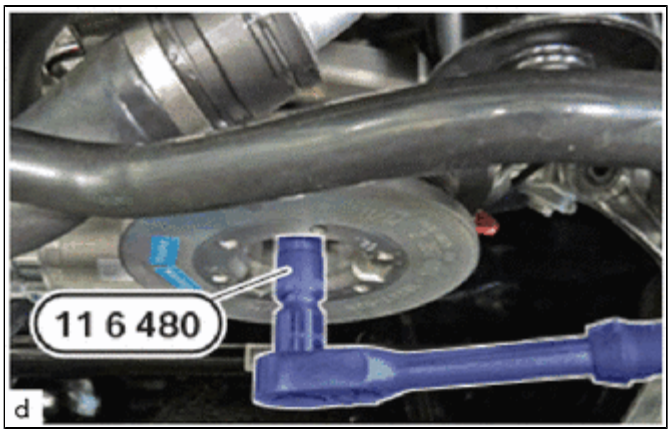
SST: 09200-WA190

NOTICE:

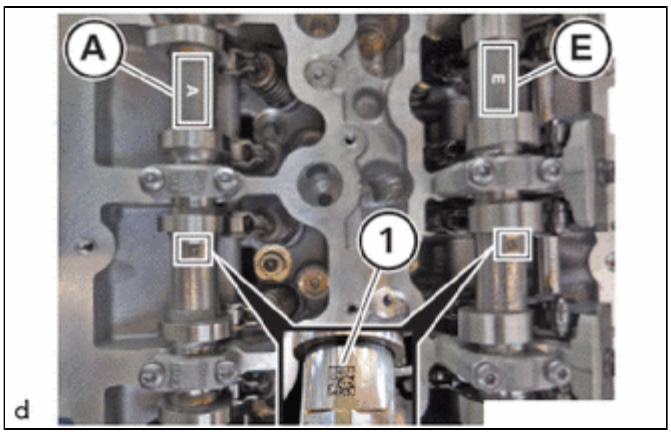
- Damage to the engine.

  The engine may be damaged if it is manually rotated in the wrong direction.

  - Always rotate the engine in the correct direction of rotation by hand: a) Clockwise, facing the crankshaft pulley assembly or b) Counter-clockwise, facing the timing chain. (b) only applies when the chain sub-assembly is installed.

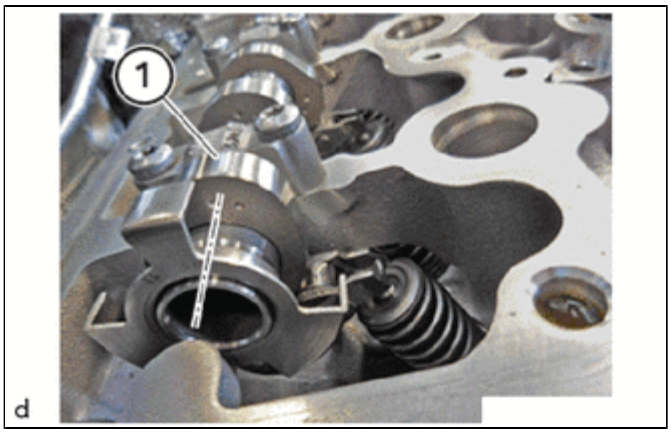


(b) Make sure that the marks (1) on the intake camshaft sub-assembly (E) and the exhaust camshaft sub-assembly (A) are legible from above.

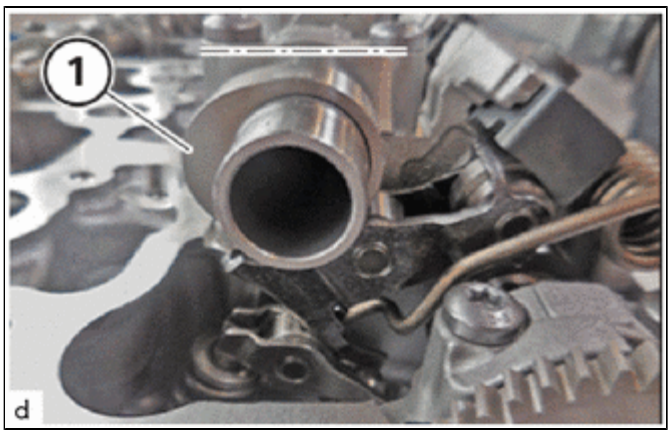


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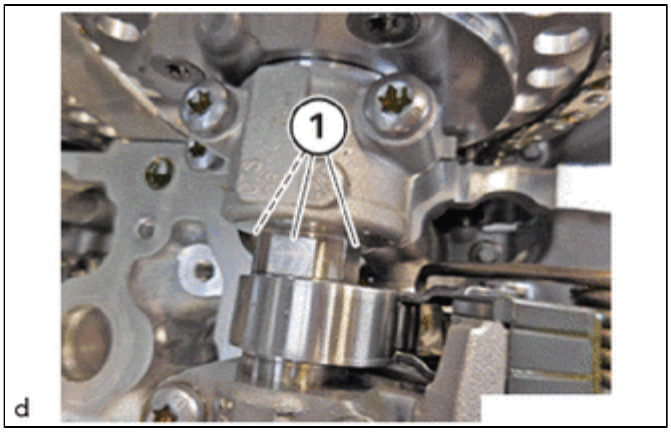
(c) Ensure that the cam (1) on the exhaust camshaft sub-assembly on cylinder 1 points to the inside right at a slight angle.



(d) Ensure that the cam (1) on the intake camshaft sub-assembly on cylinder 1 points to the inside left at an angle.



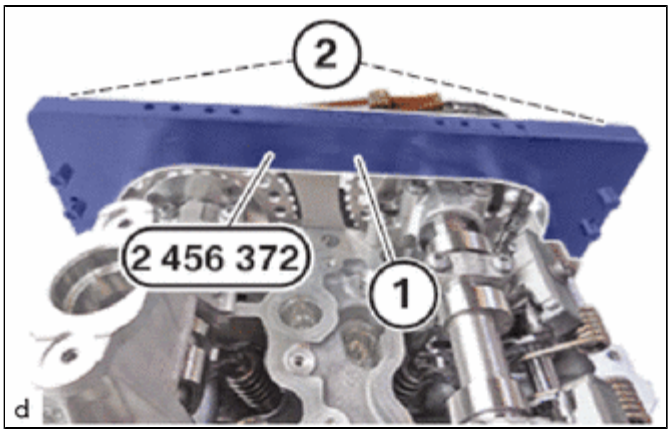
(e) Ensure that the flattened areas (1) on the intake camshaft sub-assembly and the exhaust camshaft sub-assembly point upwards.



(f) Position the basic carrier (1) from the set of special tools 2 456 372 on the cylinder head sub-assembly.

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SST: 09200-WA690



(g) Tighten the bolts (2) from the set of special tools 2 456 372 .

SST: 09200-WA690

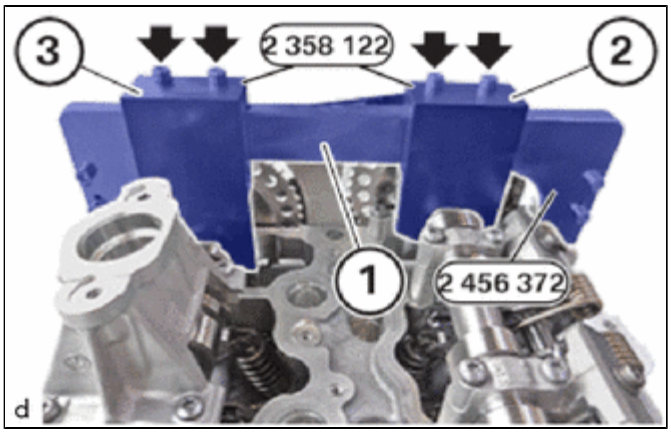
Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(h) Position the test gauge (2) from the set of special tools 2 358 122 between the intake camshaft sub-assembly and the basic carrier (1) from the set of special tools 2 456 372 .

SST: 09200-WA380

SST: 09200-WA690



(i) Position the test gauge (3) from the set of special tools 2 358 122 between the exhaust camshaft sub-assembly and the basic carrier (1) from the set of special tools 2 456 372 .

SST: 09200-WA380

SST: 09200-WA690

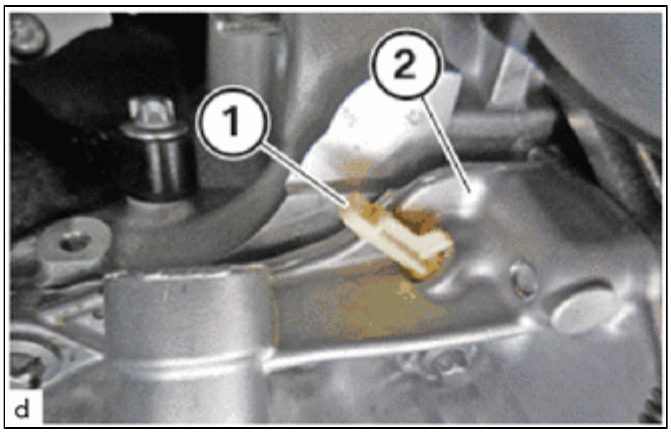
(j) Tighten bolts (arrows).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(k) Guide out and remove sealing cap (1) on oil pan sub-assembly (2).

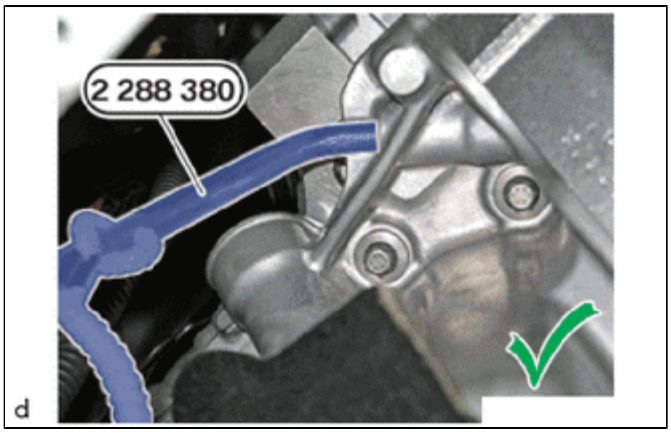
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(l) Position the special tool 2 288 380 correctly in the dowel hole .

SST: 09200-WA570

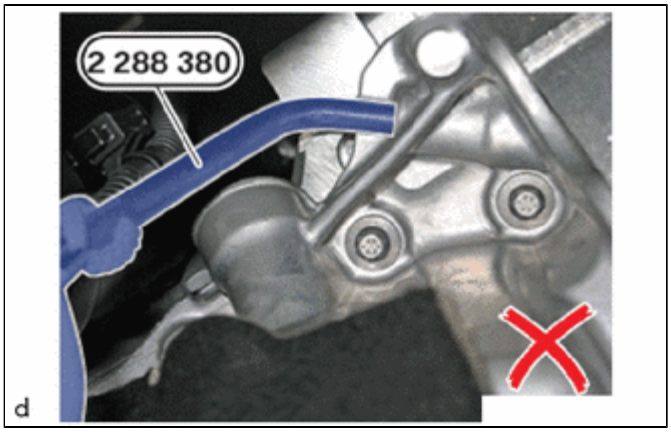
(1) The engine is in the TDC firing position of cylinder 1.



(m) Make sure that the special tool 2 288 380 is not positioned incorrectly.

SST: 09200-WA570

(1) The TDC firing position of cylinder 1 was not reached.



16. REMOVE NO. 1 CHAIN TENSIONER ASSEMBLY

Click here INFO

17. LOOSEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

18. LOOSEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

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Click here INFO

19. REMOVE INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

20. REMOVE EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

21. REMOVE CAMSHAFT TIMING GEAR ASSEMBLY

Click here INFO

22. REMOVE CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

Click here INFO

23. REMOVE SST

Click here INFO

24. REMOVE CYLINDER HEAD SUB-ASSEMBLY

Click here INFO

25. REMOVE CYLINDER HEAD GASKET

Click here INFO

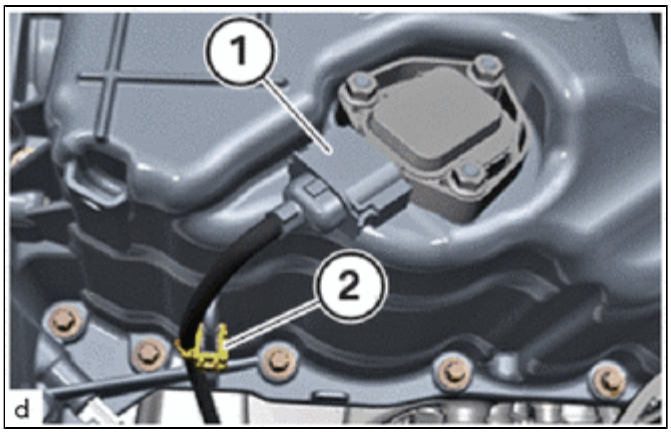
26. REMOVE CRANKSHAFT PULLEY ASSEMBLY

Click here INFO

27. REMOVE DRIVE PLATE AND RING GEAR SUB-ASSEMBLY

Click here INFO

28. REMOVE OIL PAN SUB-ASSEMBLY

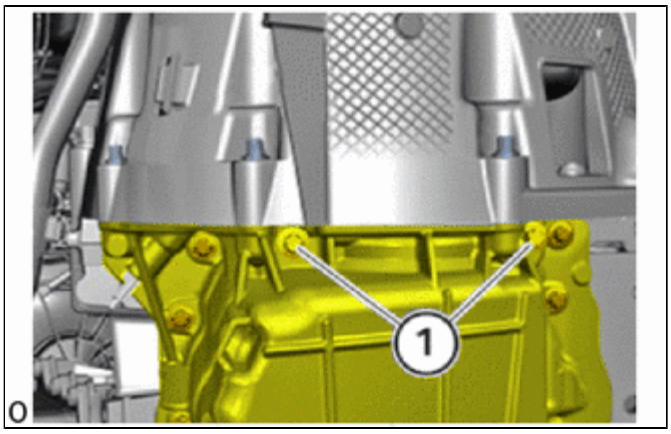


(a) Unlock and loosen connector (1).

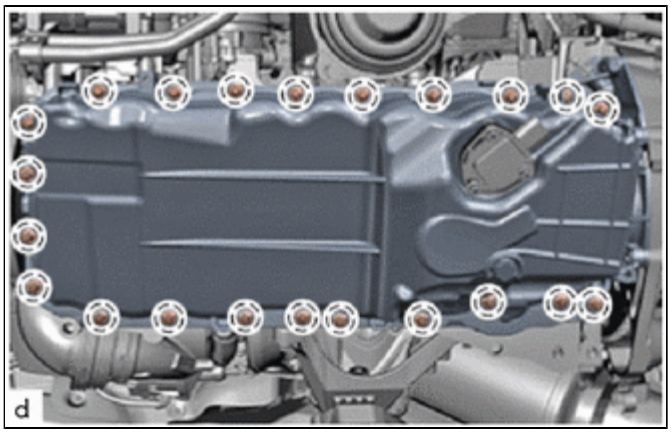
(b) Loosen clamp (2).

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(c) Loosen E10 bolts (1).



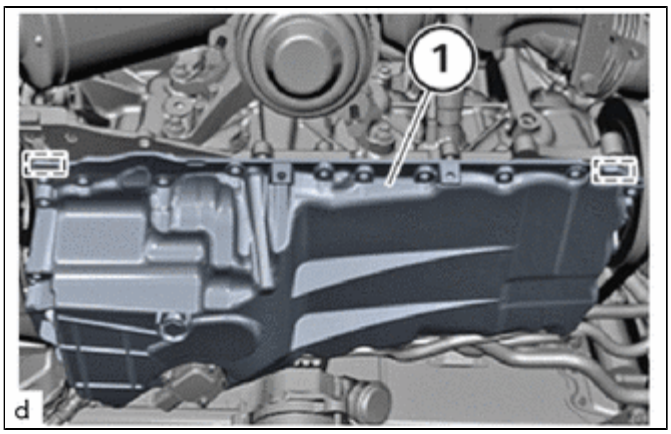
(d) Unscrew all of the E10 bolts (marks).



(e) Release the oil pan sub-assembly (1) in the marked areas.

HINT:

Increased force may be necessary during disassembly because the component is bonded with seal packing.



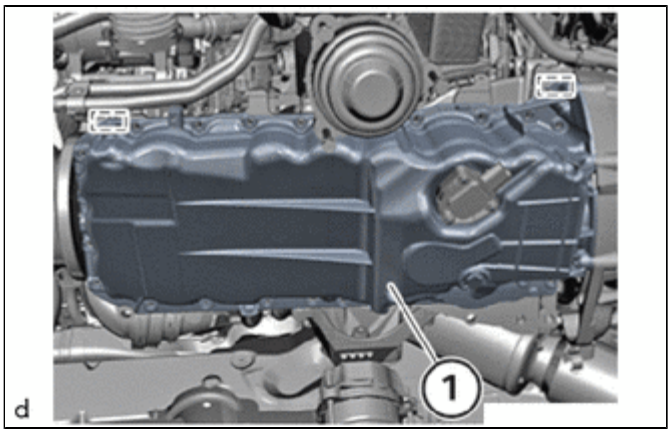
(f) Release the oil pan sub-assembly (1) in the marked areas.

HINT:

Increased force may be necessary during disassembly

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because the component is bonded with seal packing.



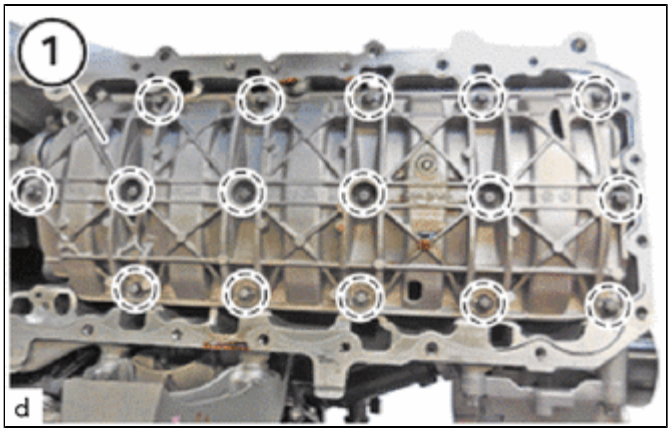
(g) Guide out oil pan sub-assembly (1) toward the bottom and remove.

29. REMOVE OIL PUMP ASSEMBLY

Click here INFO

30. REMOVE NO. 1 OIL PAN BAFFLE PLATE

(a) Unscrew all E10 bolts (markings).



(b) Guide out and remove the No. 1 oil pan baffle plate (1).

31. REMOVE CONNECTING ROD SUB-ASSEMBLY

Click here INFO

32. REMOVE TIMING GEAR CASE

Click here INFO

33. REMOVE TIMING CHAIN COVER OIL SEAL

Click here INFO

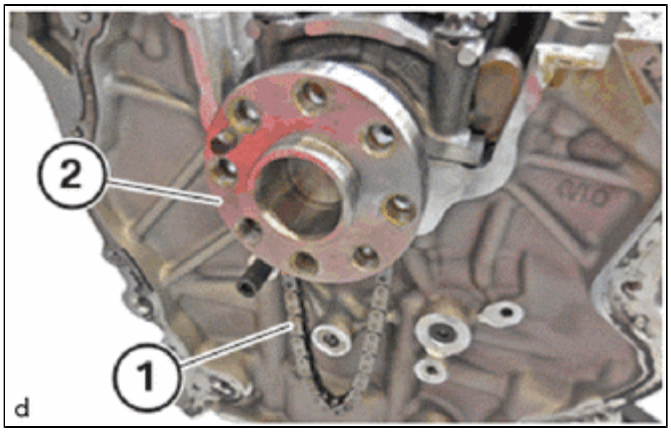
34. REMOVE CHAIN SUB-ASSEMBLY

Click here INFO

35. REMOVE OIL PUMP DRIVE CHAIN SUB-ASSEMBLY

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(a) Guide out and remove oil pump drive chain sub-assembly (1) from crankshaft (2).



36. REMOVE CRANKSHAFT

NOTICE:

- Engine damage caused by incorrectly installed crankshaft bearings and crankshaft bearing caps.

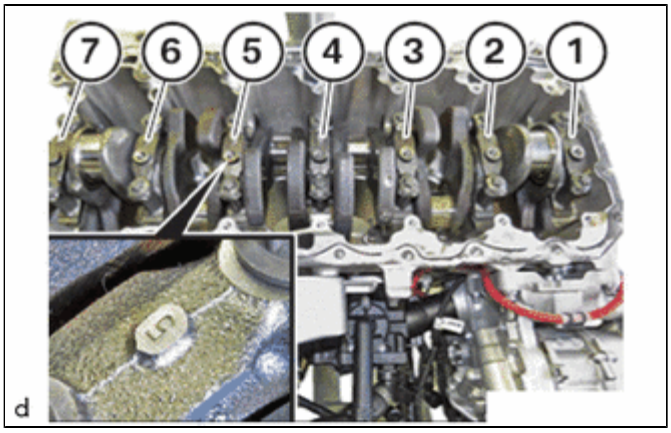
  Engine damage may result from incorrectly installing crankshaft bearings and crankshaft bearing caps.

  - Always install all crankshaft bearings and crankshaft bearing caps in the same position from which they were removed.

(a) Observe the assignment and numbering (1) to (7) of the crankshaft bearing caps.

(1) (1) = Engine, front (vibration damper)

(2) (7) = Clutch side

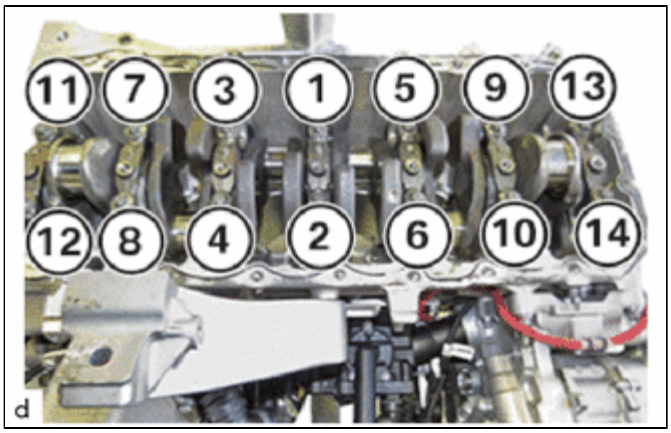


(b) Loosen E14 bolts in the order (14) to (1).

HINT:

The crankshaft bearing cap, crankshaft bearing are aligned with each other.

Always install the crankshaft bearing cap, crankshaft bearing in the cylinder from which they were removed.



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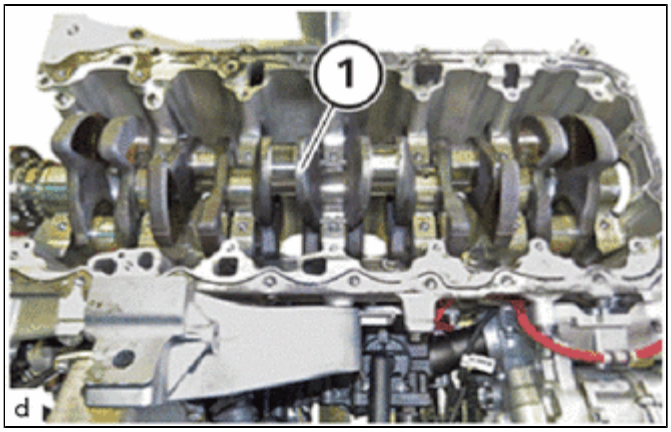
(c) Remove the crankshaft (1).

CAUTION:

- Heavy component.

  Heavy components can lead to injury or damage.

  - Remove and install heavy components with the aid of another person/other persons.



37. REMOVE CRANKSHAFT BEARING

NOTICE:

- Engine damage caused by incorrectly installed crankshaft bearings and crankshaft bearing caps.

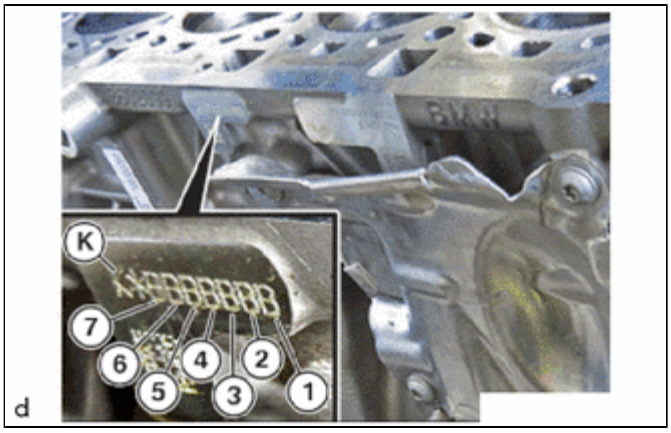
  Engine damage may result from incorrectly installing crankshaft bearings and crankshaft bearing caps.

  - Always install all crankshaft bearings and crankshaft bearing caps in the same position from which they were removed.

(a) Enter the code letter on the crankcase in the table.

(1) K = Clutch side

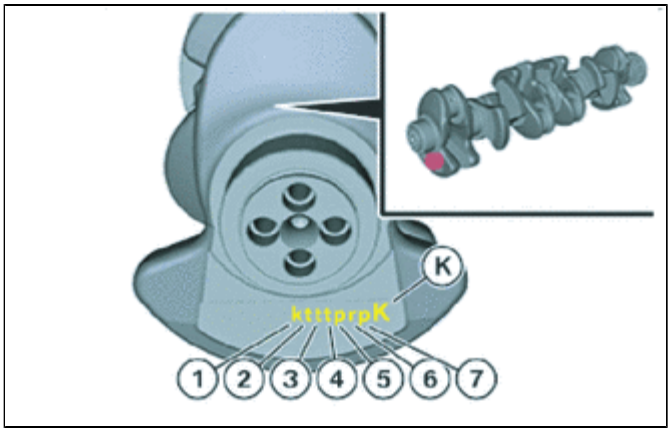
(2) The position numbers (7) to (1) describe the bearing seats 7 to 1. The identification number is always located on the crankshaft bearing caps.



(b) Enter the identification numbers on the crankshaft in the table.

(1) K = Clutch side

(2) The position numbers (1) to (7) describe the bearing seats 1 to 7. The identification number is always located on the crankshaft bearing



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(c) Enter the code letters of the crankcase and the identification numbers of the crankshaft.

	Code letter on the crankcase	Key performance indicator on the crankshaft
Bearing seat 1		
Bearing seat 2		
Bearing seat 3		
Bearing seat 4		
Bearing seat 5		
Bearing seat 6		
Bearing seat 7		

(d) Use the table below to determine the number of the crankshaft bearings.

HINT:

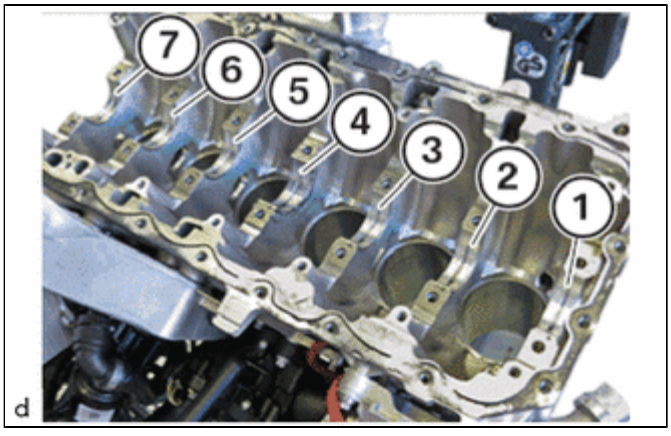
- Click PDF button.
- The following illustration is an example.

Table for the classification of crankshaft bearing 1, 2, 3, 5, 6

Crankshaft bearing (1) without lubrication groove in the crankshaft bearing cover.
Crankshaft bearing (2) with lubrication groove in the crankcase

	Upper case letter on the crankcase																			
	A	B	C	D	E	H	J	K	L	M	N	P	R	T	U	V	W	X	Y	Z
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
a→	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2

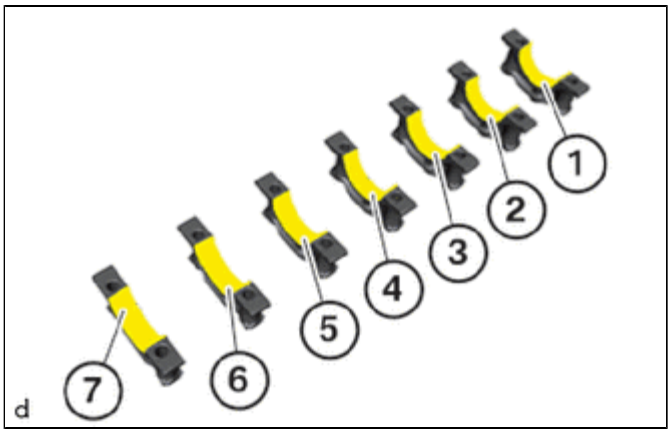
(e) Remove the crankshaft bearings with lubricating groove (1) to (3) and (5) to (7) from the crankcase.



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(f) Remove the upper crankshaft thrust washer with lubricating groove (4) fromthe crankcase.

(g) Remove the crankshaft bearings (1) to (3) and (5) to (7) from the crankshaft bearing cap.



(h) Remove the lower crankshaft thrust washer (4) from the crankshaft bearingcap.

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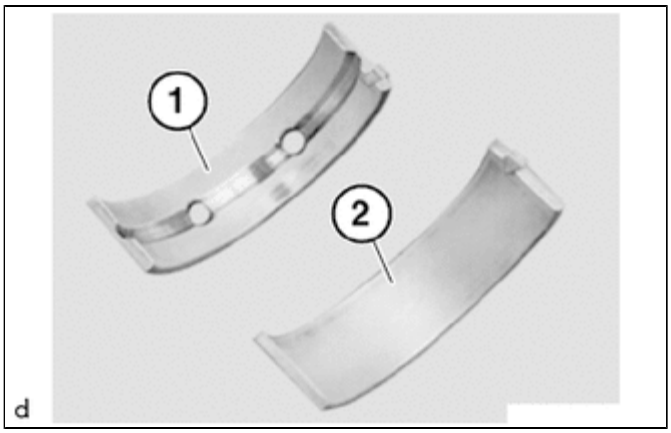
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFT
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CRANKSHAFT: REASSEMBLY; 2020 MY Supra [03/2019 -]		

REASSEMBLY

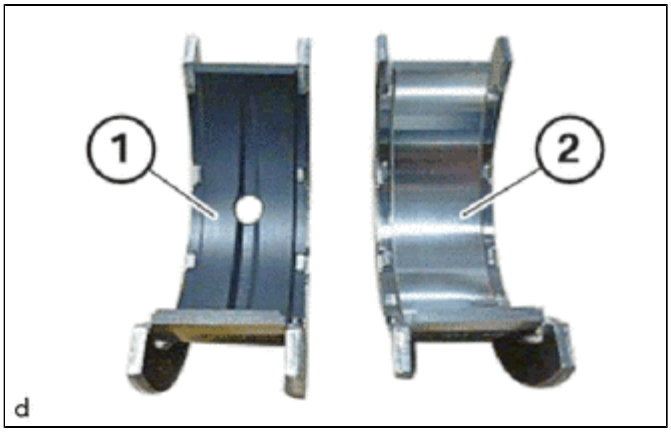
PROCEDURE

1. CRANKSHAFT BEARING

(a) Replace crankshaft bearing with lubricating groove (1) and the crankshaft bearing (2).

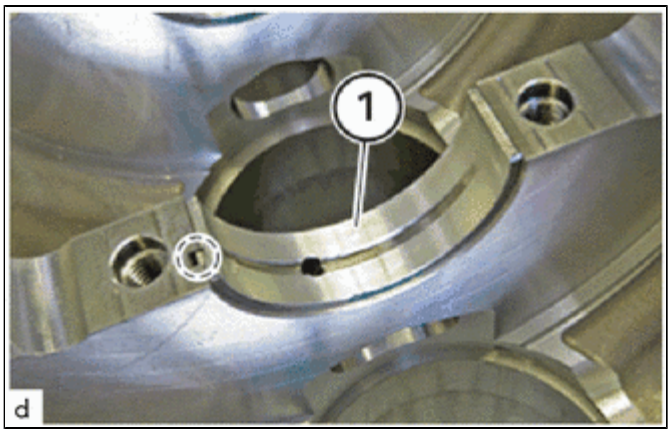


(b) Replace upper crankshaft thrust washer (1) and the lower crankshaft thrust washer (2).

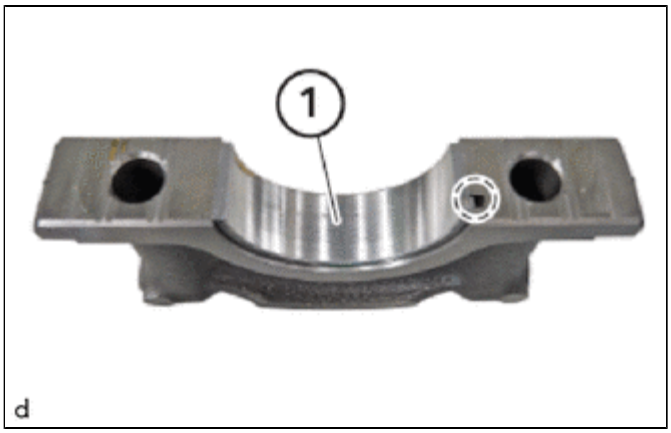


(c) Make sure the crankshaft bearing (1) is correctly installed with the claw in the highlighted area.

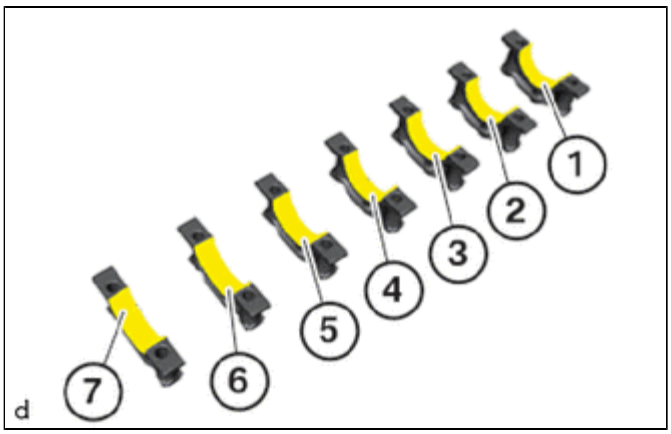
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(d) Make sure the crankshaft bearing (1) is correctly installed with the claw in the highlighted area.



(e) Install crankshaft bearings (1) to (3) and (5) to (7) in to the crankshaft bearing cap.

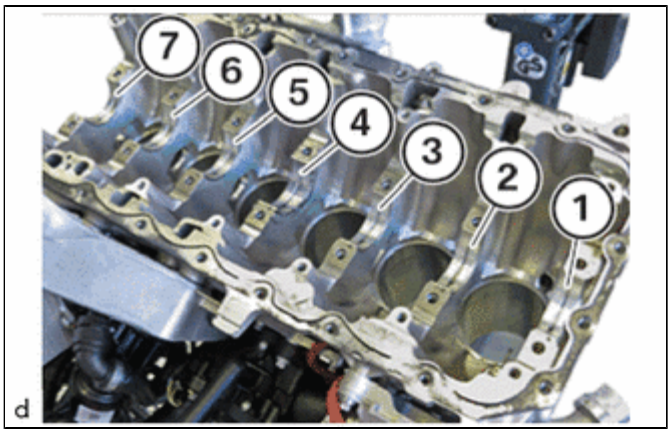


(f) Install the lower crankshaft thrust washer (4) in the crankshaft bearing cap.

(g) Oil all crankshaft bearings and guide bearings (1) to (7).

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(h) Install crankshaft bearings with lubricating groove (1) to (3) and (5) to (7) in the crankcase.



(i) Install the upper crankshaft thrust washer with lubricating groove (4) in the crankcase.

(j) Oil all crankshaft bearings and guide bearing shells with lubricating groove (1) to (7).

2. INSTALL CRANKSHAFT

NOTICE:

- Engine damage caused by incorrectly installed crankshaft bearings and crankshaft bearing caps.

  Engine damage may result from incorrectly installing crankshaft bearings and crankshaft bearing caps.

  - Always install all crankshaft bearings and crankshaft bearing caps in the same position from which they were removed.

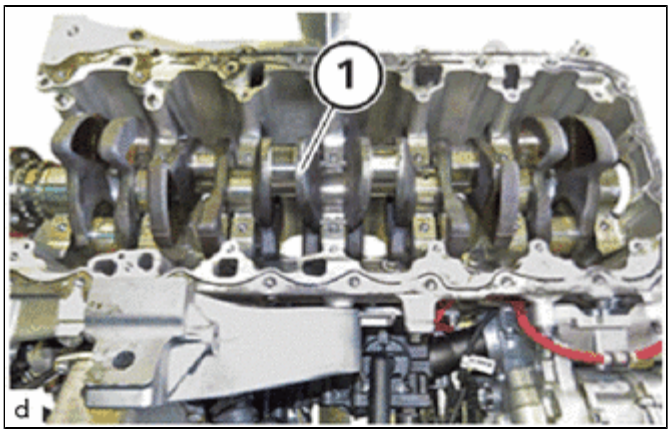
(a) Install the crankshaft (1).

CAUTION:

- Heavy component.

  Heavy components can lead to injury or damage.

  - Remove and install heavy components with the aid of another person/other persons.



(b) Observe the assignment and numbering (1) to (7) of the crankshaft bearing caps.

(1) (1) = Engine, front (vibration damper)

(2) (7) = Clutch side

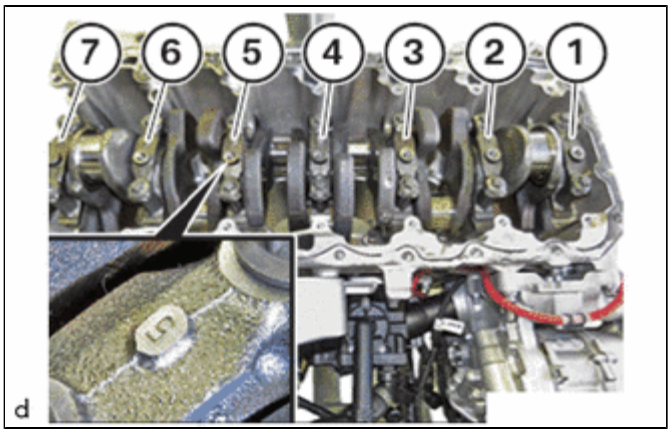
HINT:

The crankshaft bearing cap, main bearing shell and guide bearing shell are aligned with each other.

Always install the crankshaft bearing cap, main bearing shells and guide bearing shells in the cylinder from which

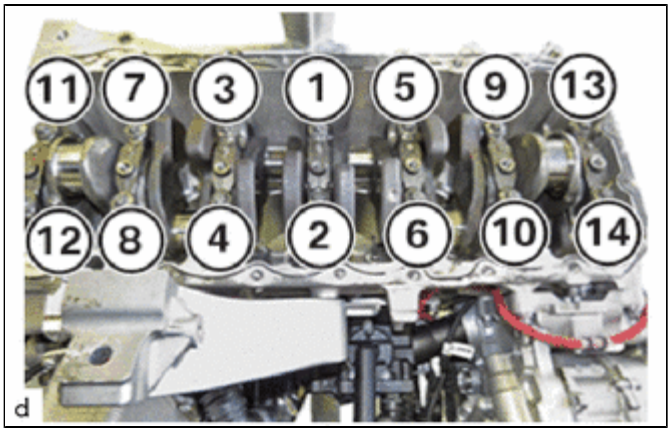
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they were removed.



(c) Position the crankshaft bearing caps (1) to (7).

(d) Replace bolts (1) to (14).



(e) Step 1:

(1) Tighten the E14 bolts in sequence (1) to (14).

Torque:

25 N·m {255 kgf·cm, 18 ft·lbf}

(f) Step 2:

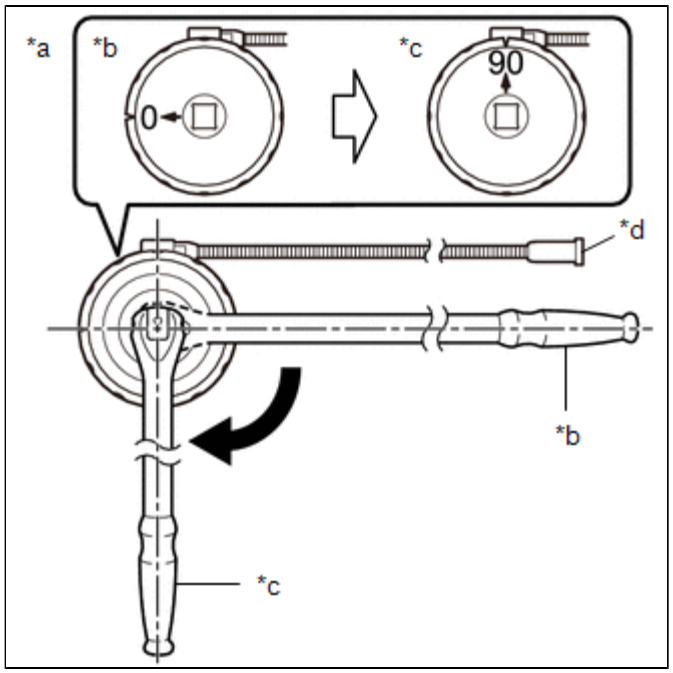
(1) Tighten the bolts 65° in the order shown in step 1 with the special tool 0 490 504 (00 9 120).

SST: 09900-WA010

HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.

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*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

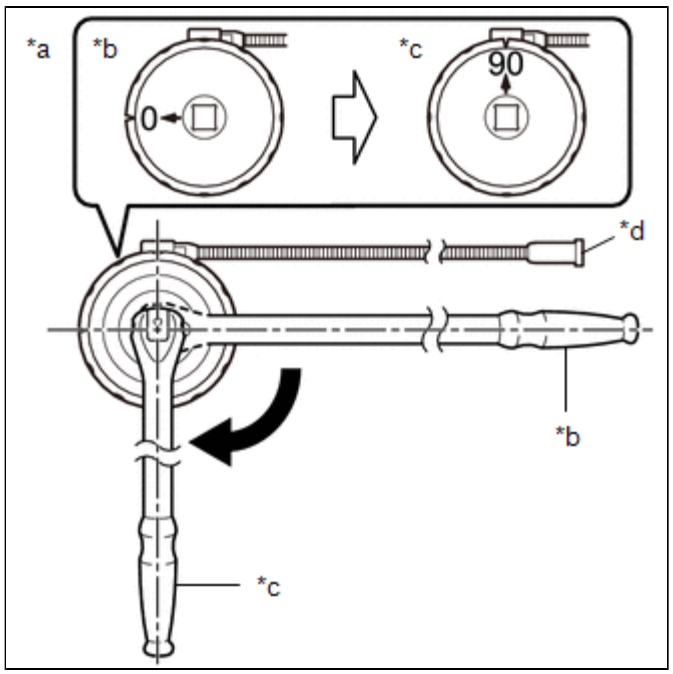
(g) Step 3:

(1) Tighten the bolts another 65° in the order shown in step 1 with the special tool 0 490 504 (00 9 120).

SST: 09900-WA010

HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.



*a	Example

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*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

(h) Step 4:

(1) Release E14 bolts (1) to (14).

(i) Step 5:

(1) Tighten the E14 bolts in sequence (1) to (14).

Torque:

25 N·m {255 kgf·cm, 18 ft·lbf}

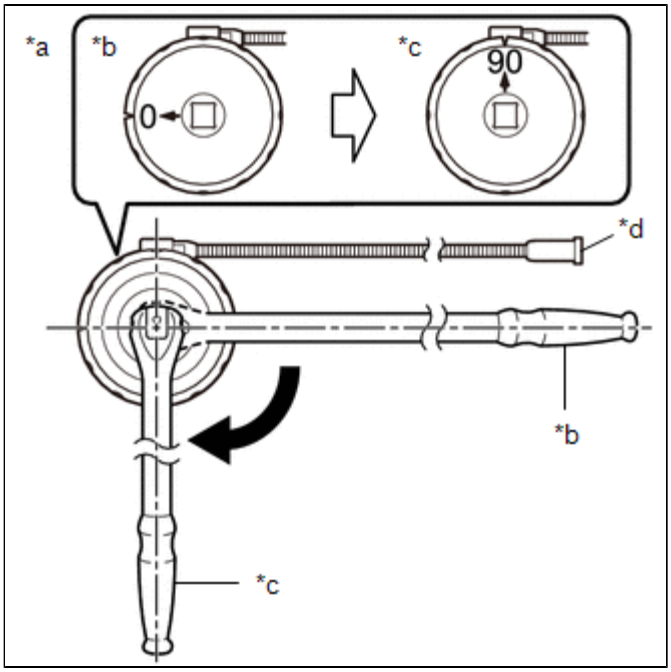
(j) Step 6:

(1) Tighten the bolts 65° in the order shown in step 1 with the special tool 0 490 504 (00 9 120).

SST: 09900-WA010

HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.



*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

(k) Step 7:

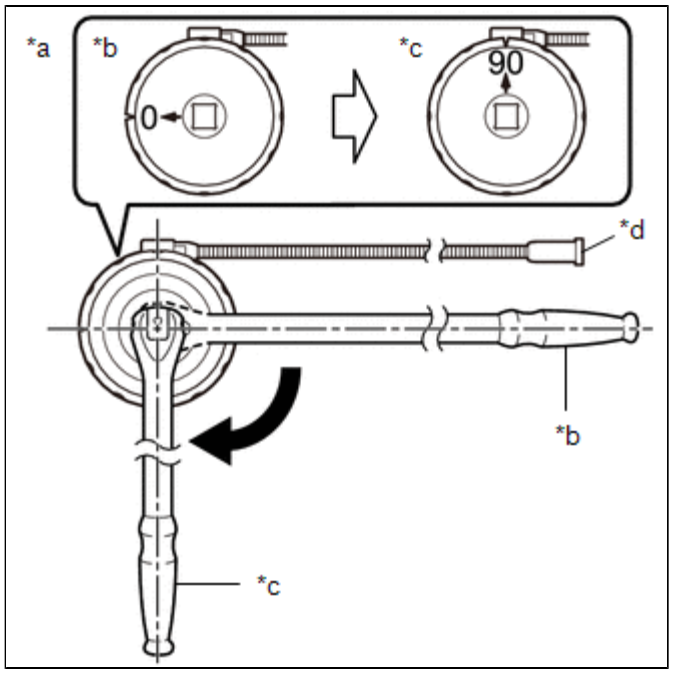
(1) Tighten the bolts another 65° in the order shown in step 1 with the special tool 0 490 504 (00 9 120).

SST: 09900-WA010

HINT:

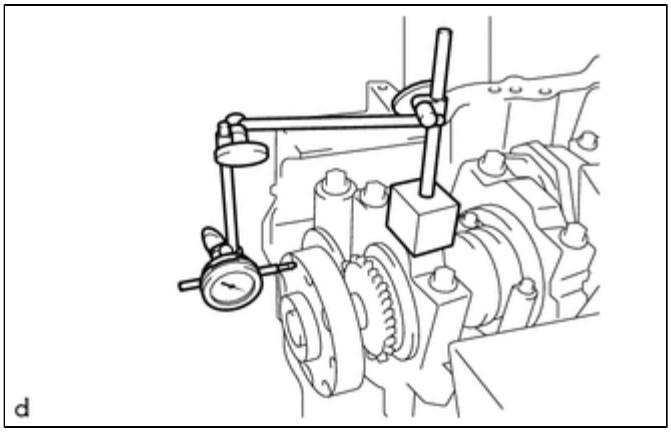
- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.

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*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

3. INSPECT CRANKSHAFT THRUST CLEARANCE



(a) Using a dial indicator, check crankshaft thrust clearance.

Axial play of crankshaft:
0.09 to 0.314 mm (0.00354 to 0.01236 in.)

HINT:

If the thrust clearance is not as specified,replace worn components.

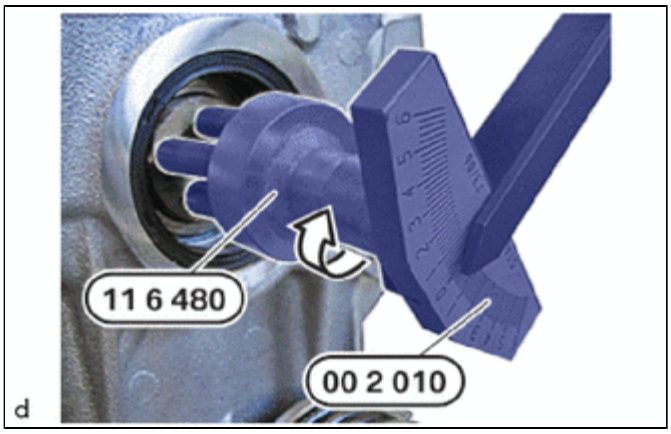
4. INSPECT CRANKSHAFT

(a) Turn the crankshaft clockwise with the special tool 0 490 130 (00 2 010) and compare the reading on the scale to the maximum permitted torque.

SST: 09200-WA190

Maximum permitted torque of the crankshaft:
12 N*m (122 kgf*cm, 9 ft.*lbf)

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HINT:

If the maximum permitted torque is exceeded, correct the radial clearance.

5. INSPECT PISTON

Click here INFO

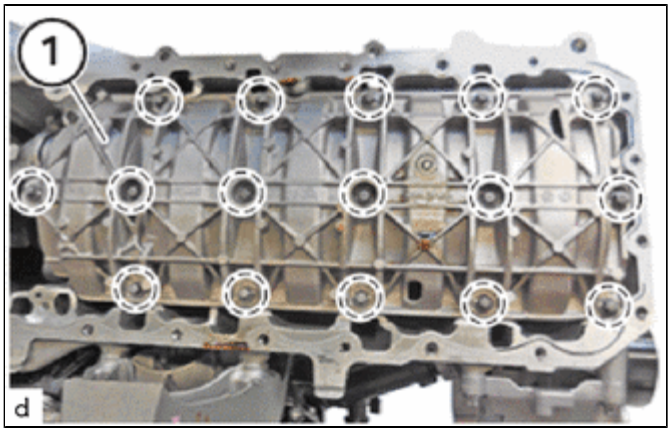
6. INSPECT CYLINDER BORE

Click here INFO

7. INSTALL CONNECTING ROD SUB-ASSEMBLY

Click here INFO

8. INSTALL NO. 1 OIL PAN BAFFLE PLATE



(a) Replace bolts (markings).

(b) Insert No. 1 oil pan baffle plate (1) and position.

(c) Tighten the E10 bolts in a crosswise pattern.

Torque:

15 N·m {153 kgf·cm, 11 ft·lbf}

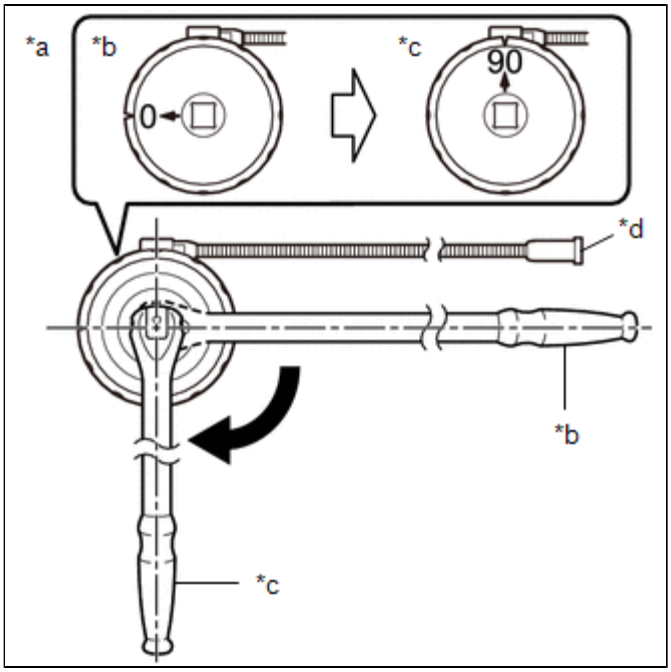
(d) Using SST, tighten the E10 bolts an additional 45°.

SST: 09900-WA010

HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.

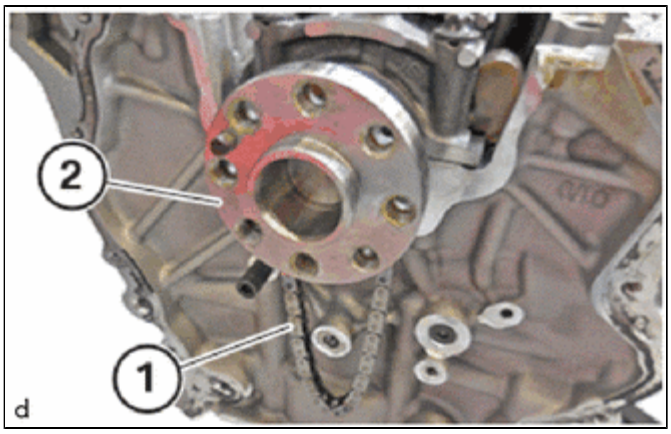
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*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

9. INSTALL OIL PUMP DRIVE CHAIN SUB-ASSEMBLY

(a) Guide in and install oil pump drive chain sub-assembly (1) on crankshaft (2).



10. INSTALL OIL PUMP ASSEMBLY

Click here INFO

11. INSTALL CHAIN SUB-ASSEMBLY

Click here INFO

12. INSTALL TIMING GEAR CASE

Click here INFO

13. INSTALL TIMING CHAIN COVER OIL SEAL

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Click here INFO

14. INSTALL OIL PAN SUB-ASSEMBLY

NOTICE:

- Contaminant or foreign body.

  Contamination can result in malfunctions, operating failure or leaks.

  - Adhere to the utmost cleanliness.
  - Protect components from contamination e.g. by covering.
  - Close off line connections with seal plugs.

- Damage to the surface.

  The use of metal-cutting tools (e.g. sandpaper) to clean the surfaces can damage them and lead to leaks or engine damage.

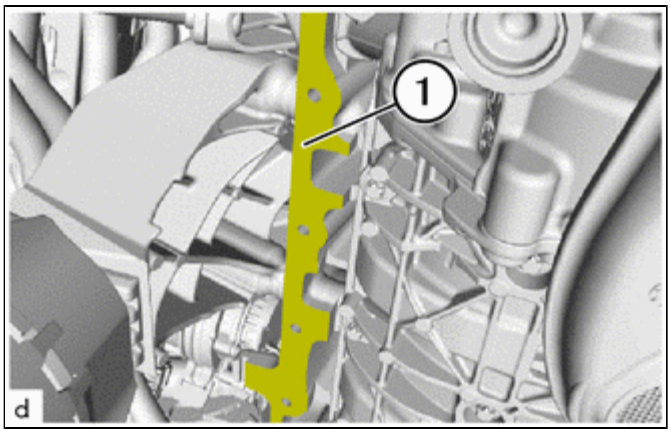
  - Do not use any metal-cutting tools.

(a) Remove coarse seal packing remains on the sealing surface of the cylinder block (1) and the sealing surface on the oil pan sub-assembly.

SST: 09900-WA030

NOTICE:

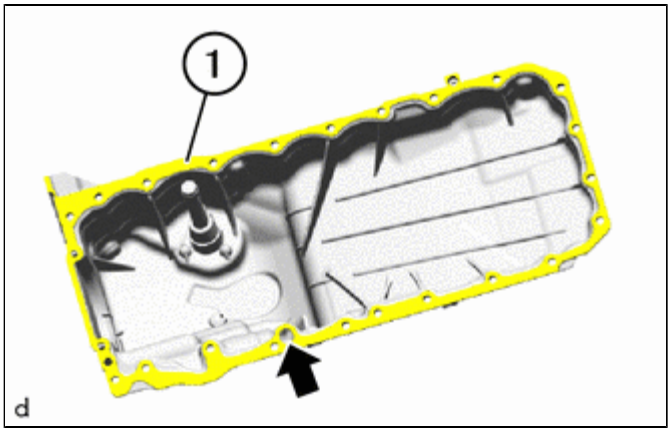
The sealing surfaces must be free from oils, grease and cleaning agents.



(b) Remove fine seal packing remains on the sealing surface of the oil pan sub-assembly (1) and the sealing surface on the cylinder block.

NOTICE:

The sealing surfaces must be free from oils, grease and cleaning agents.



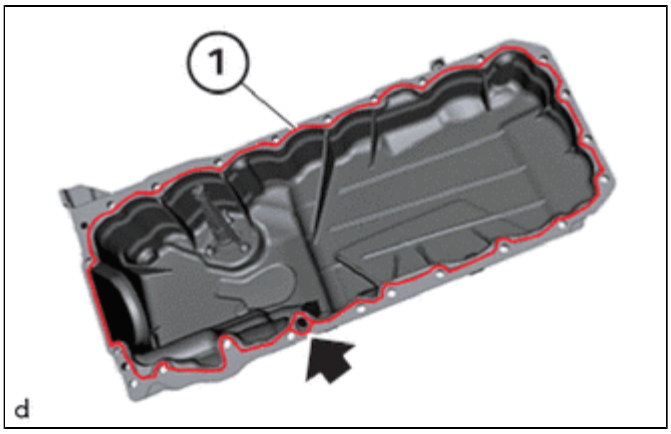
(c) Load the sealer gun with the seal packing.

Seal Packing:
Loctite 5970 Flange Sealant

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(d) Apply sealing bead (1) with the seal packing in the marked area along the inner edge.

Height of the sealing bead:
2.0 to 2.5 mm (0.0787 to 0.0984 in.)

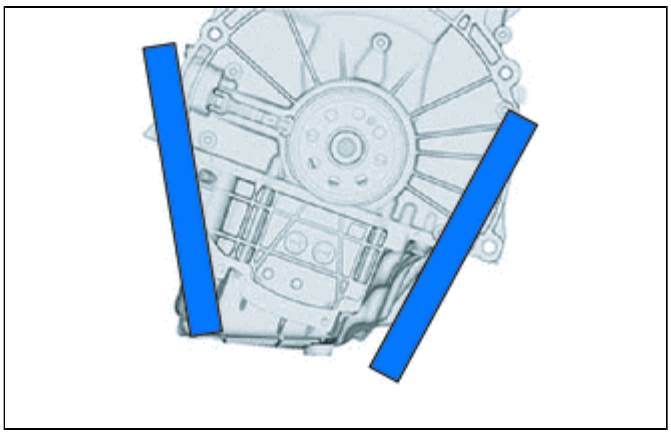


NOTICE:

The maximum application time of the liquid seal packing is 12 minutes.

(e) Completely encircle the oil return orifice (arrow) with the seal packing.

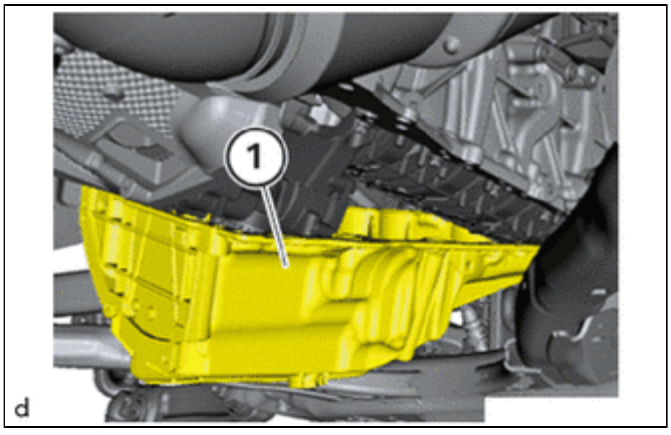
(f) Using a straightedge, position the oil pan sub-assembly and timing case cover so that their surfaces are aligned.



HINT:

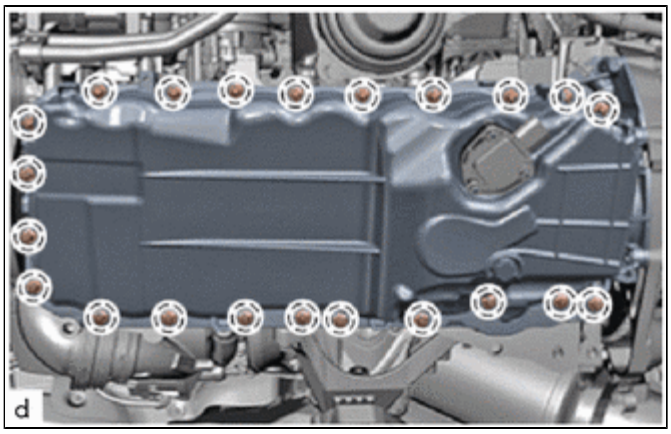
The straightedge is only required when the transmission is removed.

(g) Insert oil pan sub-assembly (1) upwards and forwards and position.



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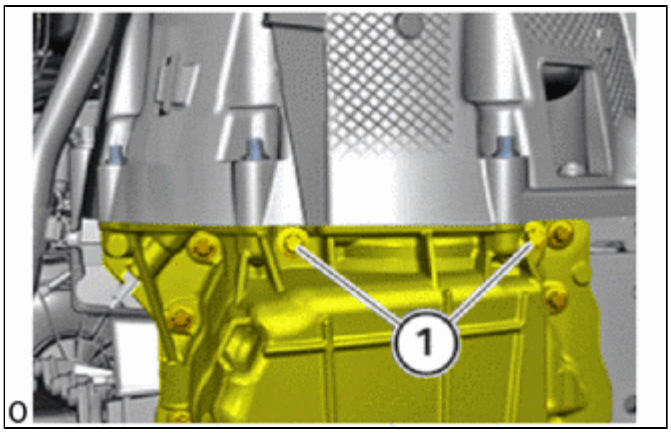
(h) Tighten all the oil pan sub-assembly E10 bolts (marks) hand-tight, do not yet tighten fully.



(i) Tighten the E10 bolts (1).

Torque:

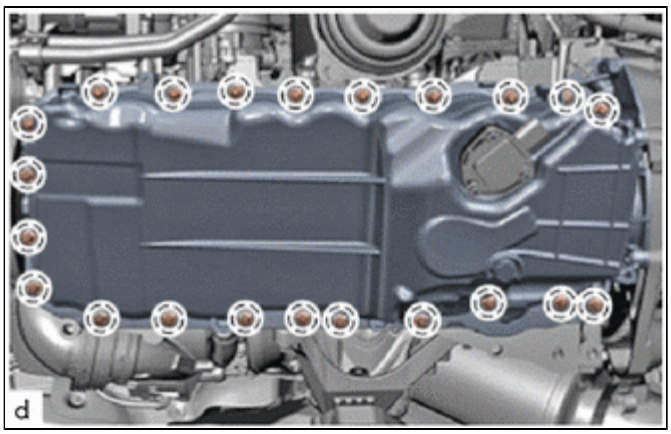
24 N·m {245 kgf·cm, 18 ft·lbf}



(j) Tighten all E10 bolts (marks).

Torque:

24 N·m {245 kgf·cm, 18 ft·lbf}

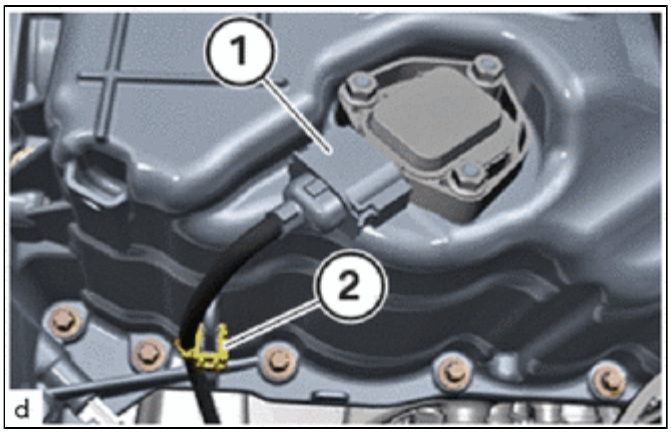


(k) Connect connectors (1) and lock.

HINT:

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Make sure the connector engages audibly.



(l) Secure clamps (2).

15. INSTALL DRIVE PLATE AND RING GEAR SUB-ASSEMBLY

Click here INFO

16. REMOVE AND INSTALL FRONT CRANKSHAFT OIL SEAL

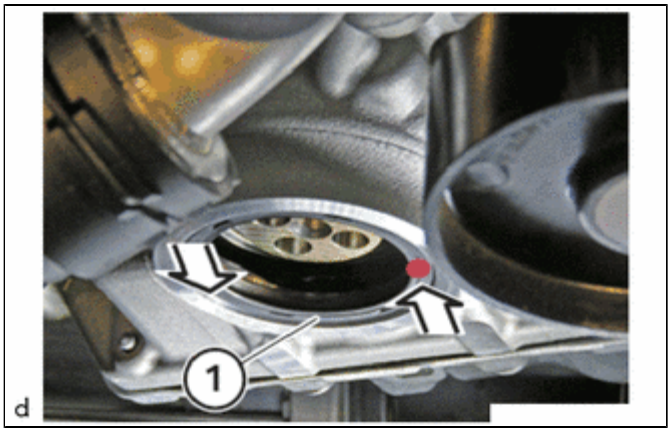
(a) Drive in the front crankshaft oil seal (1) in themarked area with a punch to approx. 1 cm deep.

HINT:

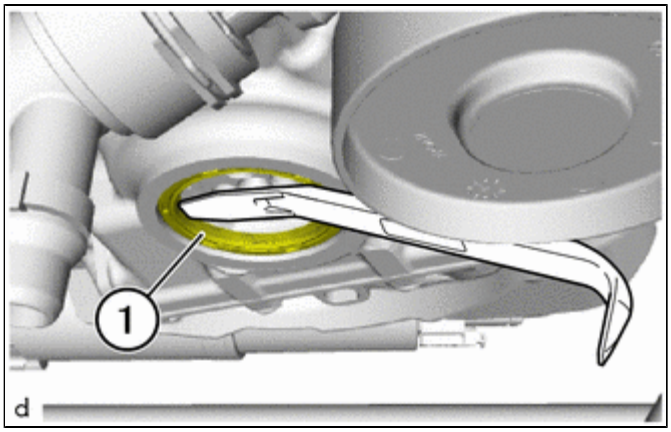
- Scratches.

  Tools and sharp-edged components cancause scratches.

  - Protect working area.
  - Handle tools and componentscarefully.

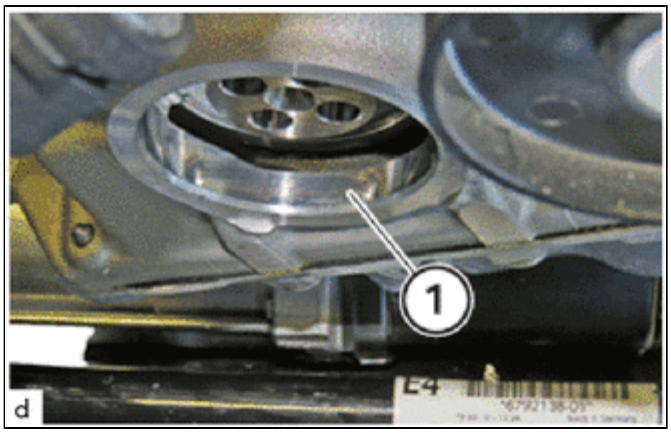


(b) Carefully lever out and remove the front crankshaftoil seal (1).



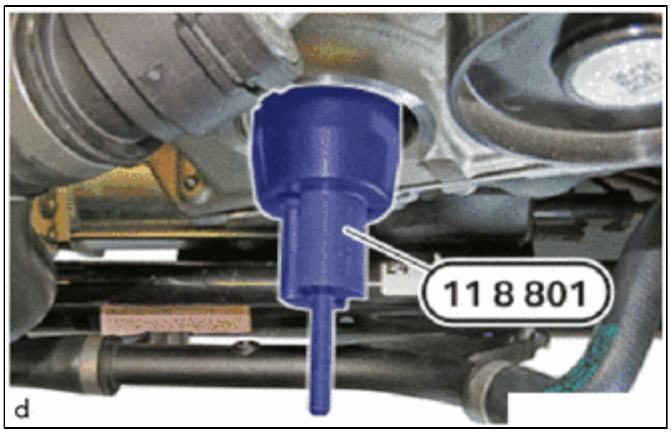
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(c) Clean sealing surface (1).



(d) Clean the special tool 0 496 128 (11 8 801) fromthe set of special tools 0 496 127 (11 8 800) andcoat it with fresh engine oil.

SST: 09200-WA080

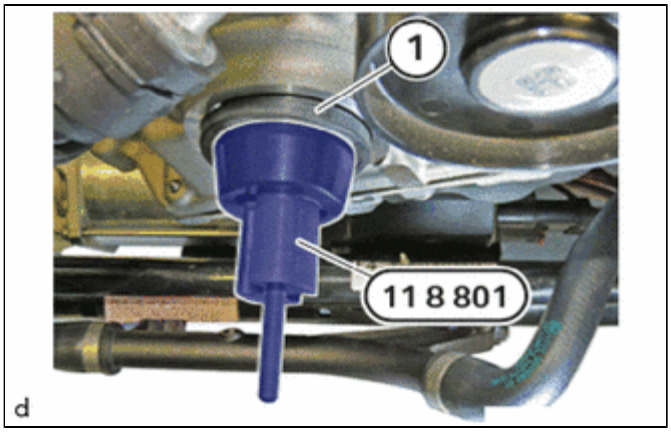


(e) Position the special tool 0 496 128 (11 8 801) from the set of special tools 0 496 127 (11 8 800) onthe crankshaft and bolt it on.

SST: 09200-WA080

HINT:

- Front crankshaft oil seal damage.Touching the sealing lip (inner) andapplying oil to the front crankshaft oilseal will lead to its destruction.
  - Do not touch the sealing lip (inner)of the front crankshaft oil seal.
  - Do not apply oil to the frontcrankshaft oil seal.
  - Install the front crankshaft oil sealdry.



(f) Replace front crankshaft oil seal (1).

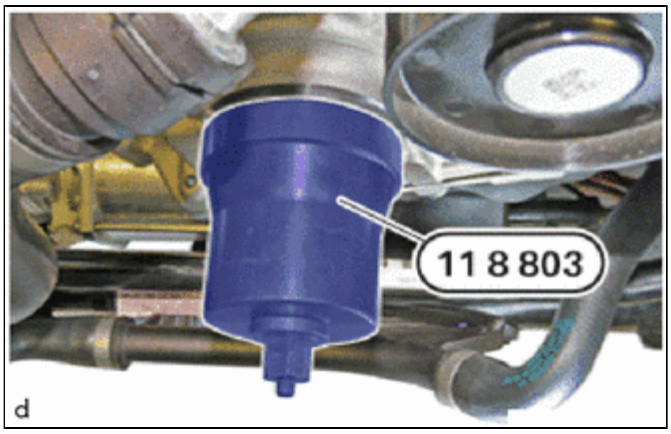
(g) Carefully slide the front crankshaft oil seal (1) straight in a rotational movement onto the specialtool 0 496 128 (11 8 801) from the set of special tools 0 496 127 (11 8 800) until the frontcrankshaft oil seal is positioned flush against the cylinder block sub-assembly.

SST: 09200-WA080

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(h) Position the special tool 0 496 130 (11 8 803) fromthe set of special tools 0 496 127 (11 8 800) andbolt on hand-tight with the nut.

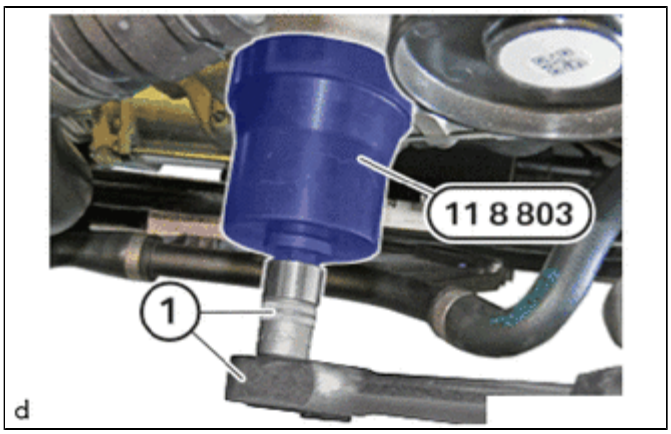
SST: 09200-WA080



(i) Ensure that the front crankshaft oil seal moves inevenly.

(j) Bolt in the special tool (sleeve) 0 496 130 (11 8803) from the set of special tools 0 496 127 (11 8800) with the tool (1) until the special tool(sleeve)0 496 130 (11 8 803) is flush with thecylinder block sub-assembly.

SST: 09200-WA080



17. INSTALL CRANKSHAFT PULLEY ASSEMBLY

Click here INFO

18. SEALING OIL DUCT

Click here INFO

19. CLEAN SEALING SURFACE

Click here INFO

20. INSTALL CYLINDER HEAD GASKET

Click here INFO

21. SET NO. 1 CYLINDER TO TDC (COMPRESSION)

NOTICE:

- Damage to the engine.

  The engine may be damaged if it is manually rotated in the wrong direction.

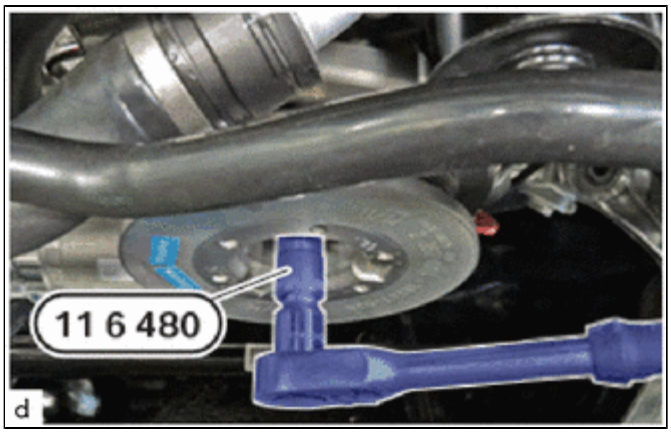
  - Always rotate the engine in the correct direction of rotation by hand: a) Clockwise, facing the vibration damper or b) Counter-clockwise, facing the timing chain. (b) only applies when the chain sub-assembly is

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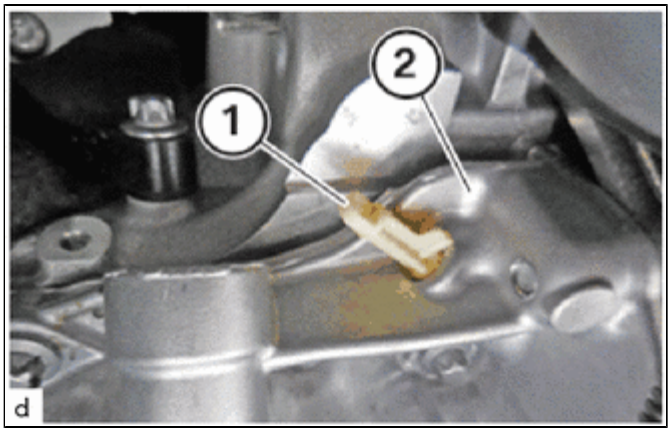
installed.

(a) Turn the engine with the special tool 0 493 380 (11 6 480) to the TDC firing position of cylinder 1.

SST: 09200-WA190



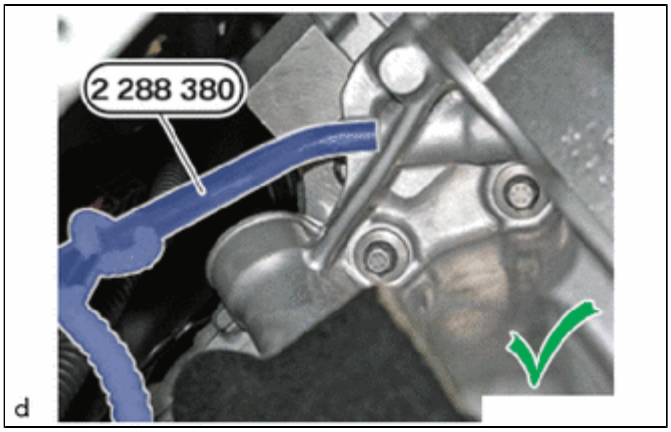
(b) Guide out and remove sealing cap (1) on oil pan sub-assembly (2).



(c) Make sure that the special tool 2 288 380 is positioned correctly .

SST: 09200-WA570

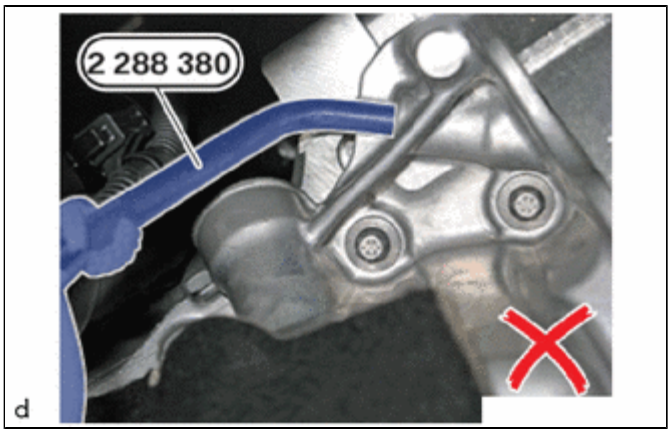
(1) The engine is in the TDC firing position of cylinder 1.



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(d) The TDC firing position of the 1st cylinder is not reached and the special tool 2 288 380 is positioned incorrectly: Position the special tool 2 288 380 again.

SST: 09200-WA570



22. INSTALL CYLINDER HEAD SUB-ASSEMBLY

Click here INFO

23. ADJUST CAMSHAFT

Click here INFO

24. INSTALL CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

Click here INFO

25. TEMPORARILY TIGHTEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

26. INSTALL CAMSHAFT TIMING GEAR ASSEMBLY

Click here INFO

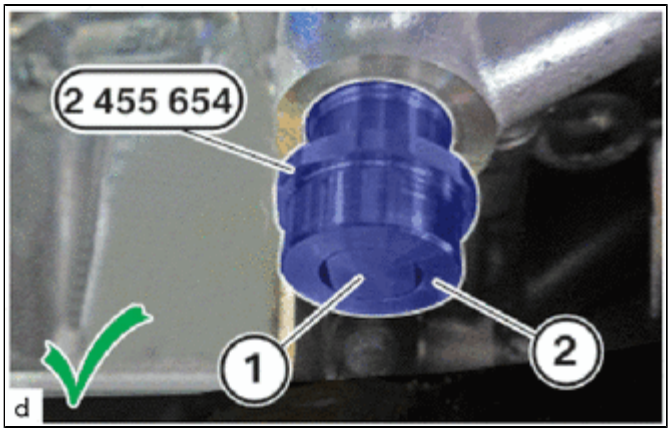
27. TEMPORARILY TIGHTEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

28. TEMPORARILY INSTALL CHAIN SUB-ASSEMBLY

(a) Pretension the timing chain correctly with the special tool 2 455 654 .

SST: 09200-WA810

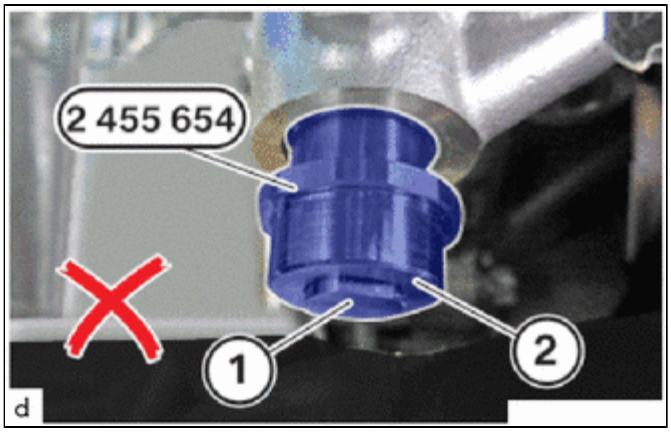


(b) Make sure that pin (1) is flush with housing (2).

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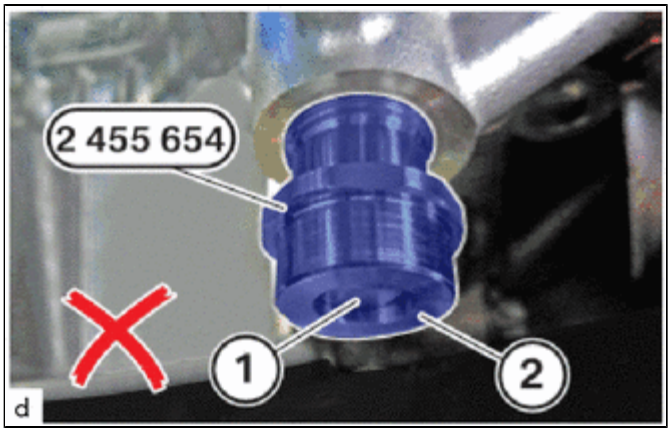
(c) Make sure that the preload of the timing chain is not insufficient. The preload is insufficient when the pin (1) of the special tool 2 455 654 is not aligned flush with the housing (2). The timing chain is not correctly pre-tensioned.

SST: 09200-WA810



(d) Make sure that the preload of the timing chain is not too high. The preload is too high when the pin (1) of the special tool 2 455 654 is not aligned flush with the housing (2). The timing chain is not correctly pre-tensioned.

SST: 09200-WA810



29. TIGHTEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

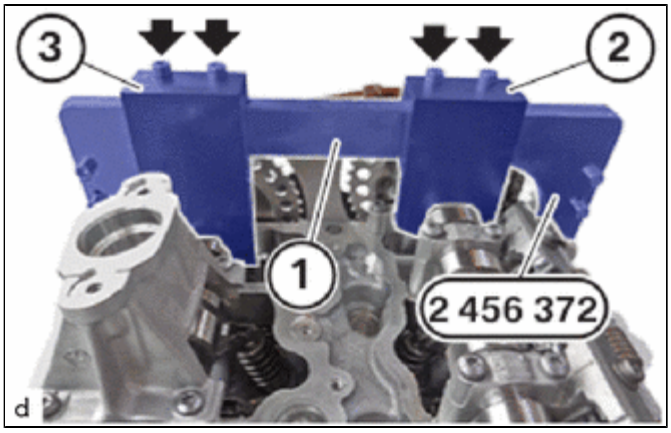
30. TIGHTEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

31. REMOVE SST

(a) Release the bolts (arrows) from the set of special tools 2 456 372 .

SST: 09200-WA690



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(b) Guide the setting gauge 0.5 ° (3) out of the special tool 2 456 372 between the exhaust camshaft and basic carrier (1) and remove it.

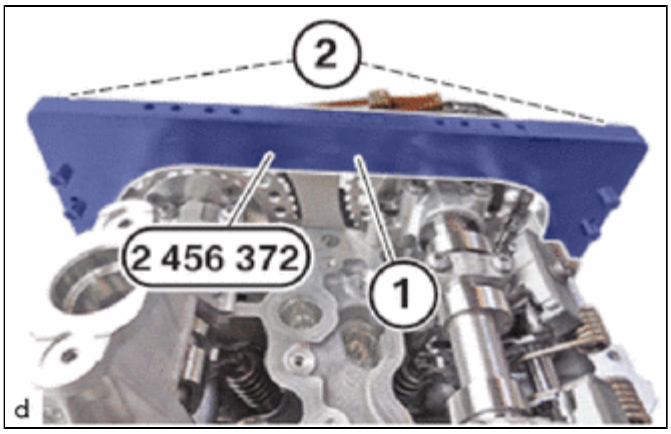
SST: 09200-WA690

(c) Guide setting gauge 0.7 ° (2) out of the special tool 2 456 372 between the intake camshaft and basic carrier (1) and remove it.

SST: 09200-WA690

(d) Unscrew the bolts (2) from the set of special tools 2 456 372 .

SST: 09200-WA690



(e) Thread the basic carrier (1) out of the special tool 2 456 372 and remove.

SST: 09200-WA690

(f) Guide the special tool 2 288 380 out and remove.

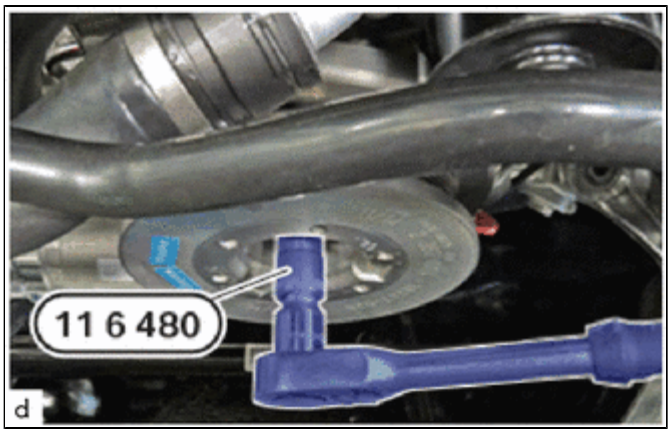
SST: 09200-WA570



(g) Guide the special tool 0 493 380 (11 6 480) out and remove.

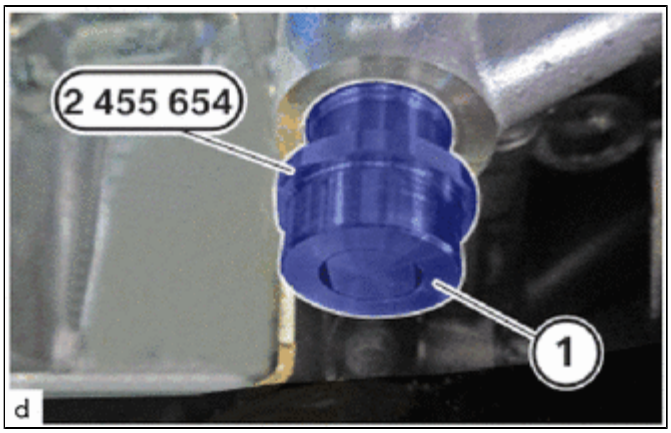
SST: 09200-WA190

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(h) Guide the special tool 2 455 654 (1) out and remove.

SST: 09200-WA810



32. INSTALL NO. 1 CHAIN TENSIONER ASSEMBLY

Click here INFO

33. INSPECT CAMSHAFT TIMING

(a) Turn the engine with the special tool 0 493 380 (11 6 480) to the TDC firing position of cylinder 1.

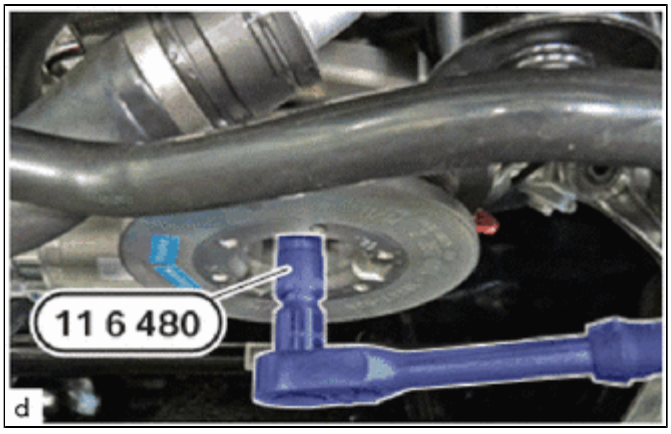
SST: 09200-WA190

NOTICE:

- Damage to the engine.

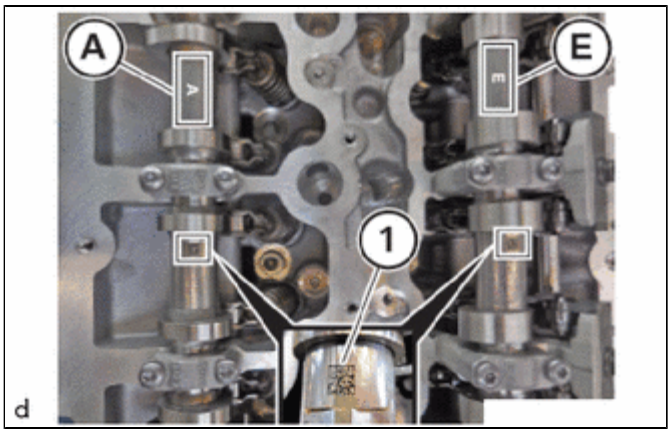
  The engine may be damaged if it is manually rotated in the wrong direction.

  - Always rotate the engine in the correct direction of rotation by hand: a) Clockwise, facing the crankshaft pulley assembly or b) Counter-clockwise, facing the timing chain. (b) only applies when the chain sub-assembly is installed.

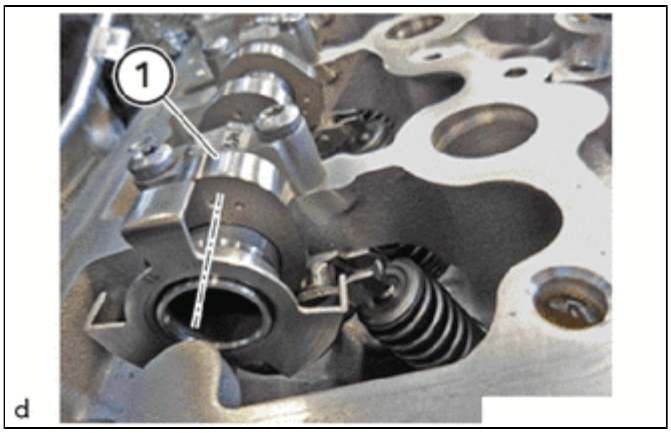


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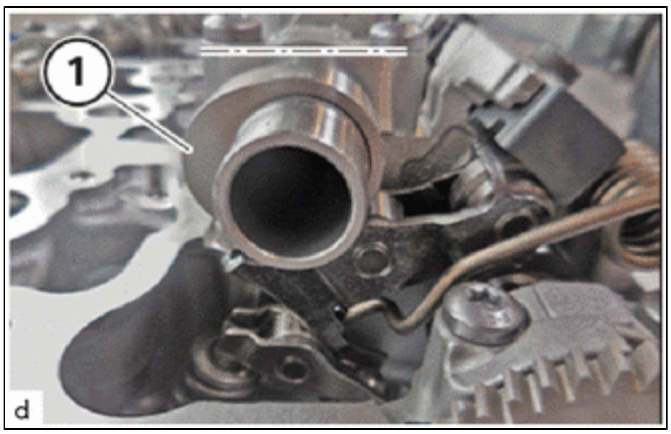
(b) Make sure that the marks (1) on the intake camshaft sub-assembly (E) and the exhaust camshaft sub-assembly (A) are legible from above.



(c) Ensure that the cam (1) on the exhaust camshaft sub-assembly on cylinder 1 points to the inside right at a slight angle.

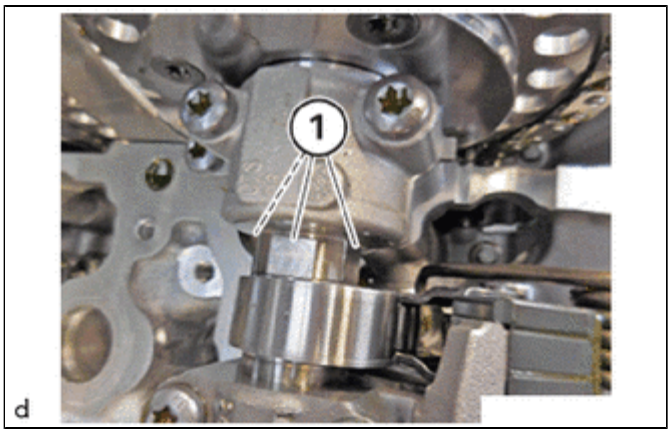


(d) Ensure that the cam (1) on the intake camshaft sub-assembly on cylinder 1 points to the inside left at an angle.



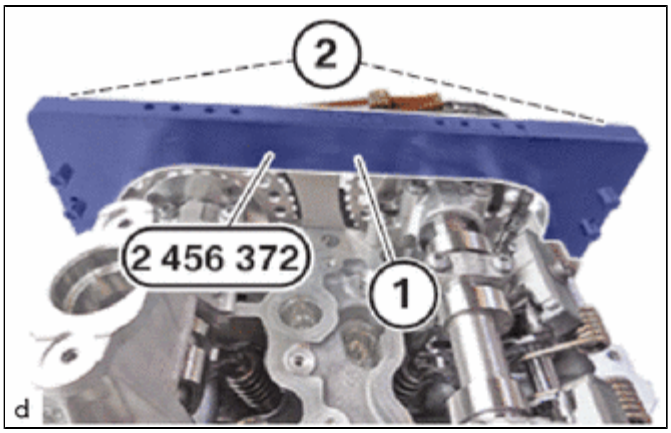
(e) Ensure that the flattened areas (1) on the intake camshaft sub-assembly and the exhaust camshaft sub-assembly point upwards.

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(f) Position the basic carrier (1) from the set of special tools 2 456 372 on the cylinder head sub-assembly.

SST: 09200-WA690



(g) Tighten the bolts (2) from the set of special tools 2 456 372 .

SST: 09200-WA690

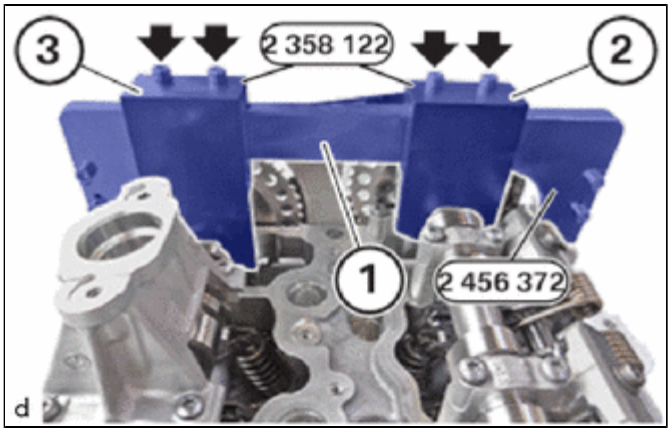
Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(h) Position the test gauge (2) from the set of special tools 2 358 122 between the intake camshaft sub-assembly and the basic carrier (1) from the set of special tools 2 456 372 .

SST: 09200-WA380

SST: 09200-WA690



(i) Position the test gauge (3) from the set of special tools 2 358 122 between the exhaust camshaft sub-assembly and the basic carrier (1) from the set of special tools 2 456 372 .

SST: 09200-WA380

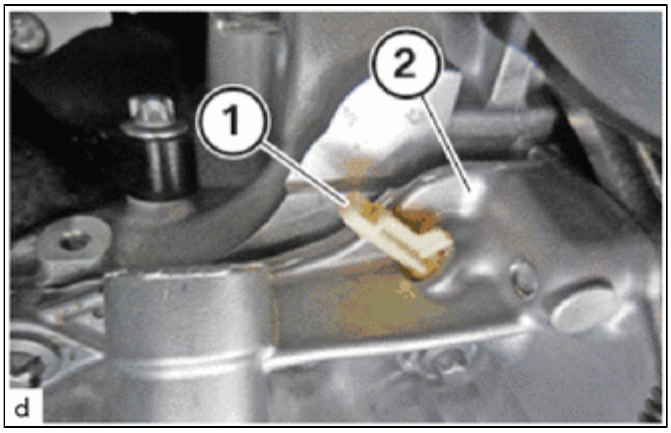
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SST: 09200-WA690

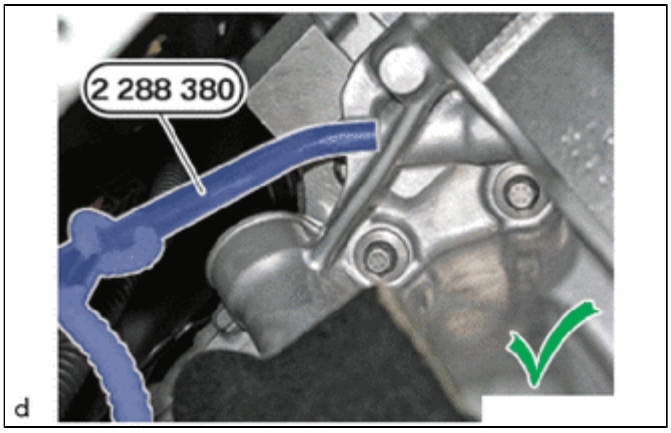
(j) Tighten bolts (arrows).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}



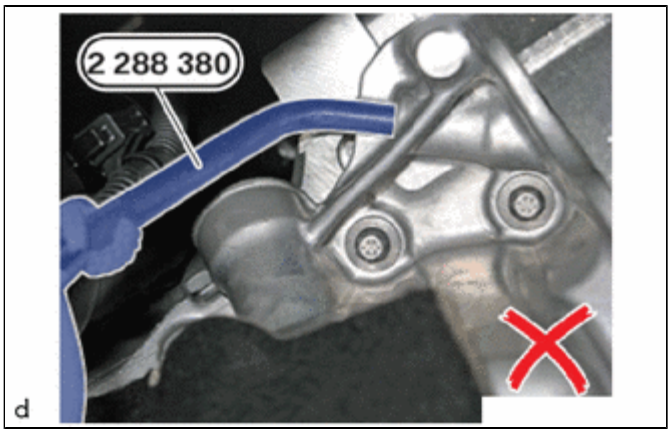
(k) Guide out and remove sealing cap (1) on oil pan sub-assembly (2).



(l) Position the special tool 2 288 380 correctly in the dowel hole .

SST: 09200-WA570

(1) The engine is in the TDC firing position of cylinder 1.



(m) Make sure that the special tool 2 288 380 is not positioned incorrectly.

SST: 09200-WA570

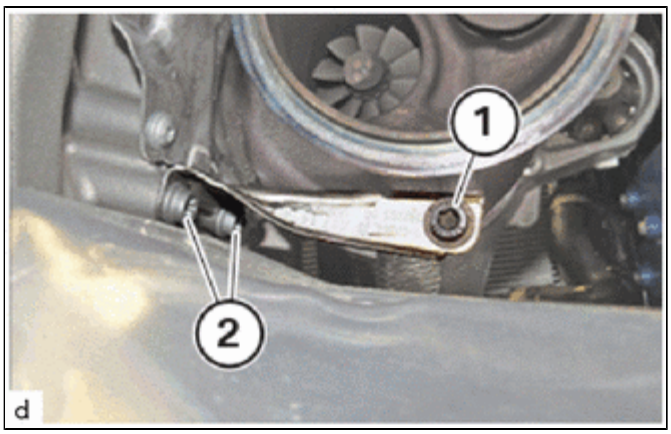
(1) The TDC firing position of cylinder 1 was not reached.

34. INSTALL SPARK PLUG

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35. INSTALL TURBOCHARGER STAY



(a) Replace bolts (2).

(b) Position support and tighten with the T45 bolt (2).

Torque:

19 N·m {194 kgf·cm, 14 ft·lbf}

(c) Replace bolts (1).

(d) Tighten down T45 bolt (1).

Torque:

19 N·m {194 kgf·cm, 14 ft·lbf}

36. INSTALL OUTLET TURBO OIL PIPE

Click here INFO

37. INSTALL INTAKE MANIFOLD

Click here INFO

38. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY

Click here INFO

39. INSTALL CAM TIMING OIL CONTROL SOLENOID ASSEMBLY

Click here INFO

40. REPLACE FUEL INJECTOR SEAL

Click here INFO

41. INSTALL FUEL INJECTOR ASSEMBLY (for Rear Side)

Click here INFO

42. INSTALL FUEL INJECTOR ASSEMBLY (for Front Side)

Click here INFO

43. ADJUST FUEL PUMP LIFTER ASSEMBLY

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Click here INFO

44. INSTALL FUEL PUMP ASSEMBLY

Click here INFO

45. INSTALL NO. 1 FUEL PIPE SUB-ASSEMBLY

Click here INFO

46. ADD ENGINE OIL

Click here INFO

47. INSTALL NO. 2 AIR CLEANER HOSE

Click here INFO

48. INSTALL ENGINE ASSEMBLY

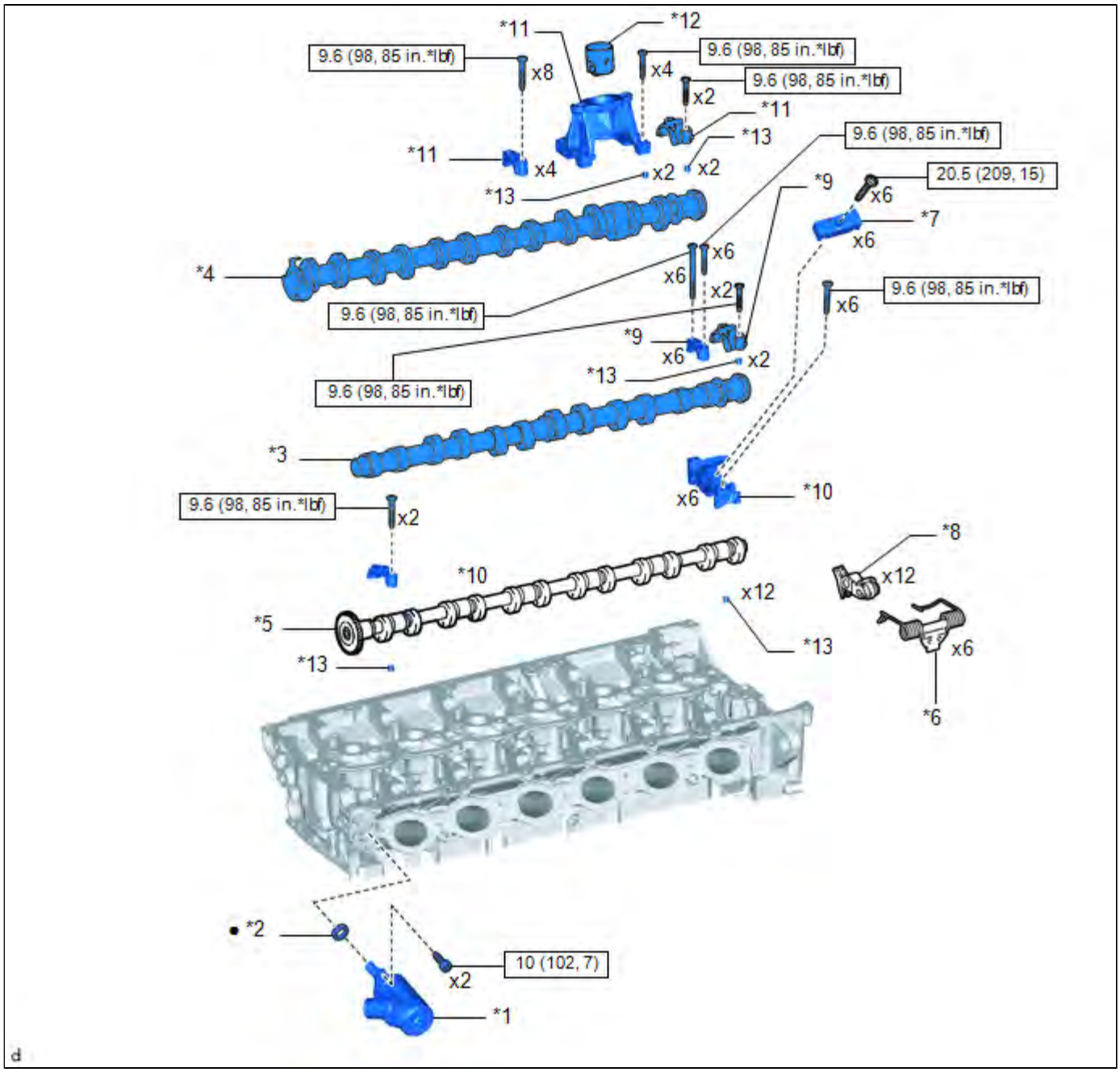
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG3
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CYLINDER HEAD: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION

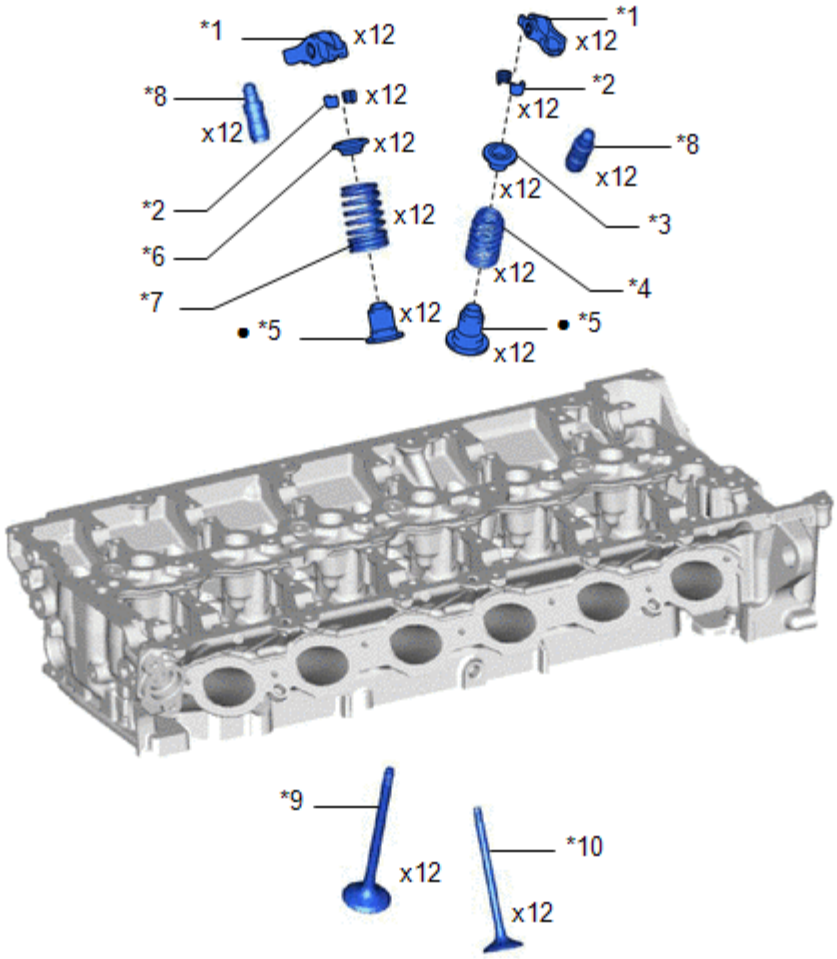


*1	SERVO MOTOR	*2	O-RING
*3	INTAKE CAMSHAFT SUB-ASSEMBLY	*4	EXHAUST CAMSHAFT SUB-ASSEMBLY
*5	NO. 3 CAMSHAFT SUB-ASSEMBLY	*6	TORSION SPRING
*7	GATE	*8	INTERMEDIATE LEVER
*9	CAMSHAFT BEARING CAP	*10	BEARING CAP

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*11	EXHAUST CAMSHAFT BEARING CAP	*12	FUEL PUMP LIFTER ASSEMBLY
*13	RING PIN	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION



d

*1	NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY	*2	VALVE SPRING RETAINER LOCK
*3	INTAKE VALVE SPRING RETAINER	*4	INTAKE VALVE COMPRESSION SPRING
*5	VALVE STEM OIL SEAL	*6	EXHAUST VALVE SPRING RETAINER
*7	EXHAUST VALVE COMPRESSION SPRING	*8	VALVE LASH ADJUSTER ASSEMBLY
*9	INTAKE VALVE	*10	EXHAUST VALVE

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG4
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CYLINDER HEAD: DISASSEMBLY; 2020 MY Supra [03/2019 -]		

DISASSEMBLY

CAUTION / NOTICE / HINT

PROCEDURE

1. REMOVE CYLINDER HEAD GASKET

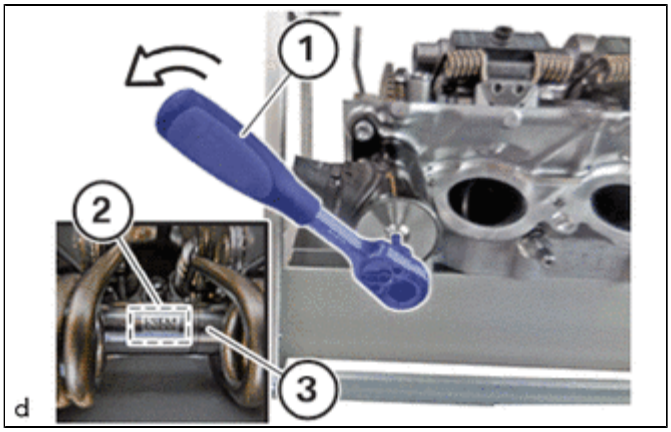
Click here INFO

2. REMOVE TURBOCHARGER SUB-ASSEMBLY

Click here INFO

3. ADJUST NO. 3 CAMSHAFT SUB-ASSEMBLY TO MINIMUM LIFT

(a) With the help of the servo motor, use a 4 mm hexagon socket wrench (1) to slowly adjust No. 3 camshaft sub-assembly (3) to the minimum lift at 4 mm in the direction of the arrow.



(b) Make sure that the mark (2) on the No. 3 camshaft sub-assembly (3) points upwards.

4. INSPECT AND ADJUST CAMSHAFT

Click here INFO

5. INSPECT AND ADJUST CAMSHAFT (CYLINDERS 3 AND 4)

Click here INFO

6. REMOVE TORSION SPRING

CAUTION:

- Spring preload.

  Danger of injury!

  - The use of the specified special tool (tool) is mandatory.
  - The described operation must be carried out properly.

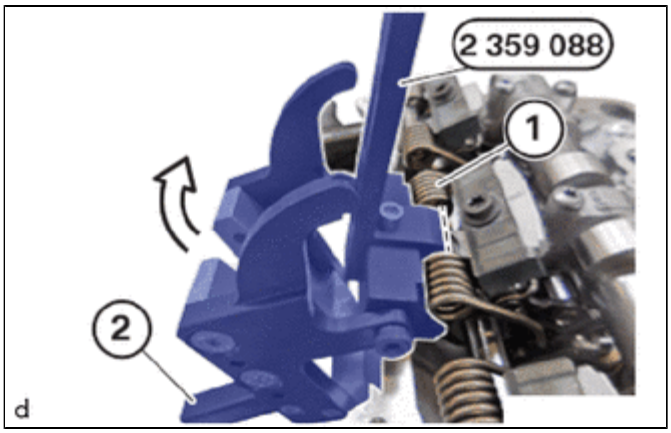
HINT:

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Wear safety goggles.

(a) Open the special tool 2 359 088 and position it at the torsion spring (1).

SST: 09200-WA410

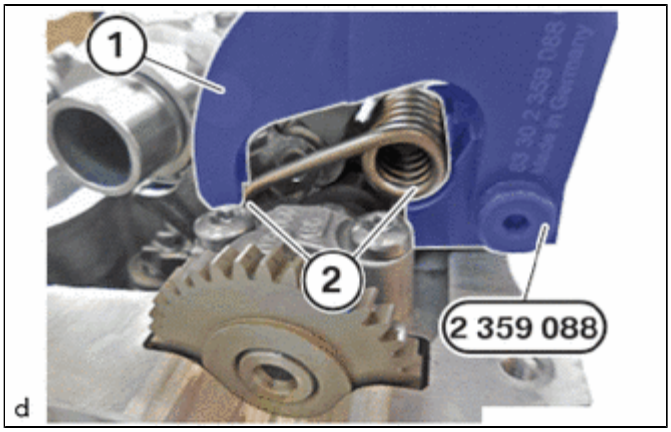


(b) Position retaining hook (2) of the special tool 2 359 088 in the direction of arrow.

SST: 09200-WA410

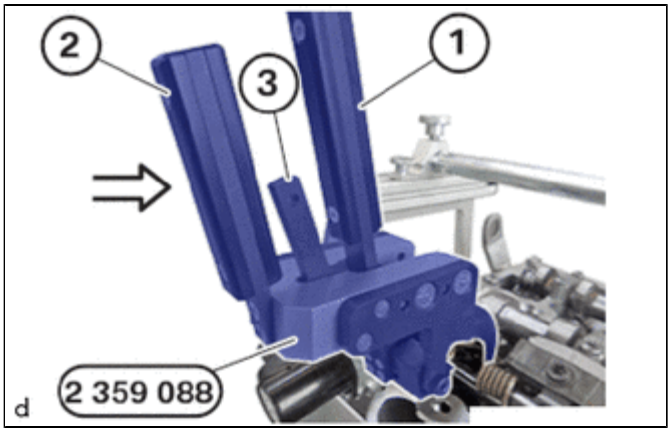
(c) Make sure that the torsion spring (2) is correctly positioned in the clamping lever (1) of the special tool 2 359 088 .

SST: 09200-WA410



(d) Hold down lever (1) of special tool 2 359 088 .

SST: 09200-WA410



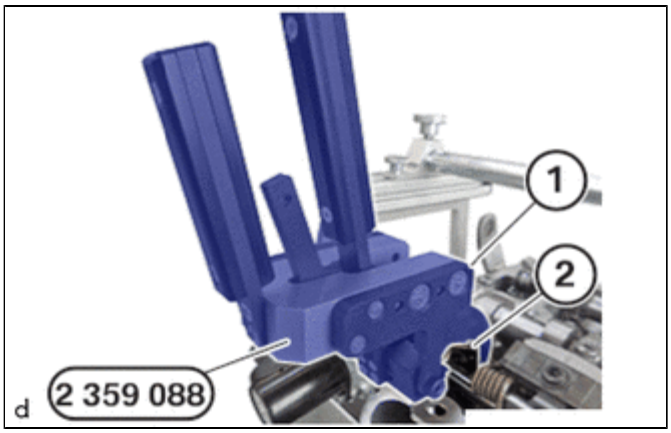
(e) Close lever (2) of the special tool 2 359 088 carefully in the direction of arrow until the retaining hook (3) engages audibly.

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SST: 09200-WA410

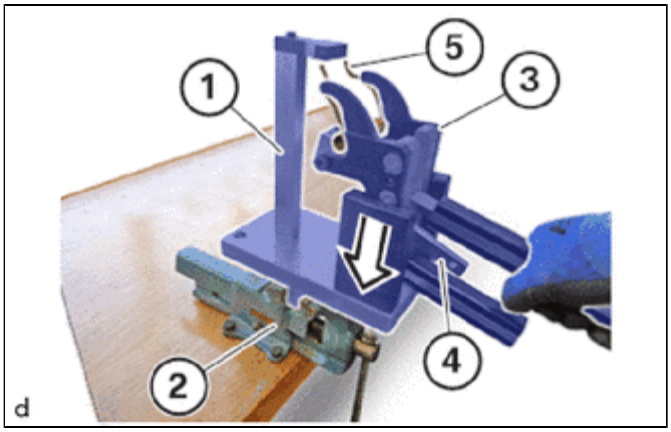
(f) Thread out clamping lever (1) of special tool 2 359 088 with pre-tensioned torsion spring (2)carefully then remove.

SST: 09200-WA410



(g) Clamp fixture (1) of the special tool 2 359 088 in the vice (2).

SST: 09200-WA410



(h) Position clamping lever (3) of special tool 2 359 088 with pre-tensioned torsion spring (5) in direction of arrow in the mounting (1) of the special tool 2 359 088 .

SST: 09200-WA410

(i) Carefully unlock retaining hook (4) of the special tool 2 359 088 .

(1) The torsion spring (5) is relieved.

SST: 09200-WA410

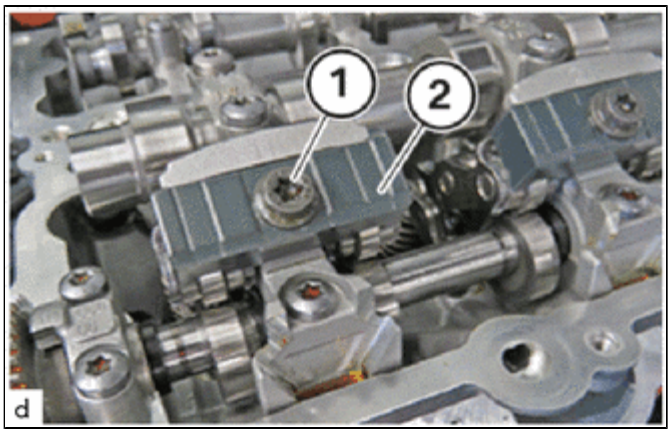
(j) Slowly open clamping lever (3) and remove the torsion spring (5).

(k) Repeat the operations for the remaining torsion spring.

7. REMOVE GATE

(a) Loosen T40 bolts (1).

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(b) Remove the gate (2).

(c) Repeat the step for all the gate.

8. REMOVE INTERMEDIATE LEVER

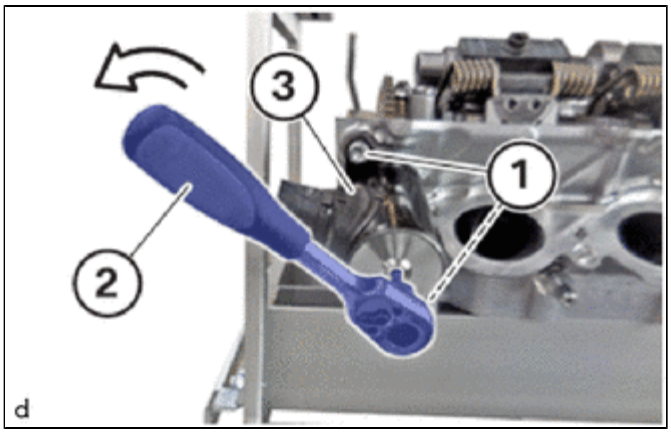
Click here INFO

9. REMOVE INTAKE CAMSHAFT SUB-ASSEMBLY

Click here INFO

10. REMOVE SERVO MOTOR

(a) Loosen T30 bolts (1).



(b) Using a 4 mm hexagon wrench (2), turn servo motor for the No. 3 camshaft sub-assembly (3) to the left on the bolt in the marked area and pull off the cylinder head at the same time.

NOTICE:

Do not turn the No. 3 camshaft sub-assembly beyond the end stop.

HINT:

This releases the tension of the eccentric shaft.

(c) Removing the servo motor for the eccentric shaft (3).

11. REMOVE NO. 3 CAMSHAFT SUB-ASSEMBLY

Click here INFO

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12. REMOVE EXHAUST CAMSHAFT SUB-ASSEMBLY

Click here INFO

13. REMOVE NO.1 VALVE ROCKER ARM SUB-ASSEMBLY

Click here INFO

14. REMOVE VALVE LASH ADJUSTER ASSEMBLY

Click here INFO

15. REMOVE INTAKE VALVE COMPRESSION SPRING

Click here INFO

16. REMOVE EXHAUST VALVE COMPRESSION SPRING

Click here INFO

17. REMOVE VALVE STEM OIL SEAL

Click here INFO

18. REMOVE INTAKE VALVE

Click here INFO

19. REMOVE EXHAUST VALVE

Click here INFO



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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG6
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CYLINDER HEAD: INSPECTION; 2020 MY Supra [03/2019 -]		

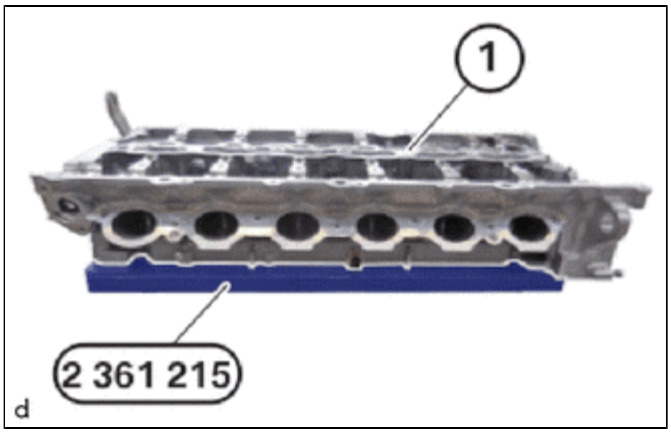
INSPECTION

PROCEDURE

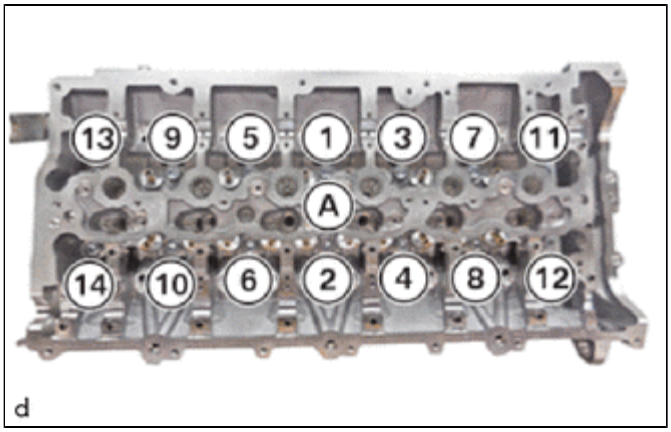
1. INSPECT WATER LEAK

(a) Position the cylinder head sub-assembly (1) on the special tool 2 361 215 so that the rubber layer faces the cylinder head sub-assembly (1) and all water ducts at the cylinder head sub-assembly (1) are closed.

SST: 09200-WA430



(b) Guide in bolts (1) to (14) on cylinder head sub-assembly (A).



(c) Tighten T60 bolts in the order (1) to (14).

Torque:

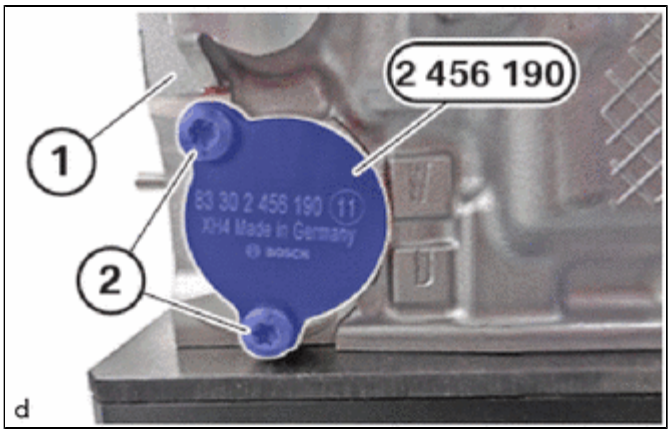
:

35 N·m {357 kgf·cm, 26 ft·lbf}

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(d) Thread in and install the special tool 2 456 190 on the cylinder head sub-assembly (1).

SST: 09200-WA720



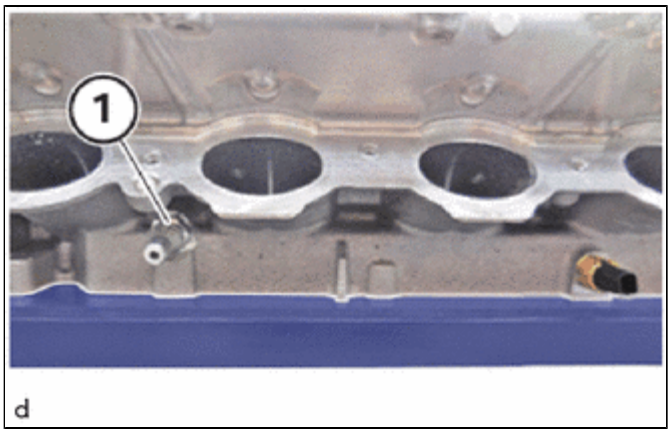
(e) Tighten down T30 bolts (2).

(1) Use the bolts of the No. 2 water by-pass hose between the cylinder head sub-assembly and the coolant pump assembly.

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(f) Release air by-pass valve assembly (1).



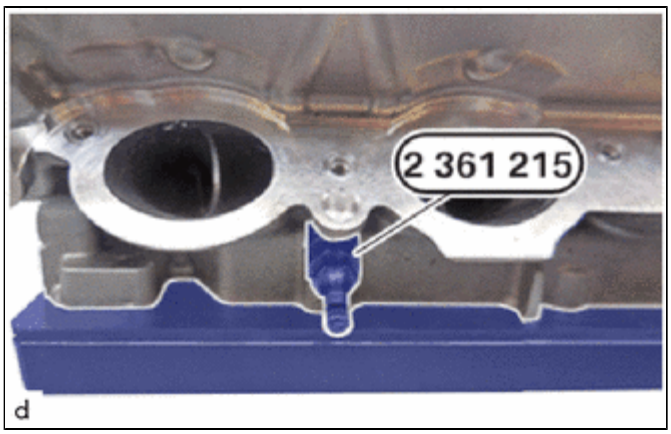
(g) Guide out and remove air by-pass valve assembly (1).

(h) Mount the valve of the special tool 2 361 215 on the cylinder head sub-assembly.

SST: 09200-WA430

Torque:

18 N·m {184 kgf·cm, 13 ft·lbf}



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(i) Heat up the cylinder head sub-assembly.

Temperature of the cylinder head:
60 °C (140 °F)

(j) Connect compressed air.

Maximum Testing Pressure:

300 kPa (3.06 kgf/cm^2, 43.5 psi)

(k) Check the cylinder head sub-assembly in for tightness in a water bath.

(1) Air bubbles develop.

(2) Check the cylinder head sub-assembly for damage at the point of exit of the air bubbles.

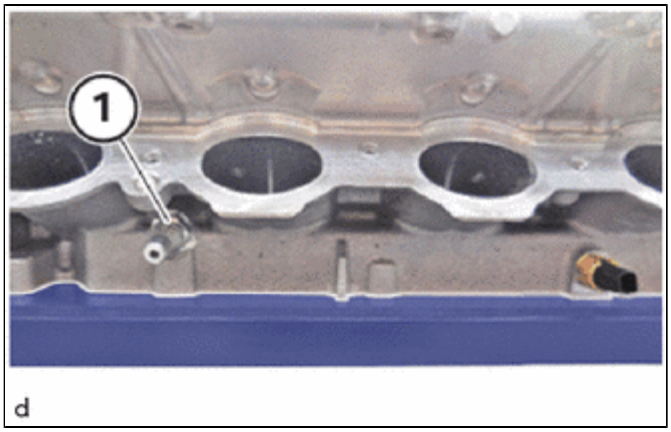
(3) Repair or replace the cylinder head sub-assembly if necessary.

(l) Disassemble the valve of the special tool 2 361 215 .

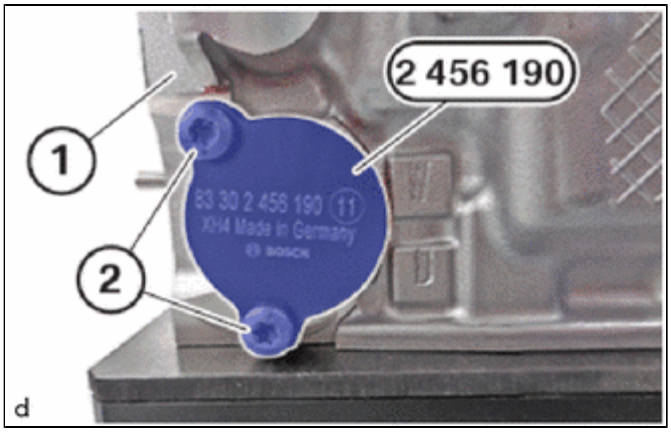
SST: 09200-WA430

(m) Install air by-pass valve assembly (1).

Torque:
18 N·m {184 kgf·cm, 13 ft·lbf}



(n) Loosen bolts (2).

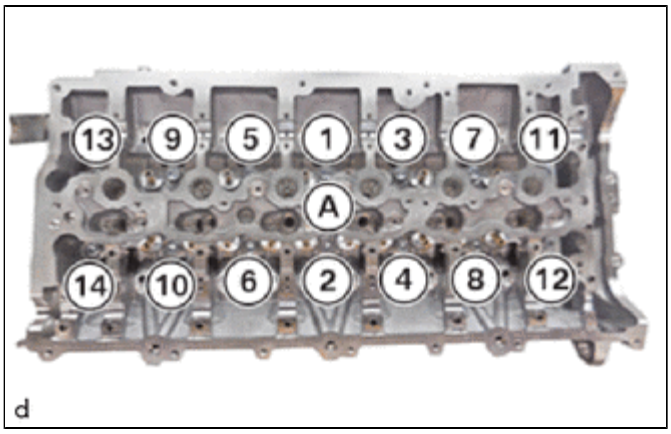


(o) Feed out the special tool 2 456 190 from the cylinder head sub-assembly (1) and remove.

SST: 09200-WA720

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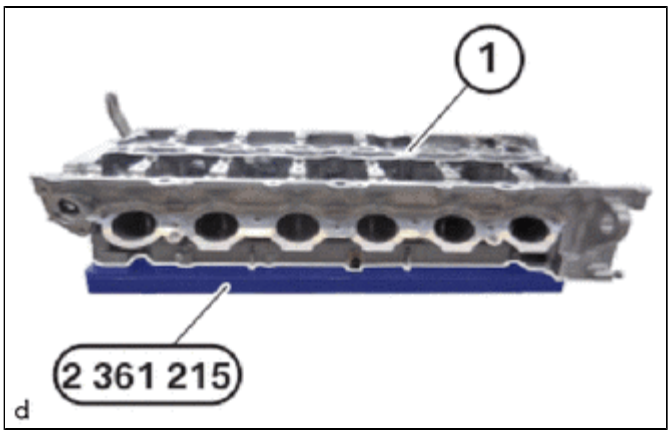
(p) Release the bolts in the order (14) to (1) from cylinder head sub-assembly (A).



(q) Guide out and remove T60 bolts (14) to (1).

(r) Guide out and remove cylinder head sub-assembly (1) from the special tool 2 361 215 .

SST: 09200-WA430



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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG5
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CYLINDER HEAD: REASSEMBLY; 2020 MY Supra [03/2019 -]		

REASSEMBLY

PROCEDURE

1. INSTALL INTAKE VALVE

Click here INFO

2. INSTALL EXHAUST VALVE

Click here INFO

3. INSTALL VALVE STEM OIL SEAL

Click here INFO

4. INSTALL EXHAUST VALVE COMPRESSION SPRING

Click here INFO

5. INSTALL INTAKE VALVE COMPRESSION SPRING

Click here INFO

6. INSTALL VALVE LASH ADJUSTER ASSEMBLY

Click here INFO

7. INSTALL NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

Click here INFO

8. INSTALL EXHAUST CAMSHAFT SUB-ASSEMBLY

Click here INFO

9. INSTALL NO. 3 CAMSHAFT SUB-ASSEMBLY

Click here INFO

10. INSTALL INTAKE CAMSHAFT SUB-ASSEMBLY

Click here INFO

11. INSPECT INTERMEDIATE LEVER

Click here INFO

12. INSPECT NO.1 VALVE ROCKER ARM SUB-ASSEMBLY

Click here INFO

13. INSTALL INTERMEDIATE LEVER

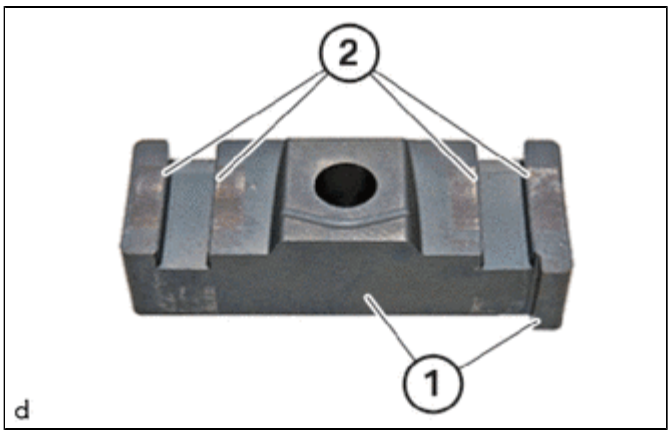
Click here

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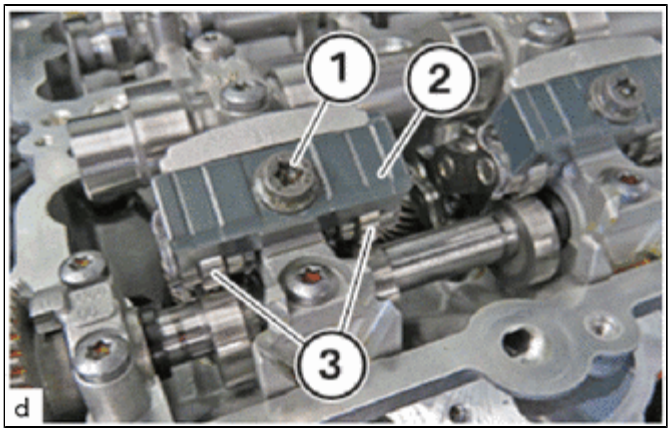
INFO

14. INSTALL GATE

(a) Clean contact surfaces (1) and (2) off oil, grease and dirt.



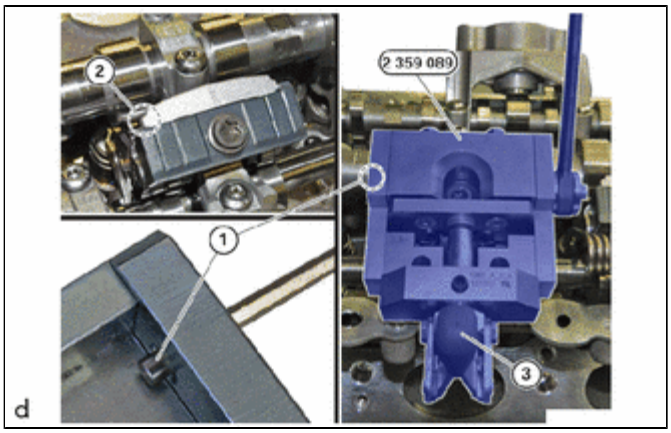
(b) Position the gate (2) and hand-tighten the bolt (1).



(c) Check that the intermediate lever (3) is in the correct mounting orientation.

(d) Position the special tool 2 359 089 on the cylinder head sub-assembly.

SST: 09200-WA420



(e) Pre-tension the gate with the lever (3).

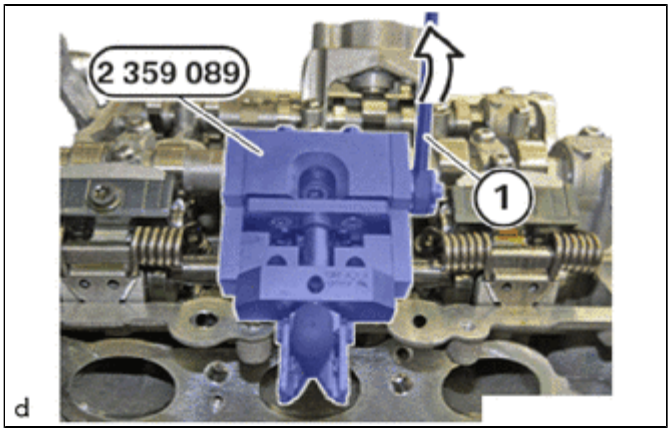
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(f) Move bolt (1) against contact surface (2).

(g) Make sure that the special tool 2 359 089 does not rotate during this process.

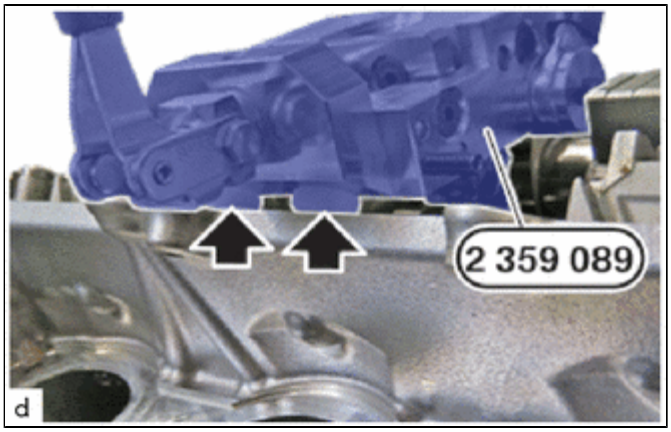
SST: 09200-WA420

(h) Secure the gate with the lever (1).



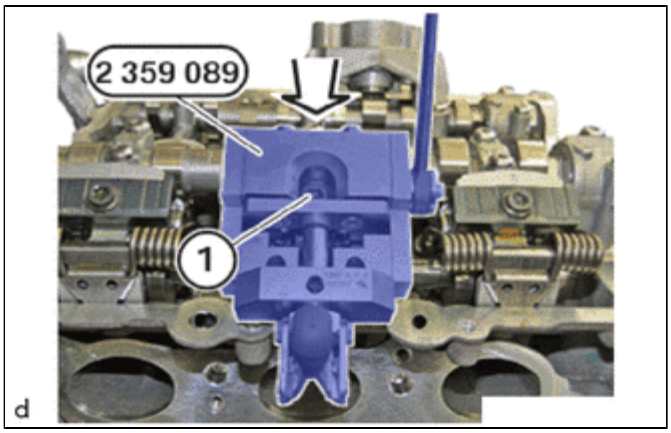
(i) Ensure that the special tool 2 359 089 lies flat on the cylinder head sub-assembly.

SST: 09200-WA420



(j) Press the special tool 2 359 089 onto the cylinder head sub-assembly.

SST: 09200-WA420



(k) Tighten the T40 bolt (1) at the same time.

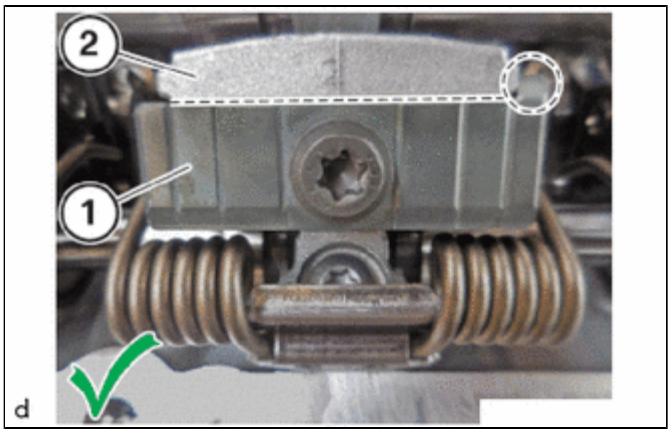
Torque:

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20.5 N·m {209 kgf·cm, 15 ft·lbf}

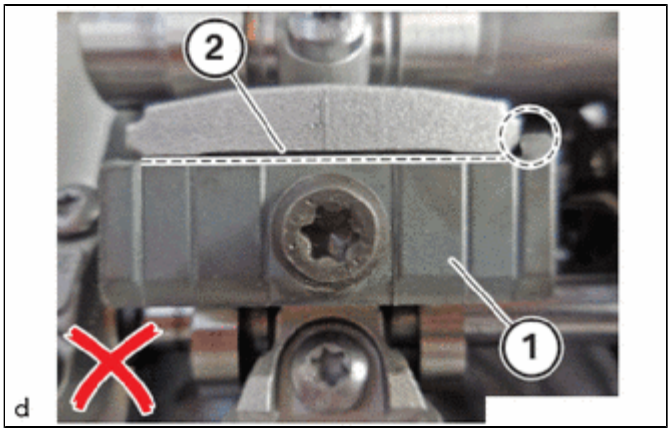
(l) Make sure that gate (1) rests correctly against bearing bracket (2).

(1) Gate (1) is installed correctly in the marked area.



(m) Make sure that gate (1) rests correctly against bearing bracket (2).

(1) Gate (1) is installed incorrectly in the marked area.



(n) Repeat the step for all the gates.

15. INSPECT AND ADJUST CAMSHAFT (CYLINDERS 3 AND 4)

Click here INFO

16. INSTALL TORSION SPRING

CAUTION:

- Spring preload.

  Danger of injury!

  - The use of the specified special tool (tool) is mandatory.
  - The described operation must be carried out properly.

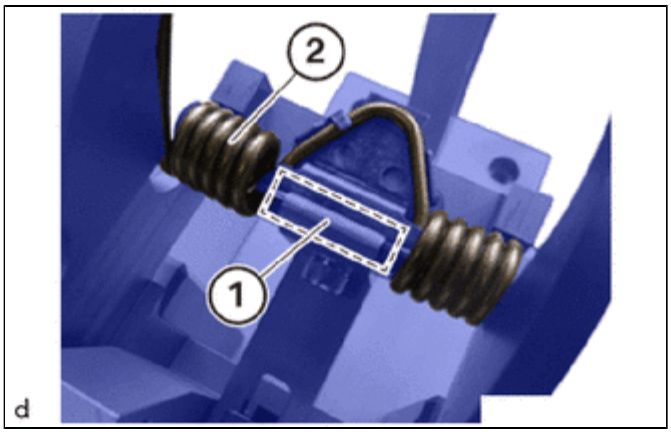
HINT:

Wear safety goggles.

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(a) Insert the torsion spring (2) in the clamping lever of the special tool 2 359 088 .

SST: 09200-WA410

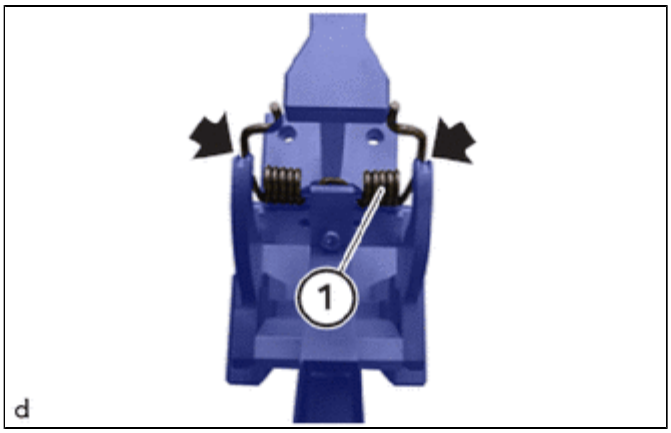


(b) Make sure that the torsion spring (2) is correctly positioned in the marked area (1) of the special tool 2 359 088 .

SST: 09200-WA410

(c) Carefully close the clamping lever of the special tool 2 359 088 in the accompanying fixture until the retaining hook engages.

SST: 09200-WA410



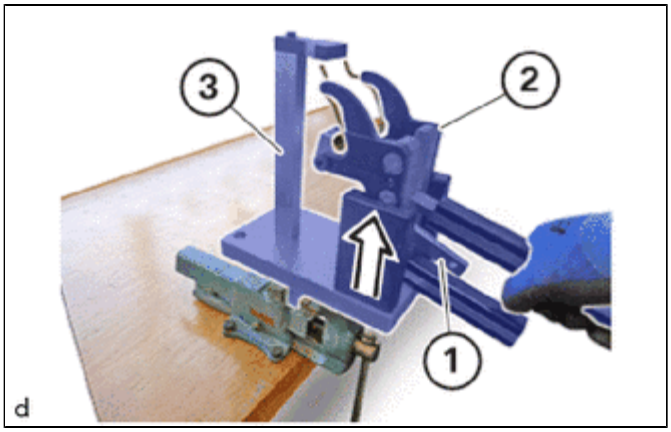
(d) Ensure that the torsion spring (1) lies correctly in the lateral guides (arrows) of the special tool 2 359 088 during tensioning.

SST: 09200-WA410

(e) Carefully close the clamping lever (2) of the special tool 2 359 088 in the fixture (3) until the retaining hook (1) audibly engages.

SST: 09200-WA410

(1) The torsion spring is tensioned.



(f) Carefully take the clamping lever (2) of the special tool 2 359 088 with the stretched torsion spring out of the fixture

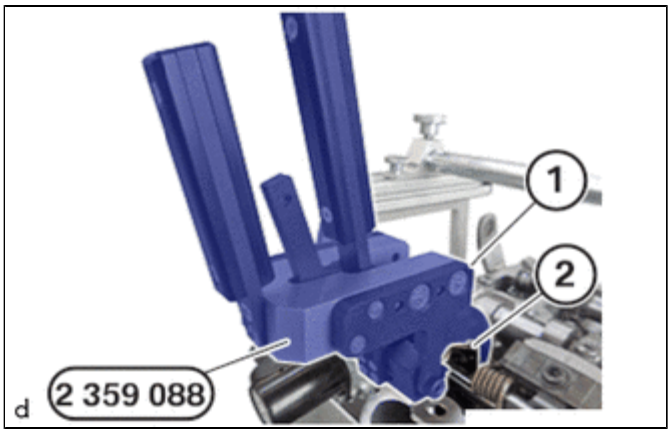
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(3) of the special tool 2 359 088 in the direction of arrow.

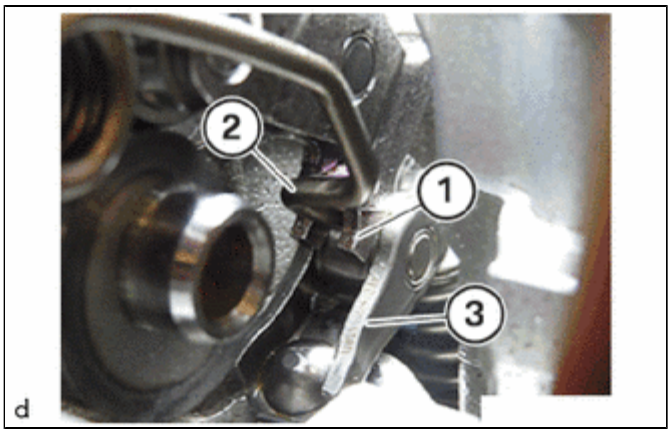
SST: 09200-WA410

(g) Feed in clamping lever (1) from the special tool 2 359 088 with the pre-tensioned torsion spring (2) and position it.

SST: 09200-WA410



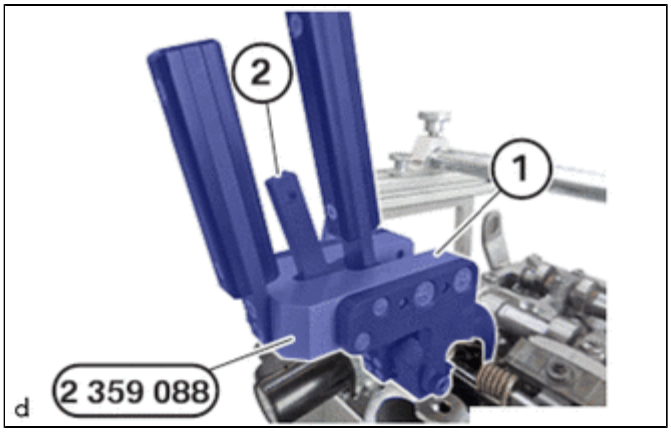
(h) Ensure that the torsion spring (2) is positioned correctly in the intermediate lever (1).



(i) Check all No. 1 valve rocker arm sub-assembly (3) for correct installation position.

(j) Press the clamping lever (1) of the special tool 2 359 088 together until the retaining hook (2) unlocks.

SST: 09200-WA410



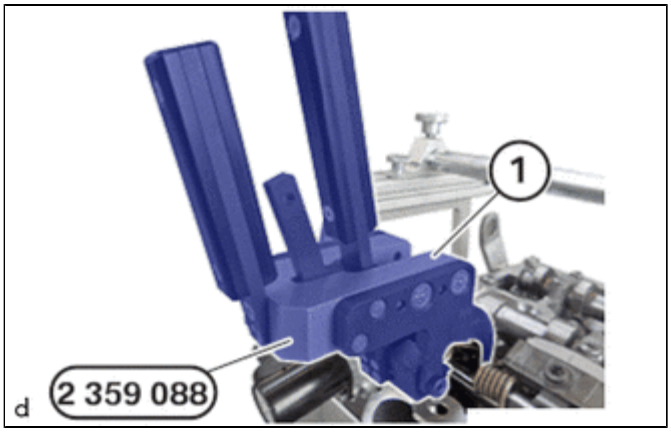
(k) Carefully open the clamping lever (1) of the special tool 2 359 088 until the torsion spring is completely relaxed.

SST: 09200-WA410

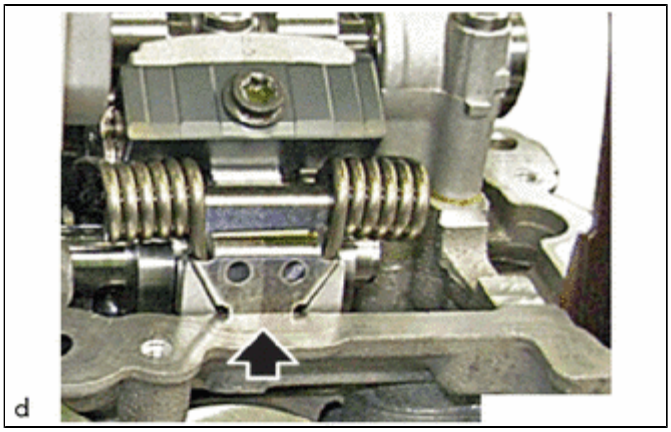
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(l) Guide out and remove the clamping lever (1) of the special tool 2 359 088 .

SST: 09200-WA410



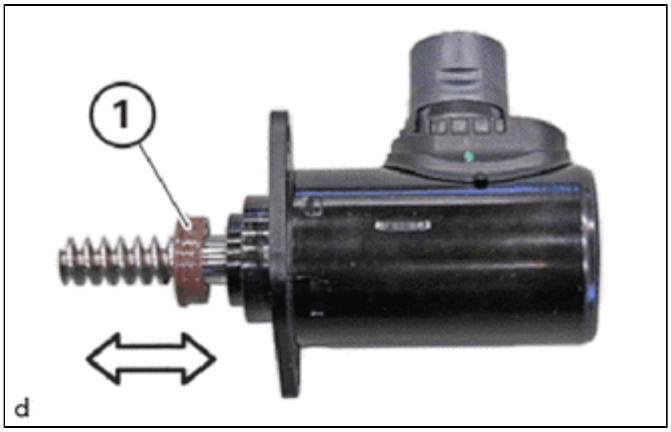
(m) Check for correct mounting orientation of the torsion spring (arrow) at the cylinder head sub-assembly.



(n) Repeat the operations for the remaining torsion spring.

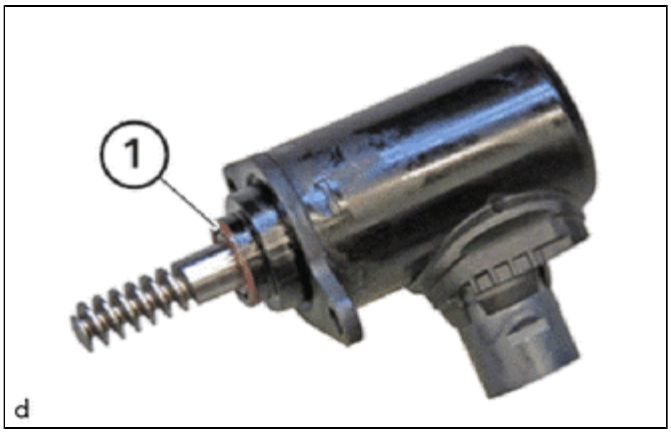
17. INSTALL SERVO MOTOR

(a) Pull off O-ring (1) and replace.

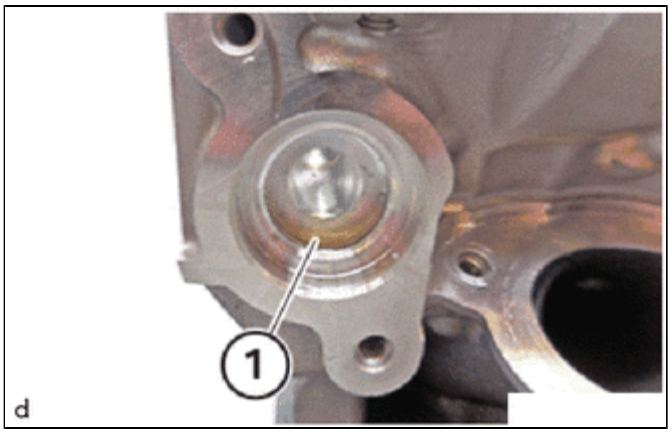


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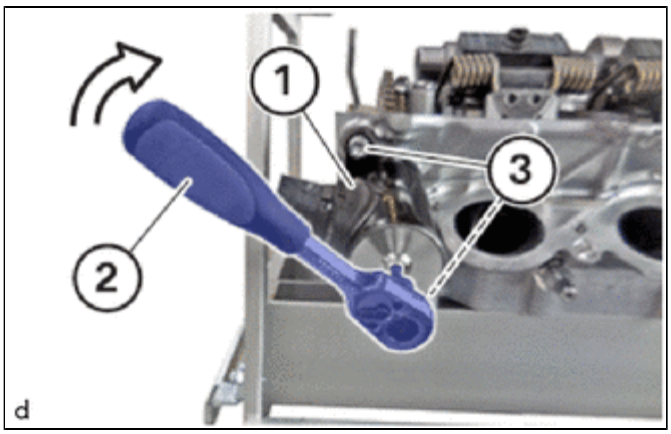
(b) Push the O-ring (1) onto the servo motor housing to the limit position.



(c) Clean sealing surface (1).



(d) Slide servo motor for eccentric shaft (1) up to the limit position.



(e) Turn screw on the servo motor for the eccentric shaft (1) to the right with a 4 mm hexagon wrench (2) until the servo motor for the eccentric shaft rests against the cylinder head.

(f) Tighten the T30 bolts (1).

Torque:

10 N·m {102 kgf·cm, 7 ft·lbf}

18. INSTALL TURBOCHARGER SUB-ASSEMBLY

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19. INSTALL CYLINDER HEAD GASKET

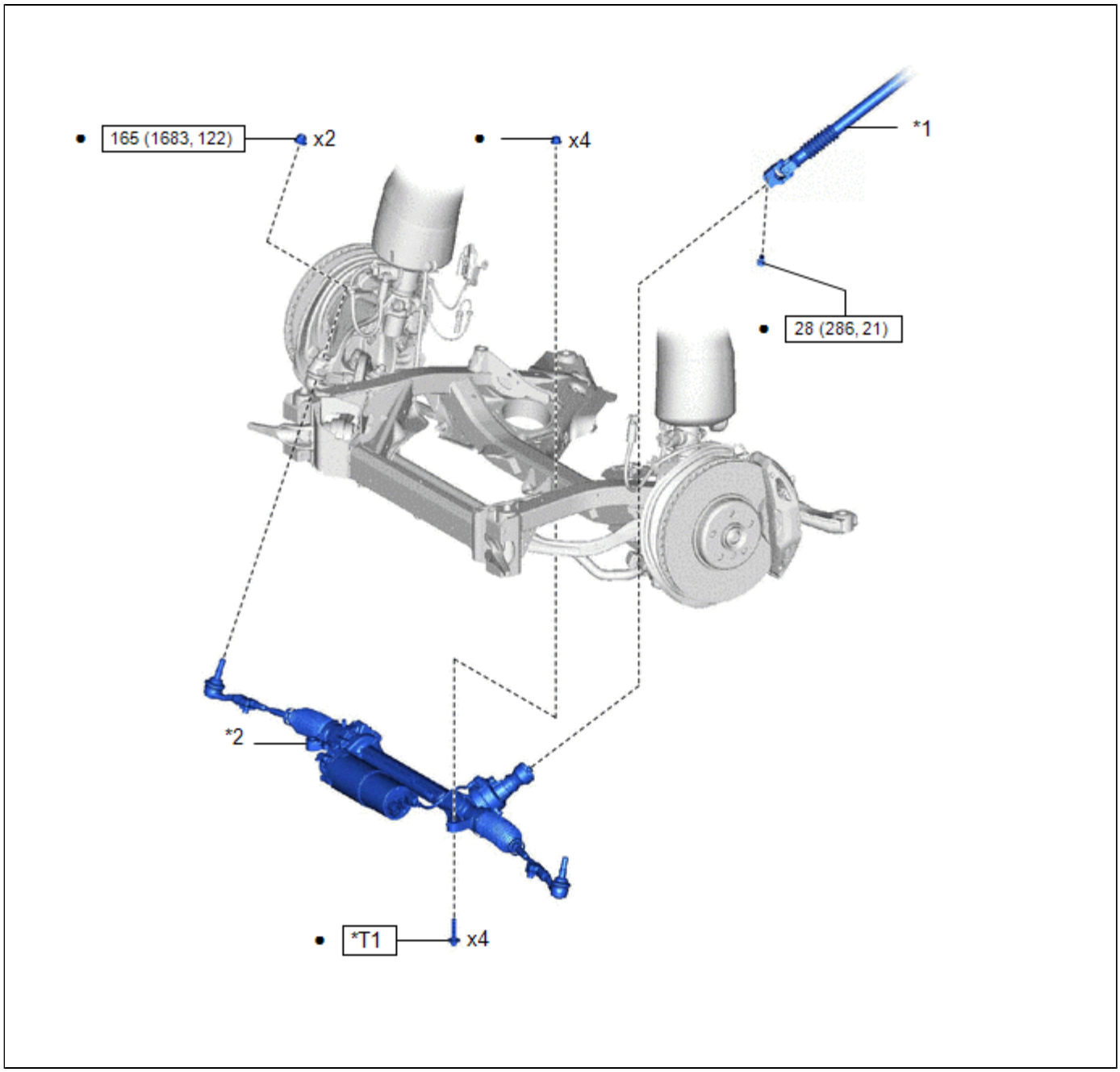
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFO
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CYLINDER HEAD GASKET: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION

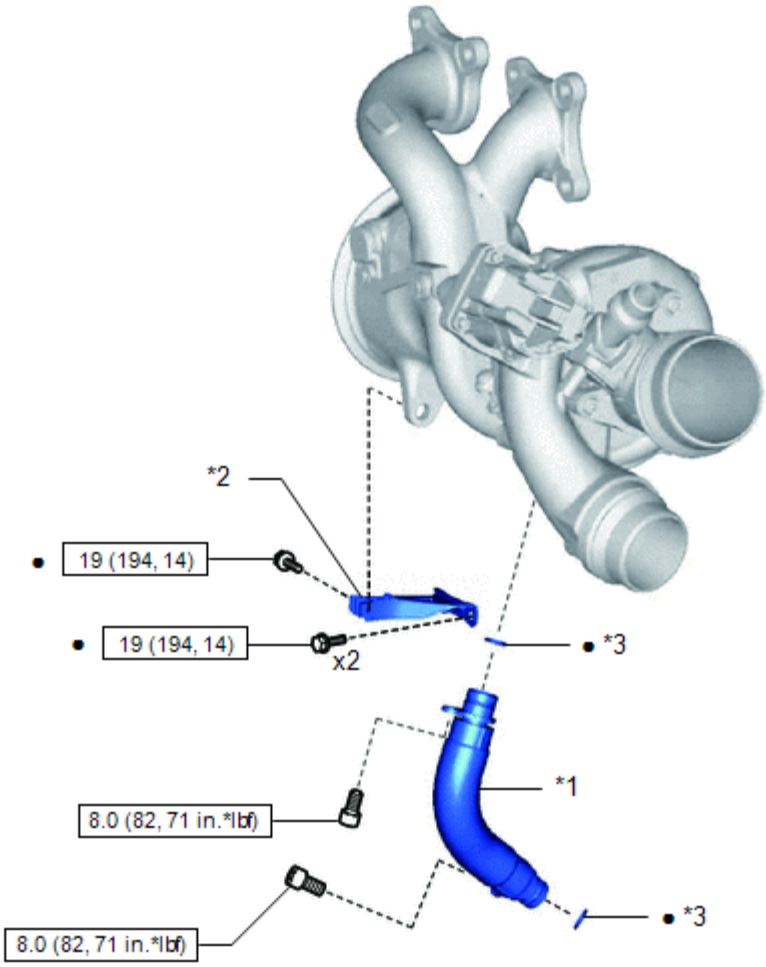


*1	STEERING INTERMEDIATE SHAFT ASSEMBLY	*2	STEERING LINK ASSEMBLY
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

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*T1	1st: 100 (1020, 74) 2nd: Turn 90°	-	-

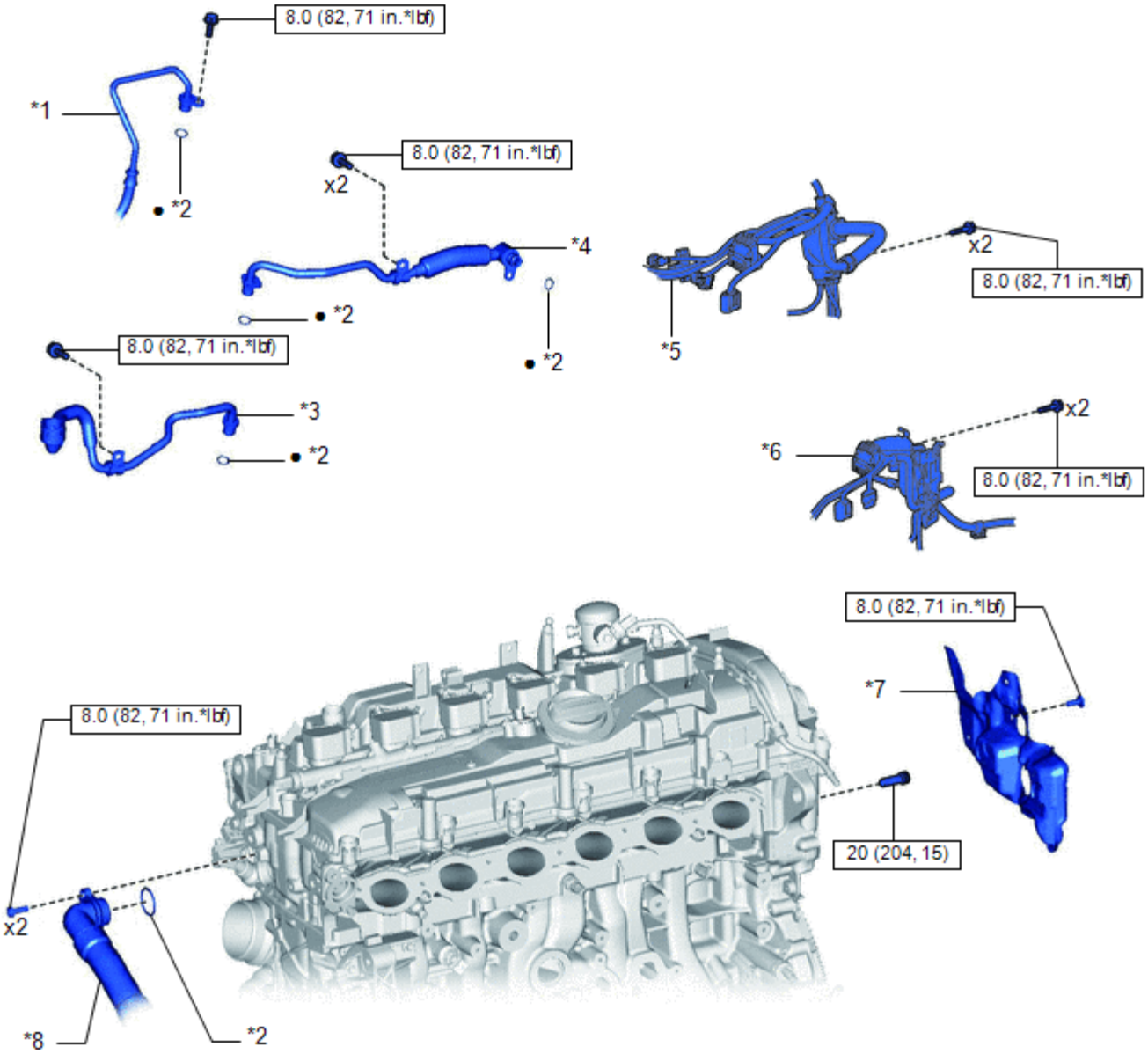
ILLUSTRATION



*1	OUTLET TURBO OIL PIPE	*2	TURBOCHARGER STAY
*3	O-RING	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

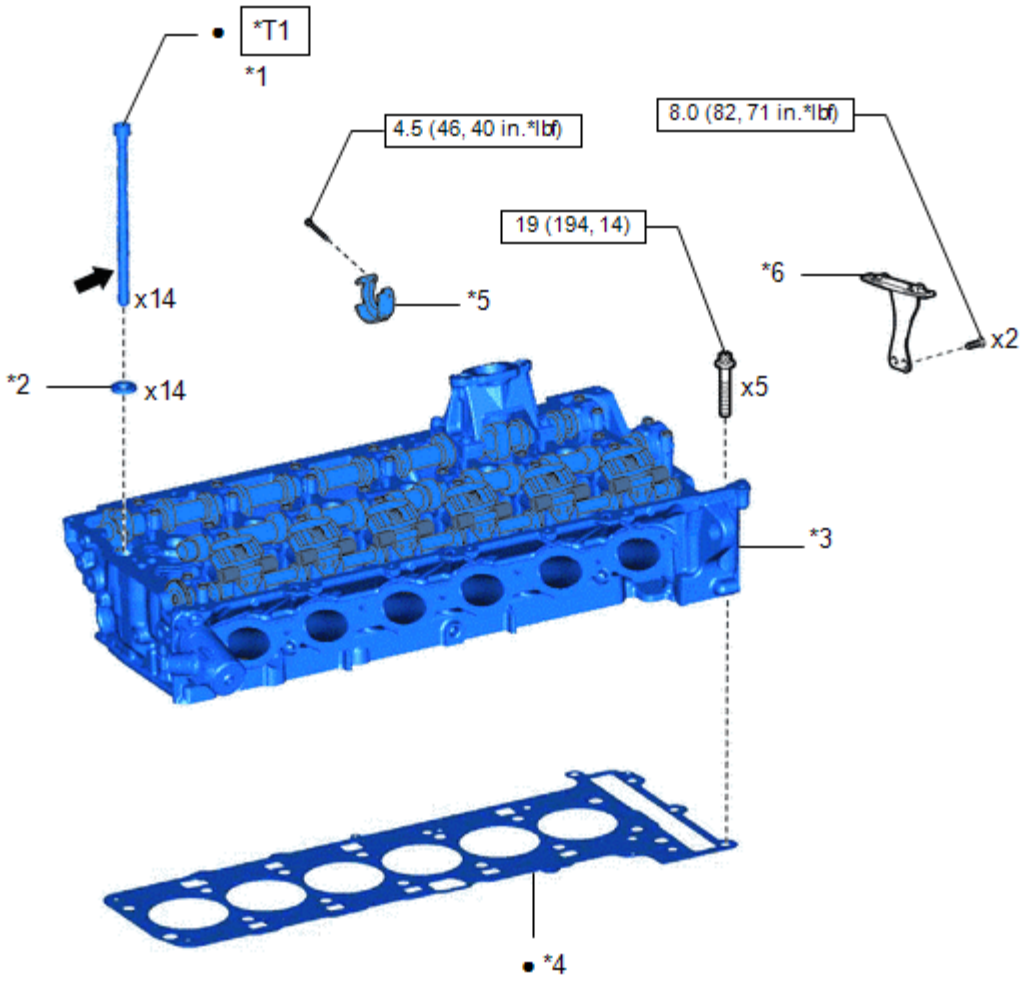
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*1	INLET TURBO OIL PIPE SUB-ASSEMBLY	*2	O-RING
*3	NO. 2 TURBO WATER PIPE SUB-ASSEMBLY	*4	NO. 1 TURBO WATER PIPE SUB-ASSEMBLY
*5	ENGINE WIRE	*6	TRANSMISSION WIRE
*7	NO. 4 ENGINE COVER	*8	NO. 2 WATER BY-PASS HOSE
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

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ILLUSTRATION



*1	CYLINDER HEAD SET BOLT	*2	CYLINDER HEAD SET PLATE WASHER
*3	CYLINDER HEAD SUB-ASSEMBLY	*4	CYLINDER HEAD GASKET
*5	CAMSHAFT SENSOR WHEEL	*6	CHAIN DAMPER GUIDE
□	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st: 30 (306, 22) 2nd: Turn 90° 3rd: Turn 180°	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFP
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CYLINDER HEAD GASKET: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

1. REMOVE CAMSHAFT TIMING GEAR ASSEMBLY

Click here INFO

2. REMOVE CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

Click here INFO

3. REMOVE WHEEL ASSEMBLY

Click here INFO

4. DISCONNECT TIE ROD END SUB-ASSEMBLY LH

Click here INFO

5. DISCONNECT TIE ROD END SUB-ASSEMBLY RH

HINT:

Use the same procedure as for the LH side.

6. REMOVE FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

7. REMOVE STEERING INTERMEDIATE SHAFT ASSEMBLY

Click here INFO

8. REMOVE STEERING LINK ASSEMBLY

Click here INFO

9. REMOVE OUTLET TURBO OIL PIPE

Click here INFO

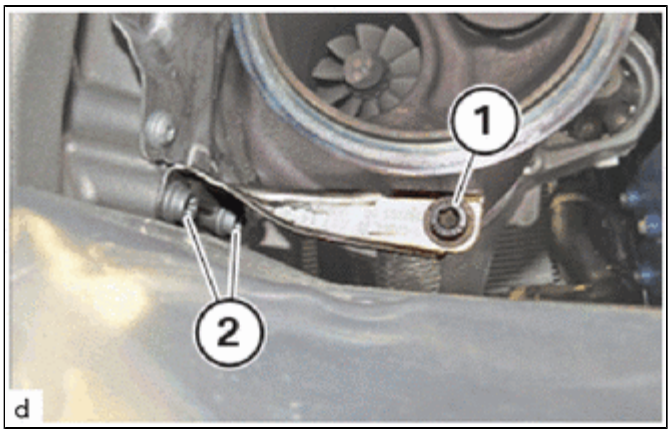
10. REMOVE EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY

Click here INFO

11. REMOVE TURBOCHARGER STAY

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(a) Loosen T40 bolt (1).



(b) Release T40 bolts (2) and remove the turbocharger stay.

12. REMOVE CYLINDER HEAD SUB-ASSEMBLY

CAUTION:

- Heavy component.

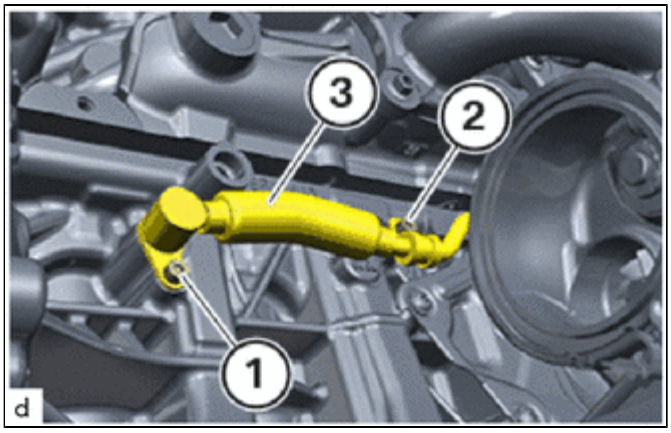
  Heavy components can lead to injury or damage.

  - Remove and install heavy components with the aid of another person/other persons.

HINT:

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

(a) Loosen T30 bolts (1) and (2).

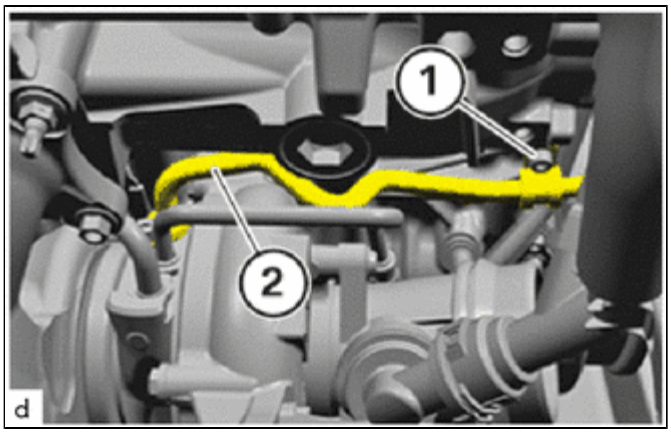


(b) Guide the No. 1 turbo water pipe sub-assembly for turbocharger sub-assembly (3) from the cylinder block sub-assembly and place it aside.

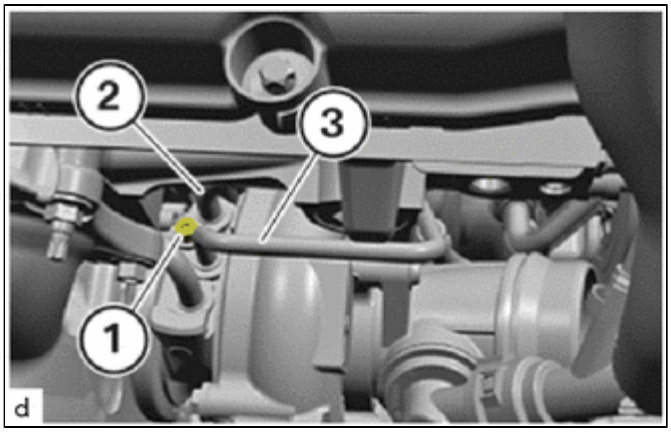
(c) Catch and dispose of escaping coolant.

(d) Release T30 bolt (1) on the holder of No. 2 turbo water pipe sub-assembly (2).

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(e) Have a rag ready and catch any engine oil that may emerge.

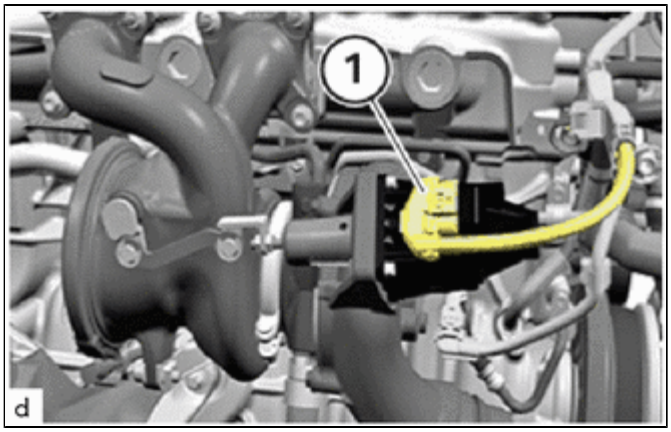


(f) Loosen T30 bolt (1).

(g) Guide out No. 2 turbo water pipe sub-assembly and No. 1 turbo water pipe sub-assembly (2) for the turbocharger sub-assembly and place it aside.

(h) Guide out turbo inlet turbo oil pipe sub-assembly (3) for the turbocharger sub-assembly and place it aside.

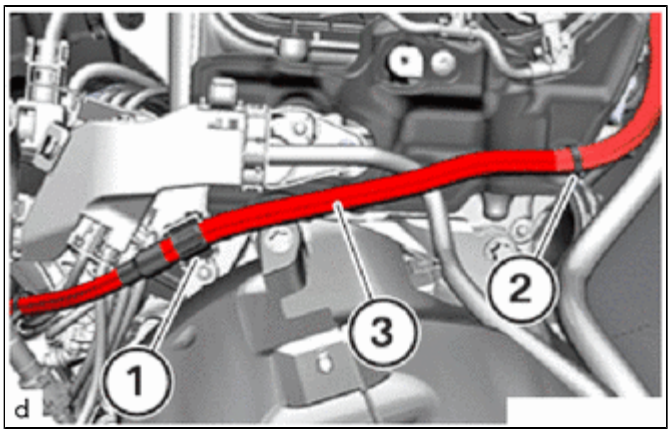
(i) Collect and dispose of emerging fluids.



(j) Unlock plug connection (1) and disconnect.

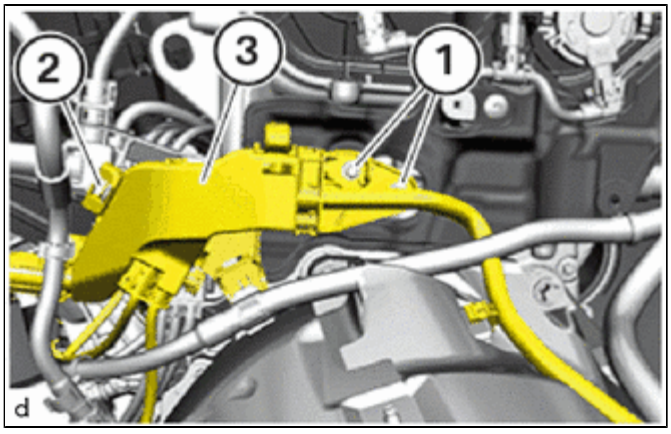
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(k) Unlock and release clamps (1) and (2).



(l) Feed out alternator positive battery cable (3) and put to one side.

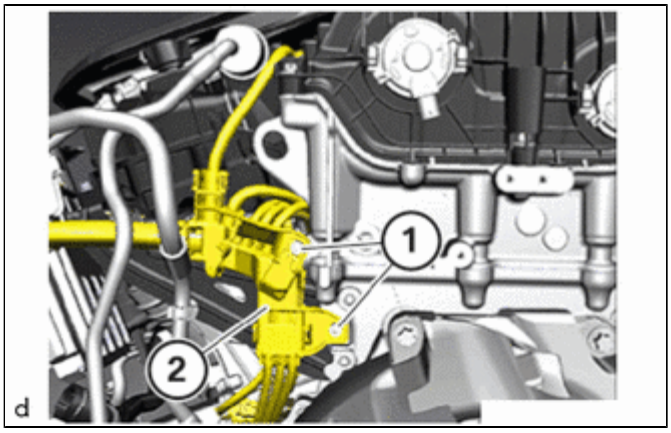
(m) Loosen E8 bolts (1).



(n) Unlock lock (2).

(o) Guide out transmission wire (3) and place it aside.

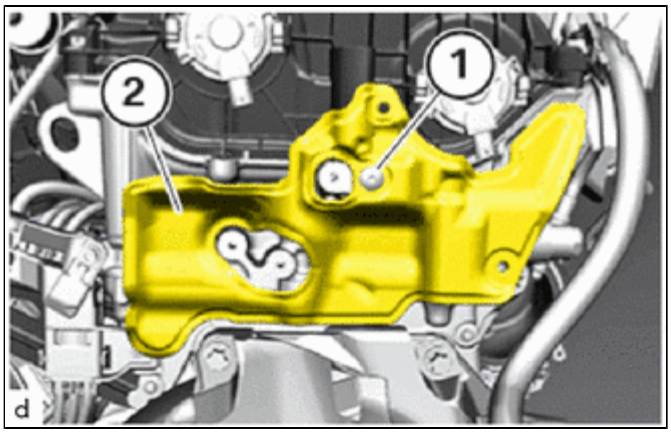
(p) Loosen T30 bolts (1).



(q) Guide out the wiring harness section for engine wire (2) and place to one side.

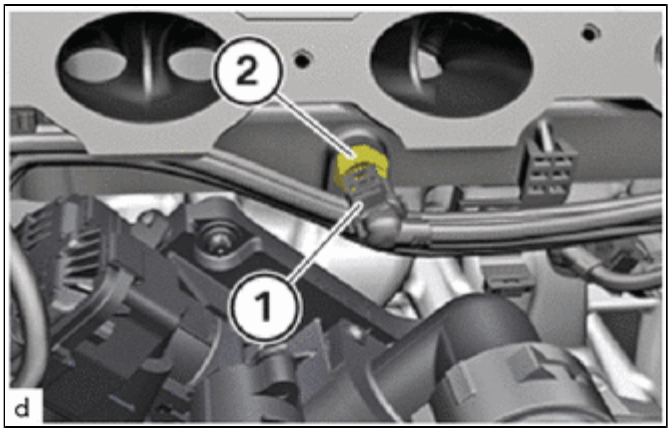
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(r) Loosen T30 bolt (1).

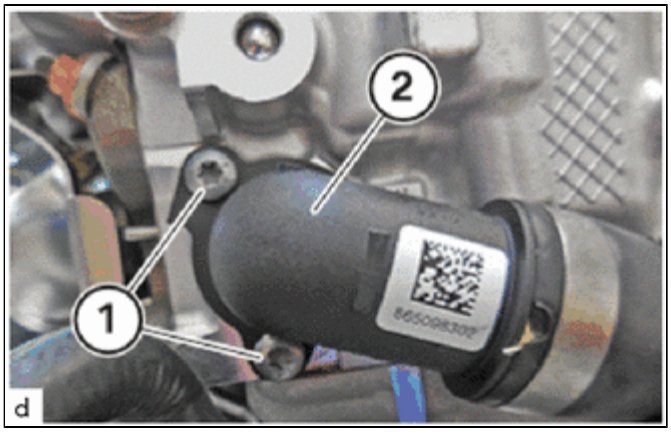


(s) Guide out and remove the No. 4 engine cover (2).

(t) Unlock and disconnect plug connection (1) on coolant temperature sensor (2).



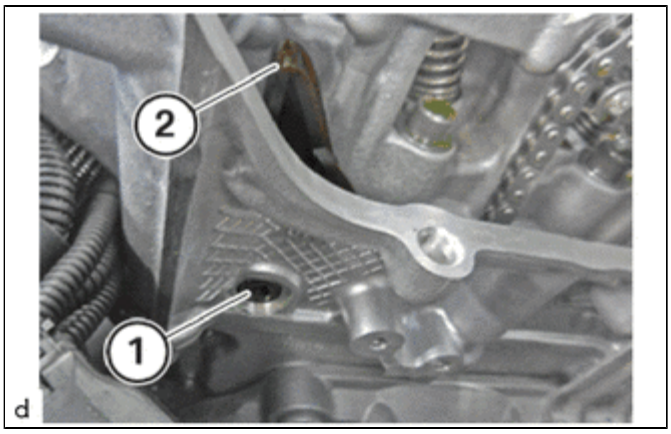
(u) Loosen T30 bolts (1).



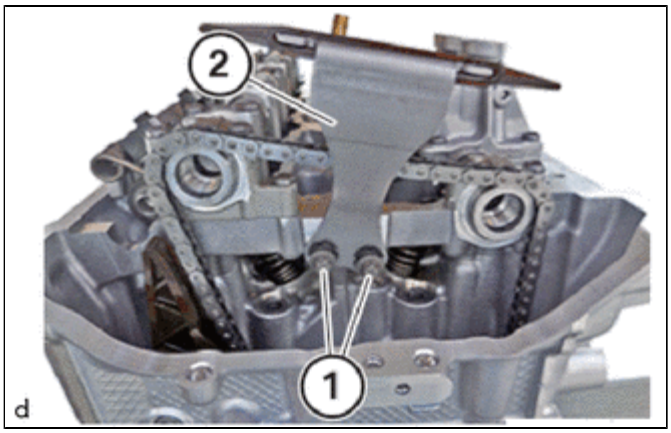
(v) Feed out No. 2 water by-pass hose (2) and place to one side.

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(w) Release the T45 bearing journal (1) from the No. 1 chain vibration damper (2).



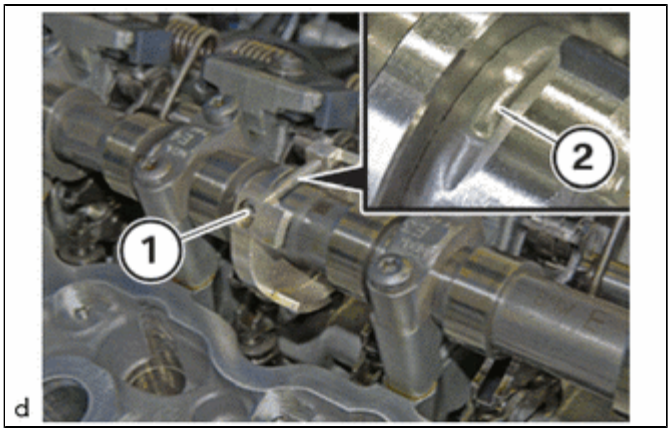
(x) Loosen E10 bolts (1).



(y) Guide out the chain damper guide (2) and remove.

(z) Rotate intake camshaft sub-assembly, if necessary in the position shown.

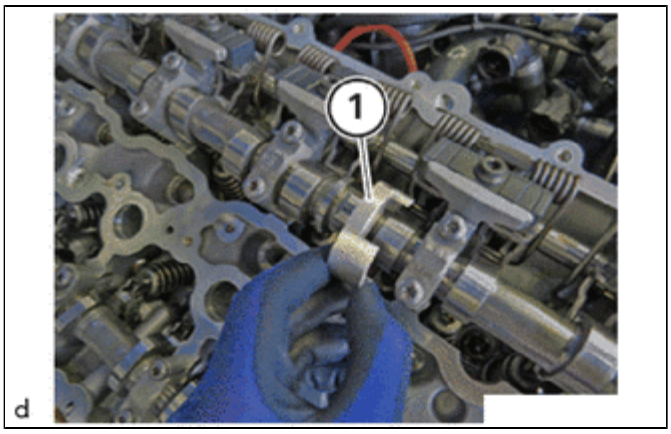
(1) The recess (2) must point upwards.



(aa) Loosen 3 mm hexagon bolt (1).

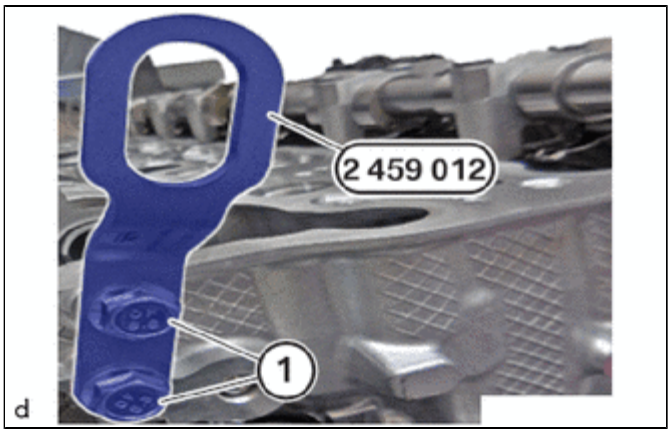
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(ab) Slide camshaft sensor wheel (1) in the direction of cylinder 1 and guide it out from the intake camshaft sub-assembly.



(ac) Guide in and position special tool 2 459 012 on cylinder head sub-assembly.

SST: 09200-WA610



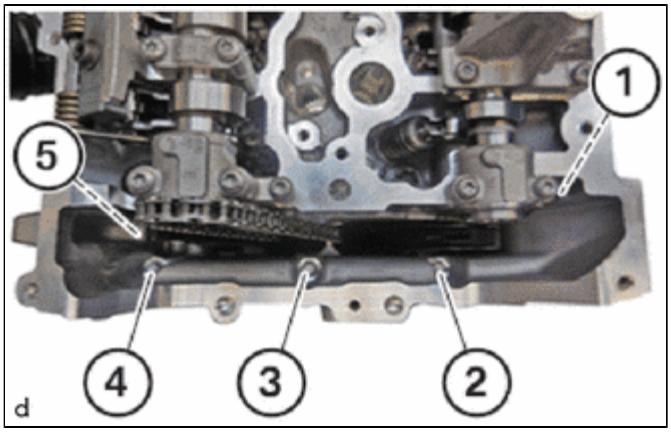
(ad) Tighten the bolts (1) of special tool 2 459 012 .

SST: 09200-WA610

Torque:

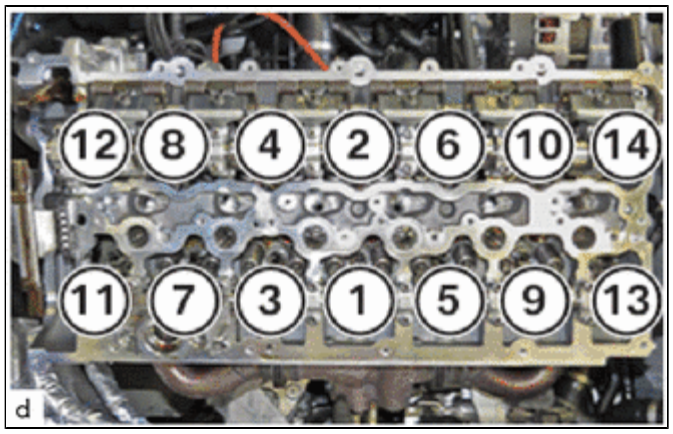
21.5 N·m {219 kgf·cm, 16 ft·lbf}

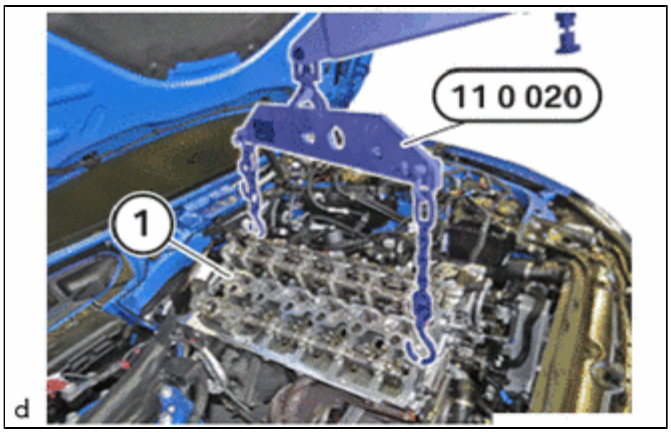
(ae) Loosen E10 bolts (1) to (5).



(af) Undo the T60 bolts in the order (14) to (1) .

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- Damage to the guide rails.

  Large amounts of force may damage the guide rails of the timing chain.

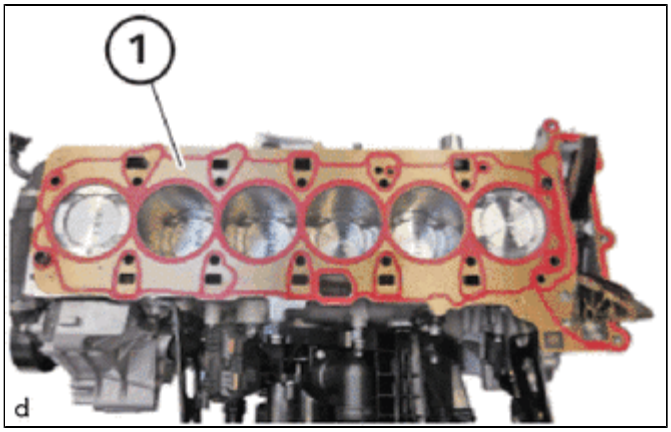
  - Make sure not to damage the guide rail with the cylinder head sub-assembly when removing and installing the cylinder head sub-assembly.

(ag) Lift out cylinder head sub-assembly (1) and the turbocharger sub-assembly with an auxiliary person, the workshop crane and special tool 0 490 567 (11 0 020).

SST: 09200-WA860

13. REMOVE CYLINDER HEAD GASKET

(a) Thread out and remove cylinder head gasket (1).

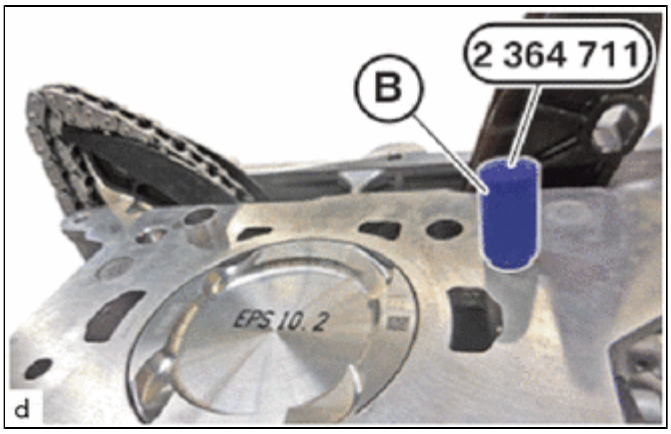


14. SEALING OIL DUCT

(a) Seal the oil duct using special tool (B) from the set of special tools 2 364 711 .

SST: 09200-WA530

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15. CLEAN SEALING SURFACE

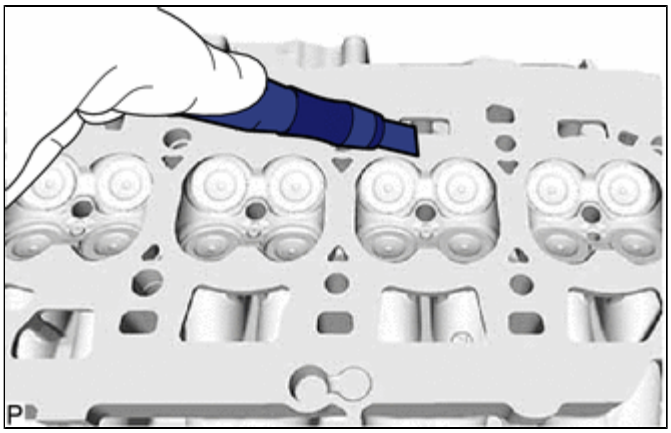
NOTICE:

- Damage to the surface.

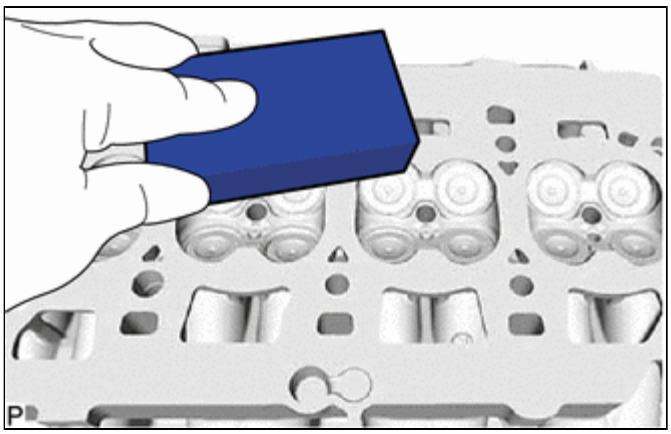
  The use of metal-cutting tools (e.g. emery cloth) to clean the surfaces can damage them and lead to leaks or engine damage.

  - Do not use any metal-cutting tools.

(a) Remove coarse backlogs from the sealing surfaces of the cylinder head sub-assembly.

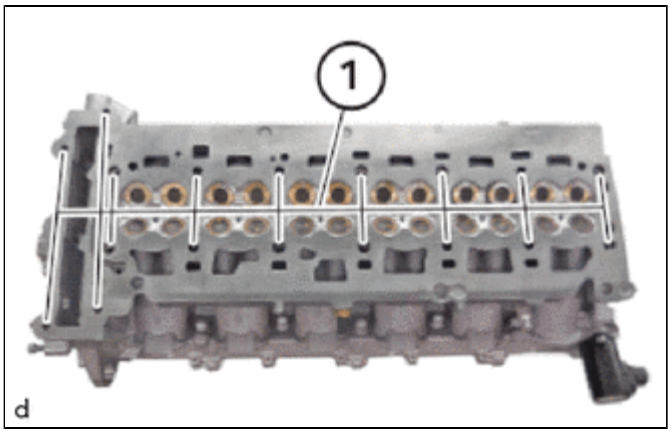


(b) Remove fine backlogs from the sealing surfaces of the cylinder head sub-assembly.

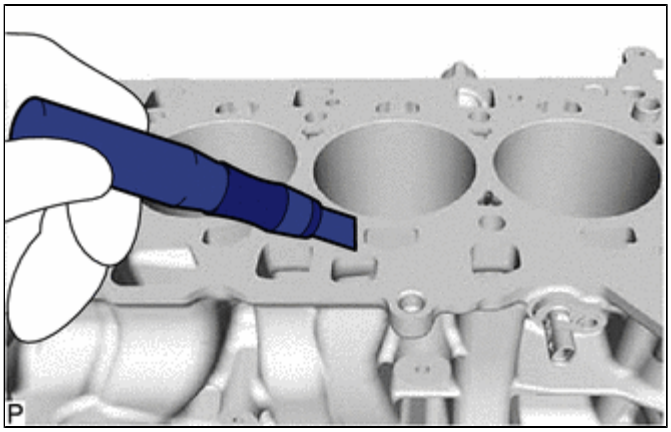


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(c) Clean all blind holes (1) of the cylinder head sub-assembly.



(d) Remove coarse backlogs from the sealing surfaces of the cylinder block sub-assembly.



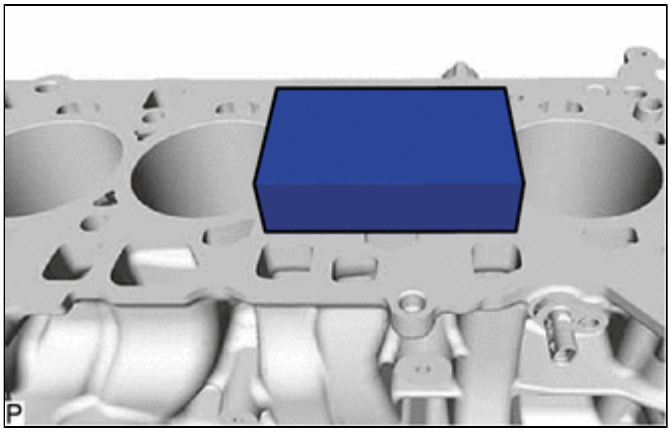
(e) Remove fine backlogs from the sealing surfaces of the cylinder block sub-assembly.

CAUTION:

- Swirling dirt particles caused by compressed air.

  Danger of injury!

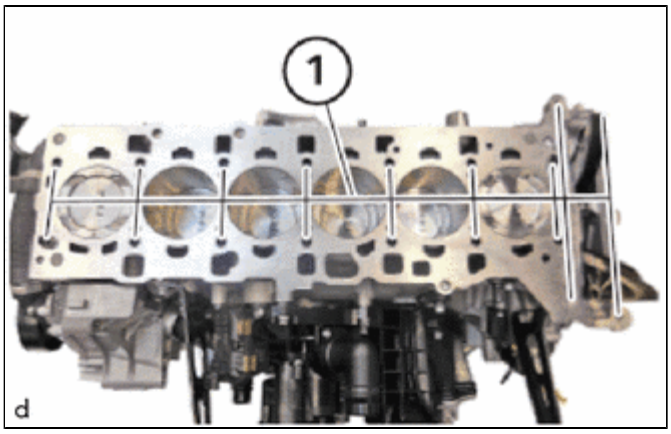
  - Collect dirt particles, e.g. when blowing out, use cloth to do so.
  - Wear safety goggles.



(f) Clean all threaded holes (1) of the cylinder block sub-

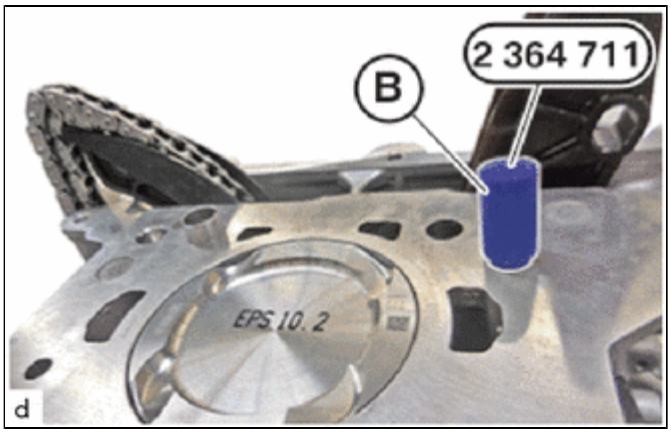
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assembly with compressed air.



(g) Remove special tool (B) contained in the set of special tools 2 364 711 .

SST: 09200-WA530



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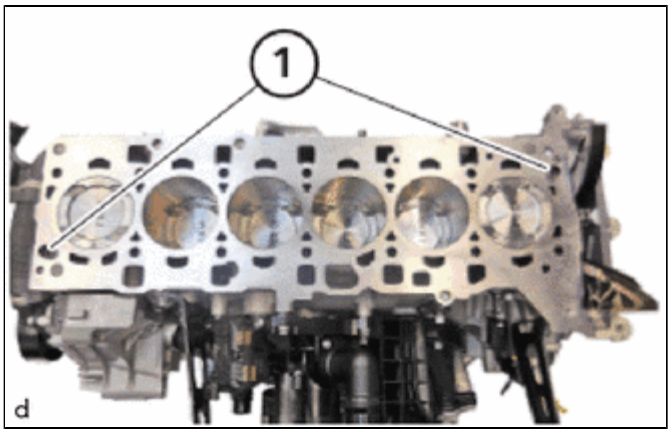
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFQ
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): CYLINDER HEAD GASKET: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

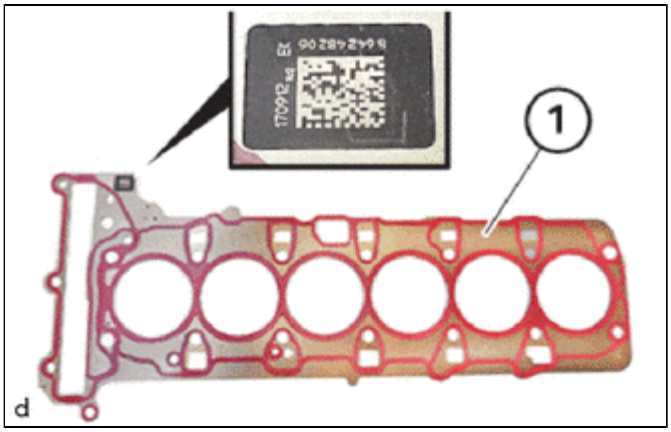
PROCEDURE

1. INSTALL CYLINDER HEAD GASKET

(a) Check the ring pins (1) for damage and replace if necessary.



(b) Replace cylinder head gasket (1).

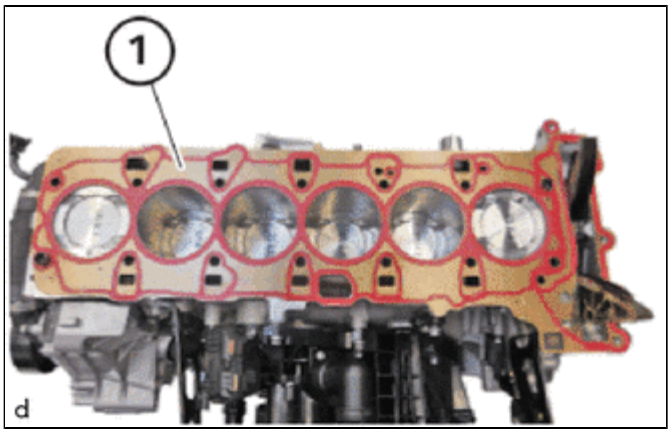


(c) Check cylinder head gasket (1) using the part number.

(1) If the cylinder head sub-assembly is reworked, an additional thicker 0.3 mm cylinder head gasket is available for service personnel.

(d) Guide in the cylinder head gasket (1) and install.

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2. INSTALL CYLINDER HEAD SUB-ASSEMBLY

CAUTION:

- Heavy component.

  Heavy components can lead to injury or damage.

  - Remove and install heavy components with the aid of another person/other persons.

NOTICE:

- Damage to threads.

  Fluid in the threaded hole may damage the thread when bolts are tightened in the threads.

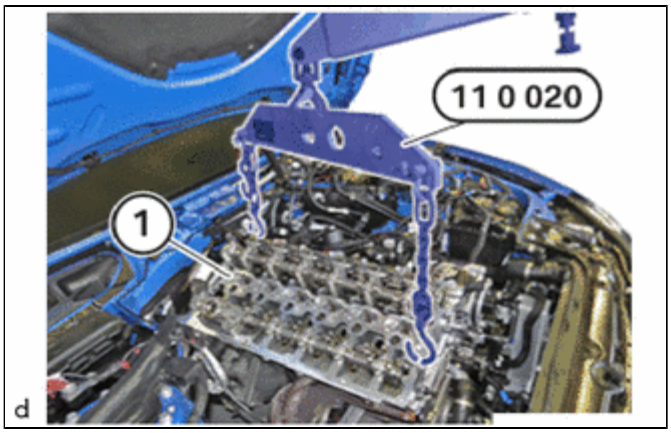
  - Dry threaded holes (e.g. using compressed air).

HINT:

- Do not remove bolt coating.
- When replacing the cylinder head sub-assembly: The complete valve control and the Valvetronic servomotor are already pre-assembled for new cylinder head sub-assembly.

(a) Feed in, position and install cylinder head sub-assembly (1) and turbocharger sub-assembly with the help of an auxiliary person and the special tool 0 490 567 (11 0 020).

SST: 09200-WA860



NOTICE:

- Damage to the guide rails.

  Large amounts of force may damage the guide rails of the timing chain.

  - Make sure not to damage the guide rail with the cylinder head sub-assembly when removing and installing the cylinder head sub-assembly.

(b) Replace cylinder head T60 bolts (1) to (14).

(c) Do not wash off coating of cylinder head T60 bolts.

(d) Lightly oil contact surfaces of cylinder head T60 bolts screw heads.

(1) No coolant, water or engine oil must be present in threaded holes of engine block.

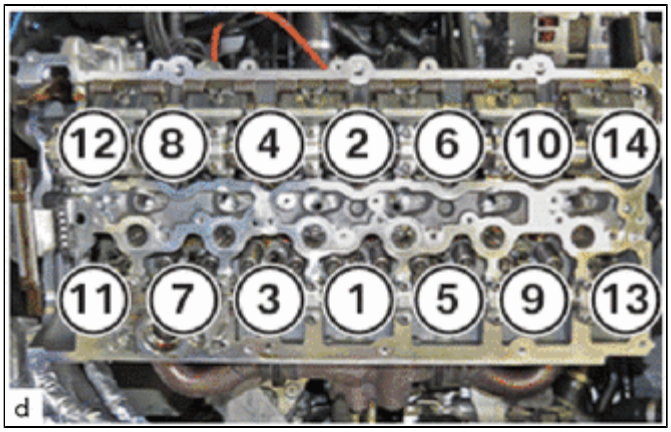
HINT:

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When assembling, it is essential to observe bolting sequences and tightening torques.

Non-observance of these requirements may result in leaks and damage.

(e) Feed in cylinder head T60 bolts (1) to (14) and install.



(f) Bolt in cylinder head T60 bolts in sequence (1) to (14).

(g) Tighten the cylinder head T60 bolts using the special tool 0 490 504 (00 9 120) in the sequence (1) to (14).

SST: 09900-WA010

Torque:

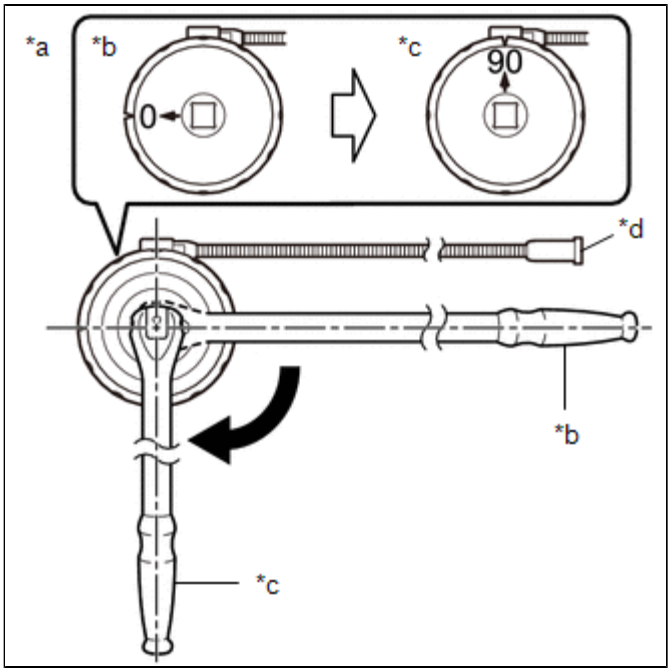
30 N·m {306 kgf·cm, 22 ft·lbf}

(h) Using SST, tighten the T60 bolts (1) to (14) an additional 90°.

SST: 09900-WA010

HINT:

- The magnetic portion is used to securethe gauge to the vehicle.
- After first adjusting the needle of thegauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.

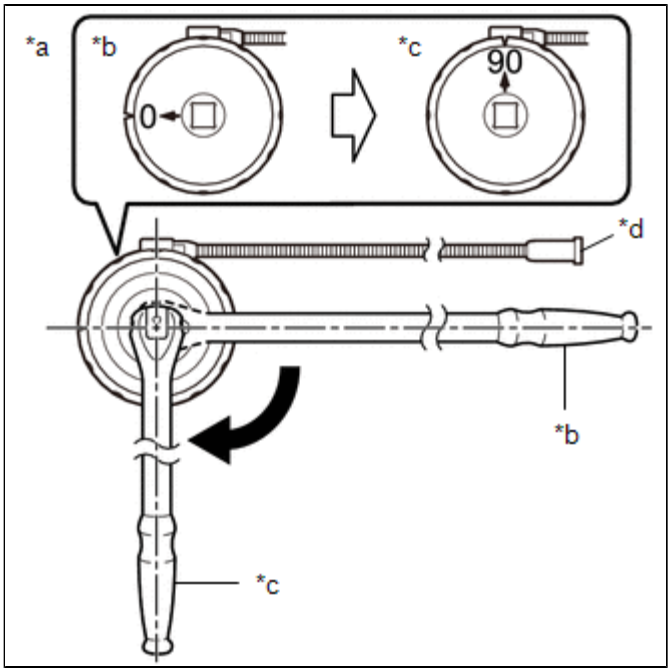


*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

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(i) Using SST, tighten the T60 bolts (1) to (14) an additional 180°.

SST: 09900-WA010

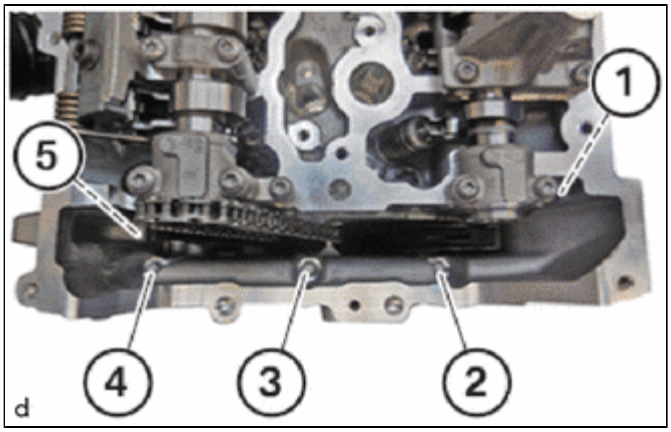


*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

HINT:

- The magnetic portion is used to securethe gauge to the vehicle.
- After first adjusting the needle of thegauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.

(j) Replace cylinder head E10 bolts (1) to (5).



(k) Make sure that there is no coolant, water or engine oil in the threaded holes of the timing case cover.

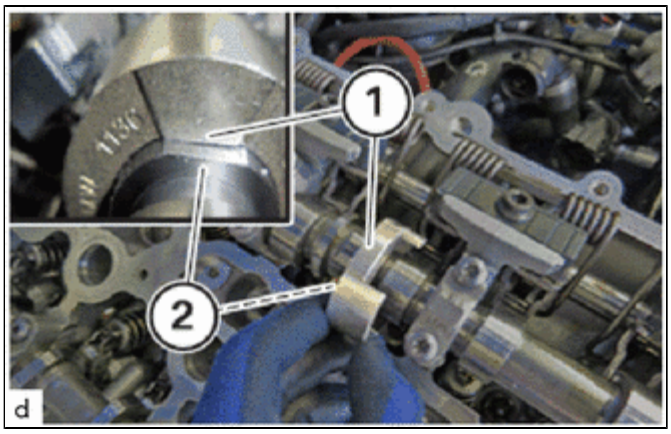
(l) Tighten the E10 bolts (1) to (5).

Torque:

19 N·m {194 kgf·cm, 14 ft·lbf}

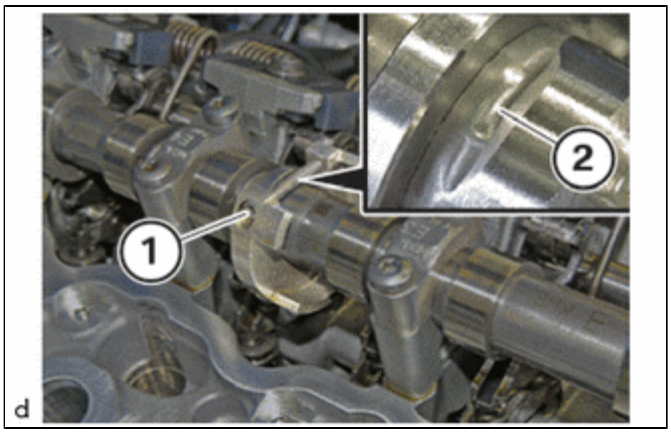
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(m) Feed in and position camshaft sensor wheel (1) on the intake camshaft sub-assembly (2).



(n) Rotate intake camshaft sub-assembly, if necessary in the position shown.

(1) The recess (2) must point upwards.

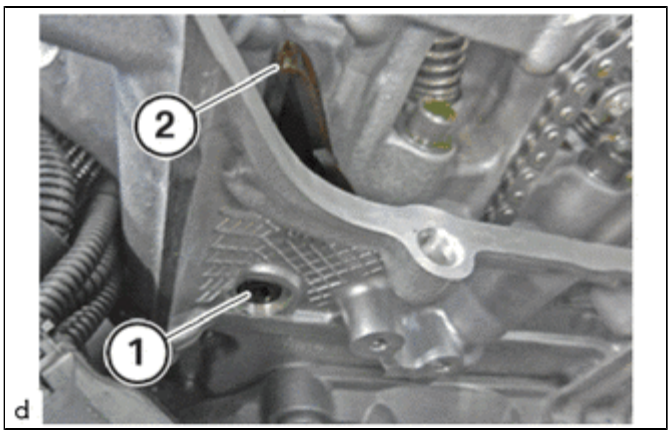


(o) Using 3 mm hexagon wrench, Tighten down bolt (1).

Torque:

4.5 N·m {46 kgf·cm, 40 in·lbf}

(p) Feed in and install T45 bearing journal (1) on the No. 1 chain vibration damper (2).



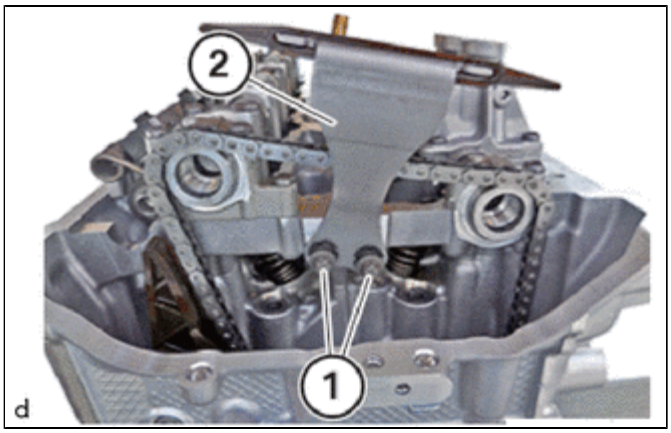
(q) Tighten the bearing journals (1).

Torque:

20 N·m {204 kgf·cm, 15 ft·lbf}

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(r) Insert chain damper guide (2) and install.

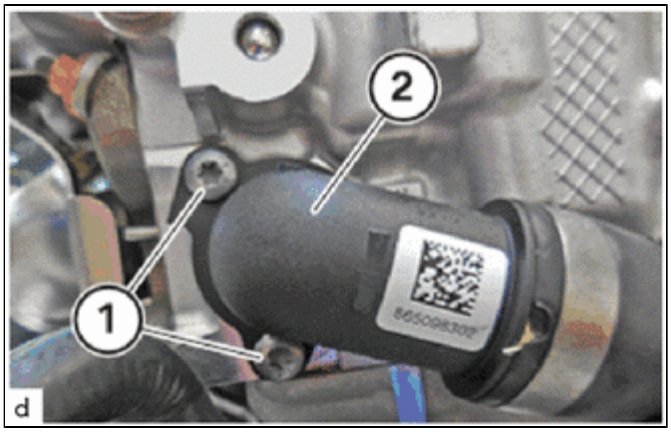


(s) Tighten the E10 bolts (1).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(t) Replace the sealing ring at the No. 2 water by-pass hose (2).



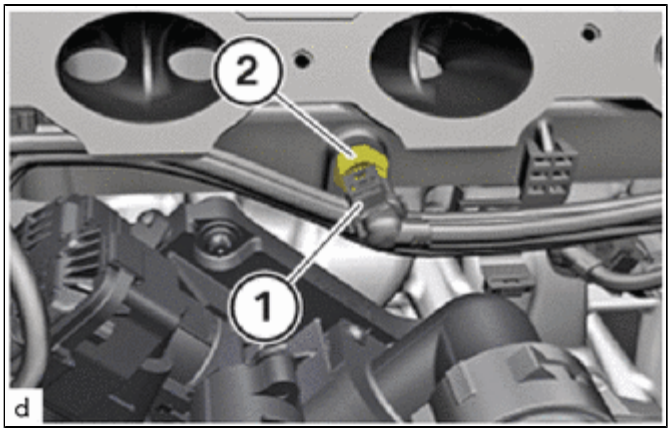
(u) Feed in and install No. 2 water by-pass hose (2).

(v) Tighten the T30 bolts (1).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

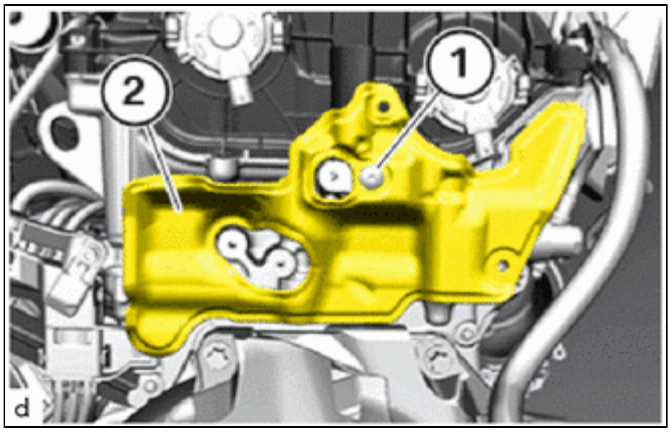
(w) Connect connector (1) to the coolant temperature sensor (2) and lock.



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(x) Make sure that the connector (1) engages audibly on the coolant temperature sensor (2).

(y) Guide in and install No. 4 engine cover (2).

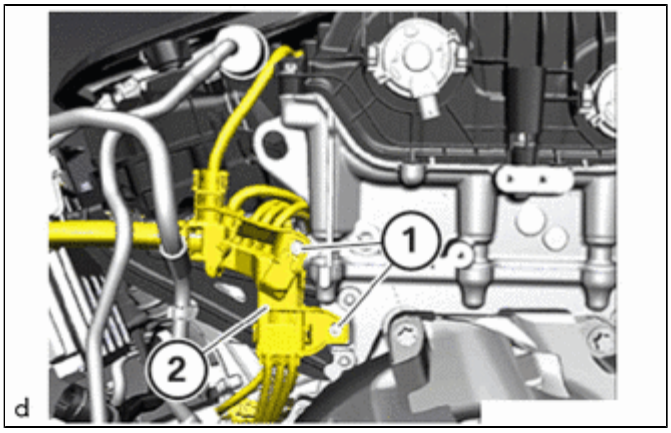


(z) Tighten the T30 bolt (1).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(aa) Insert and position the wiring harness section for the engine wire (2).



(ab) Tighten the T30 bolts (1).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

NOTICE:

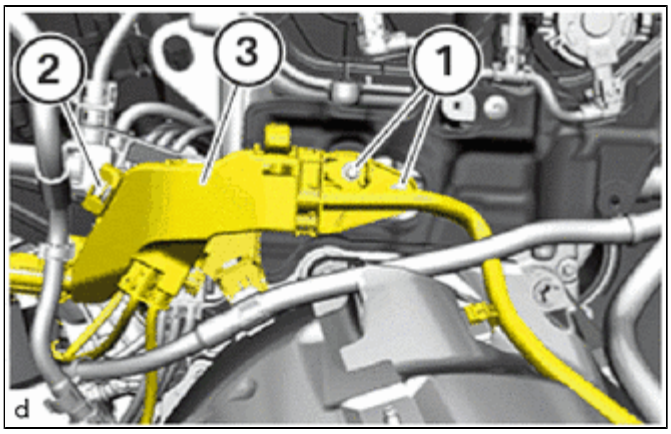
- Improper routing of cables and wiring harnesses.

  Trapped, crushed or damaged cables may cause short circuits and malfunctions.

  - Route all cables without abrasions, do not trap and crush.

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(ac) Feed in and position transmission wire (3).



(ad) Ensure that the lock (2) engages audibly.

(ae) Tighten the E8 bolts (1).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

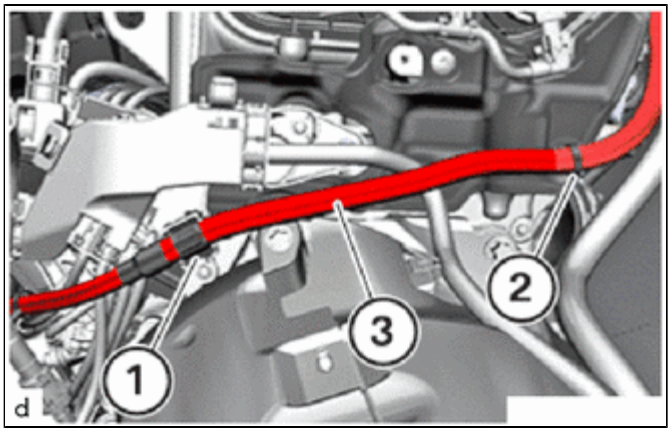
NOTICE:

- Improper routing of cables and wiring harnesses.

  Trapped, crushed or damaged cables may cause short circuits and malfunctions.

  - Route all cables without abrasions, do not trap and crush.

(af) Insert and install the alternator positive battery cable (3).



(ag) Secure clamps (1) and (2).

CAUTION:

- Improper routing of cables and wiring harnesses.

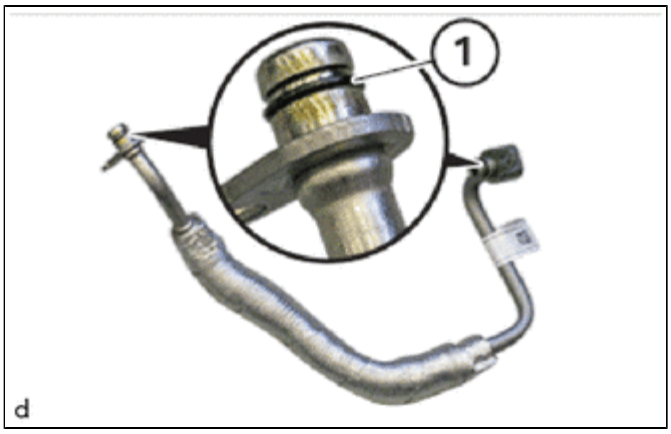
  Risk of short circuits!

  - Route the alternator wire without abrasions and do not trap.

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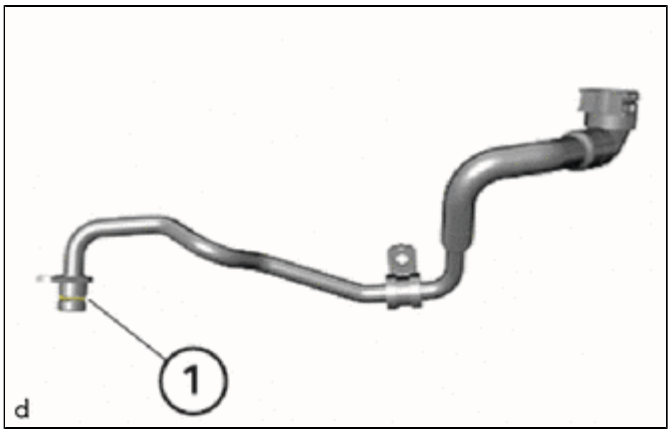
(ah) Replace the O-rings (1) using special tool 0 496 714 (00 9 030).

SST: 09800-WA010

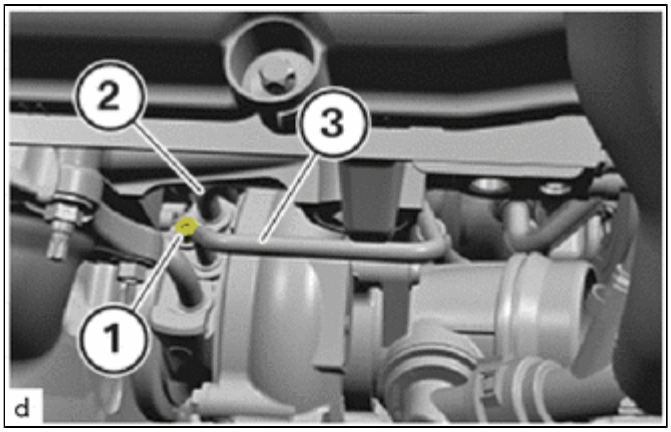


(ai) Replace the O-ring (1) using special tool 0 496 714 (00 9 030).

SST: 09800-WA010



(aj) Feed in and install the inlet turbo oil pipe sub-assembly (3) for the turbocharger sub-assembly.



(ak) Insert and install the No. 2 turbo water pipe sub-assembly (2) for the turbocharger sub-assembly.

(al) Tighten down T30 bolt (1).

Torque:

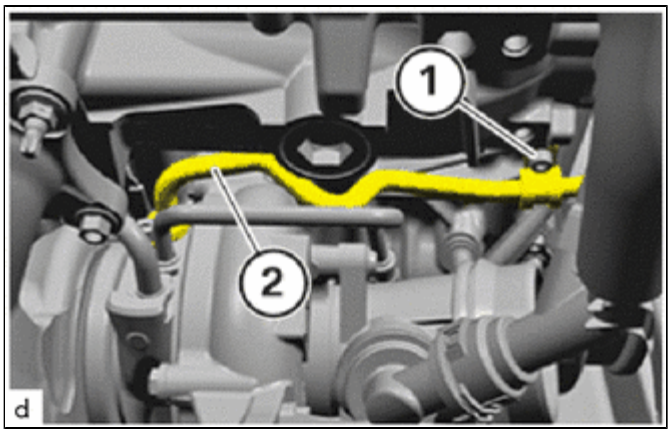
8.0 N·m {82 kgf·cm, 71 in·lbf}

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(am) Tighten the T30 bolt (1) on the holder of the No. 2 turbo water pipe sub-assembly (2).

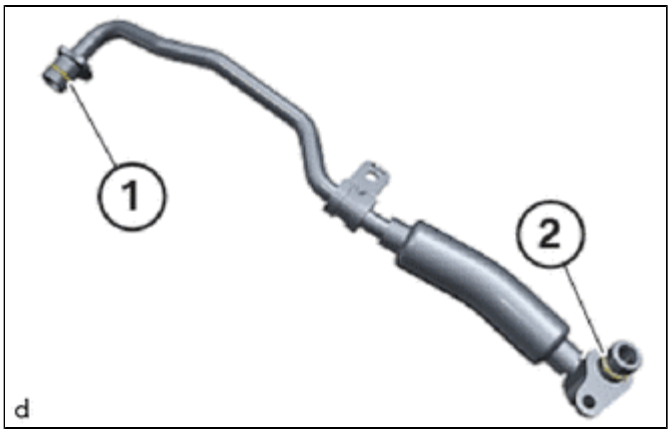
Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}



(an) Replace O-rings (1) and (2) with the special tool 0 496 714 (00 9 030).

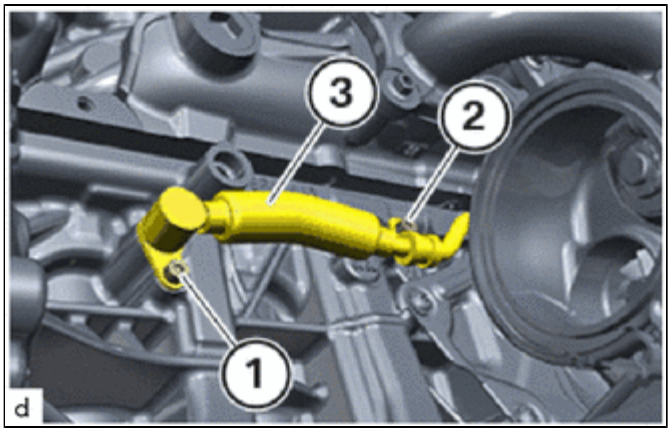
SST: 09800-WA010



(ao) Install the No. 1 turbo water pipe sub-assembly for the turbocharger sub-assembly (3) in the cylinder block sub-assembly and tighten the T30 bolt (1).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}



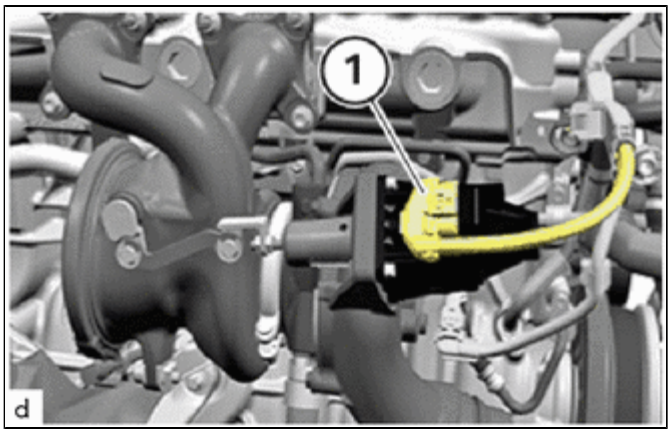
(ap) Tighten down T30 bolt (2).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

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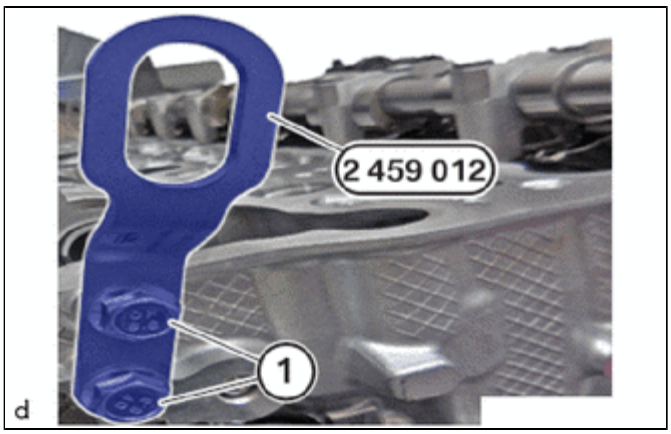
(aq) Connect connectors (1) and lock.



(ar) Make sure the connector (1) engages audibly.

(as) Unscrew the bolts (1) of the special tool 2 459 012 .

SST: 09200-WA610

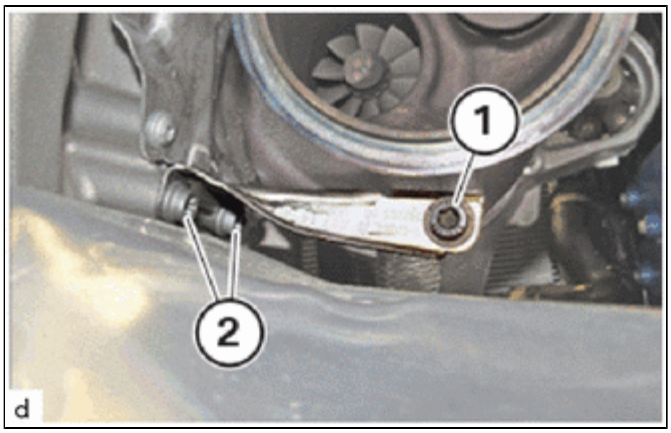


(at) Feed out the special tool 2 459 012 at the cylinder head sub-assembly and remove.

SST: 09200-WA610

3. INSTALL TURBOCHARGER STAY

(a) Replace the T40 bolts.



(b) Position support and tighten with the T40 bolts (2).

Torque:

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19 N·m {194 kgf·cm, 14 ft·lbf}

(c) Replace the T40 bolt.

(d) Tighten down bolt (1).

Torque:

19 N·m {194 kgf·cm, 14 ft·lbf}

4. INSTALL OUTLET TURBO OIL PIPE

Click here INFO

5. INSTALL EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY

Click here INFO

6. INSTALL STEERING LINK ASSEMBLY

Click here INFO

7. INSTALL STEERING INTERMEDIATE SHAFT ASSEMBLY

Click here INFO

8. CONNECT TIE ROD END SUB-ASSEMBLY LH

Click here INFO

9. CONNECT TIE ROD END SUB-ASSEMBLY RH

HINT:

Perform the same procedure as for the LH side.

10. INSTALL WHEEL ASSEMBLY

Click here INFO

11. INSTALL CAMSHAFT TIMING GEAR ASSEMBLY

Click here INFO

12. INSTALL CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

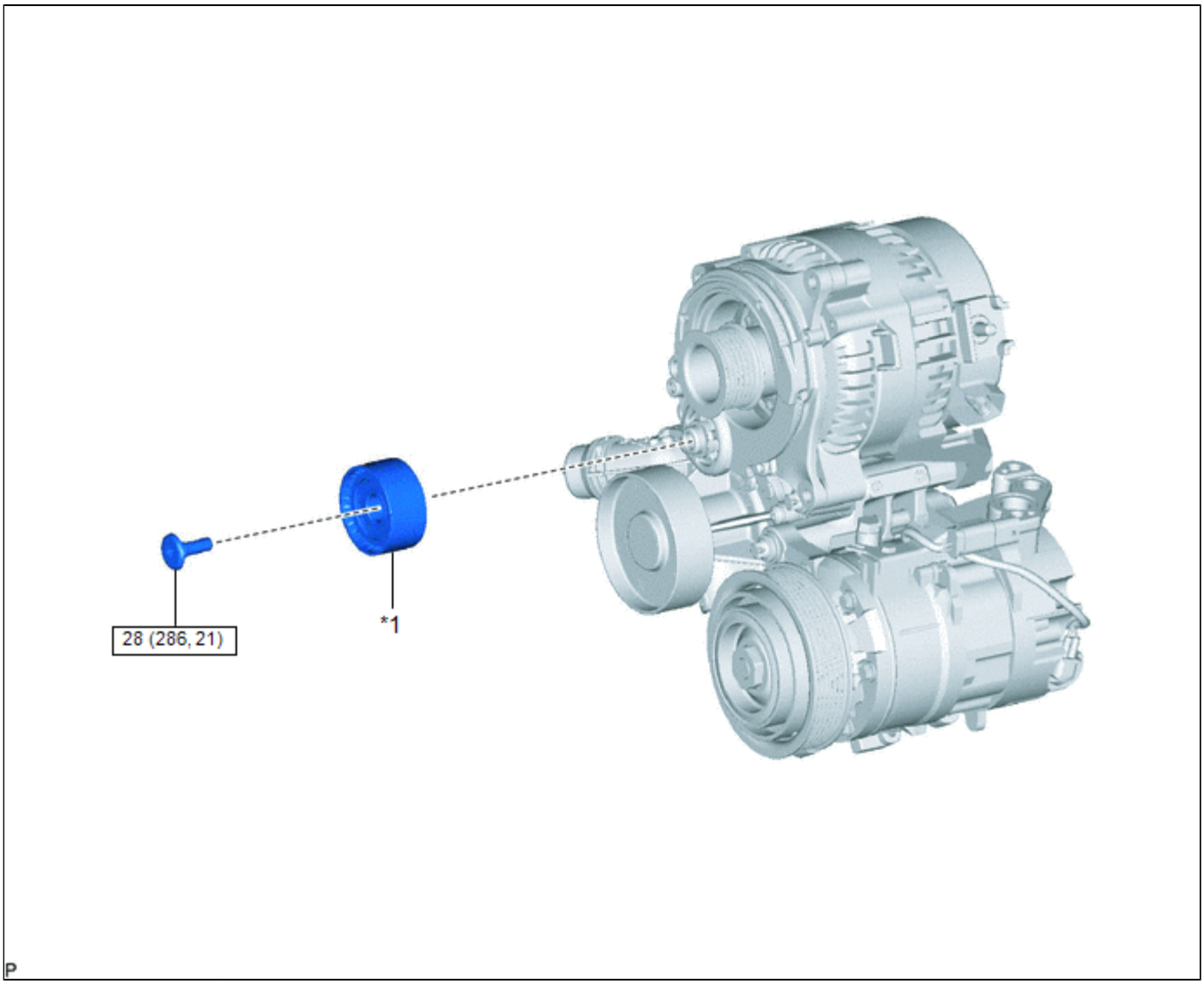
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF6
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): DEFLECTING ELEMENT: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	DEFLECTING ELEMENT	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF7
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): DEFLECTING ELEMENT: REMOVAL; 2020 MY Supra [03/2019 -]		

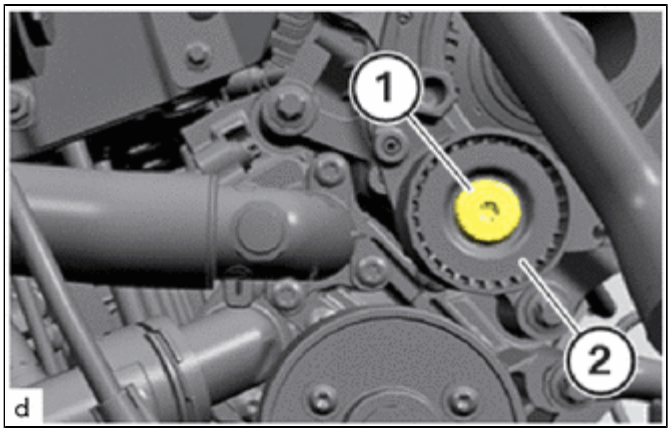
REMOVAL

PROCEDURE

1. REMOVE FAN AND GENERATOR V BELT

Click here INFO

2. REMOVE DEFLECTING ELEMENT



(a) Loosen T40 bolt (1).

(b) Remove the deflecting element (2).

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF8
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): DEFLECTING ELEMENT: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL DEFLECTING ELEMENT

(a) Position the deflecting element.

(b) Tighten down T40 bolt.

Torque:

28 N·m {286 kgf·cm, 21 ft·lbf}

2. INSTALL FAN AND GENERATOR V BELT

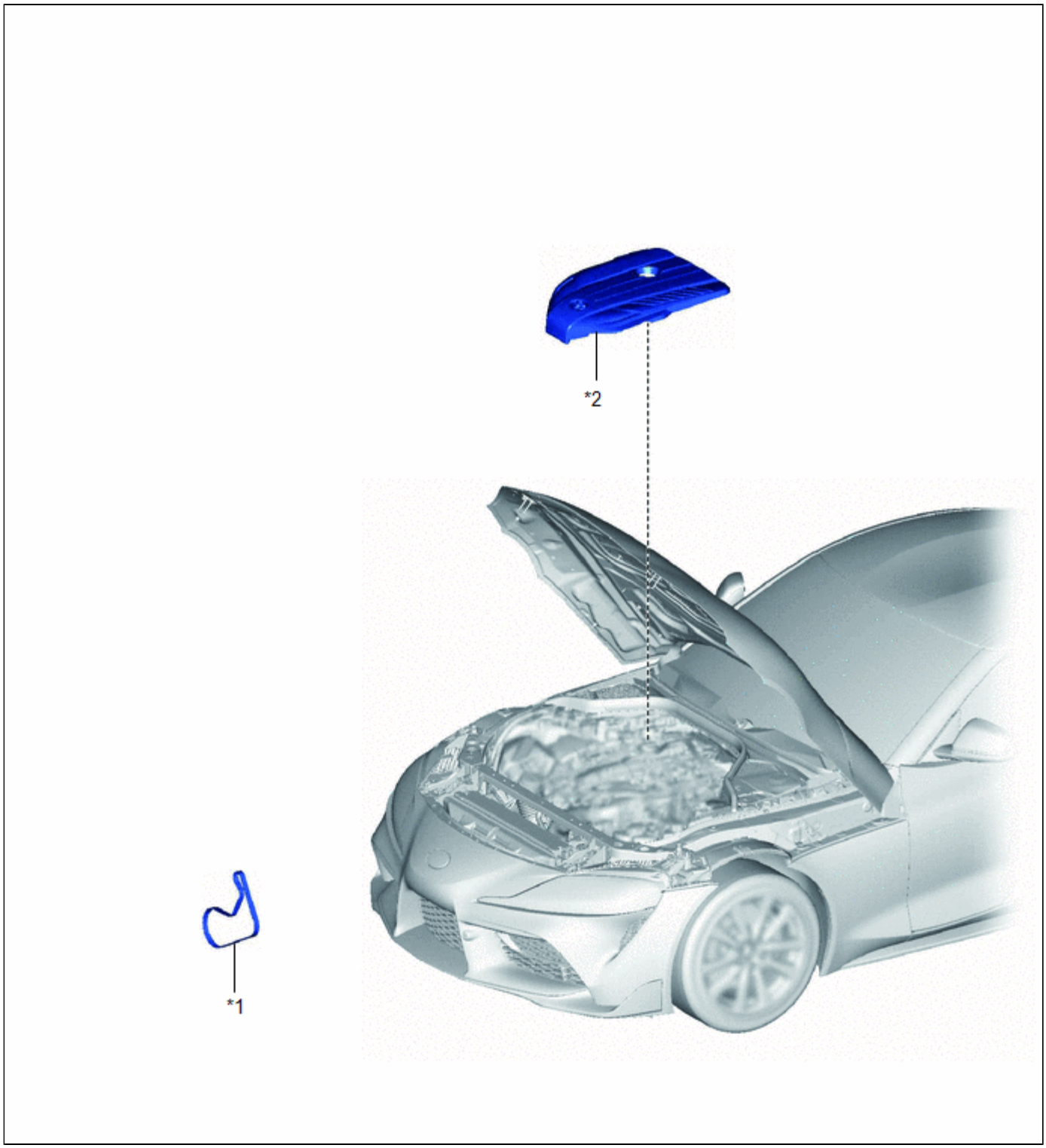
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDEZ
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): DRIVE BELT: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	FAN AND GENERATOR V BELT	*2	NO. 1 ENGINE COVER SUB-ASSEMBLY

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF0
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): DRIVE BELT: ON-VEHICLE INSPECTION; 2020 MY Supra [03/2019 -]		

ON-VEHICLE INSPECTION

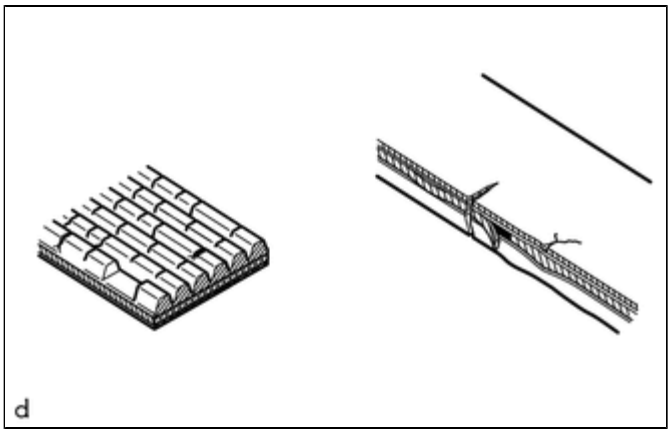
PROCEDURE

1. INSPECT FAN AND GENERATOR V BELT

(a) Check the fan and generator V belt for wear, cracks or other signs of damage.

If any of the following defects is found, replace the fan and generator V belt.

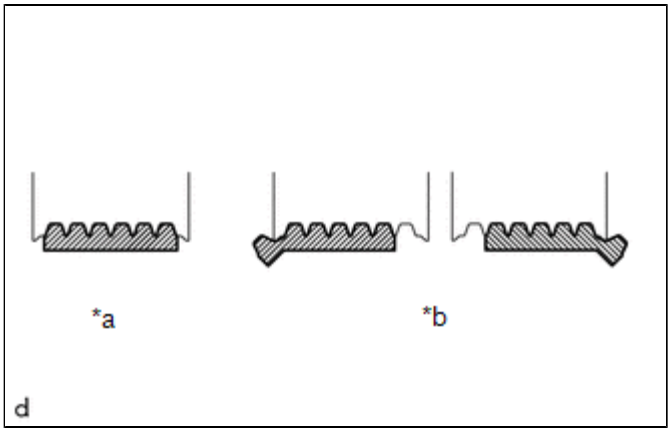
- The fan and generator V belt is cracked.
- The fan and generator V belt is worn out to the extent that the cords are exposed.
- The fan and generator V belt has chunks missing from the ribs.



(b) Check that the fan and generator V belt fits properly in the ribbed grooves.

HINT:

Check with your hand to confirm that the fan and generator V belt has not slipped out of the grooves on the bottom of the pulley. If it has slipped out, replace the fan and generator V belt. Install a new fan and generator V belt correctly.



*a	Correct
*b	Incorrect

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF1
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): DRIVE BELT: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF2
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): DRIVE BELT: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

CAUTION / NOTICE / HINT

Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDEX
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE: ON-VEHICLE INSPECTION; 2020 MY Supra [03/2019 -]		

ON-VEHICLE INSPECTION

PROCEDURE

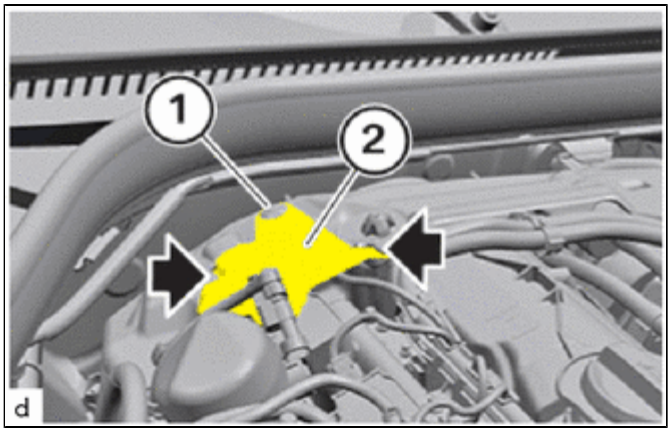
1. INSPECT COMPRESSION

(a) Remove No. 1 engine cover sub-assembly.

Click here INFO

(b) Remove No. 1 engine cover.

(1) Detach the service opening (2) in the marked areas (arrows) and twist it to the side at the pivot point (1).



(c) Remove ignition coil assembly.

Click here INFO

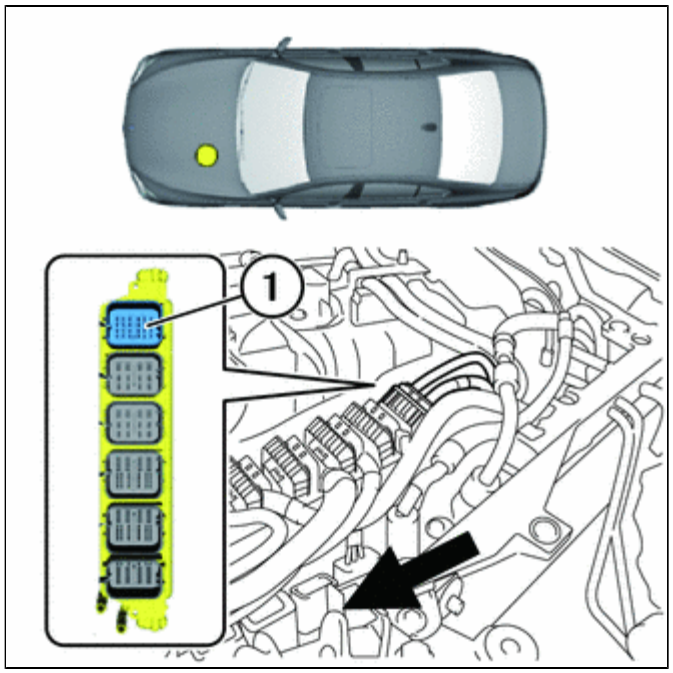
(d) Remove spark plug.

Click here INFO

(e) Disconnect plug connection (1).

(1) Unlock and disconnect plug connection (1) from the ECM.

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➡	Front of Engine

(f) Check compression of all cylinders.

(1) Desired state

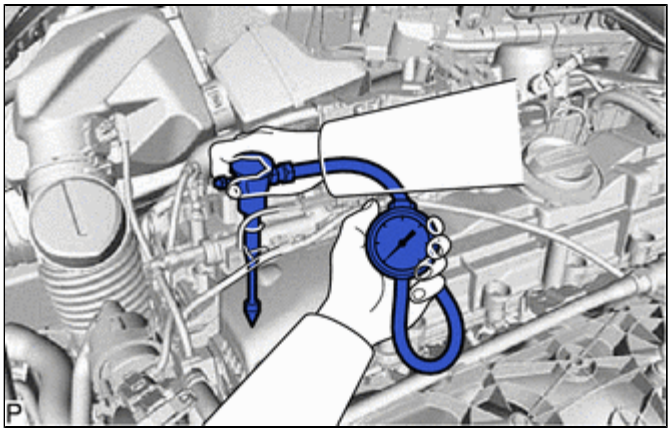
- Compression pressures of the cylinders are above the minimum compression pressure. Compression pressure difference between two cylinders in comparison is below the limit.

  Minimum Standard Compression Pressure:

  900 kPa (9.2 kgf/cm^2, 131 psi)

  Maximum Pressure Difference between Each Cylinder:

  250 kPa (2.5 kgf/cm^2, 36 psi)



(2) Compression pressures of the cylinders are below the minimum compression pressure.

(3) Compression pressure difference between two cylinders in comparison is above the limit.

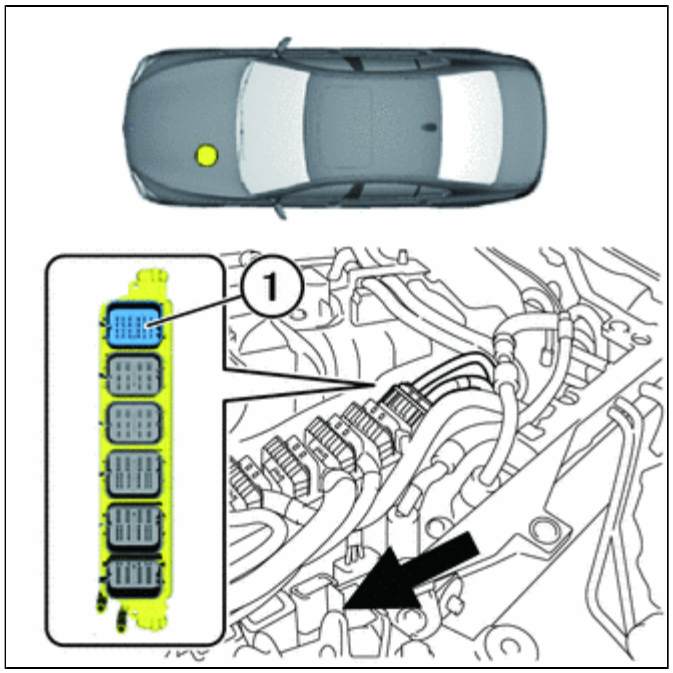
(4) Check the engine mechanics for damage.

(5) Remove compression gauge.

(g) Connect connector (1).

(1) Connect connector A46*6B to the ECM and lock.

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➡	Front of Engine

(2) Make sure the connector engages audibly.

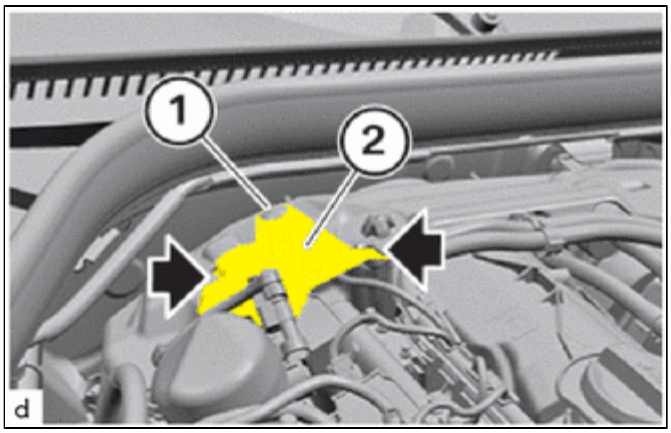
(h) Install spark plug.

Click here INFO

(i) Install ignition coil assembly.

Click here INFO

(j) Install No. 1 engine cover.



(1) Turn the rear cylinder block cover (2) at the pivot point (1) to the installation position and guide it in where marked (arrows).

(k) Install No. 1 engine cover sub-assembly.

Click here INFO

2. INSPECT INTERNAL ENGINE PRESSURE

(a) Check engine oil level.

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Click here INFO

(b) Remove the oil filler cap assembly.

Click here INFO

(c) Checking the internal engine pressure.



(1) Insert special tool 2 471 014 into opening of oil filler neck and apply hand-tighten.

SST: 09200-WA960

(2) Connect the connecting hose to the connection (1) on the special tool 2 471 014.

SST: 09200-WA960

Testing equipment:

Connecting hose
Diameter = 8 x 13 mm, length = 70 mm

(3) Connect connecting hose using an appropriate pressure measuring device.

(4) Start engine and run at idle speed.

(5) Connect diagnosis system.

(6) Measuring the internal engine pressure.

(7) Enter measured values manually in the diagnostic system.

(8) Observe diagnosis instructions.

(d) Deviation between measured value and ambient pressure.

(e) Determine possible cause using table and rectify.

Deviation	Possible cause	Solution
Measured value < ambient pressure	Pressure control valve faulty	Replace the pressure control valve
Measured value > ambient pressure	Engine ventilation blocked	Clean the engine ventilation

(f) Install the oil filler cap assembly.

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDEY
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE: ON-VEHICLE CLEANING; 2020 MY Supra [03/2019 -]		

ON-VEHICLE CLEANING

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

Click here INFO

2. REMOVE AND INSTALL BONNET HOOD SUPPORT ASSEMBLY

Click here INFO

3. REMOVE FRONT WIPER MOTOR AND LINK ASSEMBLY

Click here INFO

4. REMOVE HOOD TO COWL TOP SEAL

Click here INFO

5. REMOVE UPPER FRONT SUSPENSION CENTER BRACE

Click here INFO

6. REMOVE COWL TOP VENTILATOR LOUVER PROTECTOR

Click here INFO

7. REMOVE NO. 2 COWL TOP VENTILATOR LOUVER PROTECTOR

Click here INFO

8. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY

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Click here INFO

9. REMOVE NO.1 ENGINE COVER

Click here INFO

10. REMOVE IGNITION COIL

Click here INFO

11. INSTALL NO.2 ENGINE COVER SUB-ASSEMBLY

Click here INFO

12. REMOVE NO. 1 FUEL PIPE SUB-ASSEMBLY

Click here INFO

13. REMOVE NO. 2 FUEL PIPE SUB-ASSEMBLY

Click here INFO

14. REMOVE FUEL PUMP ASSEMBLY

Click here INFO

15. REMOVE FUEL INJECTOR ASSEMBLY (for Front Side)

Click here INFO

16. REMOVE FUEL INJECTOR ASSEMBLY (for Rear Side)

Click here INFO

17. REMOVE CAM TIMING OIL CONTROL SOLENOID ASSEMBLY

Click here INFO

18. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY

Click here INFO

19. REMOVE NO. 1 INTEGRATION RELAY

Click here INFO

20. REMOVE ENGINE ROOM ECM BOX

Click here INFO

21. REMOVE AIR CLEANER ASSEMBLY

Click here INFO

22. REMOVE AIR CLEANER HOSE ASSEMBLY

Click here INFO

23. REMOVE NO. 2 AIR CLEANER HOSE

Click here INFO

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24. REMOVE NO. 1 CHECK VALVE

Click here INFO

25. REMOVE FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

26. DRAIN ENGINE COOLANT (for Low Temperature)

Click here INFO

27. REMOVE INTAKE MANIFOLD

Click here INFO

28. CLEAN INTAKE PORT

CAUTION:

- Swirling dirt particles caused by compressed air.

  Danger of injury!

  - Collect dirt particles, e.g. when blowing out, use cloth to do so.
  - Wear safety goggles.

NOTICE:

- Engine damage due to walnut granules in the combustion chamber.

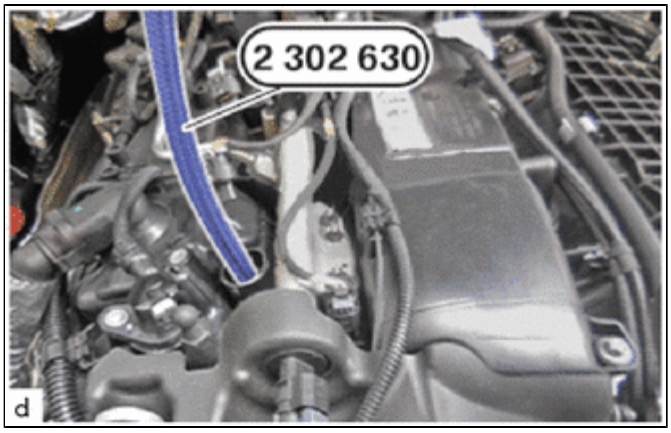
  If walnut granules penetrate the combustion chamber while cleaning the intake ports, engine damage may occur.

  - Always clean the intake port with valves of the relevant cylinder closed.
  - Set the piston of the relevant cylinder to the top dead center.
  - If walnut granules have entered the combustion chamber: Do not turn or start the engine by hand.

    Disassemble the cylinder head sub-assembly and clean all components.

(a) Screw the special tool 2 302 630 into the sparkplug thread by hand.

SST: 09200-WA660



(b) Fit special tool 0 493 380 (11 6 480).

NOTICE:

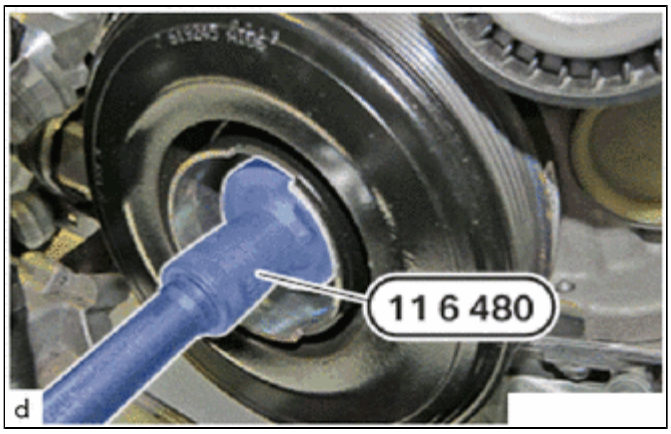
- Damage to the engine.

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The engine may be damaged if it is manually rotated in the wrong direction.

- Always rotate the engine in the correct direction of rotation by hand: a) Clockwise, facing the vibration damper or b) Counter-clockwise, facing the timing chain. (b) only applies when the rear chain sub-assembly is installed.

SST: 09200-WA190

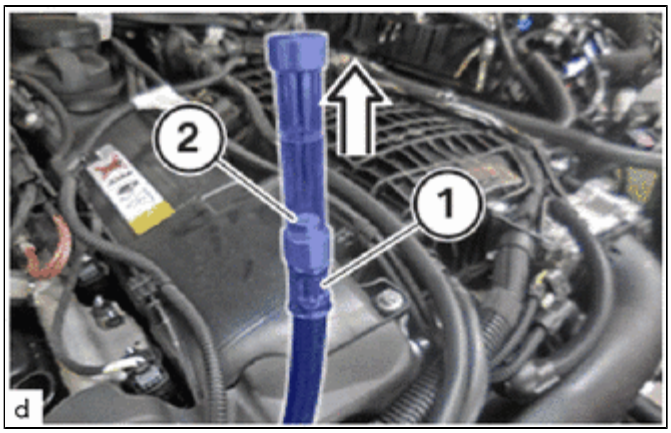


(c) Turn the engine by hand using special tool 0 493 380 (11 6 480).

SST: 09200-WA190

(d) Turn the engine by hand.

(1) When the piston moves up, the journal (2) in the special tool (1) also moves up.



(e) Turn the piston to the top dead center.

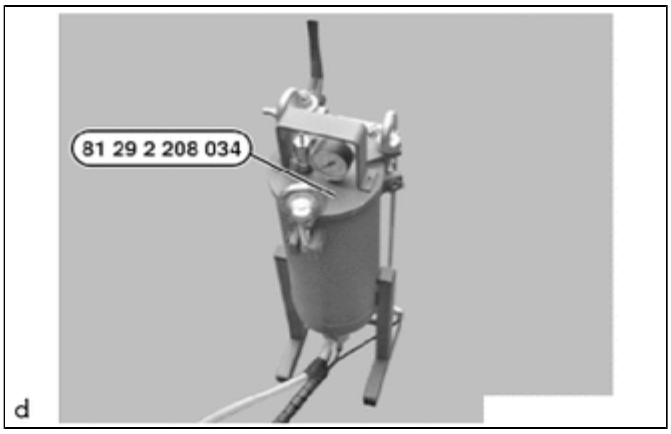
(1) In the top dead center, the piston as well as the journal (2) are positioned at the highest point in the special tool (1).

(2) The valves are now closed.

(f) Ensure that the engine is no longer turned further.

(g) Keep the special tool 2 208 034 , the walnut granules and a standard vacuum cleaner ready.

SST: 09200-WA330



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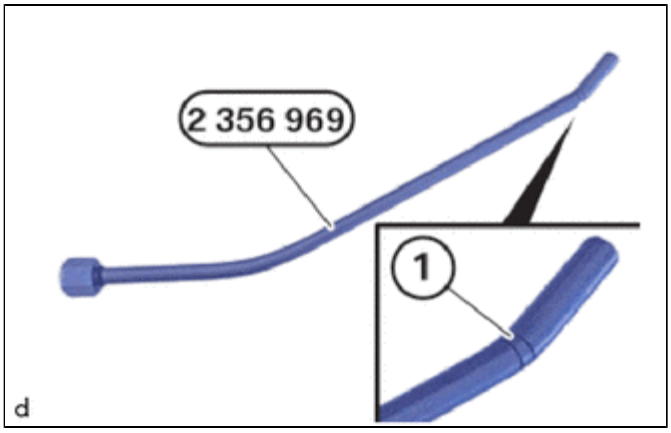
(h) Have the special tool 2 356 969 ready.

SST: 09200-WA670

HINT:

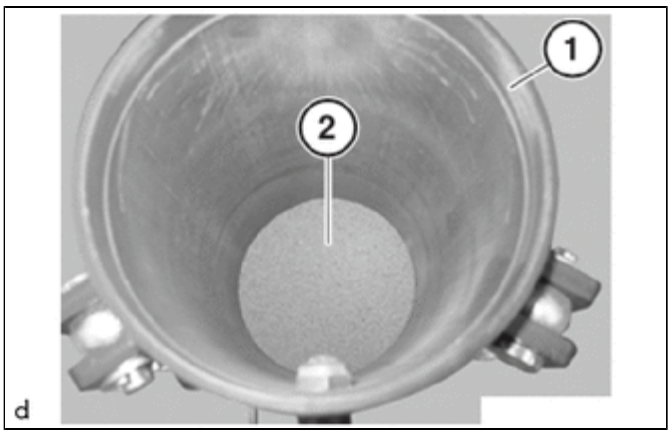
The front area of the blasting wand is marked with two notches. These may additionally be highlighted in color.

During the blasting process, only pull the blasting wand out of the vacuum adapter until the mark becomes visible.



(i) Observe the mark (1).

(j) Open blasting device (1).

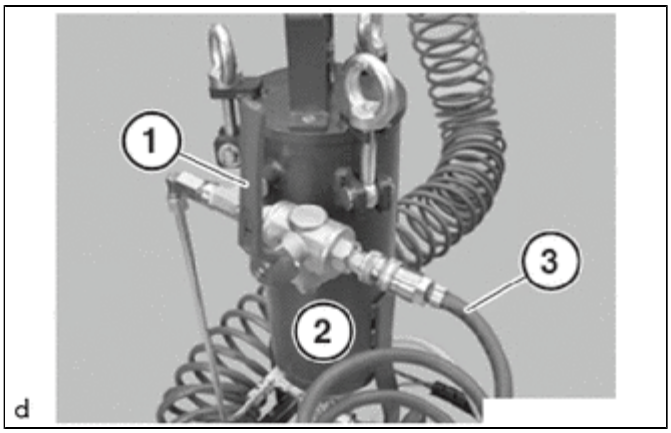


(k) Fill in walnut granules (2).

Quantity For Each Blastingprocess:
2 liters (2.11 US qts, 1.76 Imp. qts)

(l) Close blasting device (1).

(m) Close the valve (1) on the blasting device (2).



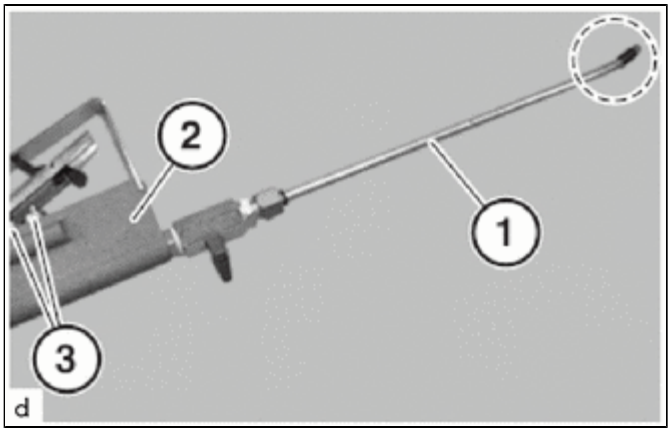
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(n) Connect compressed air (3).

Operating pressure:

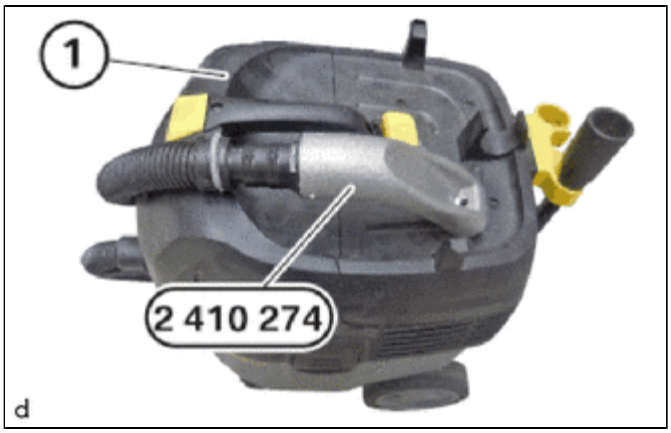
600 to 800 kPa (6.12 to 8.16 kgf/cm^2, 87 to 116 psi)

(o) Attach the blasting wand (1) to the blasting device (2).

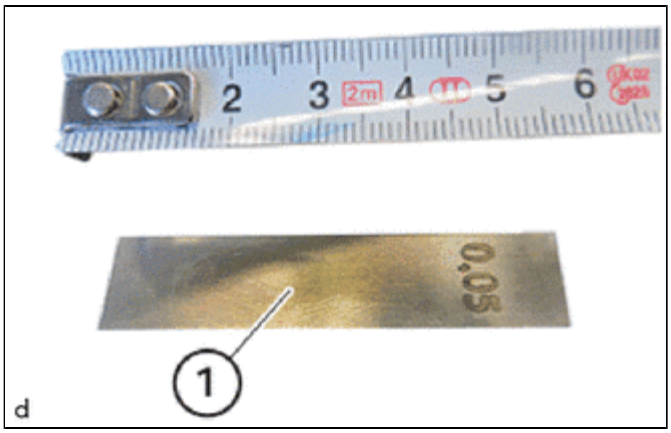


(p) Connect vacuum cleaner (1) with the special tool 2 410 274.

SST: 09200-WA340



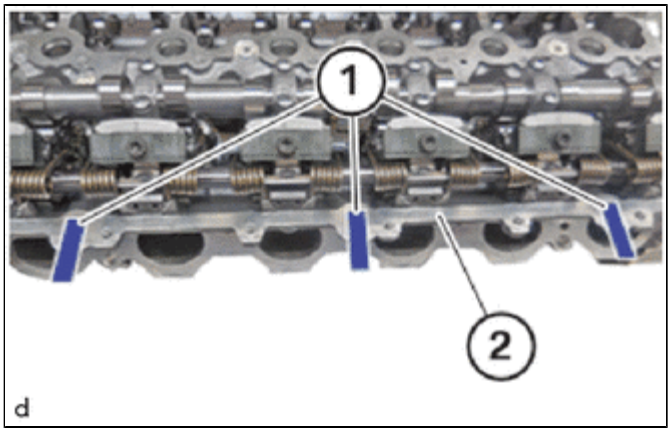
(q) Prepare 3 standard 0.05 mm feeler gauges (1).



(r) Cut 3 feeler gauges (1) to a length of 25 mm.

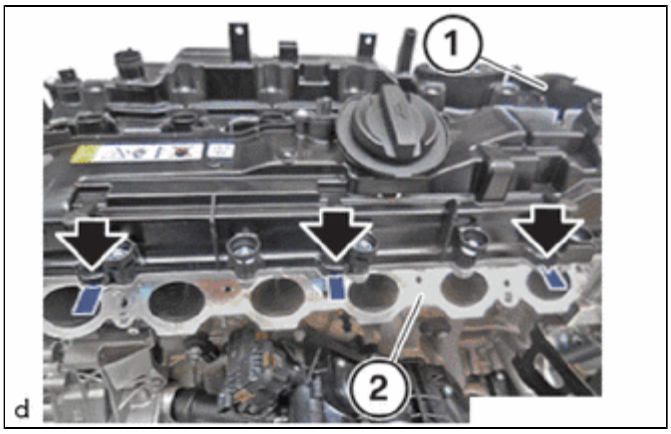
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(s) Position the prepared feeler gauges (1) on the blow-by channels of cylinder head cover sub-assembly (2).



(t) Make sure that the blow-by channels are locked on cylinder head sub-assembly (2) using feeler gauges (1).

(u) Guide the cylinder head cover sub-assembly (1) in and position it.

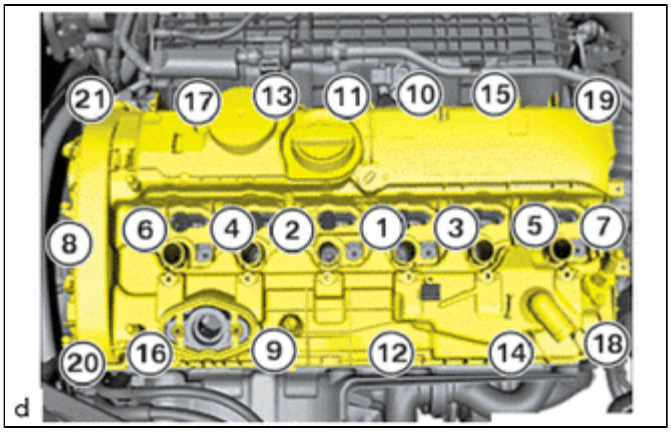


(v) Make sure that the feeler gauges (arrows) are positioned correctly between cylinder head cover sub-assembly (1) and the blow-by channels of cylinder head sub-assembly (2).

(w) Tighten all E10 bolts in sequence (1) to (21).

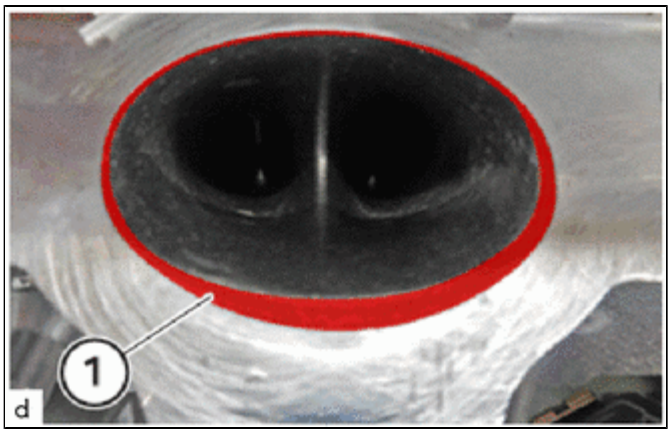
Torque:

6.0 N·m {61 kgf·cm, 53 in·lbf}



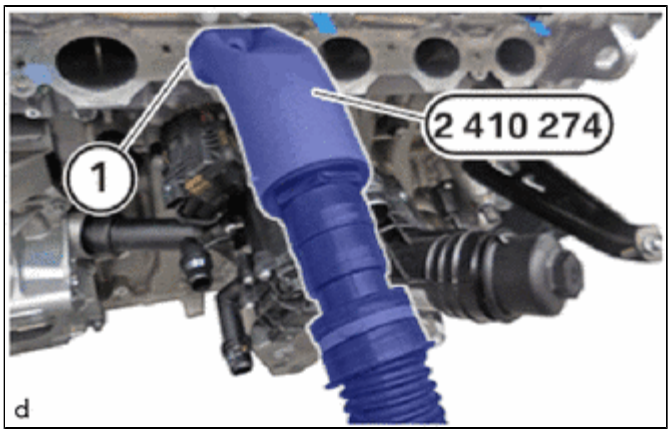
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(x) Clean marked areas (1) with a brush.



(y) Insert the special tool 2 410 274 in tangential port (1) of the cylinder to be cleaned.

SST: 09200-WA340

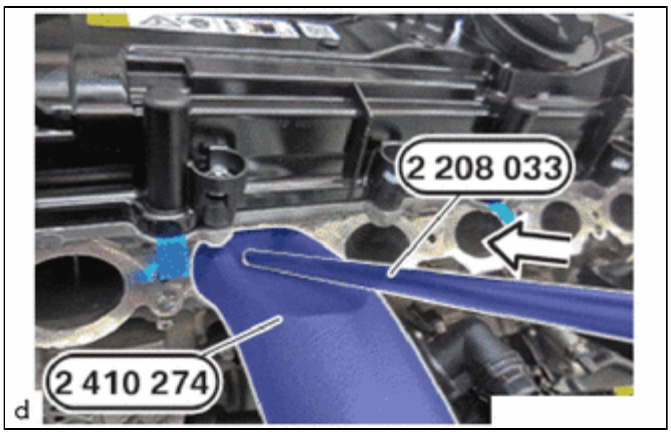


(z) Insert the special tool 2 208 033 in the special tool 2 410 274 in the direction of the arrow.

SST: 09200-WA340
SST: 09200-WA650

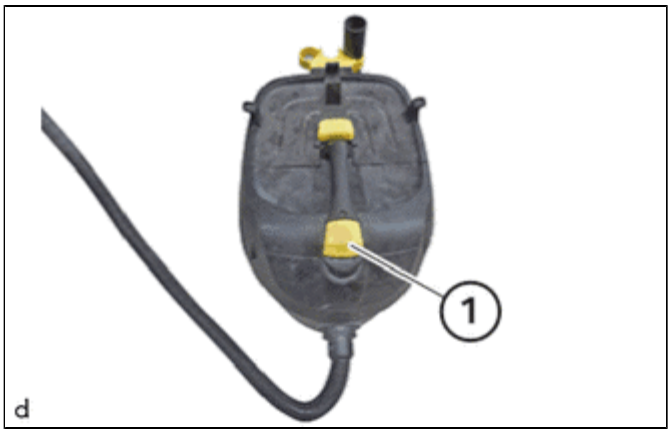
HINT:

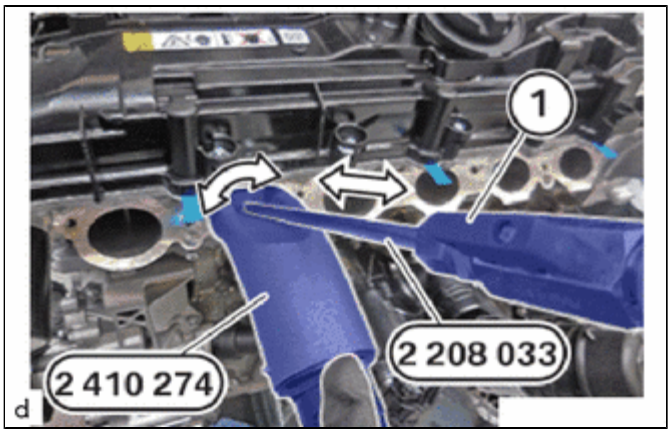
Conduct the following operation with the assistance of a second person.



(aa) Switch on vacuum cleaner (1).

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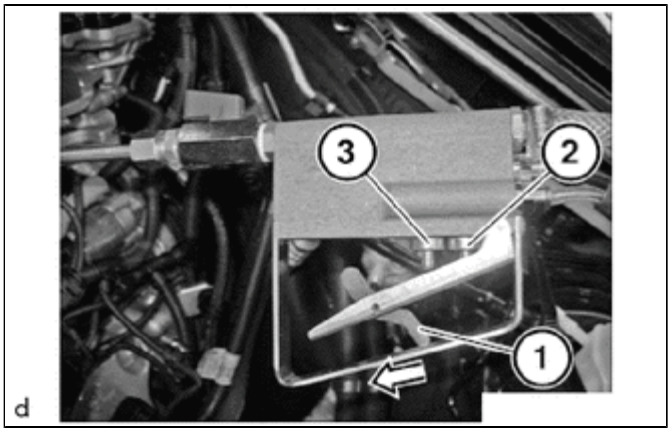




(ab) Move and turn the blasting wand in the direction of the arrow.

(1) This removes any dirt in the tangential port.

(ac) Open the valve (1).



(ad) Slide the locking lever (1) forward in the direction of the arrow.

(ae) To release the compressed air: Actuate valve (2).

(af) To release the walnut granules and the compressed air: Actuate valves (1) and (2).

(ag) Clean the intake port.

Blast duration with walnutgranules:
Approx. 20 s
Blast duration with purecompressed air for thecomplete blowing out ofwalnut granules:

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Approx. 10 s

(ah) Close the valve on the blasting wand.

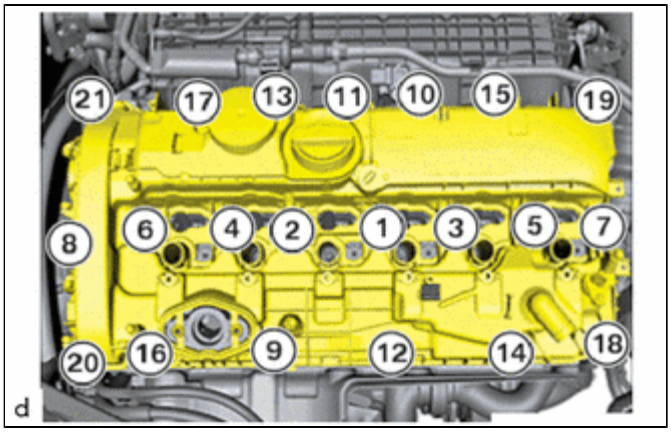
(1) Check the pressure drop at the pressure measuring device.

(ai) Repeat the following steps one after another on all the other cylinders:

(1) Turn the piston of the cylinder to be cleaned to the top dead center.

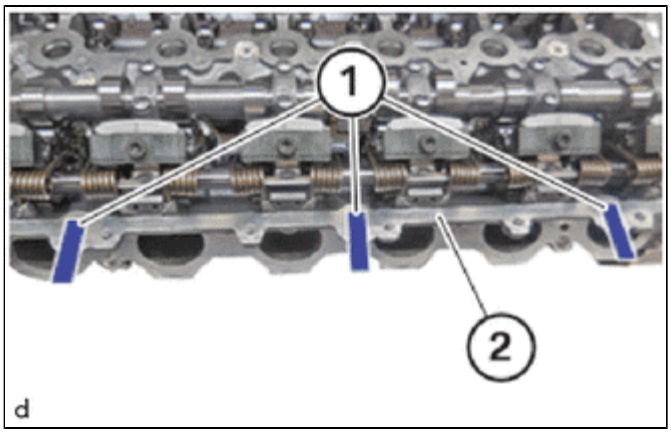
(2) Clean intake ports.

(aj) Loosen all E10 bolts in sequence (21) to (1).



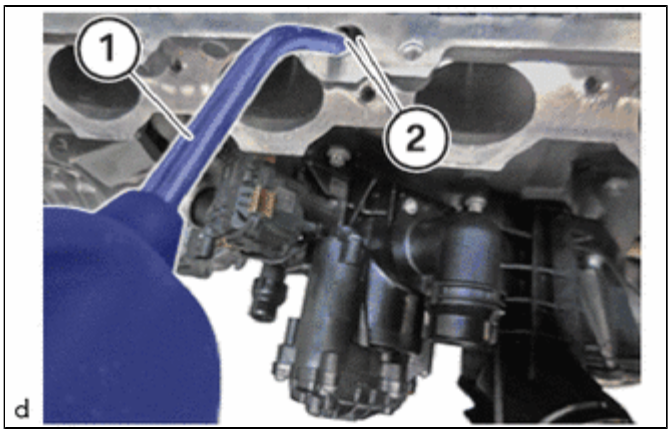
(ak) Feed out and remove the cylinder head cover sub-assembly.

(al) Guide out feeler gauges (1) on the blow-by channels of cylinder head sub-assembly (2) and remove them.

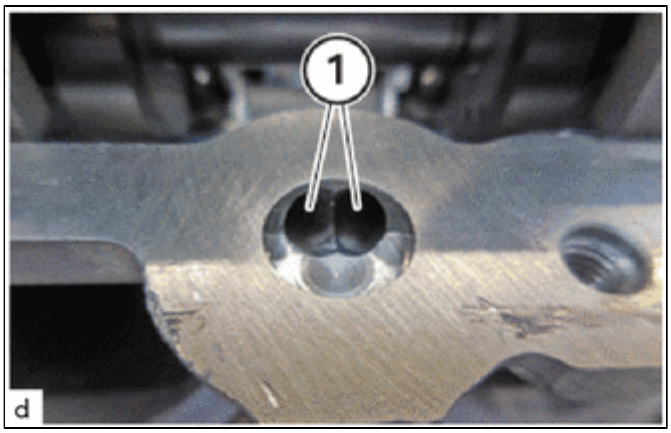


(am) Clean blow-by channels (2) with an air gun (1).

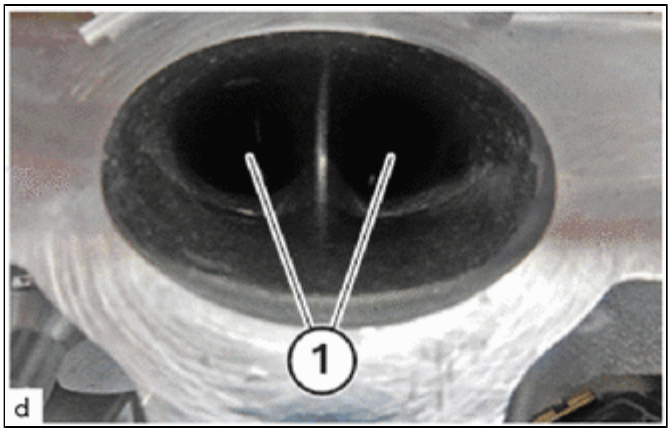
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(an) Make sure that there are no walnut granules in the blow-up channels (1).



(ao) Make sure that there are no walnut granules in the intake ports (1).



29. INSTALL INTAKE MANIFOLD

Click here INFO

30. INSTALL NO. 1 CHECK VALVE

Click here INFO

31. INSTALL NO. 2 AIR CLEANER HOSE

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Click here INFO

32. INSTALL AIR CLEANER HOSE ASSEMBLY

Click here INFO

33. INSTALL AIR CLEANER ASSEMBLY

Click here INFO

34. INSTALL ENGINE ROOM ECM BOX

Click here INFO

35. INSTALL NO. 1 INTEGRATION RELAY

Click here INFO

36. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY

Click here INFO

37. INSTALL CAM TIMING OIL CONTROL SOLENOID ASSEMBLY

Click here INFO

38. REPLACE FUEL INJECTOR SEAL

Click here INFO

39. INSTALL FUEL INJECTOR ASSEMBLY (for Rear Side)

Click here INFO

40. INSTALL FUEL INJECTOR ASSEMBLY (for Front Side)

Click here INFO

41. ADJUST FUEL PUMP LIFTER ASSEMBLY

Click here INFO

42. INSTALL FUEL PUMP ASSEMBLY

Click here INFO

43. INSTALL NO. 1 FUEL PIPE SUB-ASSEMBLY

Click here INFO

44. INSTALL NO. 2 FUEL PIPE SUB-ASSEMBLY

Click here INFO

45. INSTALL IGNITION COIL

Click here INFO

46. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

Click here INFO

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47. ADD ENGINE COOLANT (for Low Pressure)

Click here INFO

48. INSPECT ENGINE COOLANT

Click here INFO

49. INSTALL NO.2 ENGINE COVER SUB-ASSEMBLY

Click here INFO

50. INSTALL NO. 1 ENGINE COVER

Click here INFO

51. INSTALL NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

52. INSTALL NO. 2 COWL TOP VENTILATOR LOUVER PROTECTOR

Click here INFO

53. INSTALL COWL TOP VENTILATOR LOUVER PROTECTOR

Click here INFO

54. INSTALL UPPER FRONT SUSPENSION CENTER BRACE

Click here INFO

55. INSTALL HOOD TO COWL TOP SEAL

Click here INFO

56. INSTALL FRONT WIPER MOTOR AND LINK ASSEMBLY

Click here INFO

57. REMOVE AND INSTALL BONNET HOOD SUPPORT ASSEMBLY

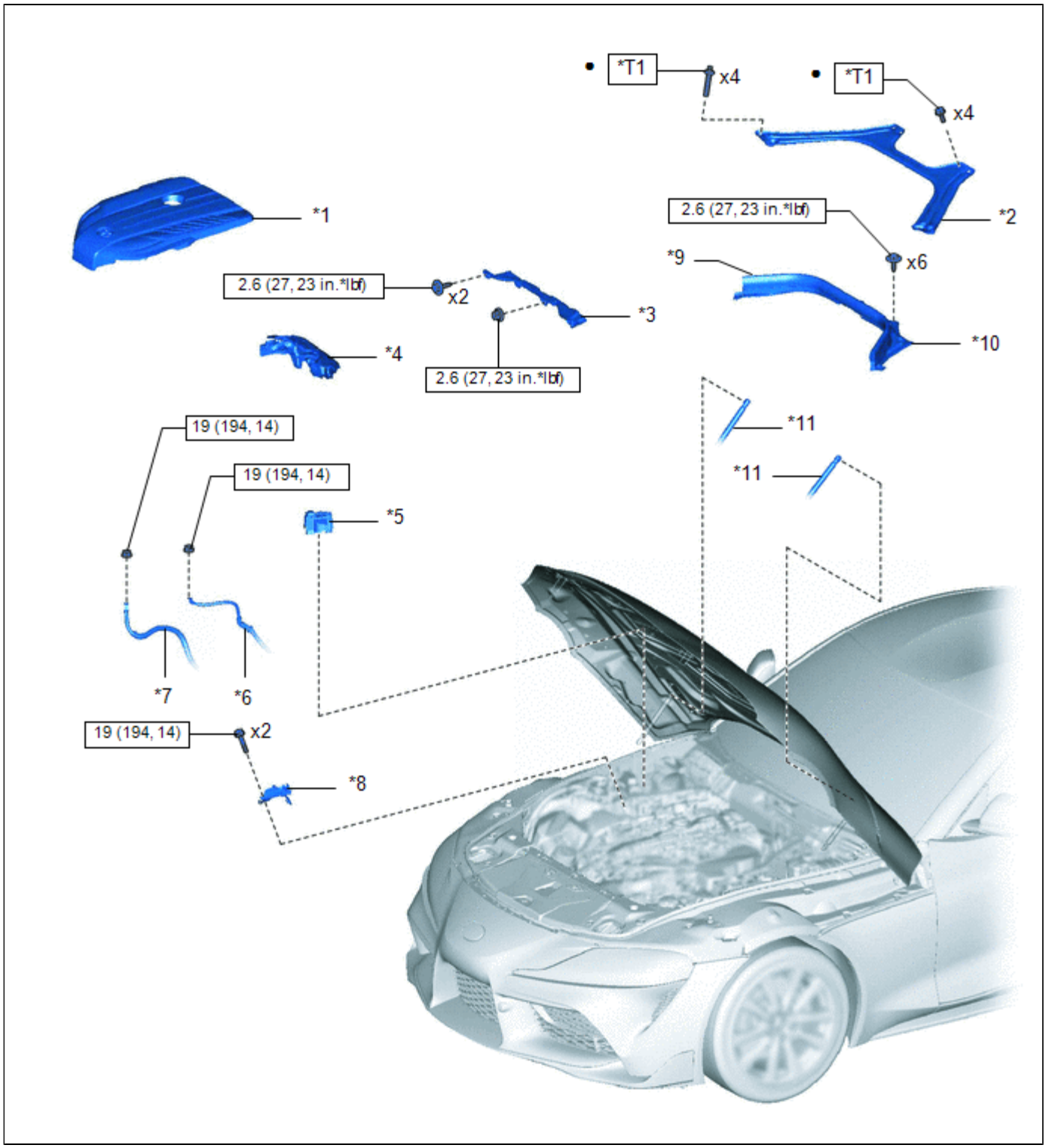
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG0
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE ASSEMBLY: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



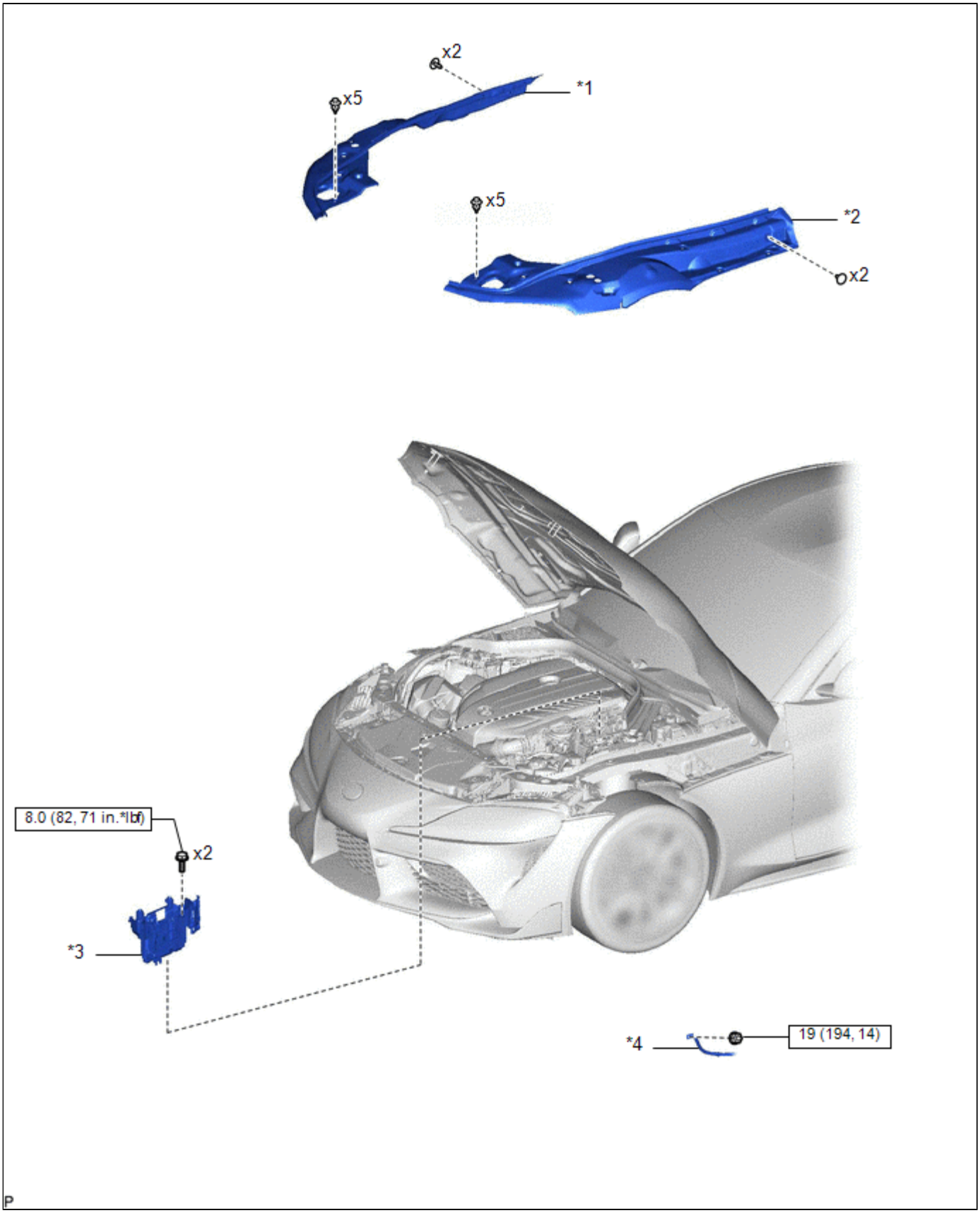
*1	NO. 1 ENGINE COVER SUB-ASSEMBLY	*2	FRONT SUSPENSION UPPER CENTER

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			BRACE
*3	NO. 2 COWL TOP VENTILATOR LOUVER PROTECTOR	*4	NO. 1 ENGINE COVER
*5	COVER	*6	STARTER WIRE
*7	GENERATOR WIRE	*8	WIRE HARNESS CLAMP BRACKET
*9	HOOD TO COWL TOP SEAL	*10	COWL TOP VENTILATOR LOUVER PROTECTOR
*11	HOOD SUPPORT ASSEMBLY	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	●	Non-reusable part
*T1	1st: 56 (571, 41) 2nd: Turn 90°	-	-

ILLUSTRATION

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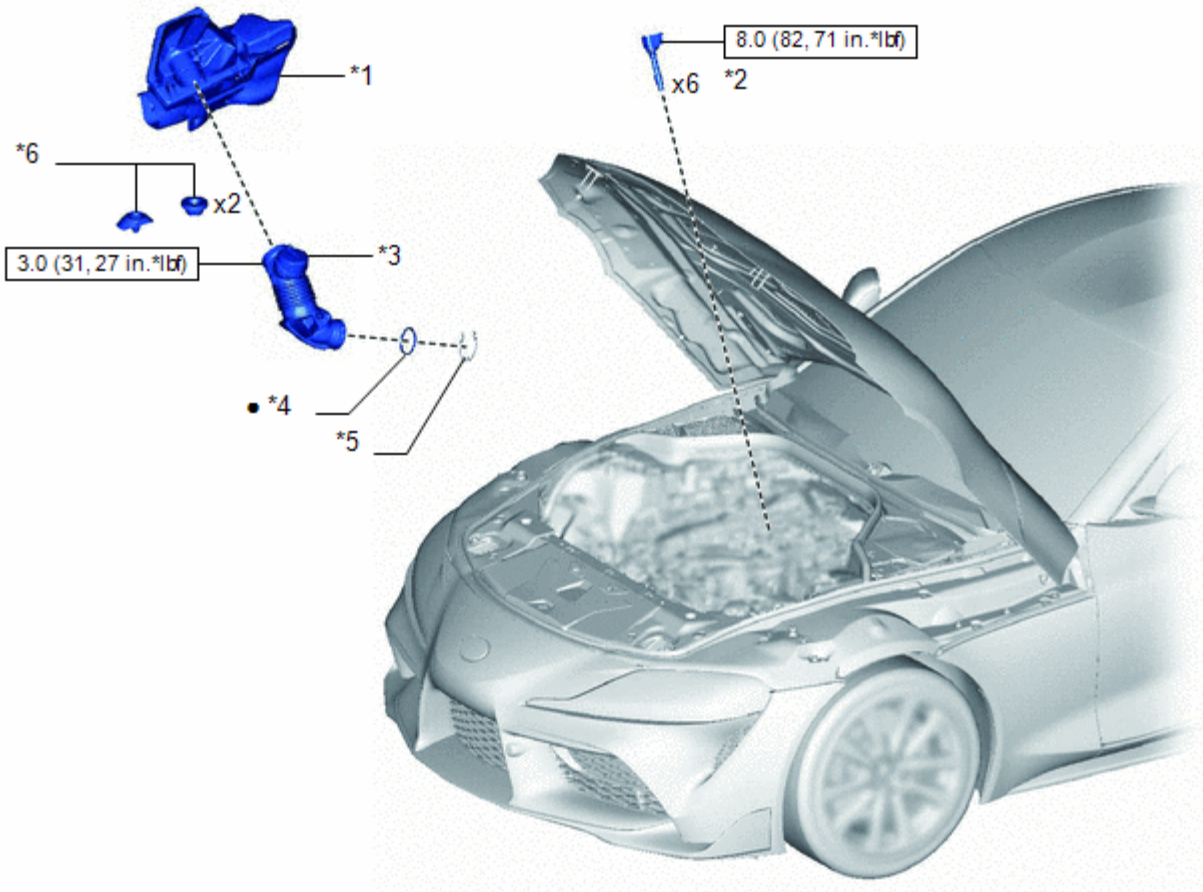


*1	FRONT UPPER FENDER PROTECTOR RH	*2	FRONT UPPER FENDER PROTECTOR LH
*3	ENGINE ROOM ECM BOX	*4	GENERATOR WIRE
	N*m (kgf*cm, ft.*lbf): Specified	-	-

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▭	torque		

ILLUSTRATION

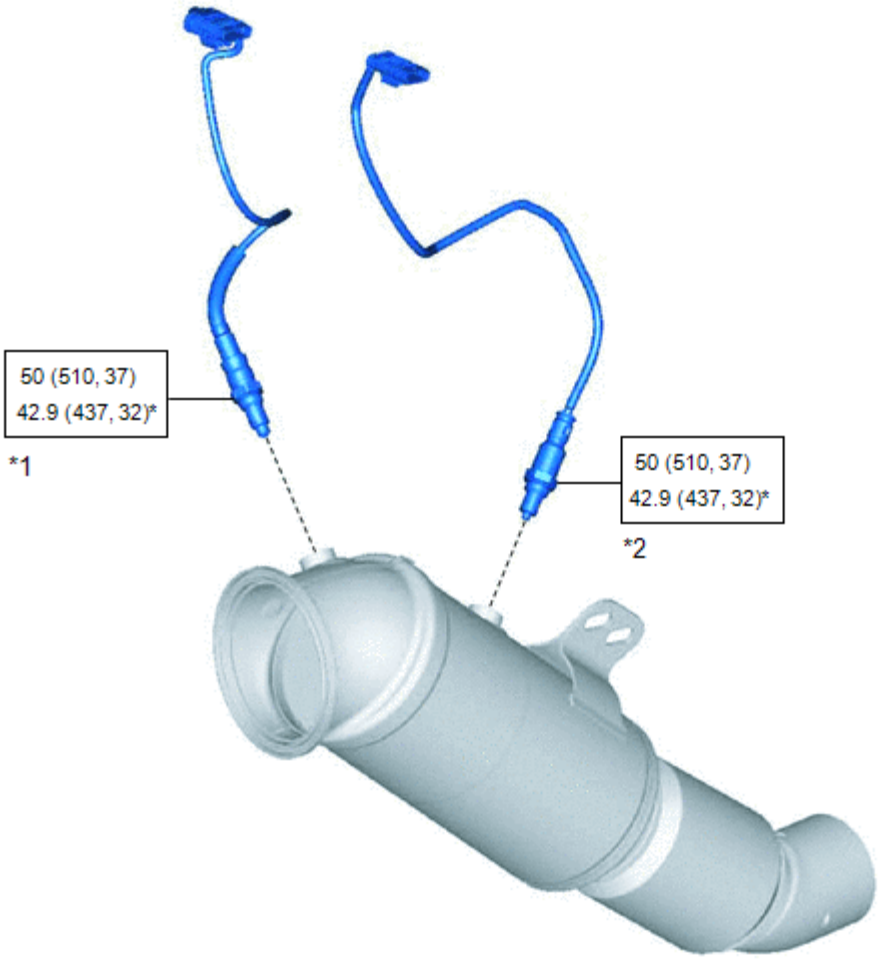


*1	AIR CLEANER ASSEMBLY	*2	IGNITION COIL ASSEMBLY
*3	AIR CLEANER HOSE ASSEMBLY	*4	GASKET
*5	CLAMP	*6	AIR CLEANER SUPPORT

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▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

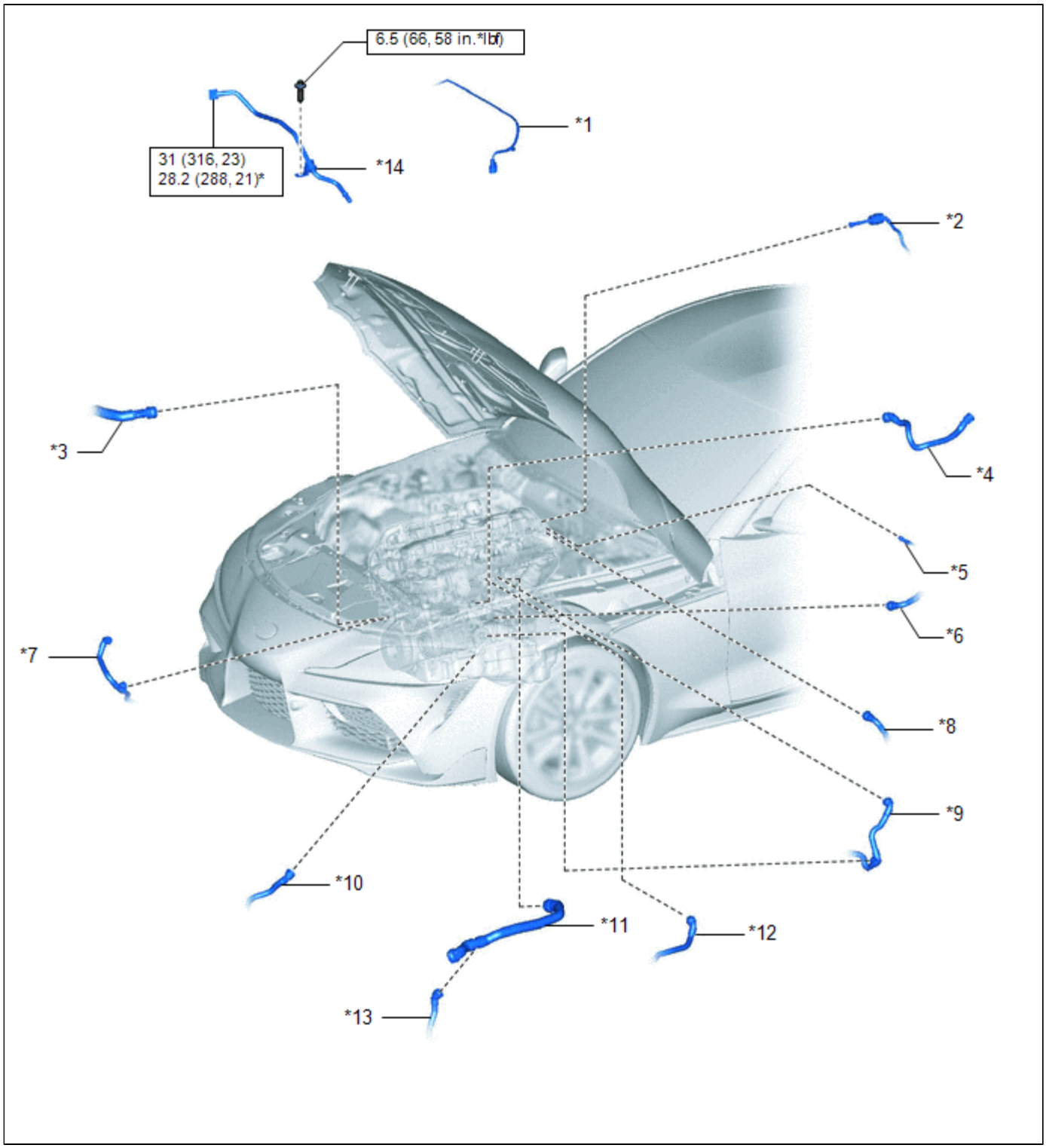
ILLUSTRATION



*1	WIDE RANGE AIR FUEL RATIO SENSOR	*2	OXYGEN SENSOR
▭	N*m (kgf*cm, ft.*lbf): Specified torque	*	For use with SST

ILLUSTRATION

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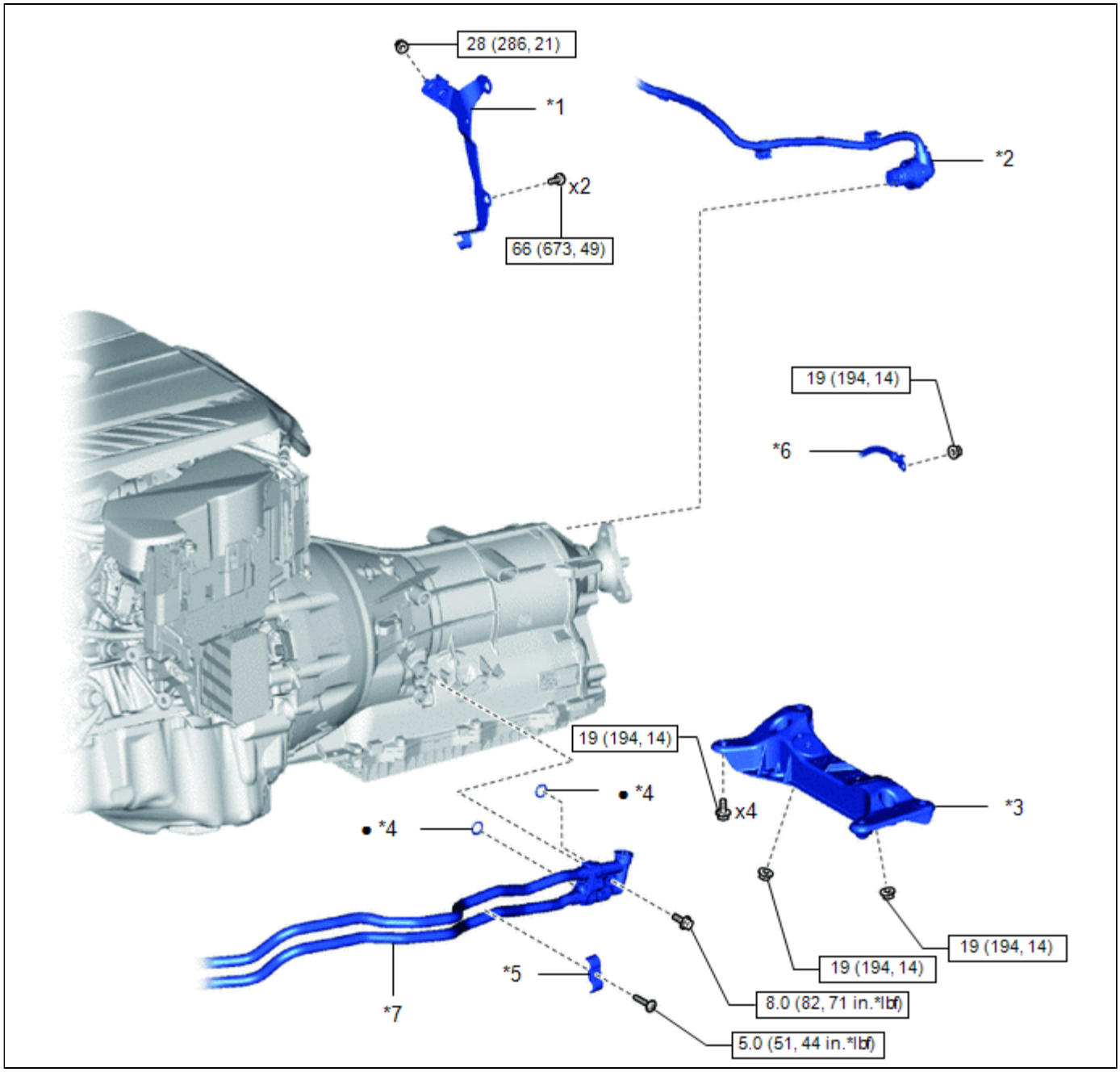


*1	FLOOR CABLE	*2	NO. 2 FUEL VAPOR FEED HOSE
*3	NO. 1 RADIATOR HOSE	*4	NO. 1 WATER BY-PASS HOSE
*5	FUEL TUBE SUB-ASSEMBLY	*6	HEATER WATER HOSE
*7	NO. 3 RADIATOR HOSE	*8	CONNECTOR TO BRAKE BOOSTER TUBE
*9	NO. 7 WATER BY-PASS HOSE	*10	NO. 6 RADIATOR HOSE
*11	NO. 2 RADIATOR HOSE	*12	NO. 5 WATER BY-PASS HOSE
*13	RADIATOR HOSE SUB-ASSEMBLY	*14	NO. 1 FUEL PIPE SUB-ASSEMBLY

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▭	N*m (kgf*cm, ft.*lbf): Specified torque	*	For use with a union nut wrench

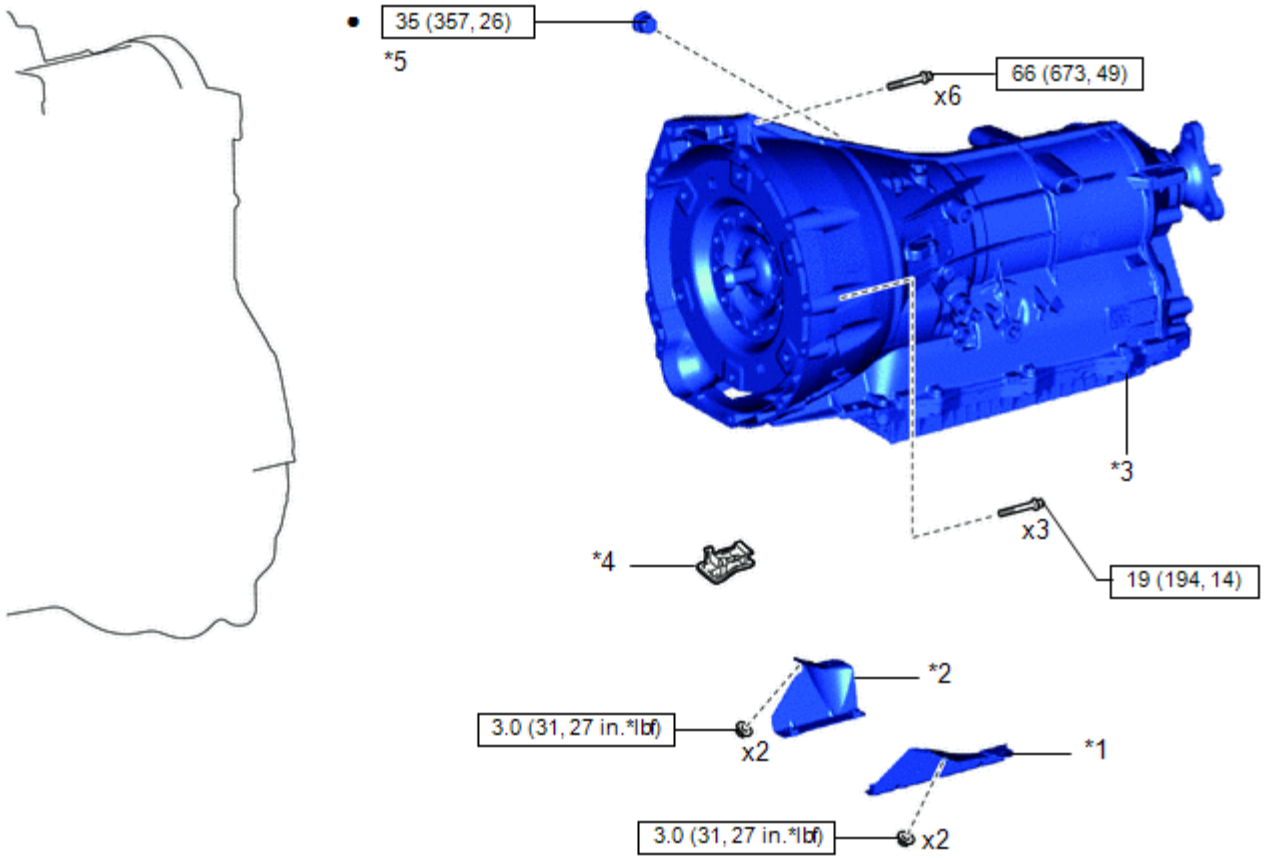
ILLUSTRATION



*1	NO. 2 MANIFOLD STAY	*2	WIRE HARNESS
*3	ENGINE REAR MOUNTING MEMBER	*4	O-RING
*5	NO. 3 AUTOMATIC TRANSMISSION OIL COOLER TUBE CLAMP	*6	NO. 2 EARTH WIRE
*7	OIL COOLER TUBE	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

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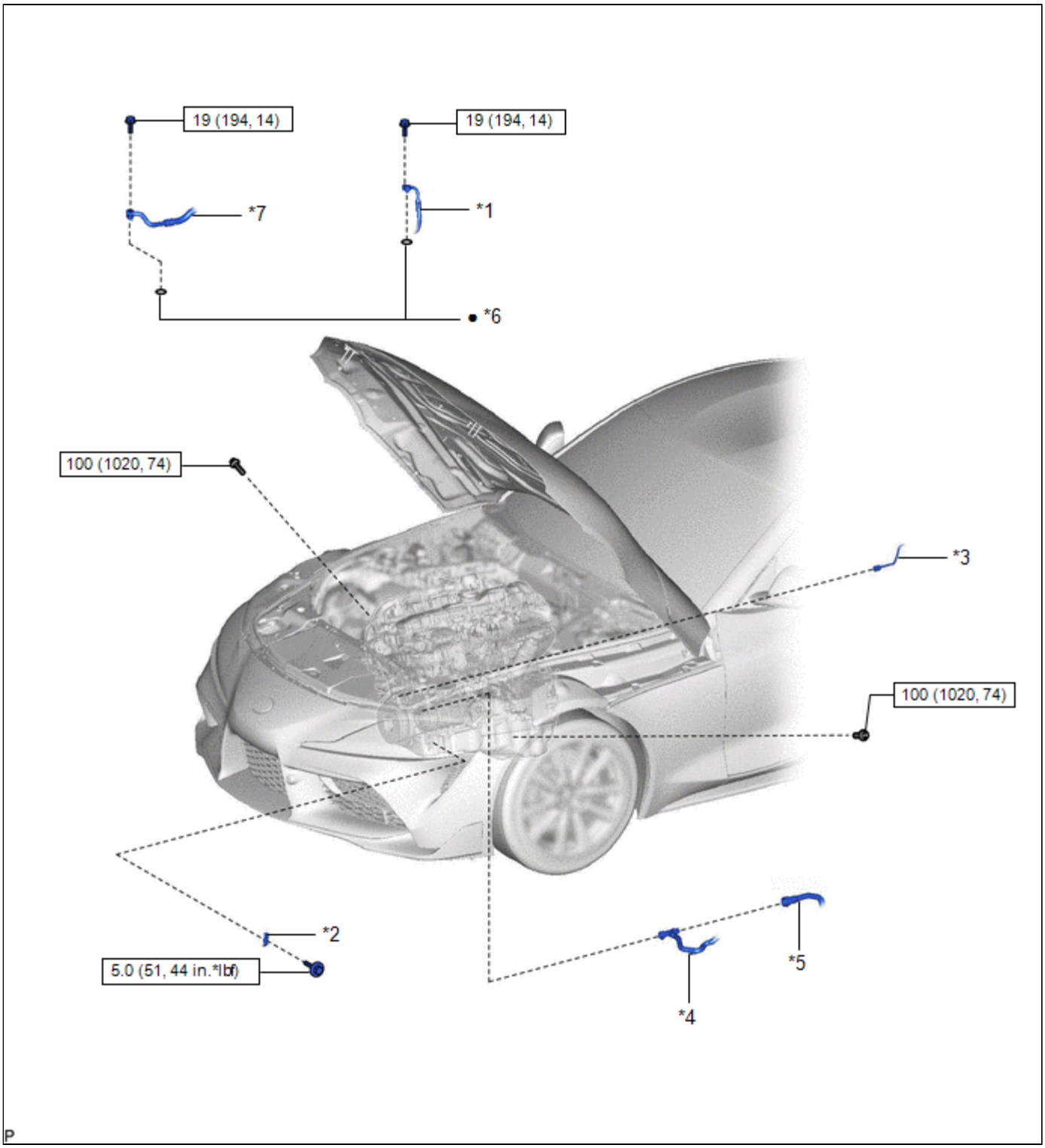
ILLUSTRATION



*1	NO. 1 FLOOR HEAT INSULATOR	*2	NO. 2 FLOOR HEAT INSULATOR
*3	AUTOMATIC TRANSMISSION ASSEMBLY	*4	TRANSMISSION HOUSING COVER
*5	FILLER PLUG	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

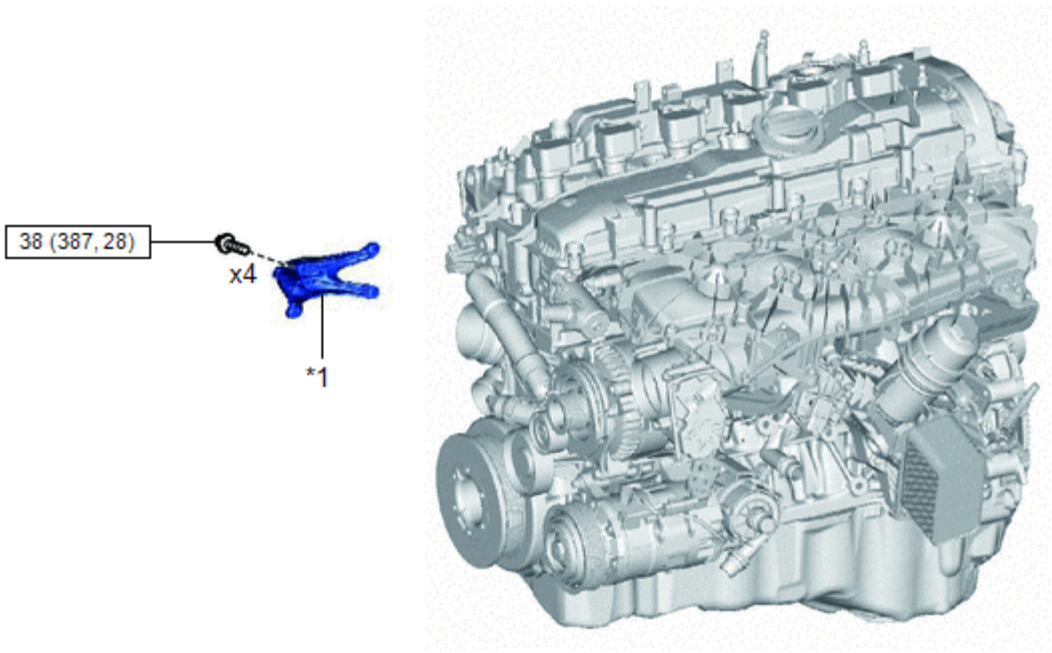
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*1	AIR CONDITIONING TUBE ASSEMBLY	*2	NO. 1 AUTOMATIC TRANSMISSION OIL COOLER TUBE CLAMP
*3	RADIATOR RESERVE TANK HOSE	*4	NO. 6 WATER BY-PASS HOSE
*5	NO. 7 WATER BY-PASS HOSE	*6	O-RING
*7	SUCTION PIPE SUB-ASSEMBLY	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

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ILLUSTRATION



*1	NO. 1 FRONT ENGINE MOUNTING BRACKET RH	-	-
☐	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG1
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE ASSEMBLY: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

1. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM

Click here INFO

2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

Click here INFO

3. REMOVE AND INSTALL HOOD SUPPORT ASSEMBLY

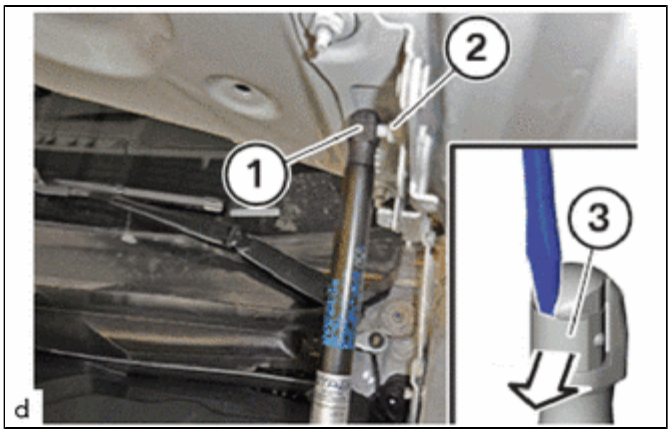
CAUTION:

- Shutting hood sub-assembly or tailgate.

  Danger of injury!

  - Support hood sub-assembly/tailgate in fully open position with the aid of a suitable device.

(a) Lift clamp (3) slightly using a screwdriver, in the direction of the arrow.



(b) Lift off ball socket (1) from ball pin (2).

(c) Repeat the operation on the other side of vehicle.

HINT:

Conduct the following operation with the assistance of a second person.

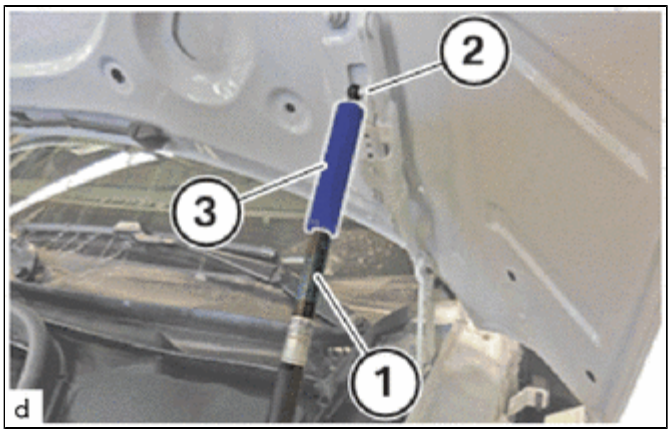
(d) Remove the hood support assembly and open the hood sub-assembly further.

(e) Push special tool 0 493 647 (51 2 170)(3) over gas

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pressure spring (1).

SST: 09800-WA030



(f) Position the special tool 0 493 647 (51 2 170) (3) on the ball pin (2) and apply force to engage it.

SST: 09800-WA030

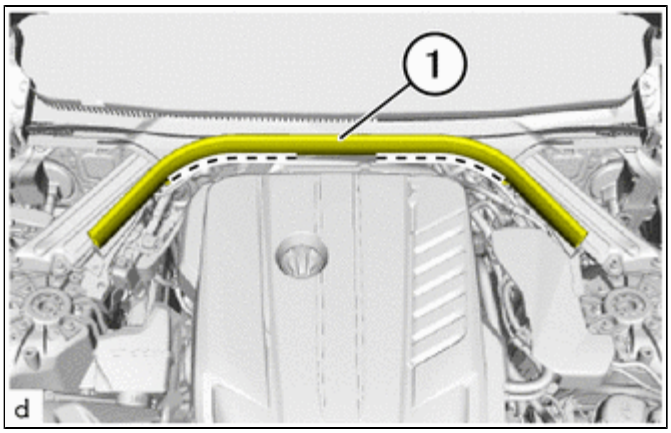
(g) Repeat the operation on the other side of vehicle.

4. REMOVE FRONT WIPER MOTOR AND LINK ASSEMBLY

Click here INFO

5. REMOVE HOOD TO COWL TOP SEAL

(a) Feed the cable out from the brackets to the front in the marked area.



(b) Remove the hood to cowl top seal (1) inward from the guide.

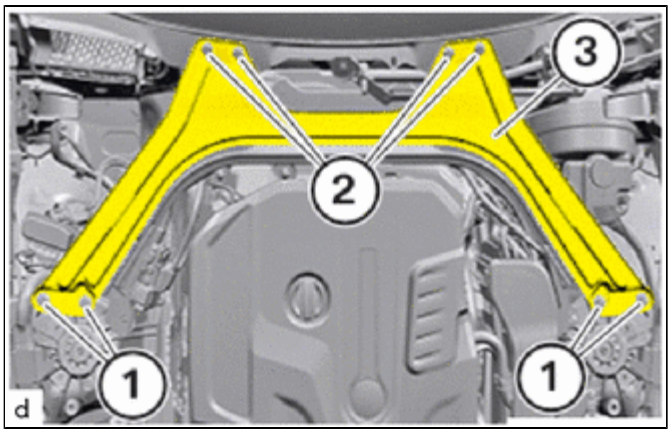
6. REMOVE UPPER FRONT SUSPENSION CENTER BRACE

NOTICE:

Driving without upper front suspension center brace is not permissible.

(a) Remove E14 bolts (1) and bolts (2).

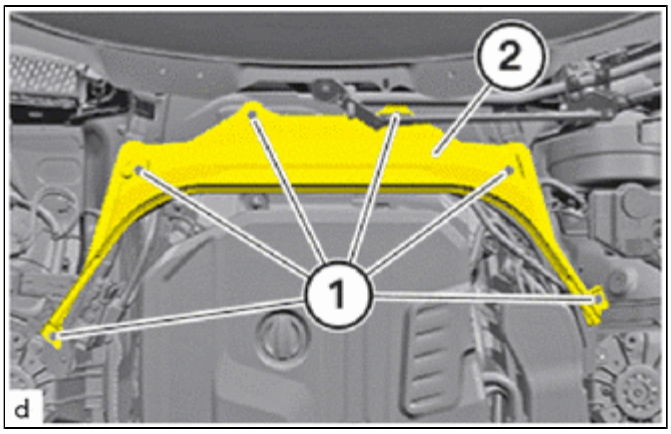
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(b) Remove the upper front suspension center brace (3).

7. REMOVE COWL TOP VENTILATOR LOUVER PROTECTOR

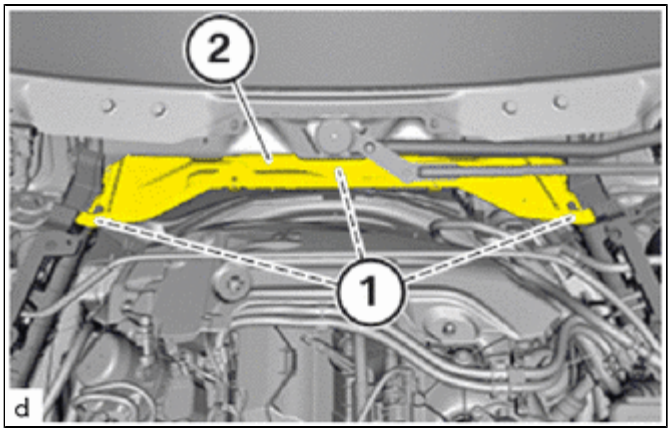
(a) Loosen bolts (1).



(b) Remove the cowl top ventilator louver protector (2).

8. REMOVE NO. 2 COWL TOP VENTILATOR LOUVER PROTECTOR

(a) Loosen bolts and nut (1).



(b) Remove the No. 2 cowl top ventilator louver protector (2).

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9. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY

NOTICE:

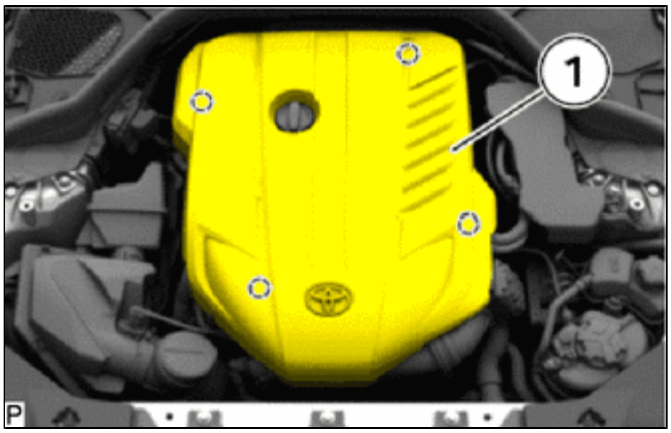
- Damage to the No. 1 engine cover sub-assembly.

  Jerky movements during disassembly and excessive application of force during installation may result in breakage of the No. 1 engine cover sub-assembly.

  - Disassemble or mount the No. 1 engine cover sub-assembly carefully.
  - Disassemble or mount snap-lock couplings of the ball pivots one after the other.
  - Disassemble or mount No. 1 engine cover sub-assembly only at temperatures >20 °C.

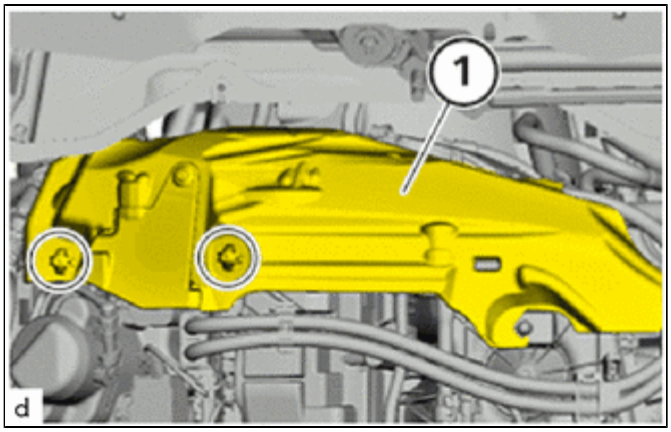
    Vehicle information / Control unit list / DME / Call up control unit functions / Diagnostic request / Diagnostic request / 117 Ambient temperature
  - Use only distilled water as an auxiliary material during installation, no lubricants.

(a) Release the No. 1 engine cover sub-assembly (1) towards the top from the grommets (marks) and remove.



10. REMOVE NO. 1 ENGINE COVER

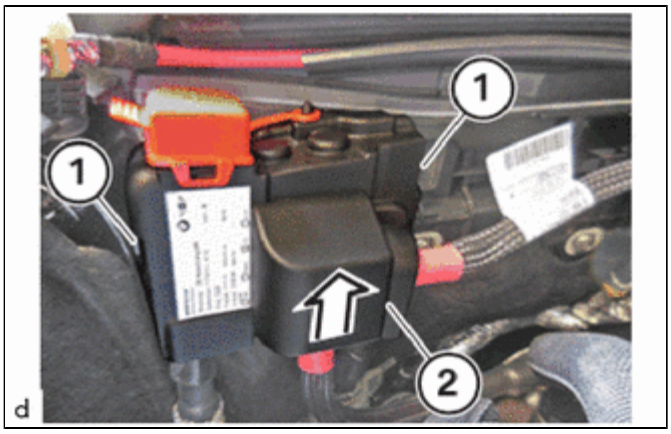
(a) Unclip the No. 1 engine cover (1) at the grommets in the marked areas and remove it to the top.



11. REMOVE POSITIVE BATTERY CABLE

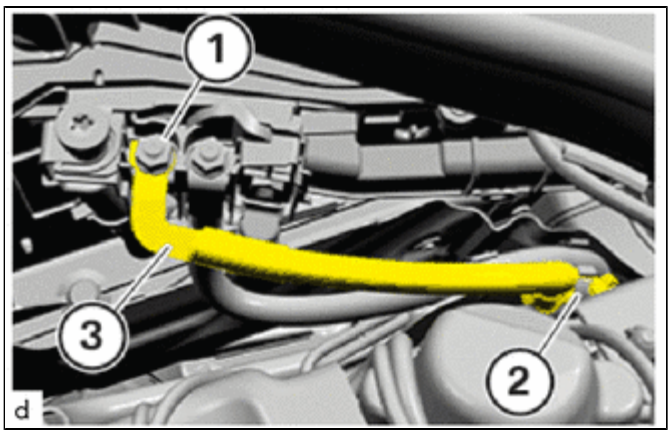
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(a) Unlock the locks (1).



(b) Guide and remove cover (2) in direction of arrow.

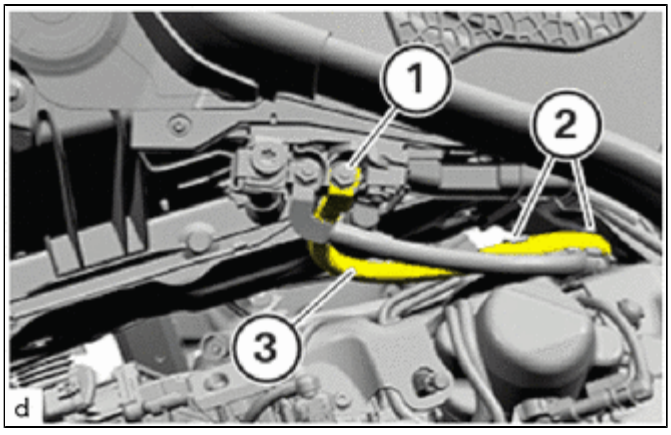
(c) Loosen nut (1).



(d) Loosen clamp (2).

(e) Feed out generator wire (3) and put to one side.

(f) Loosen nut (1).



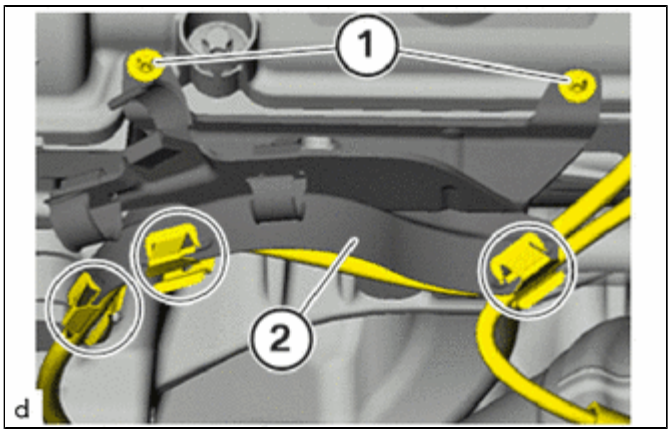
(g) Loosen clamps (2).

(h) Feed out starter wire (3) and put to one side.

12. REMOVE WIRE HARNESS CLAMP BRACKET

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(a) Unclip the lines in the marked areas.



(b) Loosen E8 screws (1).

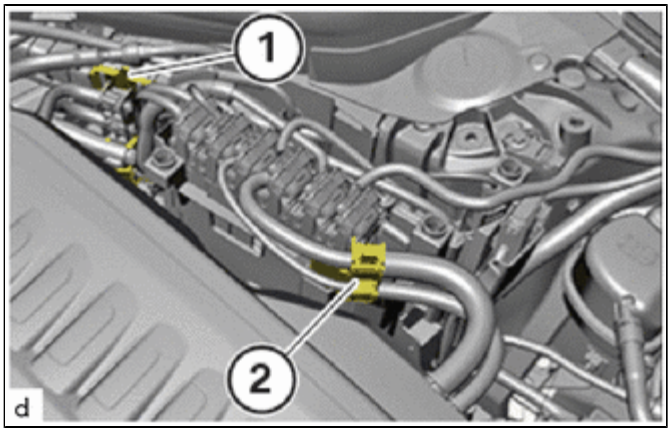
(c) Remove wire harness clamp bracket (2) for the generator wire.

13. REMOVE NO. 1 INTEGRATION RELAY

Click here INFO

14. REMOVE ENGINE ROOM ECM BOX

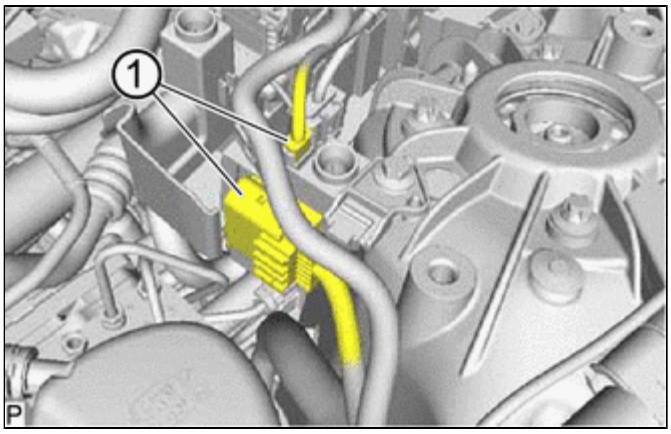
(a) Unlock and loosen locks (1) and (2).

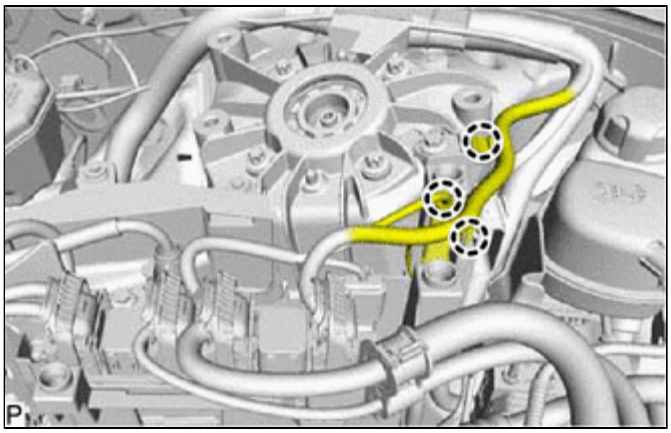


(b) Release the wiring harnesses from the engine room ECM box and set it aside.

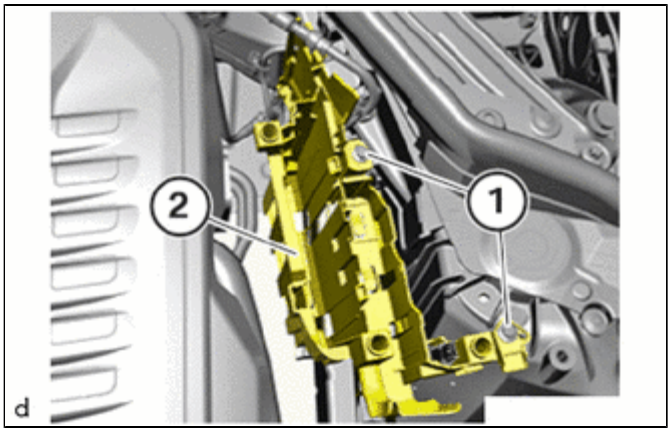
(c) Unlock plug connection (1) and disconnect.

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(d) Unlock and loosen the 3 clamps (marks).



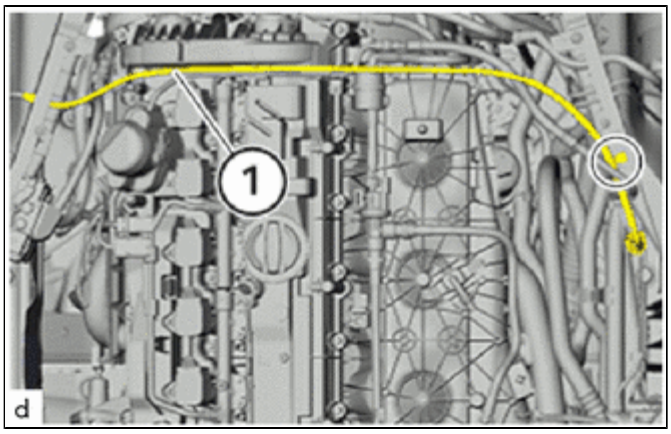
(e) Loosen bolts (1).

(f) Guide out and remove the engine room ECM box (2).

15. REMOVE FLOOR WIRE

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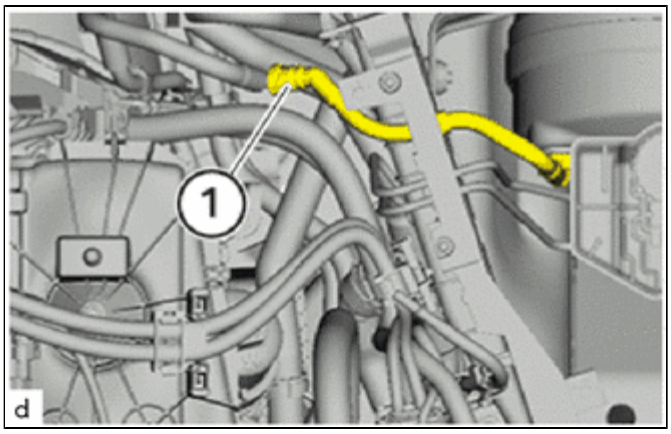
(a) Unclip floor wire (1) for the voltage supply of the power distribution box in the marked area.



(b) Set aside the floor wire (1) for the voltage supply of the power distribution box.

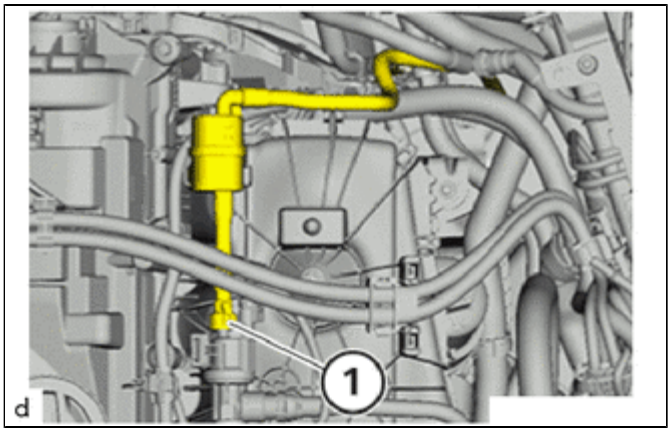
16. DISCONNECT CONNECTOR TO BRAKE BOOSTER TUBE

(a) Unlock, disconnect and tie the connector to brake booster tube (1) to one side.



17. DISCONNECT NO. 2 FUEL VAPOR FEED HOSE

(a) Disengage the clamp.



(b) Unlock, disconnect and tie the No. 2 fuel vapor feed hose (1) to one side.

18. REMOVE FRONT UPPER FENDER PROTECTOR LH

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Click here INFO

19. REMOVE FRONT UPPER FENDER PROTECTOR RH

HINT:

Use the same procedure described for the LH side.

20. REMOVE FAN SHROUD

Click here INFO

21. REMOVE AIR CLEANER ASSEMBLY

Click here INFO

22. REMOVE AIR CLEANER HOSE ASSEMBLY

Click here INFO

23. REMOVE WIDE RANGE AIR FUEL RATIO SENSOR

Click here INFO

24. REMOVE OXYGEN SENSOR

Click here INFO

25. REMOVE IGNITION COIL ASSEMBLY

Click here INFO

26. REMOVE NO. 2 FUEL PIPE SUB-ASSEMBLY

Click here INFO

27. REMOVE FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

28. DRAIN ENGINE COOLANT (for High Pressure)

Click here INFO

29. DRAIN ENGINE COOLANT (for Low Pressure)

Click here INFO

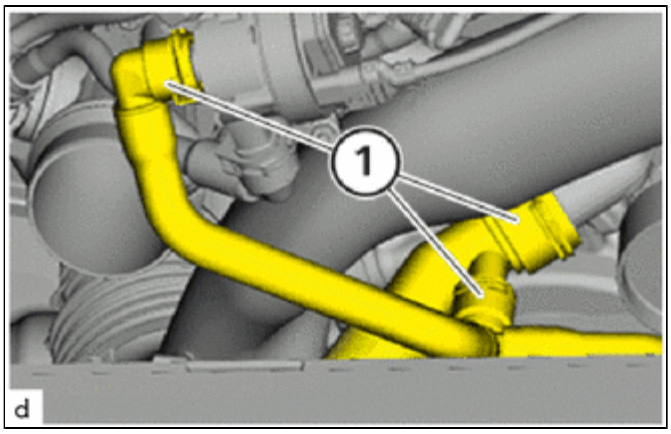
30. DISCONNECT NO. 3 RADIATOR HOSE

HINT:

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

(a) Unlock, disconnect and tie the No. 3 radiator hose (1) to one side.

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31. REMOVE NO. 2 RADIATOR HOSE

Click here INFO

32. REMOVE STARTER ASSEMBLY

Click here INFO

33. REMOVE EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY

Click here INFO

34. REMOVE FLOOR HEAT INSULATOR

Click here INFO

35. REMOVE ENGINE REAR MOUNTING MEMBER

Click here INFO

36. SEPARATE PROPELLER SHAFT ASSEMBLY

Click here INFO

37. REMOVE NO. 2 MANIFOLD STAY

Click here INFO

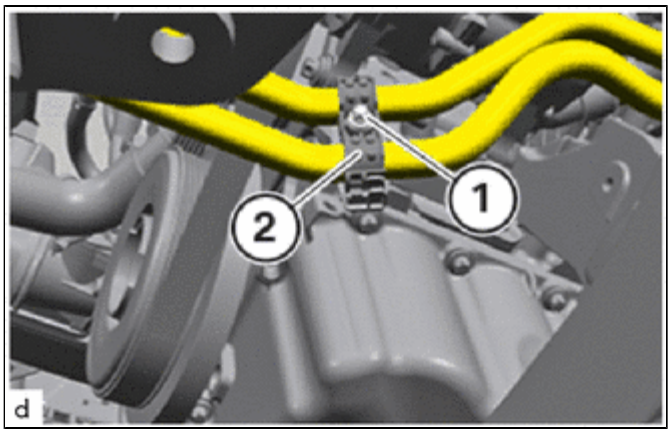
38. REMOVE AUTOMATIC TRANSMISSION ASSEMBLY

Click here INFO

39. SEPARATE OIL COOLER TUBE

(a) Loosen T25 bolt (1).

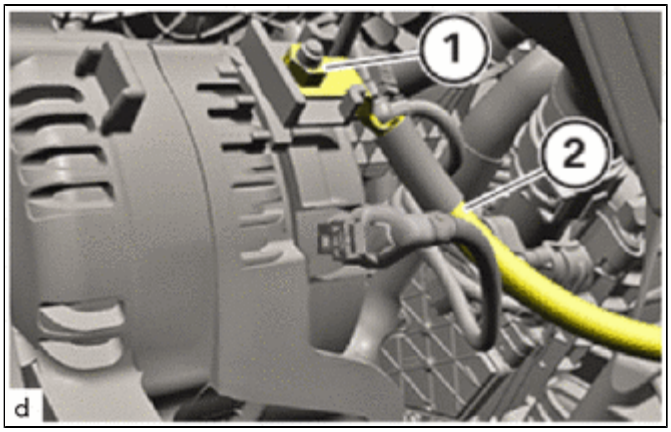
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(b) Loosen the No. 1 automatic transmission oil cooler tube clamp (2).

(c) Tie the oil cooler tube to the side.

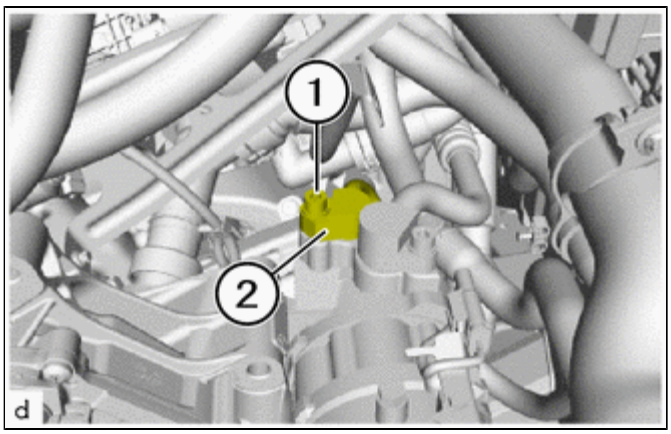
40. SEPARATE GENERATOR WIRE



(a) Unfasten nut (1).

(b) Thread out generator wire (2) and set it aside.

41. REMOVE AIR CONDITIONING TUBE ASSEMBLY



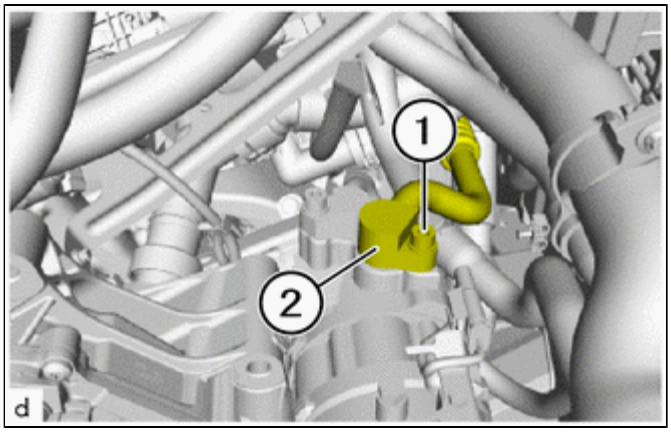
(a) Loosen T45 bolts (1).

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(b) Remove air conditioning tube assembly (2) upwards.

42. REMOVE SUCTION PIPE SUB-ASSEMBLY

(a) Loosen T45 bolts (1).



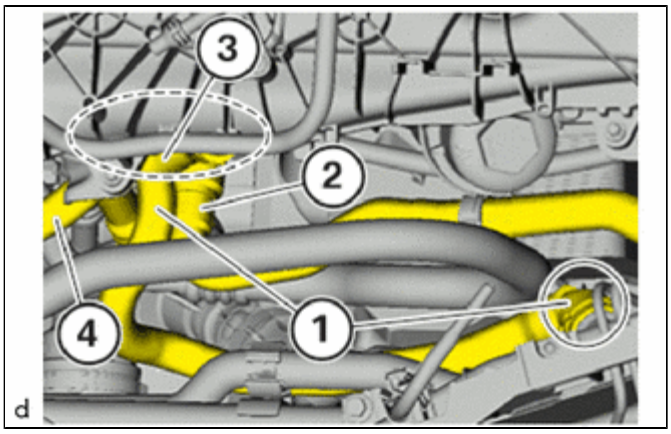
(b) Remove suction pipe sub-assembly (2) upwards.

43. DISCONNECT WATER HOSE

HINT:

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

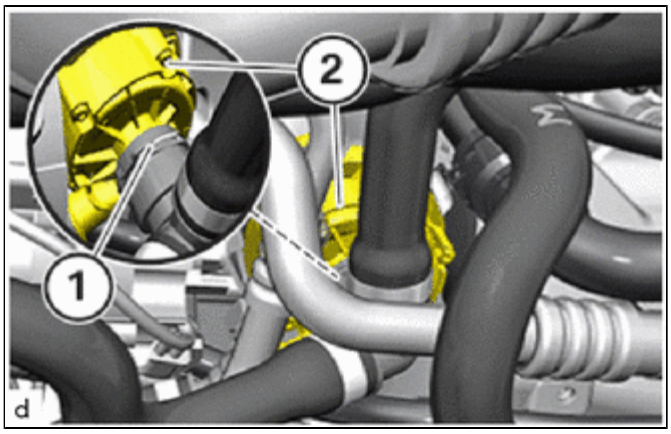
(a) Unlock and disconnect No. 1 water by-pass hose (1), heater water hose (2), No. 7 water by-pass hose (3) and No. 5 water by-pass hose (4) in the marked areas.



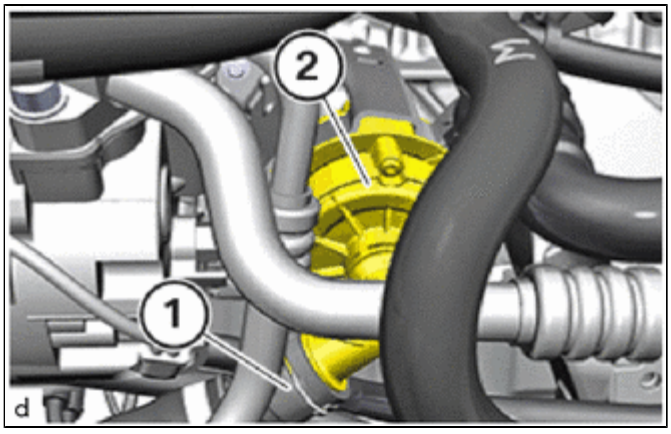
(b) Remove the No. 1 water by-pass hose (1).

(c) Unlock No. 7 water by-pass hose (1) and disconnect from the water pump sub-assembly (2).

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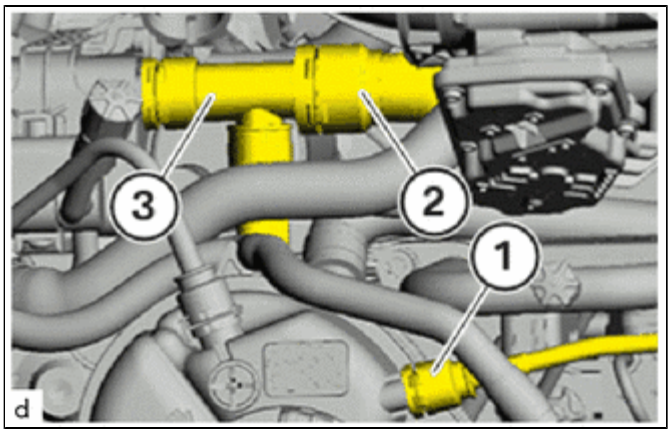


(d) Place the No. 7 water by-pass hose (1) aside.



(e) Unlock No. 6 radiator hose (1) and disconnect from the water pump sub-assembly (2).

(f) Place the No. 6 radiator hose (1) aside.



(g) Unlock and disconnect the radiator reserve tank hose (1) and No. 7 water by-pass hose (2) and lay to one side.

(h) Unlock and disconnect the No. 6 water by-pass hose (3) and set it aside.

44. REMOVE ENGINE ASSEMBLY

CAUTION:

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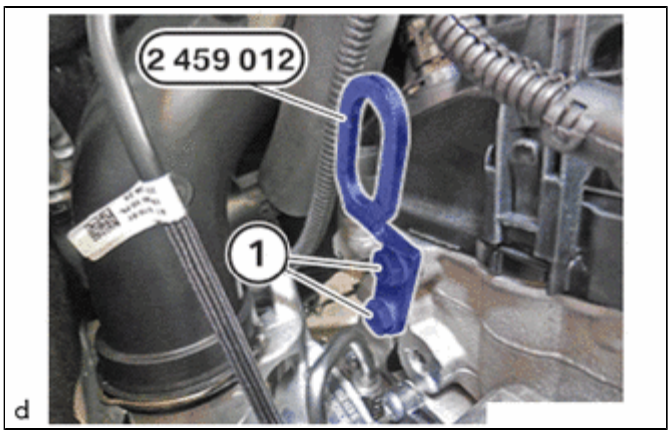
Components connected to the engine joint or cross member.

Danger of injury!

- Check lifting eyes and engine mounting brackets for damage, e.g. cracks.
- Attach the component to correctly mounted engine joints or cross members only.
- Exclusively lift the component, do not move it forwards, backwards or in transverse direction.

(a) Guide in and position special tool 2 459 012 on cylinder head.

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(b) Tighten the bolts (1) of special tool 2 459 012 .

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Torque:

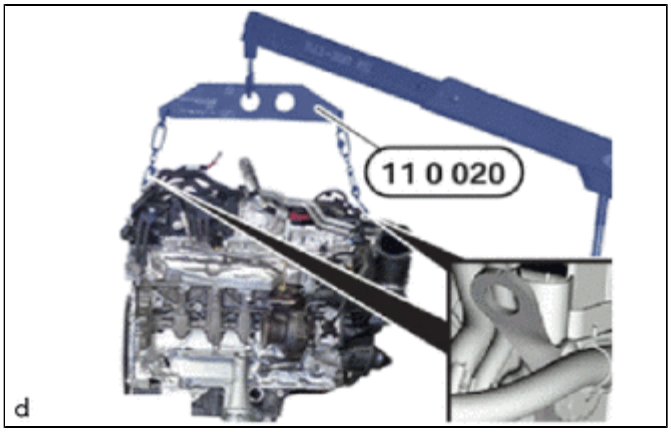
21.5 N·m {219 kgf·cm, 16 ft·lbf}

(c) Connect both hooks of the special tool 0 490 567 (11 0 020) to the front and back of the engine with the engine hangers.

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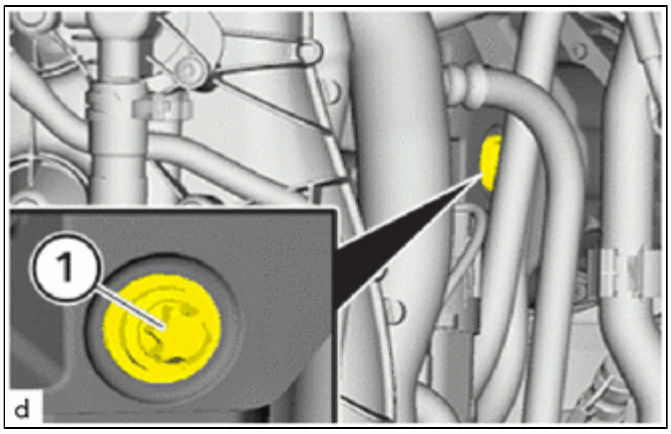
HINT:

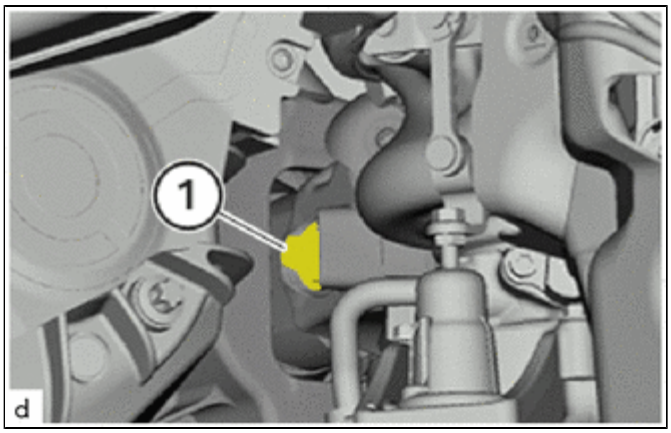
The workshop crane, lifting gear and the engine hangers on the engine must all be connected to each other so that the engine hangs straight upon lifting.



(d) Release the E14 bolt (1) from the top.

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(e) Release the E14 bolt (1) from the top.

(f) Raise and remove the engine.

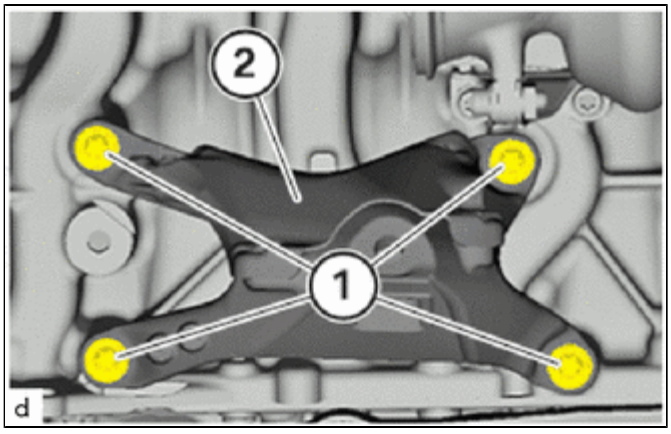
45. INSTALL ENGINE STAND

CAUTION:

- Heavy component.

  Heavy components can lead to injury or damage.

  - Remove and install heavy components with the aid of another person/other persons.

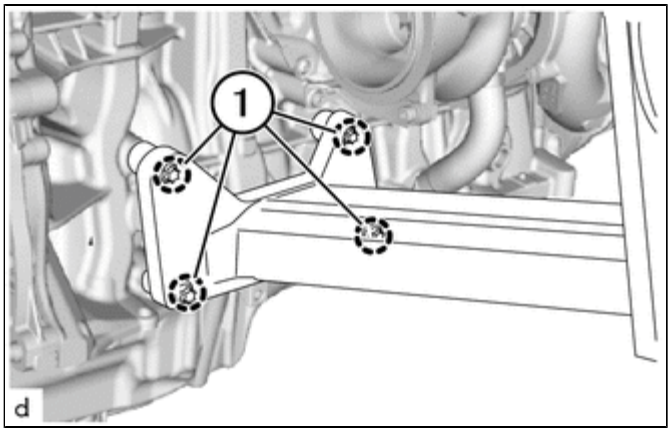


(a) Loosen E12 bolts (1).

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(b) Remove the No. 1 front engine mounting bracket RH (2).

(c) Position and secure engine stand attachment No. 2 on the engine.



(d) Tighten the bolts (1).

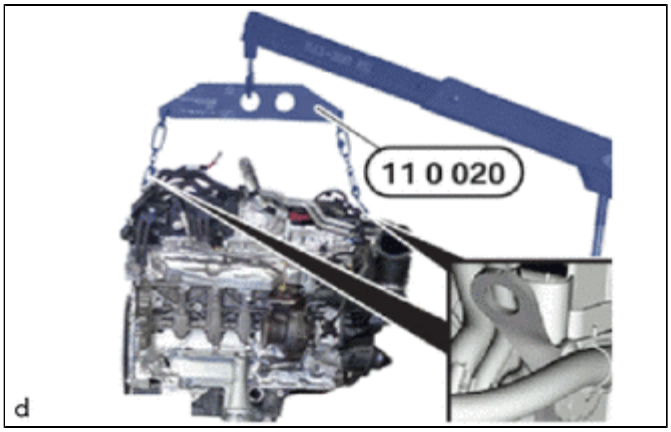
Torque:

38 N·m {387 kgf·cm, 28 ft·lbf}

(e) Lower engine slowly.

(f) Release both hooks of the special tool 0 490 567 (11 0 020) at the front and back of the engine from the engine hangers.

SST: 09200-WA860



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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG2
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE ASSEMBLY: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

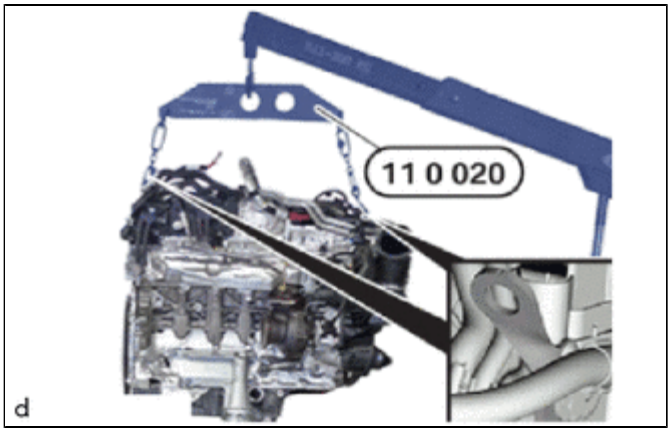
1. REMOVE ENGINE STAND

HINT:

Conduct the following operation with the assistance of a second person.

(a) Connect both hooks of the special tool 0 490 567 (11 0 020) to the front and back of the engine with the engine hangers.

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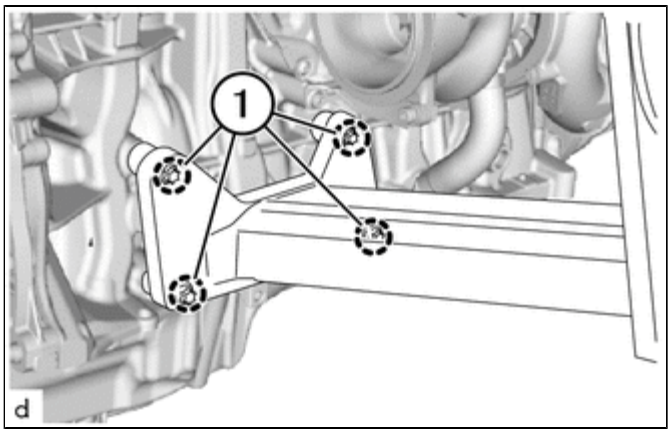


HINT:

The workshop crane, lifting gear and the engine hangers on the engine must all be connected to each other so that the engine hangs straight upon lifting.

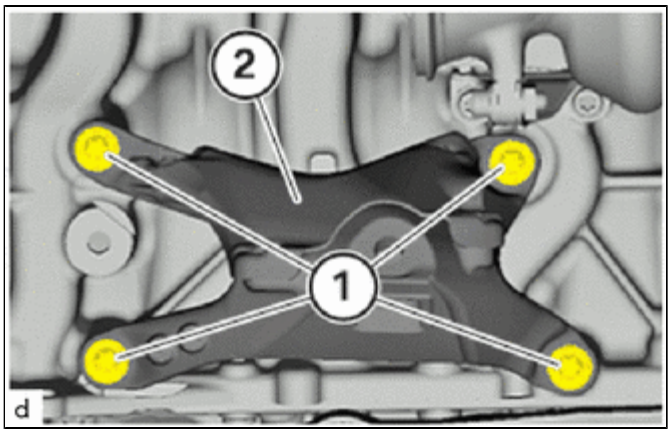
(b) Raise the engine slowly.

(c) Release the bolts (1) and remove the engine stand attachment No. 2.



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(d) Install the No. 1 front engine mounting bracket RH (2).



(e) Tighten the E12 bolts (1).

Torque:

38 N·m {387 kgf·cm, 28 ft·lbf}

2. INSTALL ENGINE ASSEMBLY

CAUTION:

- Components connected to the engine joint or cross member.

  Danger of injury!

  - Check lifting eyes and engine mounting brackets for damage, e.g. cracks.
  - Attach the component to correctly mounted engine joints or cross members only.
  - Exclusively lift the component, do not move it forwards, backwards or in transverse direction.

(a) Install and lower the engine.

(b) Make sure that the No. 1 front engine mounting brackets rest completely on the front engine mounting insulators.

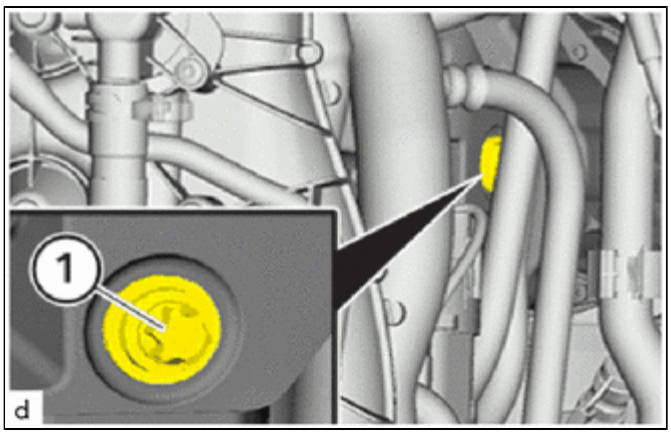
(c) Tighten down E14 bolt (1).

Torque:

100 N·m {1020 kgf·cm, 74 ft·lbf}

NOTICE:

Lower the engine completely to prevent play before bolting down the front engine mounting insulator LH and front No. 1 engine mounting bracket LH.



(d) Tighten down E14 bolt (1).

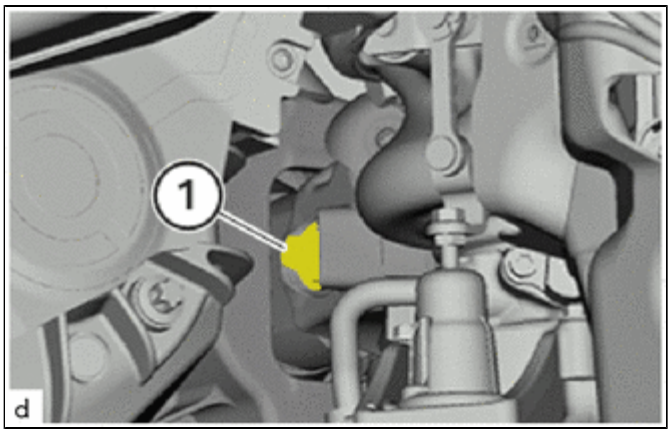
Torque:

100 N·m {1020 kgf·cm, 74 ft·lbf}

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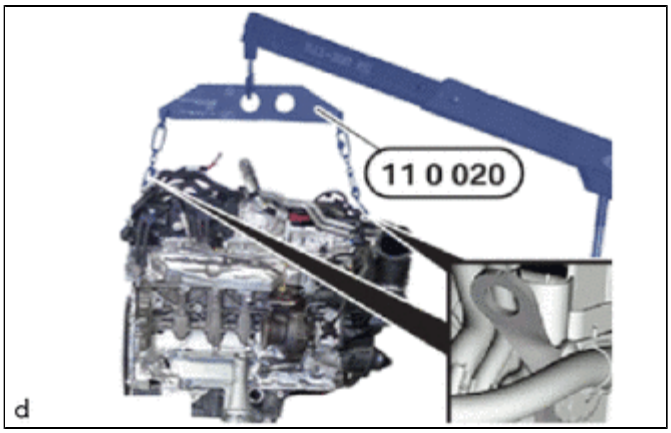
NOTICE:

Lower the engine completely to prevent play before bolting down the front engine mounting insulator RH and front No. 1 engine mounting bracket RH.



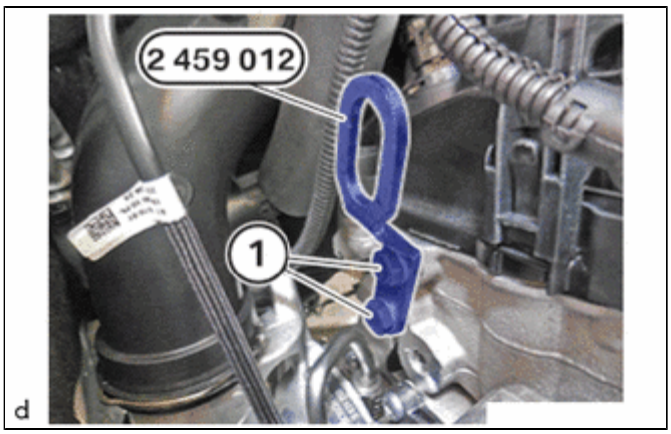
(e) Release both hooks of the special tool 0 490 567 (11 0 020) at the front and back of the engine from the engine hangers.

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(f) Unscrew the bolts (1) of the special tool 2 459 012 .

SST: 09200-WA610



(g) Feed out the special tool 2 459 012 at the cylinder head and remove.

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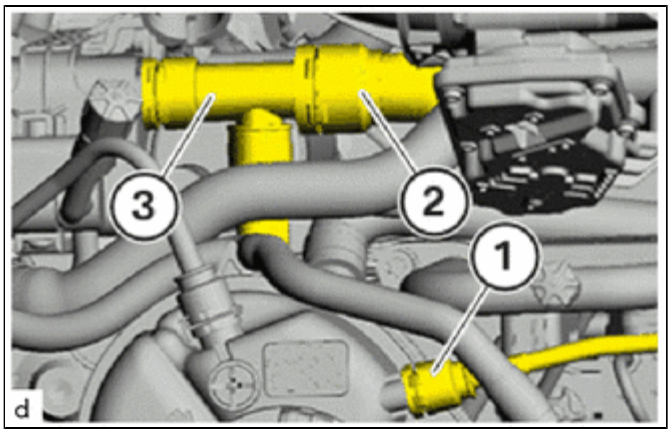
3. CONNECT WATER HOSE

HINT:

Make sure that the connections are locked correctly. The locks must engage audibly.

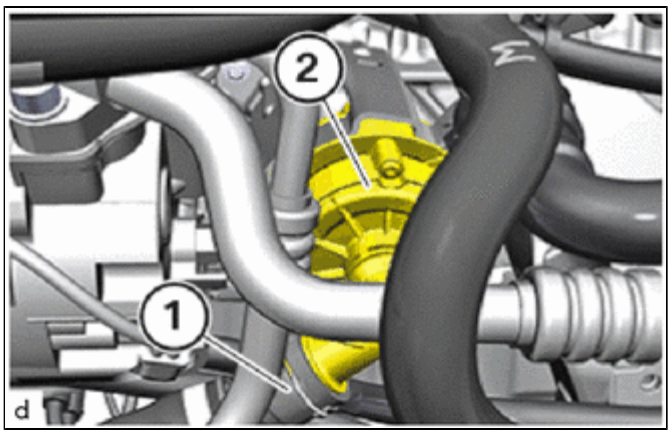
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(a) Connect and lock No. 6 water by-pass hose (3).

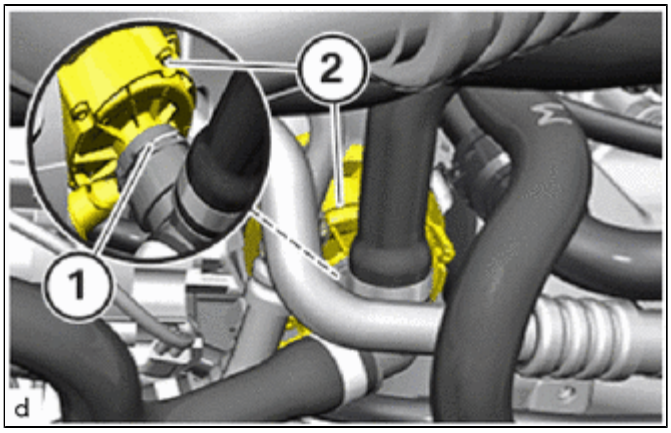


(b) Connect and lock the radiator reserve tank hose (1) and No. 7 water by-pass hose (2).

(c) Connect and lock the No. 6 radiator hose (1) to the water pump sub-assembly (2).

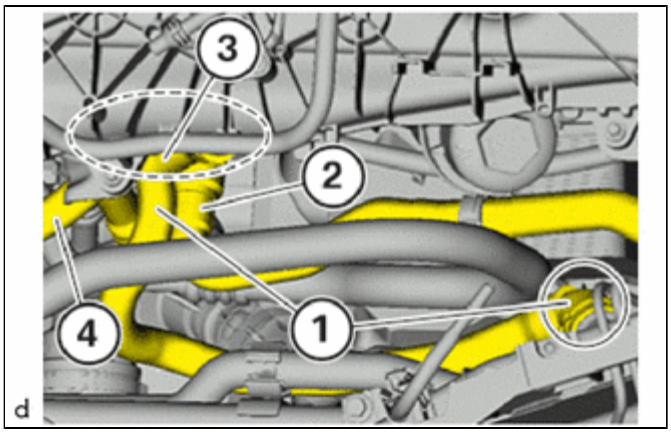


(d) Connect and lock the No. 7 water by-pass hose (1) to the water pump sub-assembly (2).



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(e) Feed in and install No. 1 water by-pass hose (1).

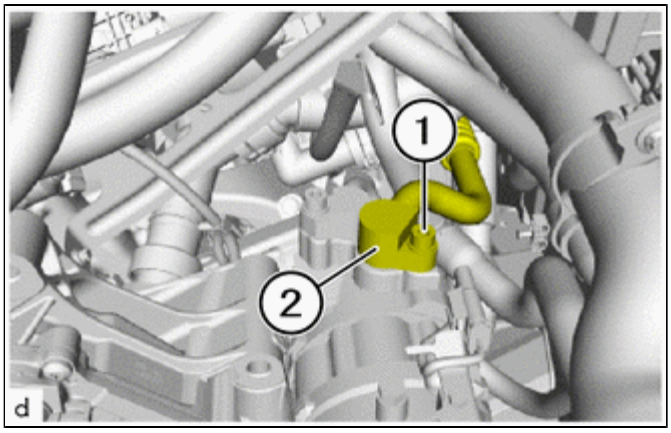


(f) Connect and lock No. 1 water by-pass hose (1), heater water hose (2), No. 7 water by-pass hose (3) and No. 5 water by-pass hose (4) in the marked areas.

4. INSTALL SUCTION PIPE SUB-ASSEMBLY

(a) Replace O-ring.

(b) Position suction pipe sub-assembly (2).



(c) Tighten the T45 bolts (1).

Torque:

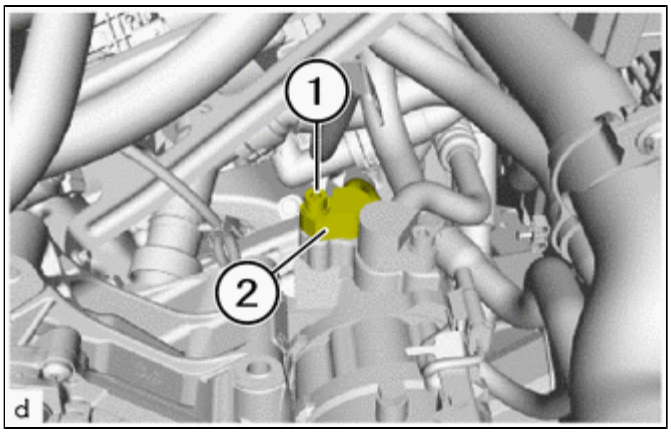
19 N·m {194 kgf·cm, 14 ft·lbf}

5. INSTALL AIR CONDITIONING TUBE ASSEMBLY

(a) Replace O-ring.

(b) Position air conditioning tube assembly (2).

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(c) Tighten the T45 bolts (1).

Torque:

19 N·m {194 kgf·cm, 14 ft·lbf}

6. INSTALL GENERATOR WIRE

(a) Insert and install the generator wire.

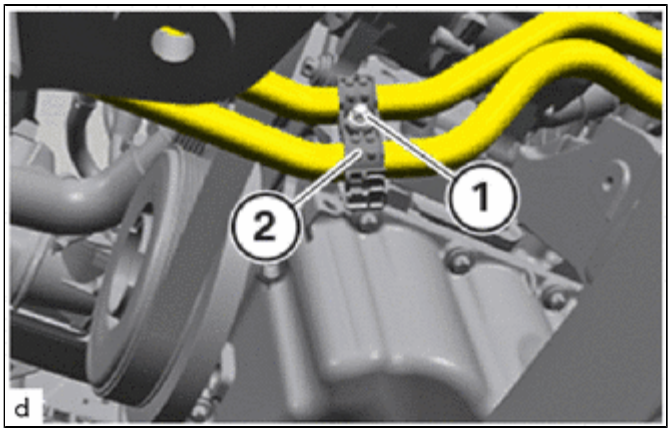
(b) Tighten nut.

Torque:

19 N·m {194 kgf·cm, 14 ft·lbf}

7. INSTALL OIL COOLER TUBE

(a) Position the oil cooler tube in the No. 1 automatic transmission oil cooler tube clamp (2).



(b) Tighten down T25 screw (1).

Torque:

5.0 N·m {51 kgf·cm, 44 in·lbf}

8. TEMPORARILY TIGHTEN AUTOMATIC TRANSMISSION ASSEMBLY

Click here INFO

9. FULLY TIGHTEN AUTOMATIC TRANSMISSION ASSEMBLY

Click here INFO

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10. INSTALL NO. 2 MANIFOLD STAY

Click here INFO

11. INSTALL PROPELLER SHAFT ASSEMBLY

Click here INFO

12. INSTALL ENGINE REAR MOUNTING MEMBER

Click here INFO

13. INSTALL FLOOR HEAT INSULATOR

Click here INFO

14. INSTALL EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY

Click here INFO

15. INSTALL STARTER ASSEMBLY

Click here INFO

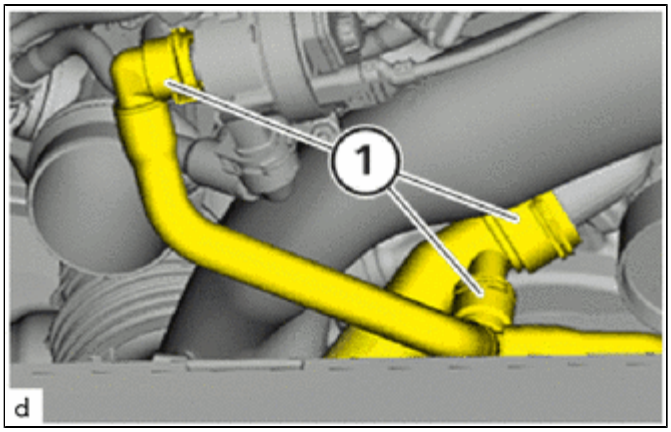
16. INSTALL NO. 2 RADIATOR HOSE

Click here INFO

17. CONNECT NO. 3 RADIATOR HOSE

HINT:

Make sure that the connections are locked correctly. The locks must engage audibly.



(a) Connect and lock the No. 3 radiator hose (1).

18. INSTALL NO. 2 FUEL PIPE SUB-ASSEMBLY

Click here INFO

19. INSTALL IGNITION COIL ASSEMBLY

Click here INFO

20. INSTALL OXYGEN SENSOR

Click here INFO

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21. INSTALL WIDE RANGE AIR FUEL RATIO SENSOR

Click here INFO

22. INSTALL AIR CLEANER HOSE ASSEMBLY

Click here INFO

23. INSTALL AIR CLEANER ASSEMBLY

Click here INFO

24. INSTALL FAN SHROUD

Click here INFO

25. INSTALL FRONT UPPER FENDER PROTECTOR LH

Click here INFO

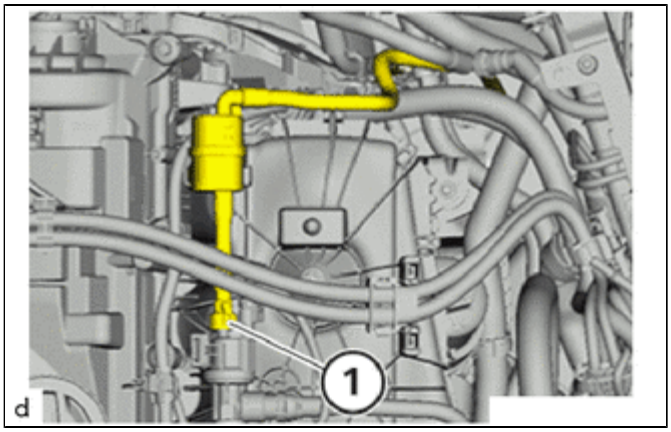
26. INSTALL FRONT UPPER FENDER PROTECTOR RH

HINT:

Use the same procedure described for the LH side.

27. CONNECT NO. 2 FUEL VAPOR FEED HOSE

(a) Connect and lock the No. 2 fuel vapor feed hose (1).

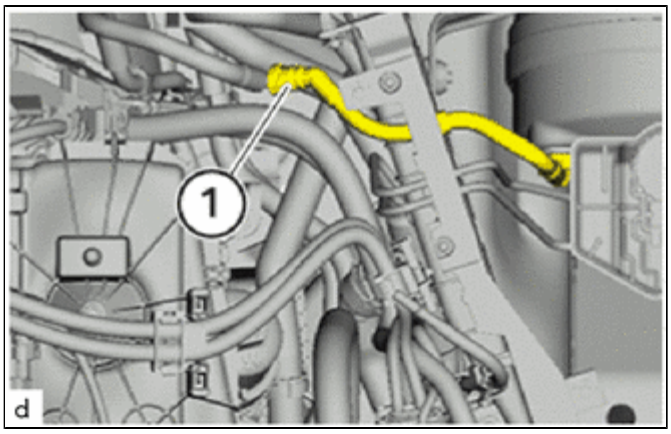


(b) Engage the clamp.

28. CONNECT CONNECTOR TO BRAKE BOOSTER TUBE

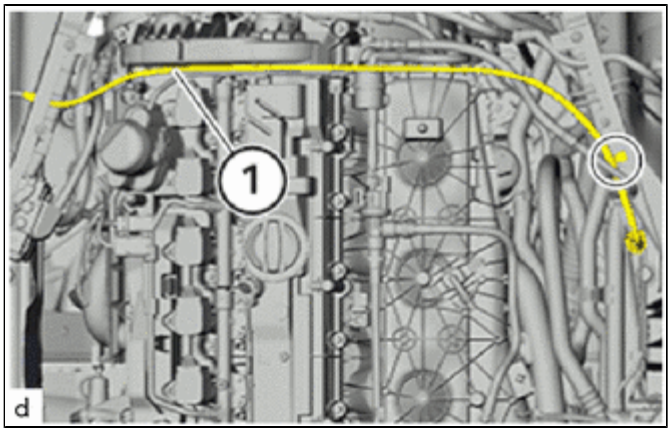
(a) Connect and lock the connector to brake booster tube (1).

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29. INSTALL FLOOR WIRE

(a) Clip in the floor cable (1) for the voltage supply of the power distribution box in the marked area.



30. INSTALL ENGINE ROOM ECM BOX

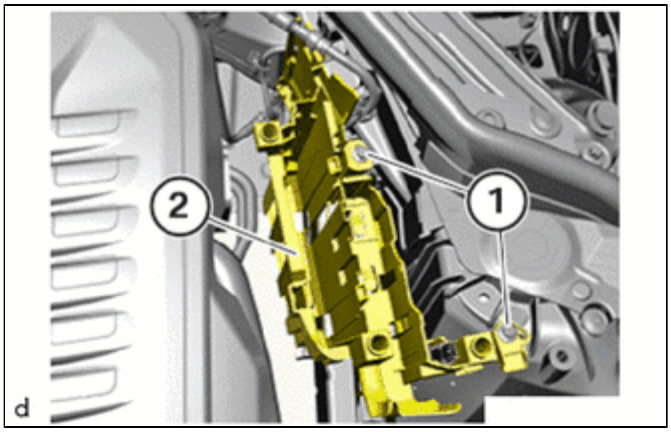
NOTICE:

- Improper routing of cables and wiring harnesses.

  Trapped, crushed or damaged cables may cause short circuits and malfunctions.

  - Route all cables without abrasions, do not trap and crush.

(a) Feed the engine room ECM box (2) into the guide and install.



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(b) Tighten the bolts (1).

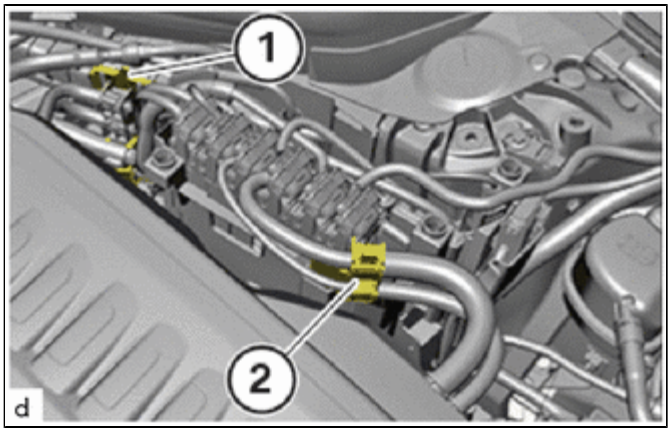
Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(c) Feed the wiring harnesses into the holder at the engine room ECM box.

(d) Engage the 3 clamps

(e) Connect connectors (1) and lock.



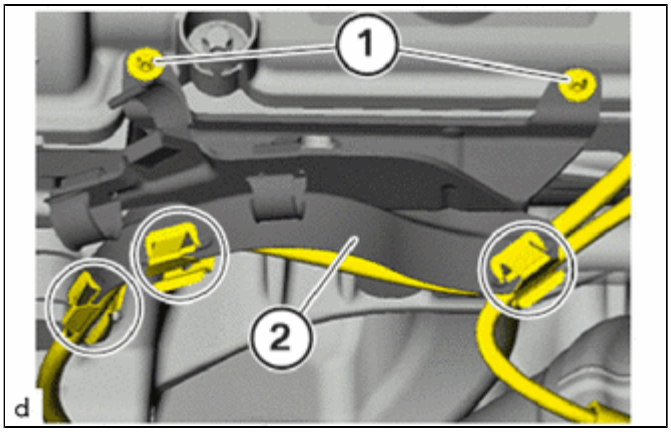
(f) The locks (1) and (2) must engage audibly.

31. INSTALL NO. 1 INTEGRATION RELAY

Click here INFO

32. INSTALL WIRE HARNESS CLAMP BRACKET

(a) Install wire harness clamp bracket (2) for the generator wire.



(b) Tighten the E8 screws (1).

Torque:

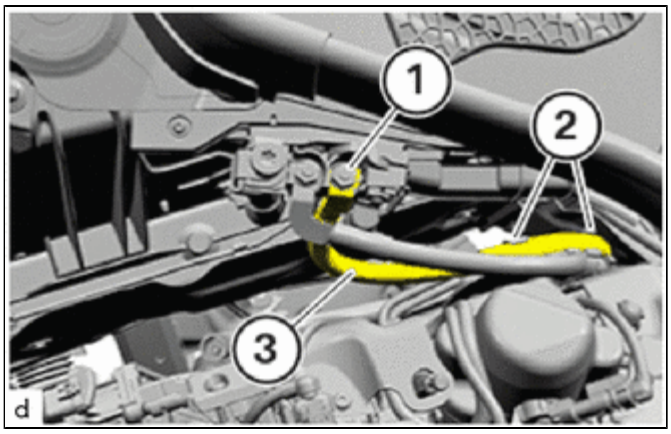
19 N·m {194 kgf·cm, 14 ft·lbf}

(c) Clip in the lines in the marked areas.

33. POSITIVE BATTERY CABLE

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(a) Position the starter wire (3).



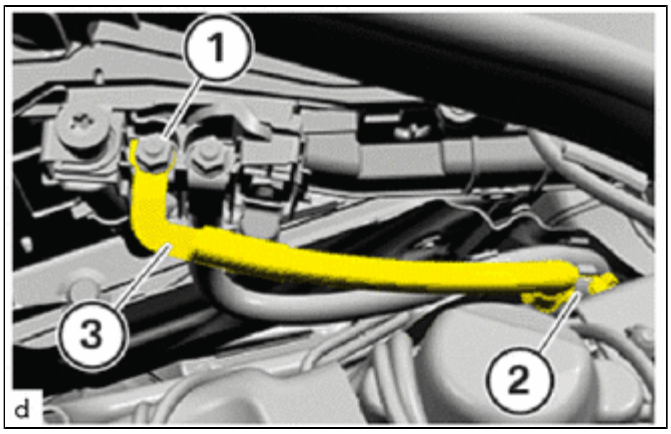
(b) Secure clamps (2).

(c) Tighten nut (1).

Torque:

19 N·m {194 kgf·cm, 14 ft·lbf}

(d) Insert and install the generator wire (3).



(e) Secure clamps (2).

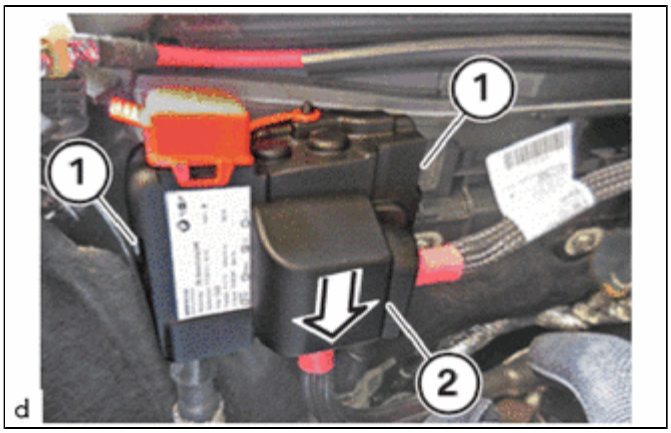
(f) Tighten nut (1).

Torque:

19 N·m {194 kgf·cm, 14 ft·lbf}

(g) Insert and install the cover (2) in the direction of the arrow.

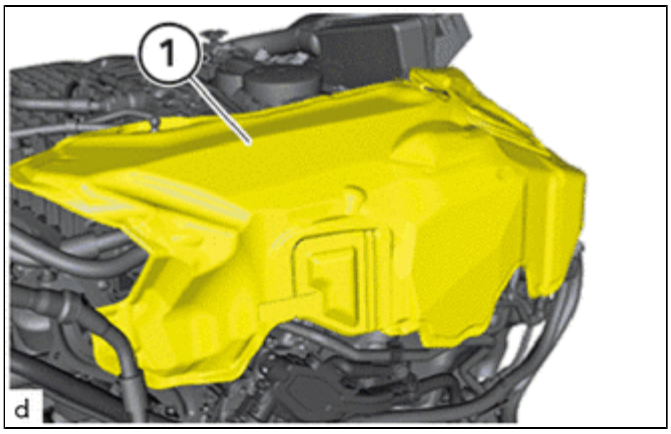
(1) The locks (1) must engage audibly.



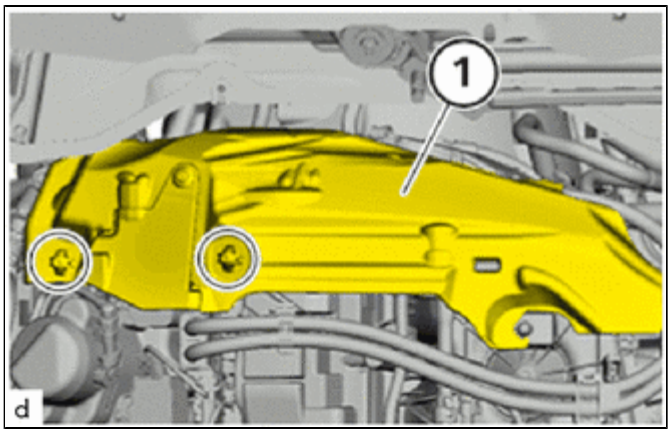
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34. INSTALL NO. 1 ENGINE COVER

(a) Make sure the No. 1 engine cover (1) is correctly positioned on the rear side of the engine.



(b) Install the No. 1 engine cover (1) from the top and clip it in at the grommets into the marked areas.



35. INSTALL NO. 1 ENGINE COVER SUB-ASSEMBLY

NOTICE:

- Damage to the No. 1 engine cover sub-assembly.

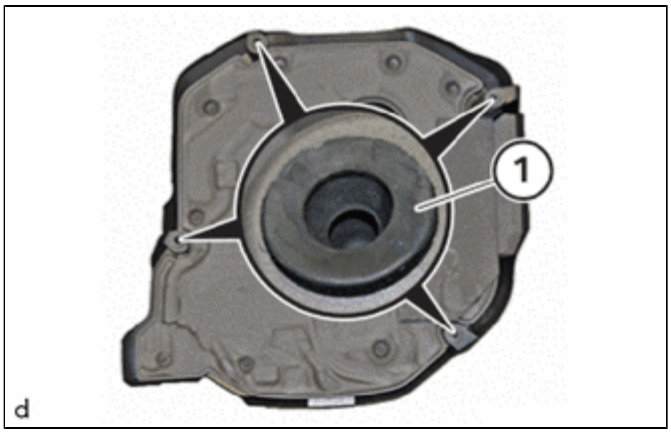
  Jerky movements during disassembly and excessive application of force during installation may result in breakage of the No. 1 engine cover sub-assembly.

  - Disassemble or mount the No. 1 engine cover sub-assembly carefully.
  - Disassemble or mount snap-lock couplings of the ball pivots one after the other.
  - Disassemble or mount No. 1 engine cover sub-assembly only at temperatures >20 °C.

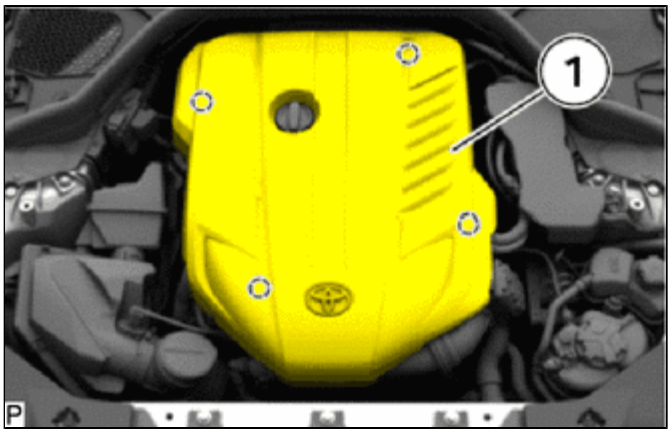
    Vehicle information / Control unit list / DME / Call up control unit functions / Diagnostic request / Diagnostic request / 117 Ambient temperature
  - Use only distilled water as an auxiliary material during installation, no lubricants.

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(a) Check the rubber mount (1) for correct fit in the No. 1 engine cover sub-assembly.

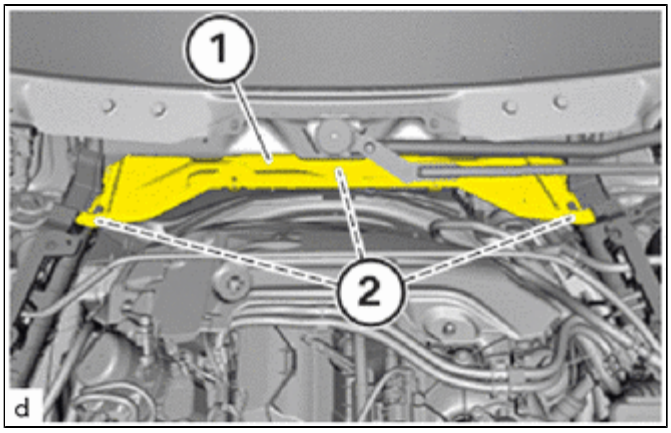


(b) Install No. 1 engine cover sub-assembly (1) and fix in the grommets (marks).



36. INSTALL NO. 2 COWL TOP VENTILATOR LOUVER PROTECTOR

(a) Position the No. 2 cowl top ventilator louver protector (1).



(b) Tighten down bolts and nut (2).

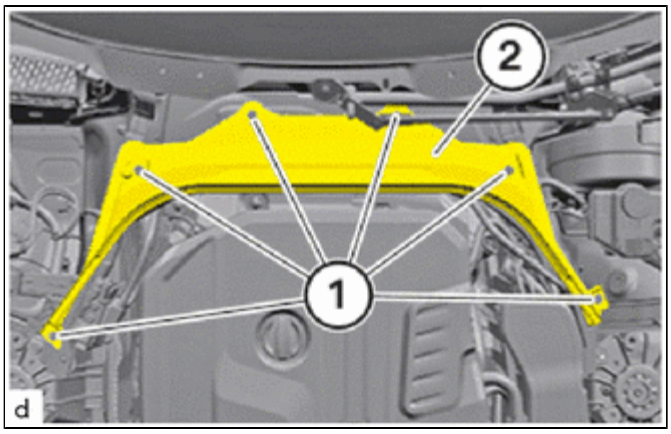
Torque:

2.6 N·m {27 kgf·cm, 23 in·lbf}

37. INSTALL COWL TOP VENTILATOR LOUVER PROTECTOR

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(a) Position the cowl top ventilator louver protector (2).



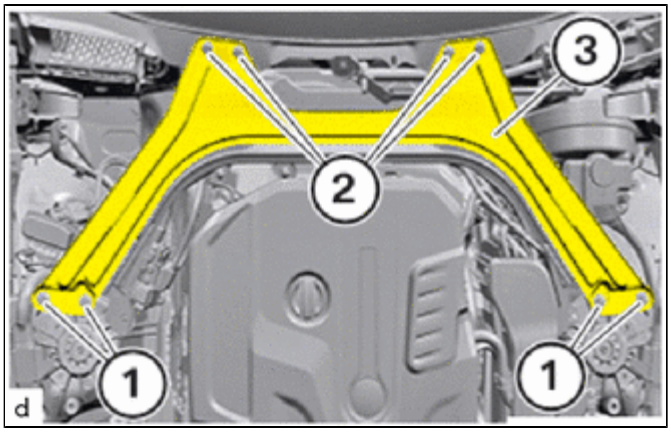
(b) Tighten the bolts (1).

Torque:

2.6 N·m {27 kgf·cm, 23 in·lbf}

38. INSTALL UPPER FRONT SUSPENSION CENTER BRACE

(a) Position upper front suspension center brace (3).



(b) Replace E14 bolts (1) and bolts (2).

(c) Tighten the E14 bolts (1).

Torque:

56 N·m {571 kgf·cm, 41 ft·lbf}

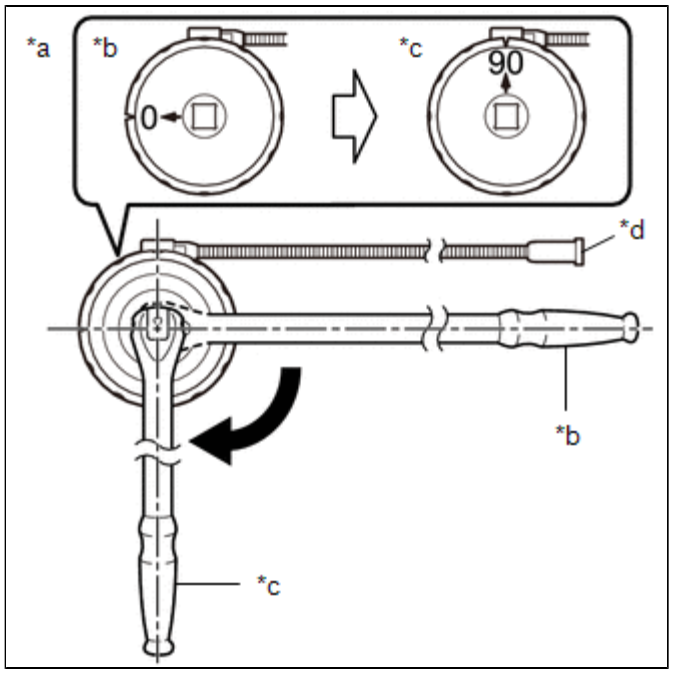
(d) Using SST, tighten the E14 bolts (1) an additional 90°.

SST: 09900-WA010

HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.

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*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

(e) Tighten the bolts (2).

Torque:

56 N·m {571 kgf·cm, 41 ft·lbf}

(f) Using SST, tighten the bolts (2) an additional 90°.

SST: 09900-WA010

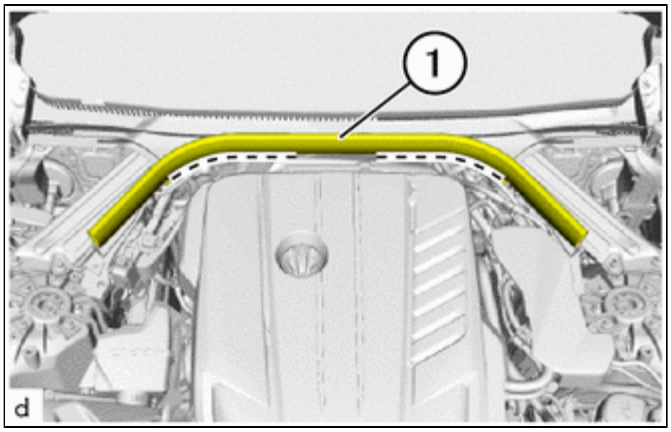
HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.

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*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

39. INSTALL HOOD TO COWL TOP SEAL



(a) Press the hood to cowl top seal (1) into the guide.

(b) Feed the cable into the brackets in the marked area.

(c) Make sure that the hood to cowl top seal (1) and the cable are fitted correctly.

40. INSTALL FRONT WIPER MOTOR AND LINK ASSEMBLY

Click here INFO

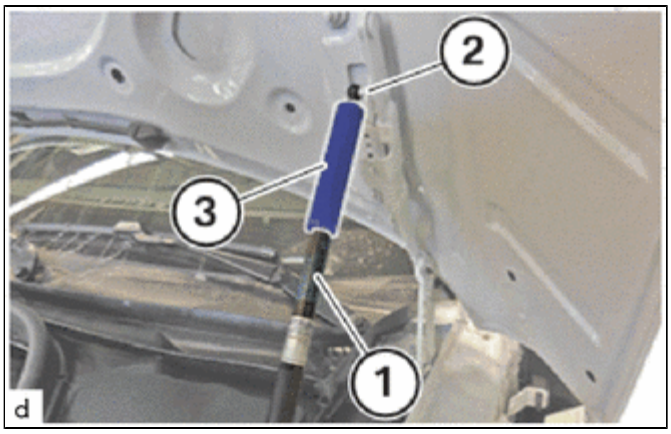
41. REMOVE AND INSTALL HOOD SUPPORT ASSEMBLY

(a) Support the hood sub-assembly by hand.

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(b) Remove the special tool 0 493 647 (51 2 170) (3) from the ball pin (2).

SST: 09800-WA030



(c) Pull off the special tool 0 493 647 (51 2 170) (3) from the gas pressure spring (1).

SST: 09800-WA030

(d) Continue to support the hood sub-assembly and repeat the operation on the other side of vehicle.

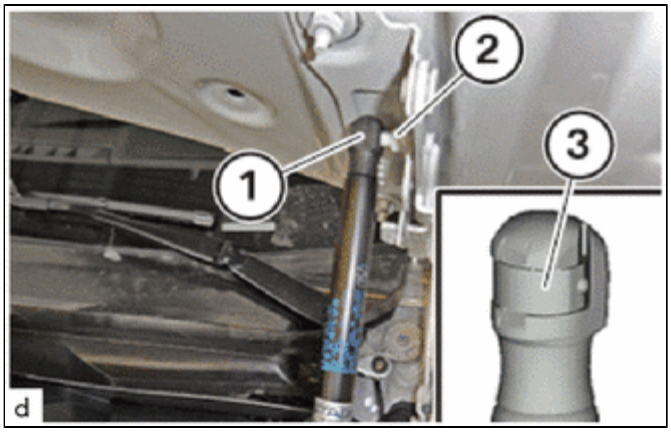
CAUTION:

- Shutting hood sub-assembly or tailgate.

  Danger of injury!

  - Support hood sub-assembly/tailgate in fully open position with the aid of a suitable device.

(e) Check the clamp (3) is fitted correctly.



(f) Connect ball socket (1) to ball pin (2).

(g) Continue to support the hood sub-assembly and repeat the operation on the other side of vehicle.

42. CHARGE AIR CONDITIONING SYSTEM WITH REFRIGERANT

Click here INFO

43. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Click here INFO

44. ADD ENGINE COOLANT (for High Pressure)

Click here INFO

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45. ADD ENGINE COOLANT (for Low Pressure)

Click here INFO

46. INSPECT FOR COOLANT LEAK

Click here INFO

47. ADJUST AUTOMATIC TRANSMISSION FLUID LEVEL

Click here INFO

48. INSTALL FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

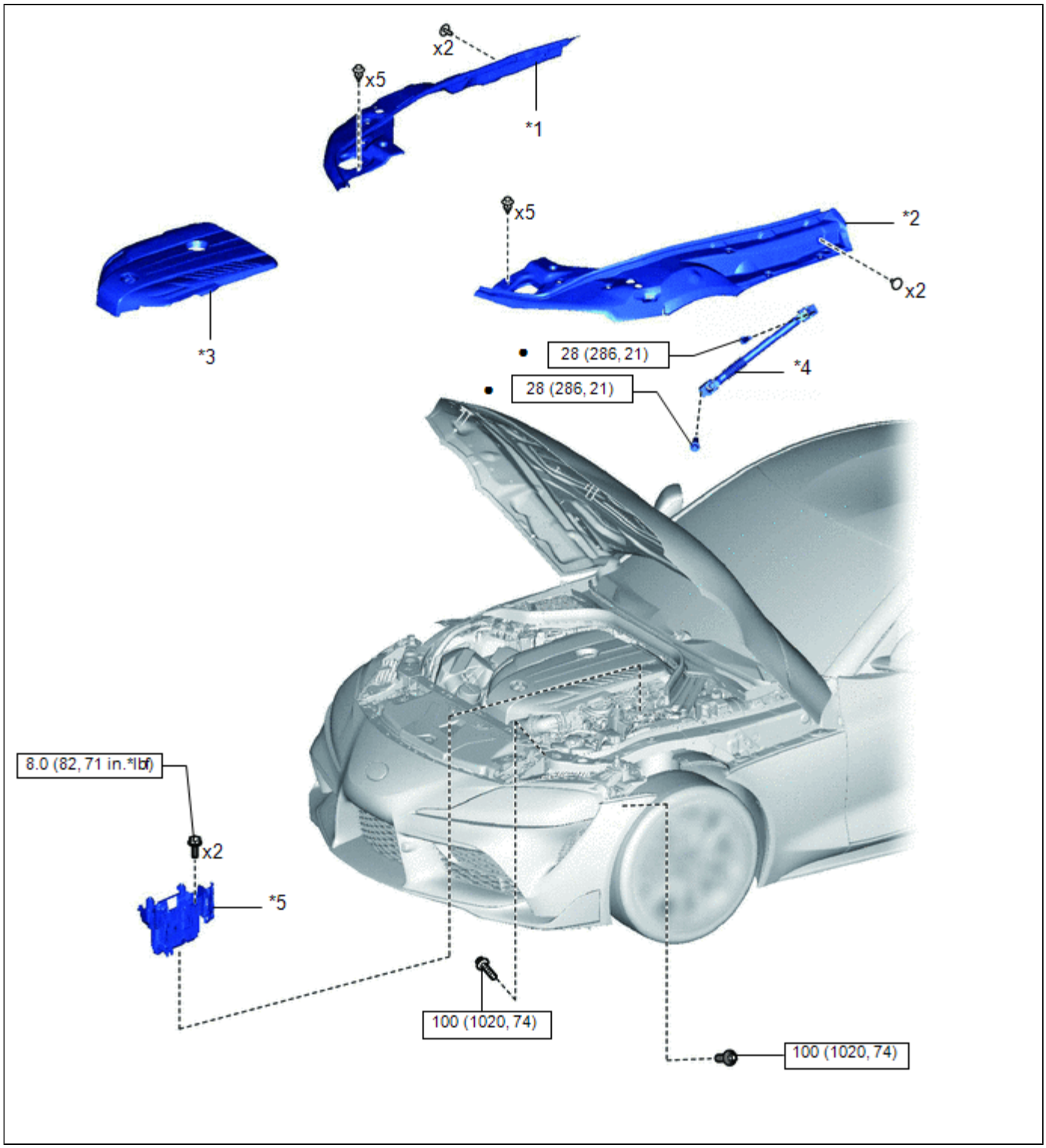


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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDH1
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE INSTALLATION POSITION: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	FRONT UPPER FENDER PROTECTOR	*2	FRONT UPPER FENDER PROTECTOR

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	RH		LH
*3	NO. 1 ENGINE COVER SUB-ASSEMBLY	*4	STEERING INTERMEDIATE SHAFT ASSEMBLY
*5	ENGINE ROOM ECM BOX	-	-
	N*m (kgf*cm, ft.*lbf): Specified torque	●	Non-reusable part

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDH2
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE INSTALLATION POSITION: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

Click here INFO

2. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

3. REMOVE AND INSTALL HOOD SUPPORT ASSEMBLY

Click here INFO

4. REMOVE NO. 1 INTEGRATION RELAY

Click here INFO

5. REMOVE ENGINE ROOM ECM BOX

Click here INFO

6. REMOVE FRONT UPPER FENDER PROTECTOR LH

Click here INFO

7. REMOVE FRONT UPPER FENDER PROTECTOR RH

HINT:

Use the same procedure described for the LH side.

8. REMOVE WHEEL ASSEMBLY

Click here INFO

9. REMOVE FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

10. REMOVE STEERING INTERMEDIATE SHAFT ASSEMBLY

Click here INFO

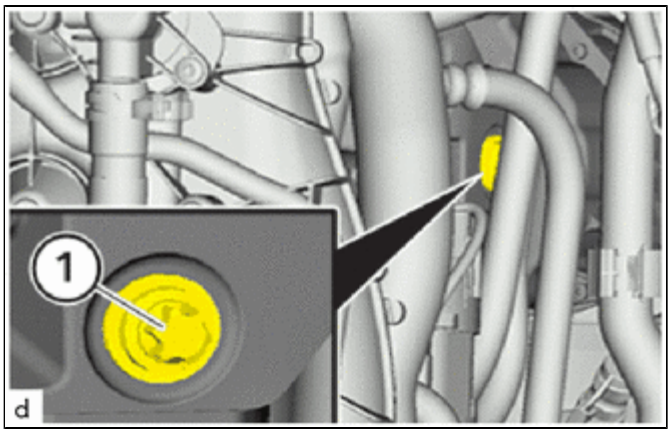
11. INSTALL ENGINE SUPPORT BRIDGE

Click here INFO

12. SEPARATE NO. 1 FRONT ENGINE MOUNTING BRACKET LH

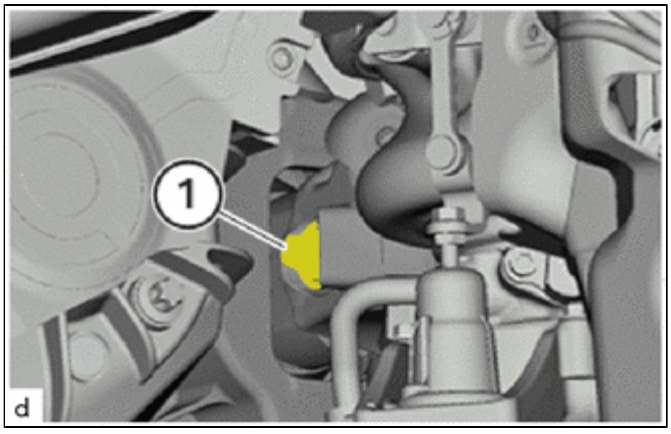
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(a) Release the E14 bolt (1) from the top.



13. SEPARATE NO. 1 FRONT ENGINE MOUNTING BRACKET RH

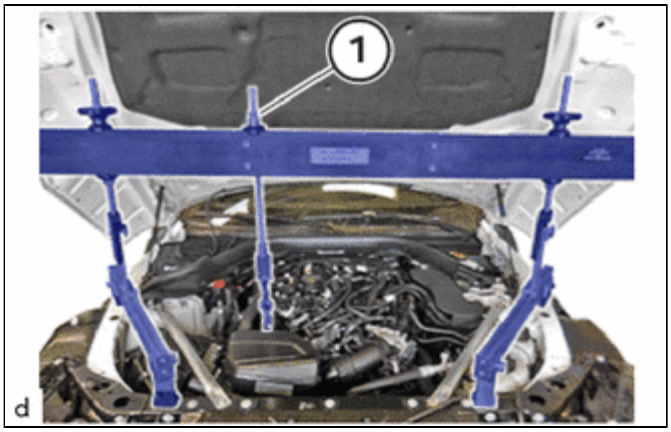
(a) Release the E14 bolt (1) from the top.



14. SUPPORT ENGINE ASSEMBLY

(a) for Type A:

(1) Raise the engine by turning the spindle (1) by 10 mm.



(b) for Type B:

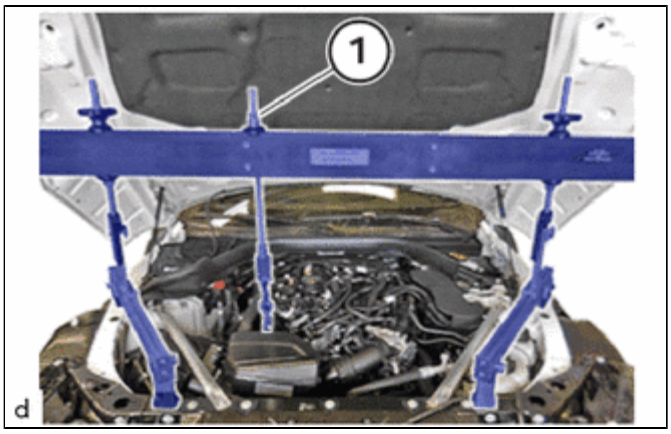
(1) Raise the engine by turning the chain block by 10 mm.

15. REMOVE ENGINE SUPPORT BRIDGE

(a) for Type A:

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(1) Turn the spindle (1) to lower the engine until the engine support arms rest completely flat on the engine mounts.



(2) Remove the engine bridge with the help from another person.

(b) for Type B:

(1) Turn the chain block to lower the engine until the engine support arms rest completely flat on the engine mounts.

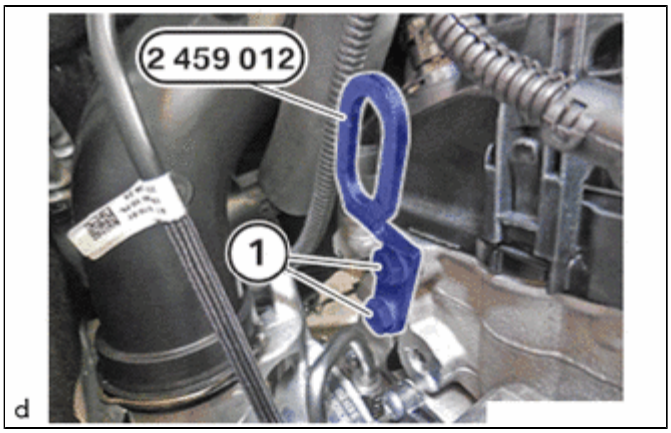
(2) Remove the engine support bridge with the help from another person.

NOTICE:

Prevent SST from contacting the vehicle body or windshield glass.

(c) Unscrew the bolts (1) of the special tool 2 459 012.

SST: 09200-WA610



(d) Feed out the special tool 2 459 012 at the cylinder head and remove.

SST: 09200-WA610

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Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE INSTALLATION POSITION: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL NO. 1 FRONT ENGINE MOUNTING BRACKET LH

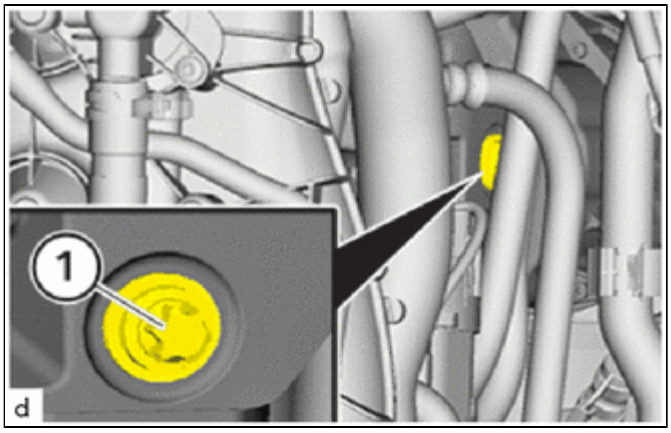
NOTICE:

Lower the engine completely to prevent play before bolting down the front engine mounting insulator LH and front No. 1 engine mounting bracket LH.

(a) Tighten down E14 bolt (1).

Torque:

100 N·m {1020 kgf·cm, 74 ft·lbf}



2. INSTALL NO. 1 FRONT ENGINE MOUNTING BRACKET RH

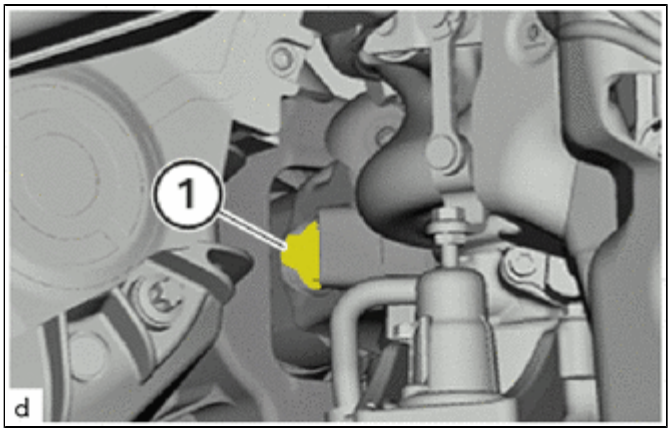
NOTICE:

Lower the engine completely to prevent play before bolting down the front engine mounting insulator RH and front No. 1 engine mounting bracket RH.

(a) Tighten down E14 bolt (1).

Torque:

100 N·m {1020 kgf·cm, 74 ft·lbf}



3. INSTALL STEERING INTERMEDIATE SHAFT ASSEMBLY

Click here INFO

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4. INSTALL FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

5. INSTALL WHEEL ASSEMBLY

Click here INFO

6. INSTALL FRONT UPPER FENDER PROTECTOR LH

Click here INFO

7. INSTALL FRONT UPPER FENDER PROTECTOR RH

HINT:

Use the same procedure described for the LH side.

8. INSTALL ENGINE ROOM ECM BOX

Click here INFO

9. INSTALL NO. 1 INTEGRATION RELAY

Click here INFO

10. REMOVE AND INSTALL HOOD SUPPORT ASSEMBLY

Click here INFO

11. INSTALL NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

12. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Click here INFO

13. INSPECT AIRBAG FOR FUNCTION

Click here INFO

14. START-UP OF ELECTROMECHANICAL STEERING

Click here INFO

15. INSPECT STRAIGHT-AHEAD DRIVING POSITION OF THE STEERING WHEEL

Click here INFO

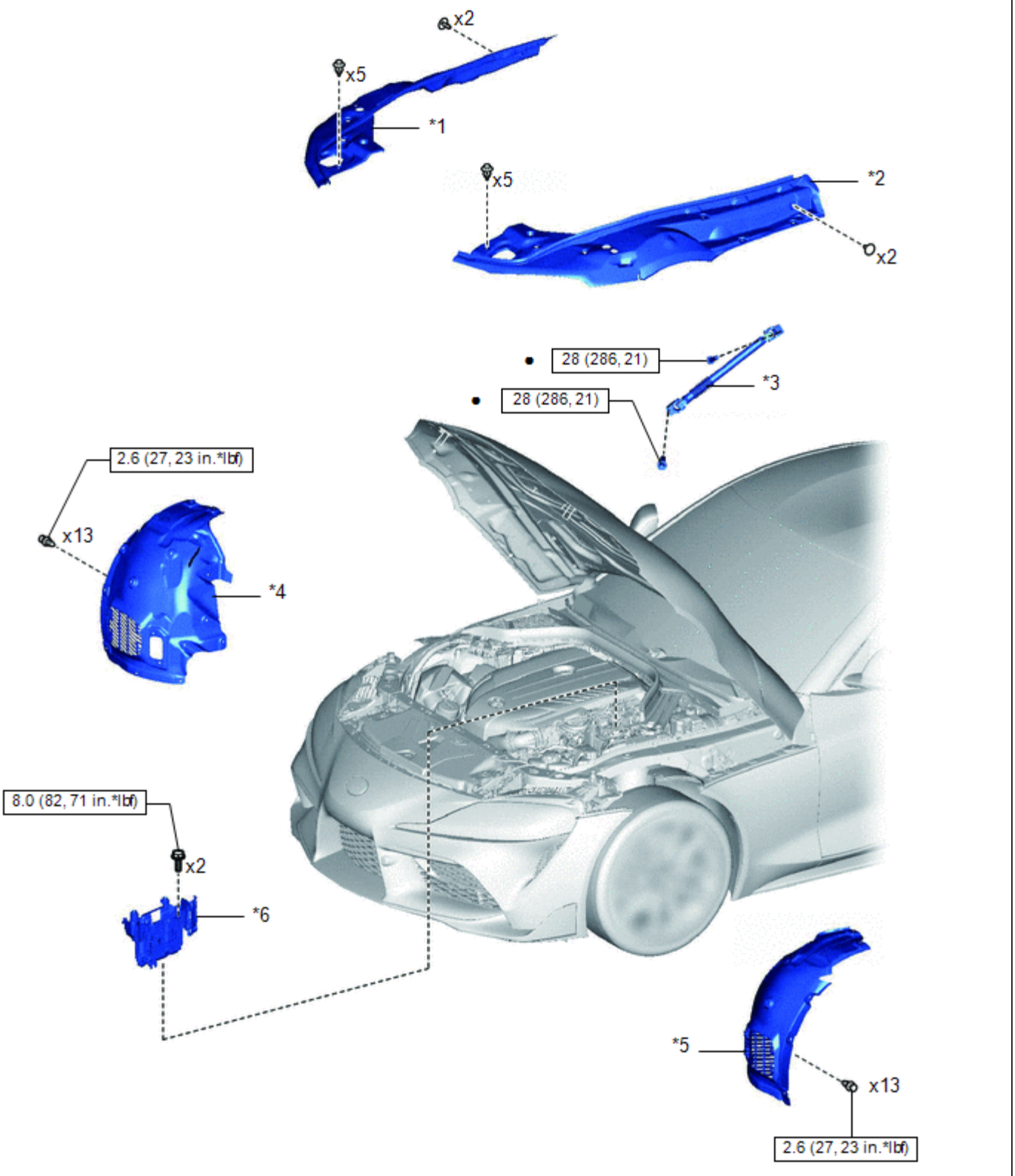
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Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE MOUNTING: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION

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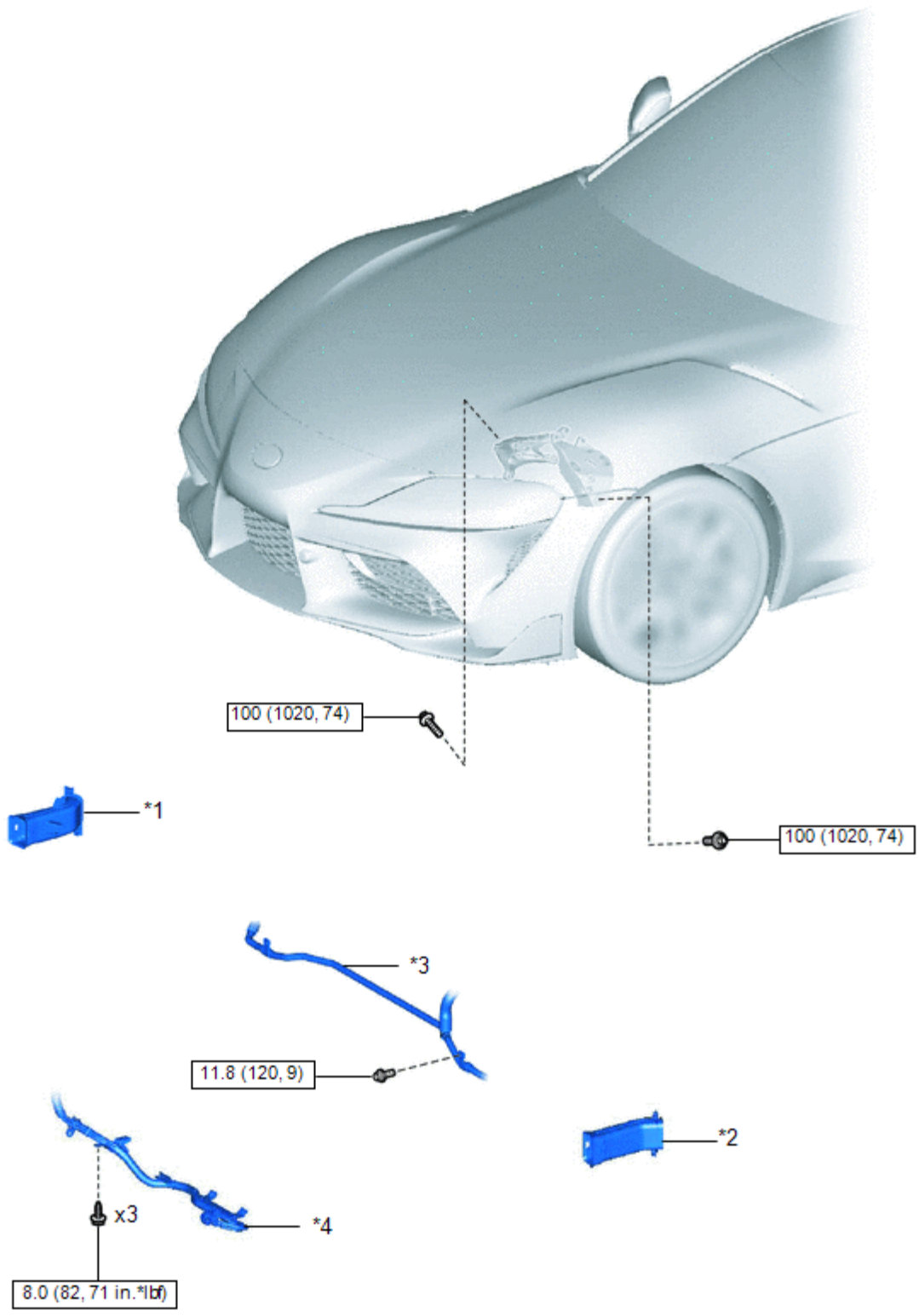
*1	FRONT UPPER FENDER PROTECTOR RH	*2	FRONT UPPER FENDER PROTECTOR LH
*3	STEERING INTERMEDIATE SHAFT ASSEMBLY	*4	FRONT FENDER LINER RH
*5	FRONT FENDER LINER LH	*6	ENGINE ROOM ECM BOX

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	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

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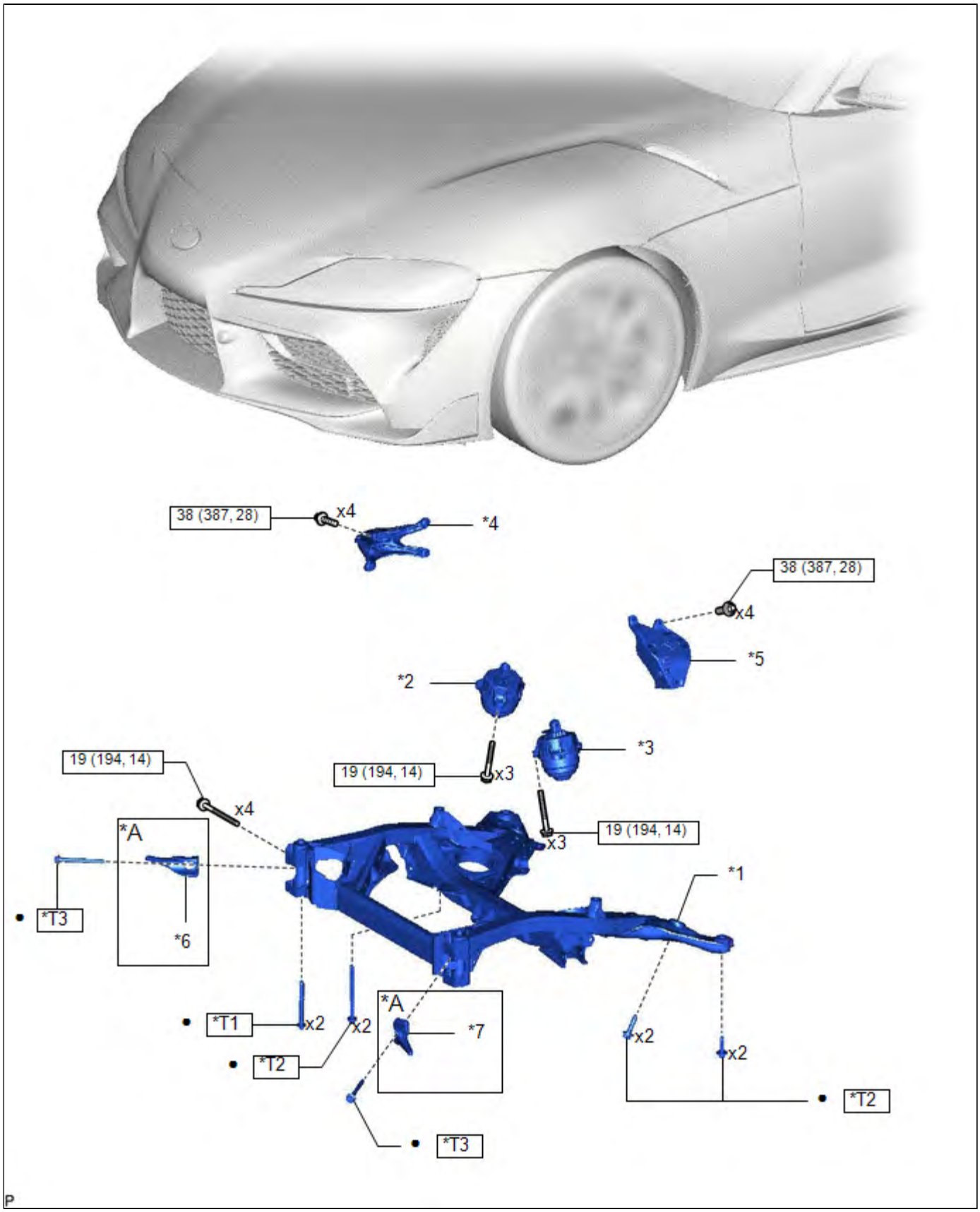
*1	AIR INTAKE DUCT RH	*2	AIR INTAKE DUCT LH
*3	COOLANT HOSE	*4	FLOOR WIRE
	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

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ILLUSTRATION

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*A	w/ Front Suspension Member Bracket	-	-
*1	FRONT SUSPENSION CROSSMEMBER SUB-ASSEMBLY	*2	FRONT ENGINE MOUNTING INSULATOR RH
*3	FRONT ENGINE MOUNTING INSULATOR LH	*4	FRONT NO. 1 ENGINE MOUNTING BRACKET RH

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*5	FRONT NO. 1 ENGINE MOUNTING BRACKET LH	*6	FRONT SUSPENSION MEMBER BRACKET SUB-ASSEMBLY RH
*7	FRONT SUSPENSION MEMBER BRACKET SUB-ASSEMBLY LH	-	-
	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st: 56 (571, 41) 2nd: Turn 45°	*T2	1st: 108 (1101, 80) 2nd: Turn 45°
*T3	1st: 100 (1020, 74) 2nd: Turn 90°	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDH5
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE MOUNTING: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

  Danger! Life-threatening injuries!

  - Observe safety information on raising the vehicle using a vehicle hoist.
  - For additional information see:

    Click here INFO

- Motor vehicle may slip off the vehicle hoist if the weight is distributed unevenly.

  Danger! Life-threatening injuries!

  - Ensure there is a specific weight compensation on the motor vehicle.

- Motor vehicle may slip off the vehicle hoist where components are supported.

  Danger! Life-threatening injuries!

  - Secure the vehicle hoist against lowering and lifting.

PROCEDURE

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

Click here INFO

2. REMOVE AND INSTALL BONNET HOOD SUPPORT ASSEMBLY

Click here INFO

3. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

4. REMOVE NO. 1 INTEGRATION RELAY

Click here INFO

5. REMOVE ENGINE ROOM ECM BOX

Click here INFO

6. REMOVE WHEEL ASSEMBLY

Click here INFO

7. REMOVE FRONT FENDER UPPER PROTECTOR LH

Click here INFO

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8. REMOVE FRONT FENDER UPPER PROTECTOR RH

HINT:

Use the same procedure as for the LH side.

9. REMOVE FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

10. REMOVE FRONT FENDER LINER LH

Click here INFO

11. REMOVE FRONT FENDER LINER RH

HINT:

Use the same procedure as for the LH side.

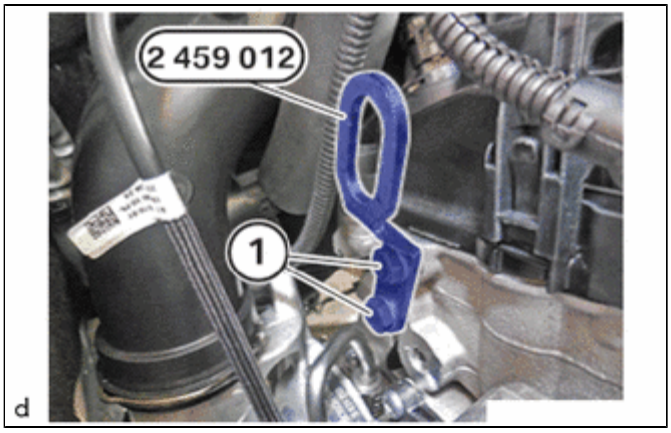
12. REMOVE EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY

Click here INFO

13. INSTALL ENGINE HANGER

(a) Guide in and position special tool 2 459 012 on cylinder head.

SST: 09200-WA610



(b) Tighten the screws (1) of special tool 2 459 012.

SST: 09200-WA610

Torque:

21.5 N·m {219 kgf·cm, 16 ft·lbf}

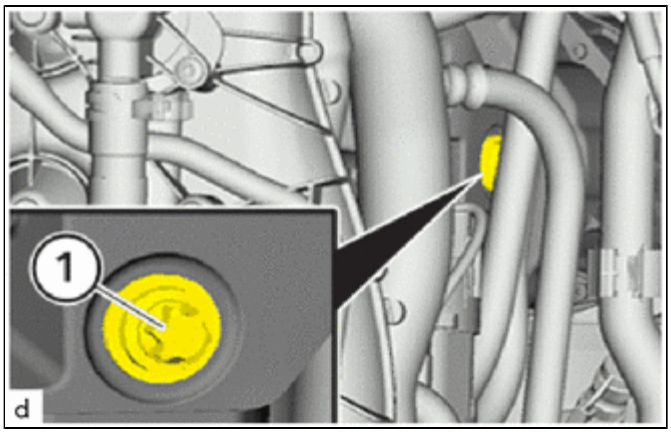
14. INSTALL ENGINE SUPPORT BRIDGE

Click here INFO

15. SEPARATE FRONT ENGINE MOUNTING INSULATOR LH

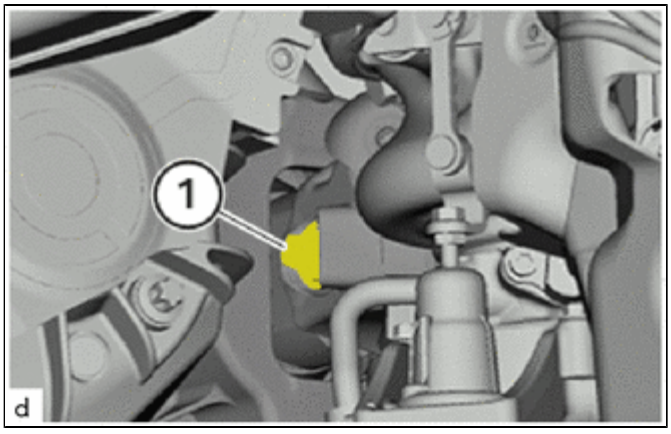
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(a) Release the E14 bolt (1) from the top.



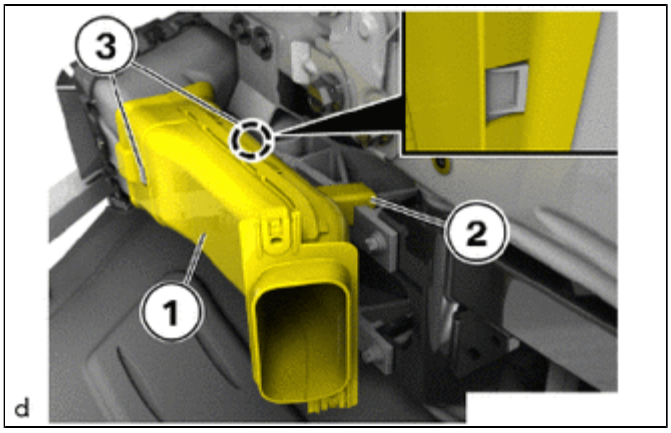
16. SEPARATE FRONT ENGINE MOUNTING INSULATOR RH

(a) Release the E14 bolt (1) from the top.



17. REMOVE AIR INTAKE DUCT LH

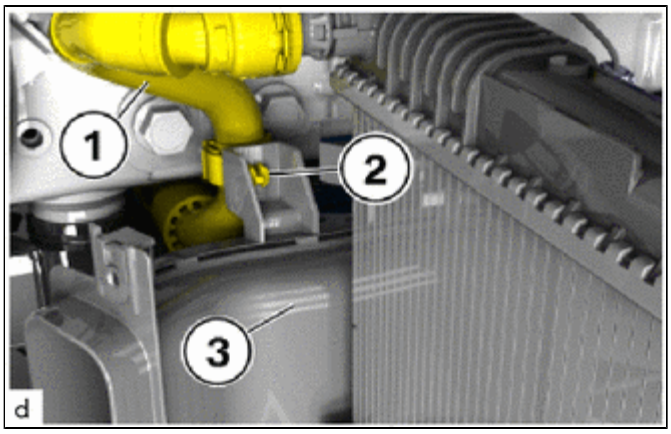
(a) Lift air intake duct LH (1) with the guide (2), detach it from the latch mechanisms (3) to the rear and remove.



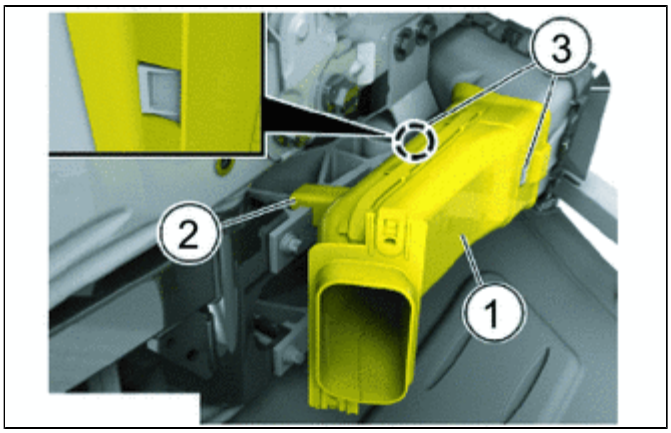
18. REMOVE AIR INTAKE DUCT RH

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(a) Unclip coolant line (1) and bracket (2) from the air intake duct RH (3).



(b) Lift air intake duct RH (1) with the guide (2), detach it from the latch mechanisms (3) to the rear and remove.

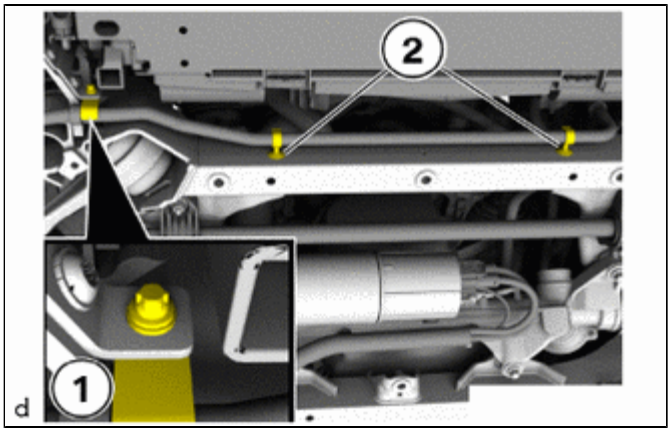


19. REMOVE STEERING INTERMEDIATE SHAFT ASSEMBLY

Click here INFO

20. SEPARATE COOLANT HOSE

(a) Loosen E8 bolt (1).



(b) Release both holders (2) from the front suspension crossmember sub-assembly.

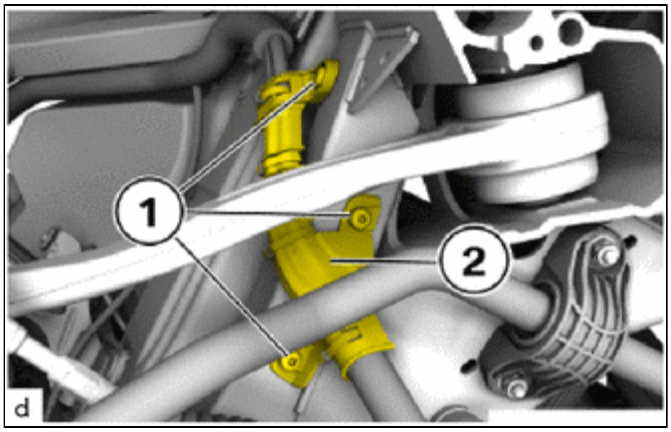
NOTICE:

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The coolant hose is not removed.
- The coolant circuit is not opened.

21. SEPARATE FLOOR WIRE

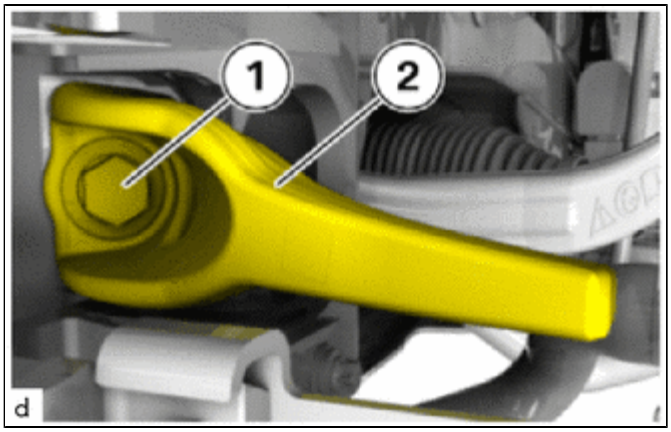
(a) Loosen T25 screws (1).



(b) Remove the wire harness mounting (2) with wire harness, move it to the side and secure it in place.

22. REMOVE FRONT UPPER SUSPENSION ARM ASSEMBLY LH (w/ Front Suspension Member Bracket)

(a) Loosen 18 mm bolt (1).



(b) Remove the front suspension member bracket sub-assembly LH (2).

23. REMOVE FRONT UPPER SUSPENSION ARM ASSEMBLY RH (w/ Front Suspension Member Bracket)

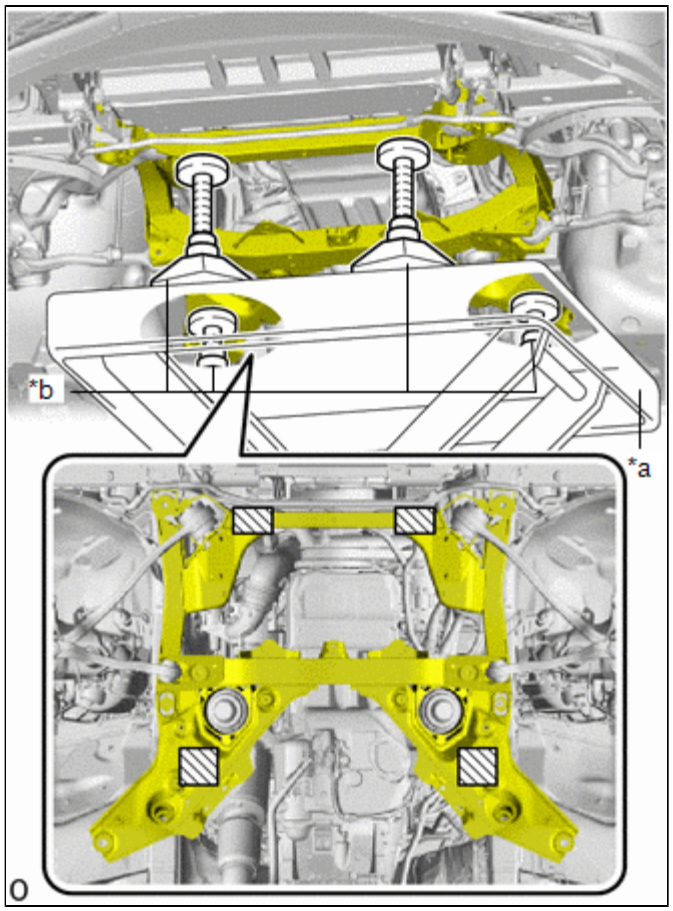
HINT:

Use the same procedure as for the LH side.

24. SEPARATE FRONT SUSPENSION CROSSMEMBER SUB-ASSEMBLY

(a) Support the front suspension crossmember sub-assembly with an engine lifter using 4 attachments or equivalent tools as shown in the illustration.

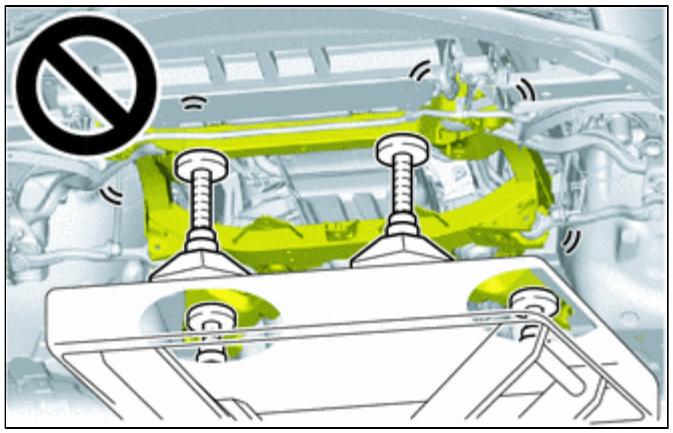
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*a	Engine Lifter
*b	Attachment
	Attachment placement location

CAUTION:

- The front suspension crossmember sub-assembly is a very heavy component. Make sure that it is supported securely.
- If the front suspension crossmember sub-assembly is not securely supported, it may drop, resulting in serious injury.



NOTICE:

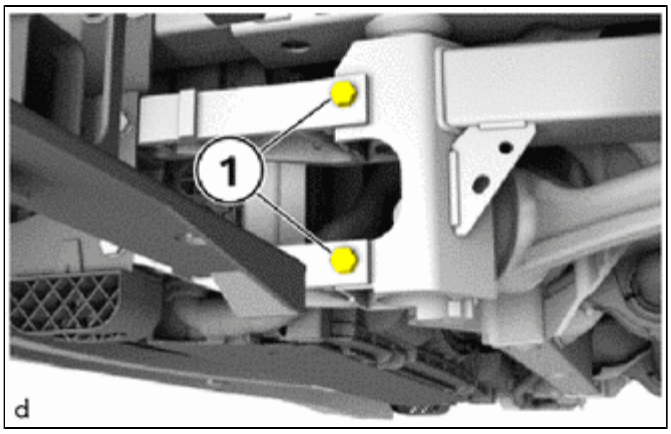
Use attachments to keep the front suspension crossmember sub-assembly level.

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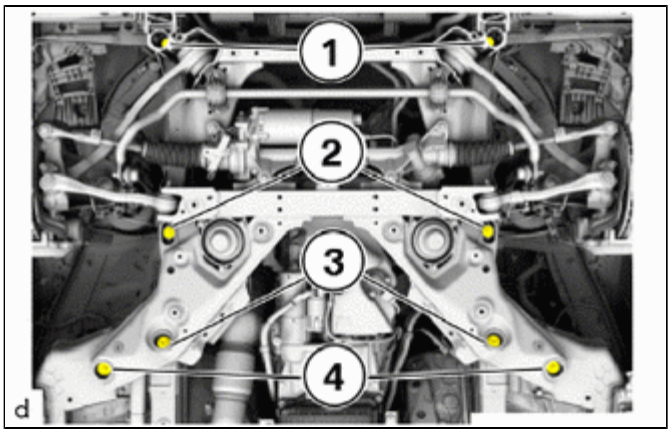
(b) Remove the E11 bolts (1).

HINT:

Perform the operations on the left and right side.



(c) Remove the E14 bolts (1), E18 bolts (2), bolts (3) and E18 bolts (4)

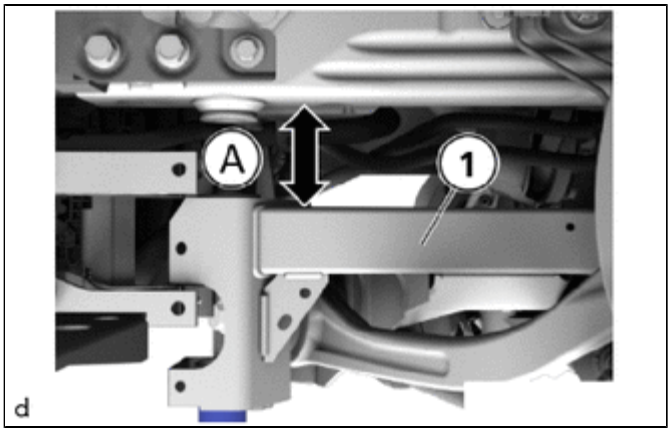


(d) Lower the front axle support (1) by dimension (A).

(1) Dimension (A) = maximum of 100 mm

NOTICE:

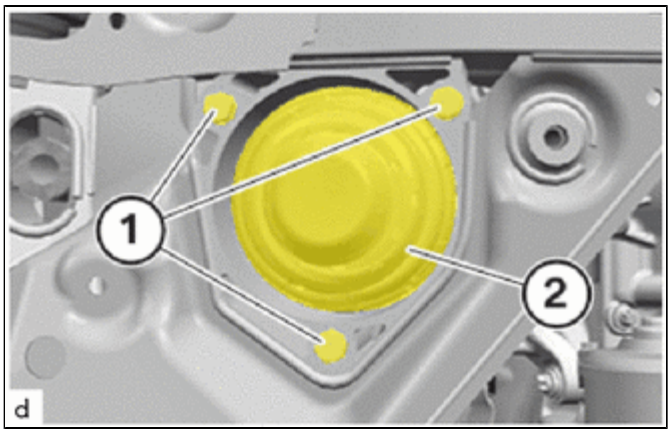
When lowering the front suspension crossmember sub-assembly, be careful not to damage the vehicle body or other components installed to the vehicle.



25. REMOVE FRONT ENGINE MOUNTING INSULATOR LH

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(a) Loosen bolts (1).



(b) Remove front engine mounting insulator LH (2).

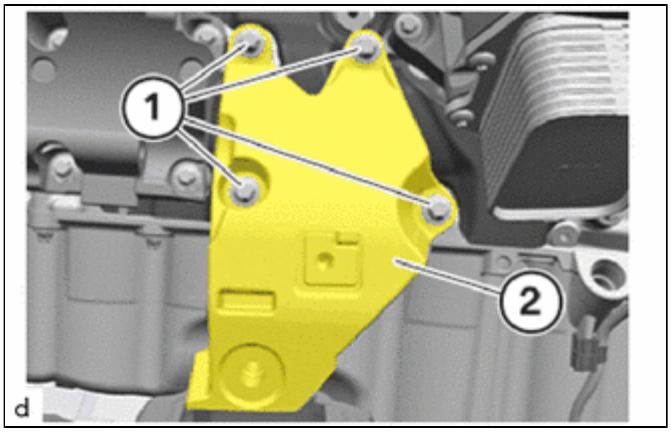
26. REMOVE FRONT ENGINE MOUNTING INSULATOR RH

HINT:

Use the same procedure as for the LH side.

27. REMOVE NO. 1 FRONT ENGINE MOUNTING BRACKET LH

(a) Loosen E12 bolts (1).

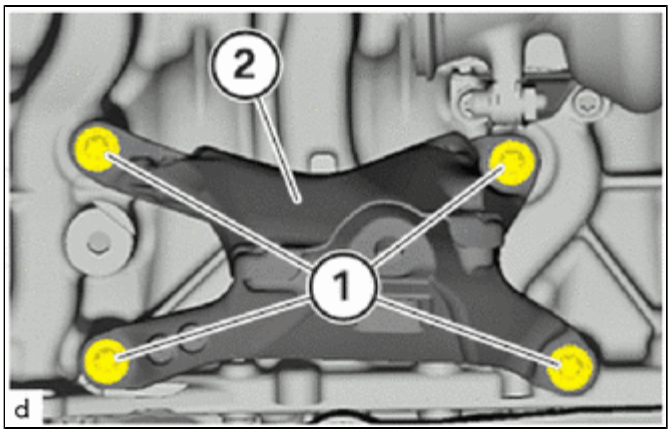


(b) Remove the No. 1 front engine mounting bracket LH (2).

28. REMOVE NO. 1 FRONT ENGINE MOUNTING BRACKET RH

(a) Loosen E12 bolts (1).

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(b) Remove the No. 1 front engine mounting bracket RH (2).

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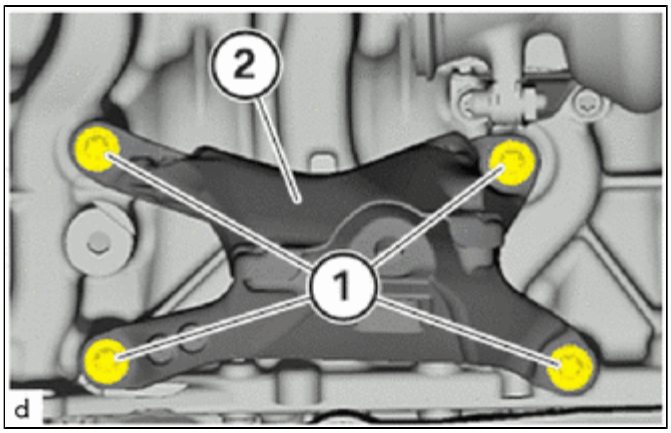
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDH6
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE MOUNTING: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL NO. 1 FRONT ENGINE MOUNTING BRACKET RH

(a) Install the No. 1 front engine mounting bracket RH (2).



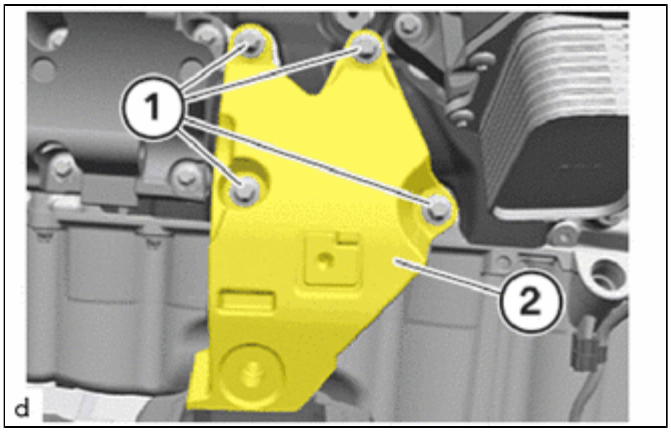
(b) Tighten the E12 bolts (1).

Torque:

38 N·m {387 kgf·cm, 28 ft·lbf}

2. INSTALL NO. 1 FRONT ENGINE MOUNTING BRACKET LH

(a) Install the No. 1 front engine mounting bracket LH (2).



(b) Tighten the E12 bolts (1).

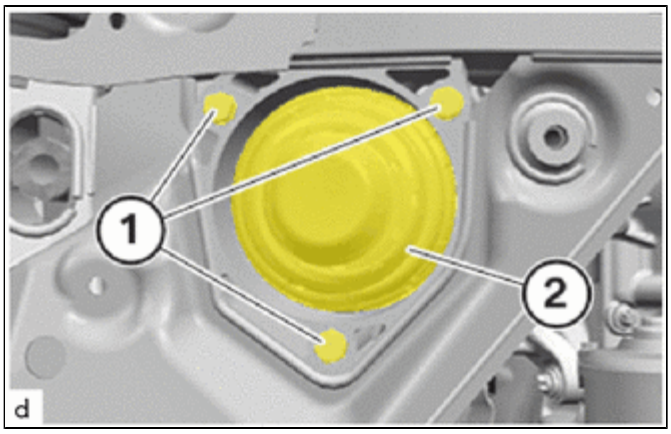
Torque:

38 N·m {387 kgf·cm, 28 ft·lbf}

3. INSTALL FRONT ENGINE MOUNTING INSULATOR LH

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(a) Install the front engine mounting insulator LH (2).



(b) Tighten the bolts (1).

Torque:

19 N·m {194 kgf·cm, 14 ft·lbf}

4. INSTALL FRONT ENGINE MOUNTING INSULATOR RH

HINT:

Use the same procedure as for the LH side.

5. INSTALL FRONT SUSPENSION CROSSMEMBER SUB-ASSEMBLY

Click here INFO

6. INSTALL FRONT UPPER SUSPENSION ARM ASSEMBLY LH (w/ Front Suspension Member Bracket)

(a) Position front upper suspension arm assembly LH at the front suspension crossmember sub-assembly.

(b) Replace the 18 mm bolt.

(c) Tighten 18 mm bolt.

Torque:

100 N·m {1020 kgf·cm, 74 ft·lbf}

NOTICE:

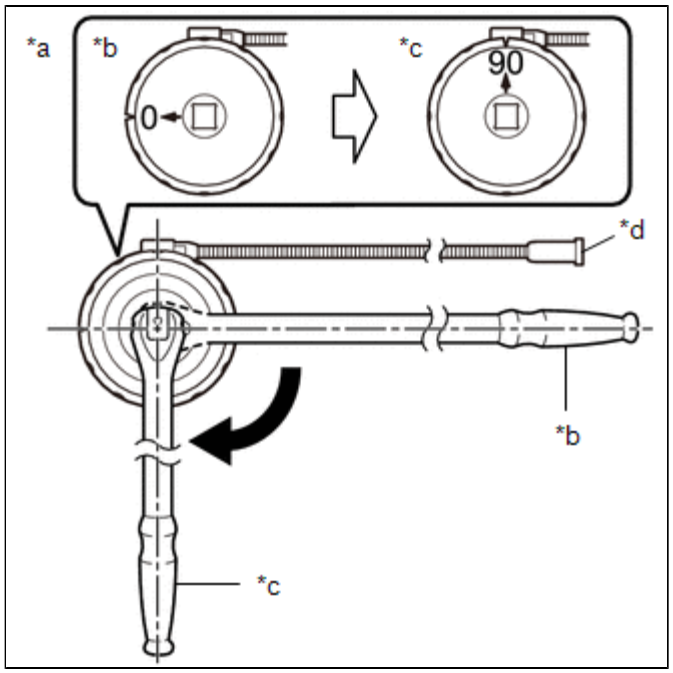
Tighten the 18 mm bolt connection in the normal position.

(d) Using SST, tighten the 18 mm bolt an additional 90°.

SST: 09900-WA010

HINT:

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*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

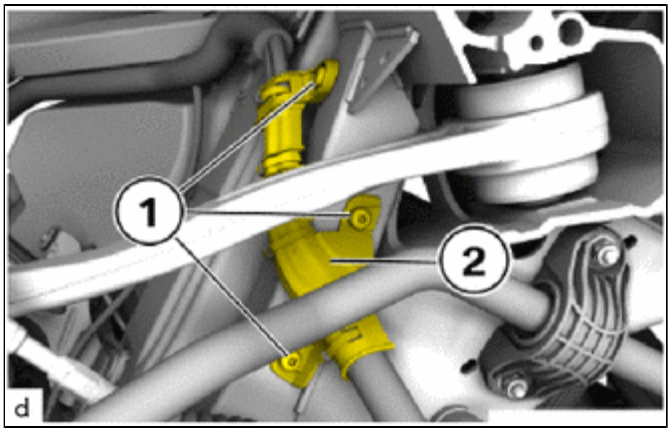
- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.

7. INSTALL FRONT UPPER SUSPENSION ARM ASSEMBLY RH (w/ Front Suspension Member Bracket)

HINT:

Use the same procedure as for the LH side.

8. INSTALL FLOOR WIRE



(a) Position the wire harness mounting (2) with the wire harness.

(b) Tighten the T25 screws (1).

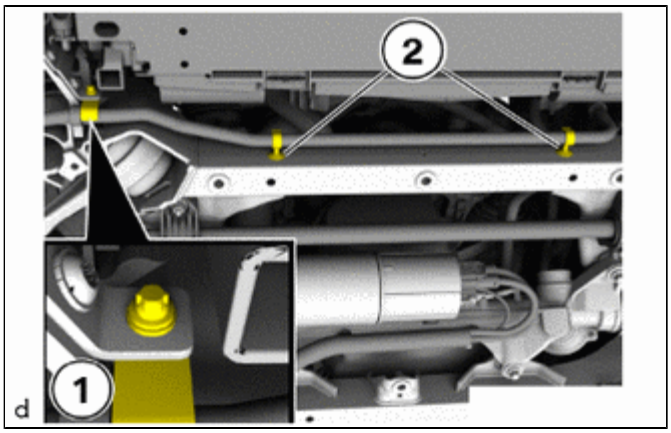
Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

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9. INSTALL COOLANT HOSE

(a) Position both holders (2) at the front suspension crossmember sub-assembly.



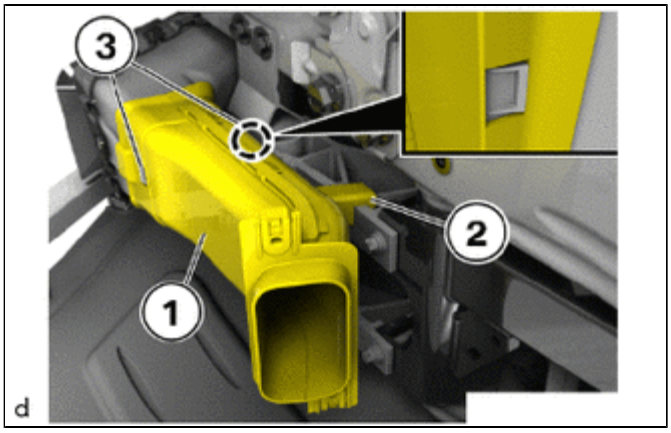
(b) Tighten down E8 bolts (1).

Torque:

11.8 N·m {120 kgf·cm, 9 ft·lbf}

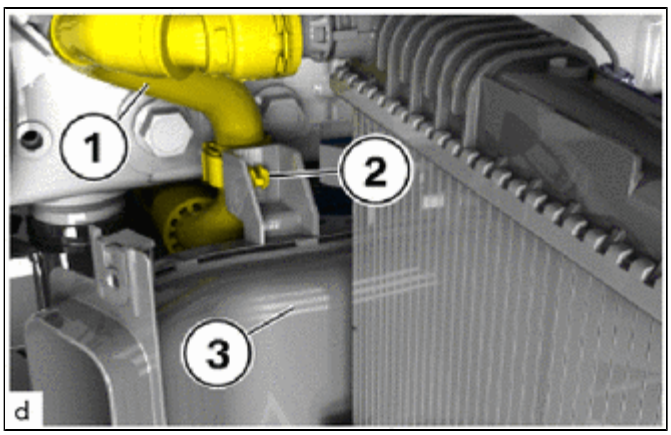
10. INSTALL AIR INTAKE DUCT LH

(a) Position air intake duct LH (1) with the guide (2) correctly and clip into the latch mechanisms (3).



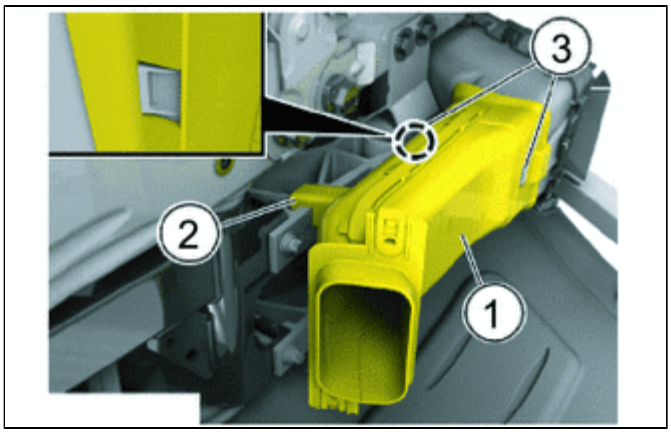
11. INSTALL AIR INTAKE DUCT RH

(a) Clip in coolant line (1) with the bracket (2) in the air intake duct RH (3).



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(b) Position brake air duct RH (1) with the guide (2) correctly and clip into the latch mechanisms (3).



12. INSTALL STEERING INTERMEDIATE SHAFT ASSEMBLY

Click here INFO

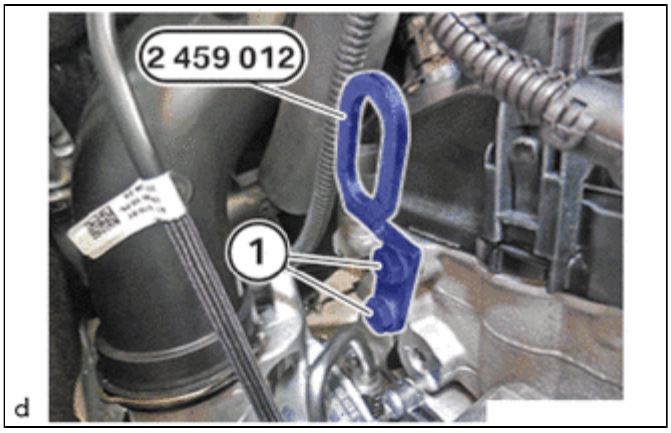
13. REMOVE ENGINE SUPPORT BRIDGE

Click here INFO

14. REMOVE ENGINE HANGER

(a) Unscrew the bolts of the special tool 2 459 012.

SST: 09200-WA610



(b) Feed out the special tool 2 459 012 at the cylinder head and remove.

SST: 09200-WA610

15. INSTALL EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY

Click here INFO

16. INSTALL FRONT ENGINE MOUNTING INSULATOR LH

NOTICE:

Lower the engine completely to prevent play before bolting down the No. 1 front engine mounting bracket LH and the front engine mounting insulator LH.

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(a) Tighten down E14 bolt.

Torque:

100 N·m {1020 kgf·cm, 74 ft·lbf}

17. INSTALL FRONT ENGINE MOUNTING INSULATOR RH

NOTICE:

Lower the engine completely to prevent play before bolting down the No. 1 front engine mounting bracket RH and the front engine mounting insulator RH.

(a) Tighten down E14 bolt.

Torque:

100 N·m {1020 kgf·cm, 74 ft·lbf}

18. INSTALL FRONT FENDER LINER LH

Click here INFO

19. INSTALL FRONT FENDER LINER RH

HINT:

Use the same procedure as for the LH side.

20. INSTALL FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

21. INSTALL FRONT FENDER UPPER PROTECTOR LH

Click here INFO

22. INSTALL FRONT FENDER UPPER PROTECTOR RH

HINT:

Use the same procedure as for the LH side.

23. INSTALL ENGINE ROOM ECM BOX

Click here INFO

24. INSTALL NO. 1 INTEGRATION RELAY

Click here INFO

25. INSTALL NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

26. REMOVE AND INSTALL BONNET HOOD SUPPORT ASSEMBLY

Click here INFO

27. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Click here INFO

28. INSPECT AIRBAG FOR FUNCTION

Click here INFO

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29. START-UP OF ELECTROMECHANICAL STEERING

Click here INFO

30. INSPECT STRAIGHT-AHEAD DRIVING POSITION OF THE STEERING WHEEL

Click here INFO

31. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

Click here INFO



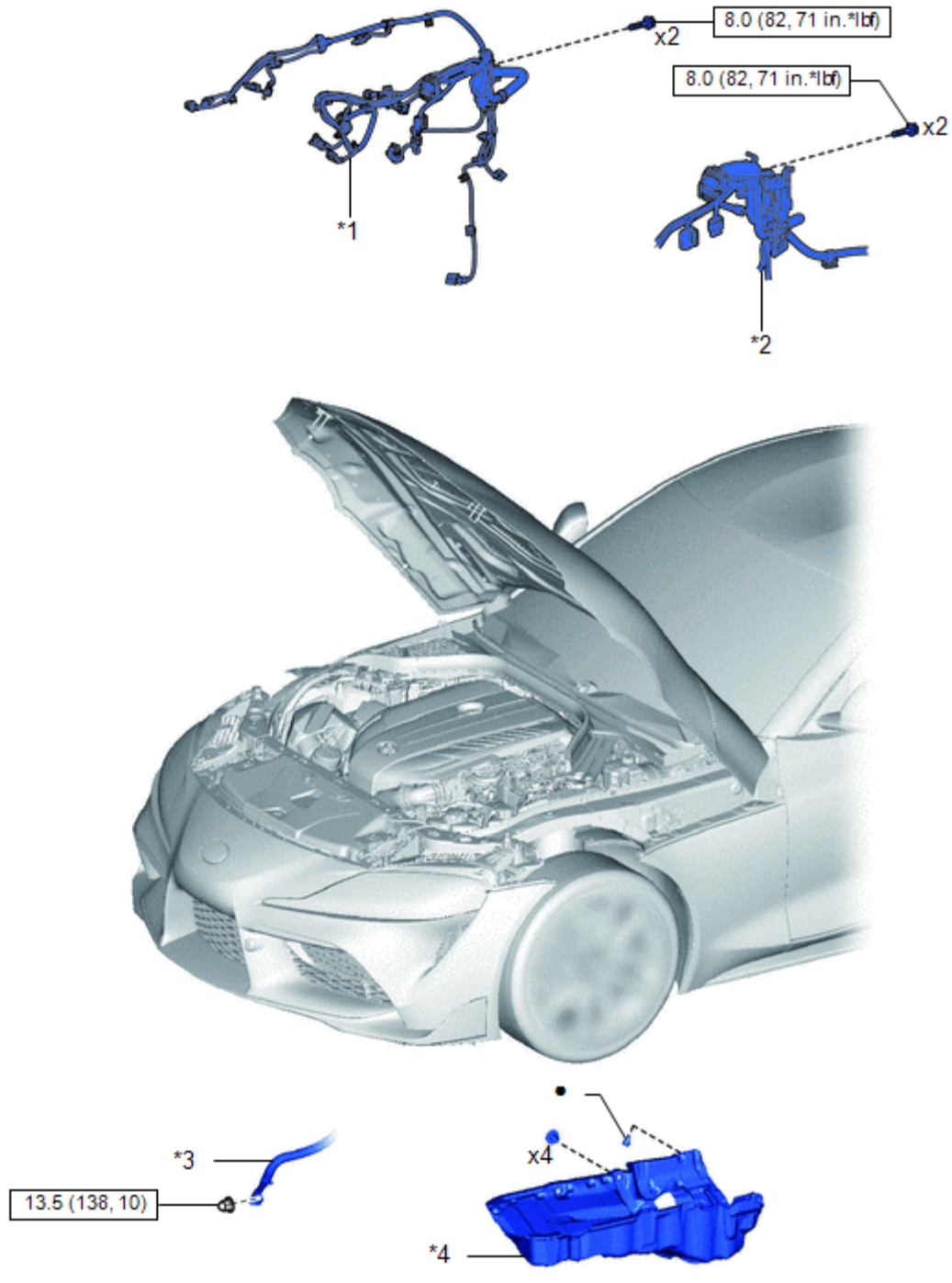
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Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE WIRE HARNESS (for No. 1): COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION

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*1	ENGINE WIRE	*2	TRANSMISSION WIRE
*3	STARTER WIRE	*4	OIL PAN COVER
	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDH8
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE WIRE HARNESS (for No. 1): REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. REMOVE FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

2. REMOVE OIL PAN COVER

Click here INFO

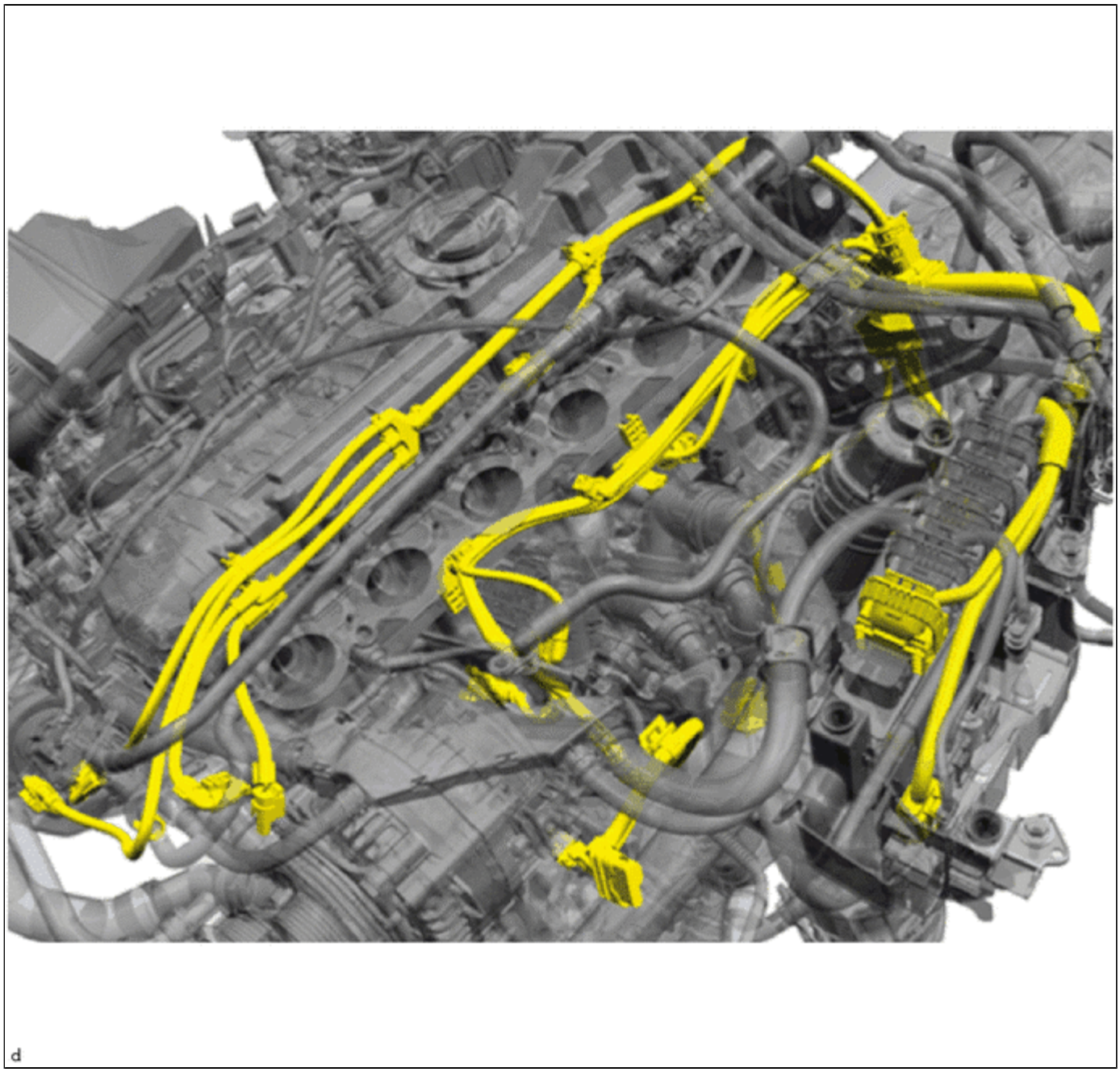
3. REMOVE INTAKE MANIFOLD

Click here INFO

4. REMOVE ENGINE WIRE

Overview: Engine wire

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NOTICE:

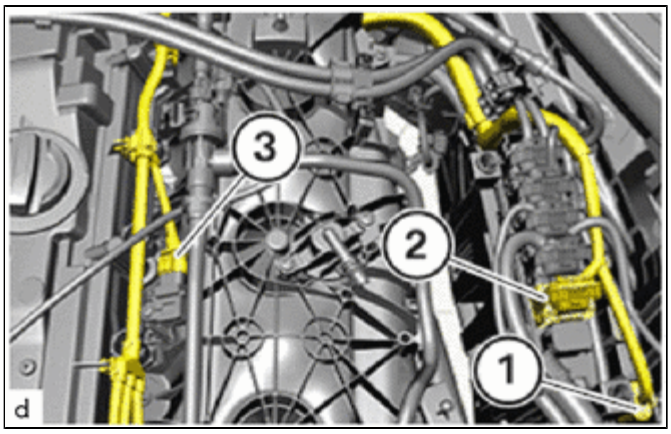
- Damage to wires when disconnecting connectors and plug connections.

  Sheared wires can cause a short circuit.

  - Do not pull on the wires when disconnecting connectors and plug connections.

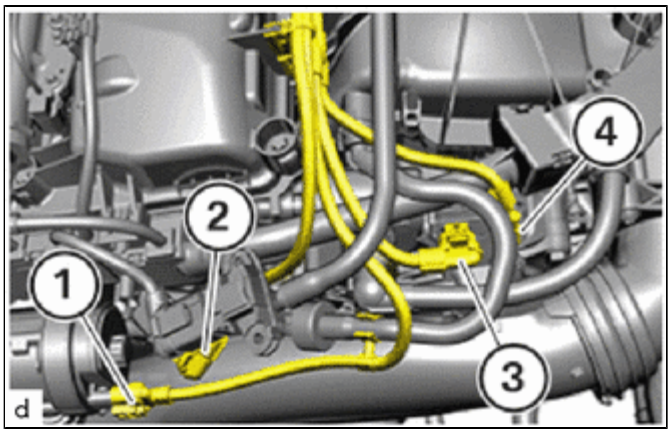
(a) Remove connector (1) from the No. 1 integration relay.

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(b) Remove connector (2) from the ECM.

(c) Unlock and loosen the connector (3) of the vacuum sensor assembly.

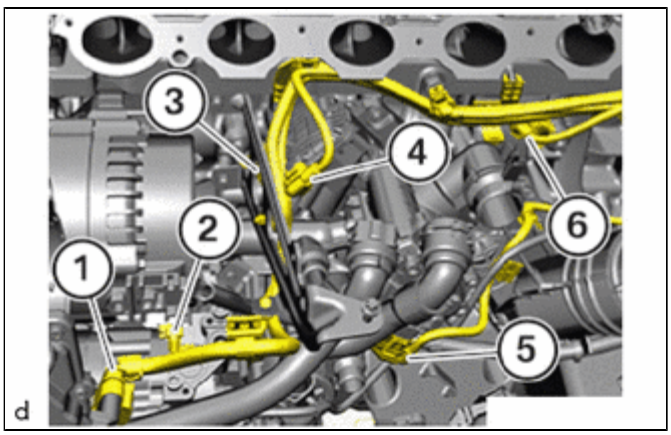


(d) Unlock and detach the connector (1) of the water pump assembly (for Turbo).

(e) Unlock and disconnect the connector (2) of the No. 2 engine wire.

(f) Unlock and loosen the connector (3) of the air pressure sensor.

(g) Unlock and disconnect the connector (4) of the inlet air temperature sensor.



(h) Unlock and disconnect the connector (1) of the throttle body with motor assembly.

(i) Unlock and disconnect the connector (2) of the generator assembly.

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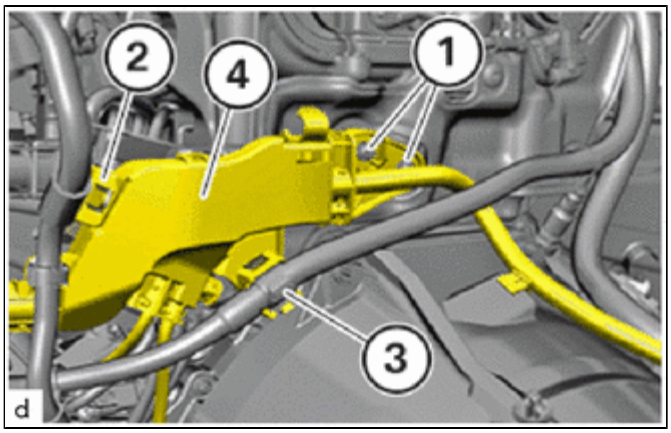
(j) Unlock and disconnect the connector (3) of the knock sensor of cylinders 1 to 3.

(k) Unlock and disconnect the connector (4) of the water valve with bracket assembly.

(l) Unlock and disconnect the lower connector (5) of the water valve with bracket assembly.

(m) Unlock and disconnect the connector (6) of the knock sensor of cylinders 4 to 6.

(n) Loosen E8 bolts (1).

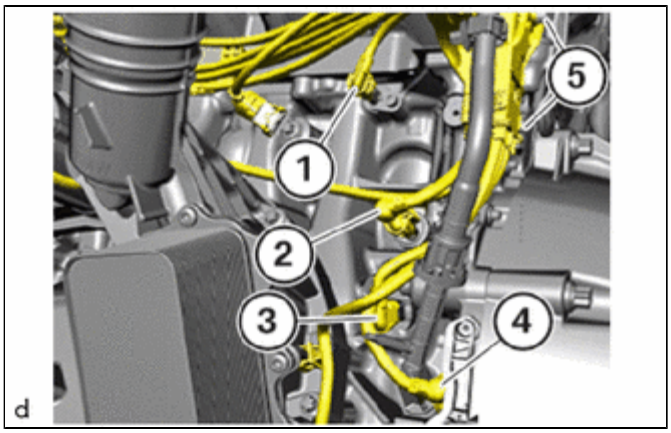


(o) Loosen clamp (2).

(p) Detach positive battery cable from bracket (3).

(q) Release cable duct (4) and lay to one side.

(r) Unlock and disconnect the connector (1) of the oil temperature sensor.



(s) Unlock and disconnect the connector (2) of the oil pressure sensor.

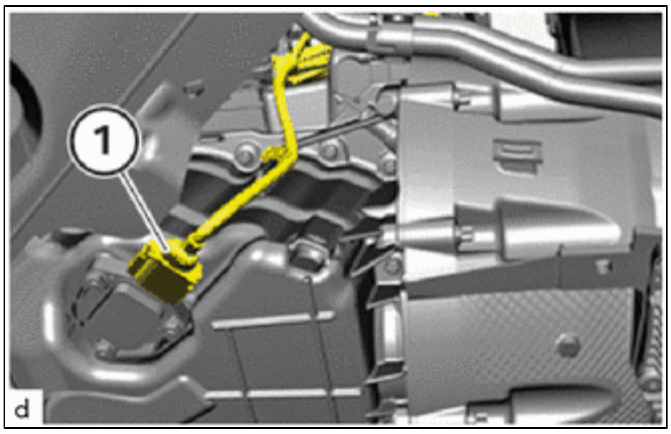
(t) Unlock and disconnect the connector (3) of the oil pressure control valve assembly.

(u) Unlock and disconnect the connector (4) of the crankshaft position sensor.

(v) Loosen T30 bolts (5).

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(w) Unlock and disconnect the connector (1) of the engine oil level sensor.



(x) Unlock and detach all clamps.

(y) Feed out the engine wire and remove it.

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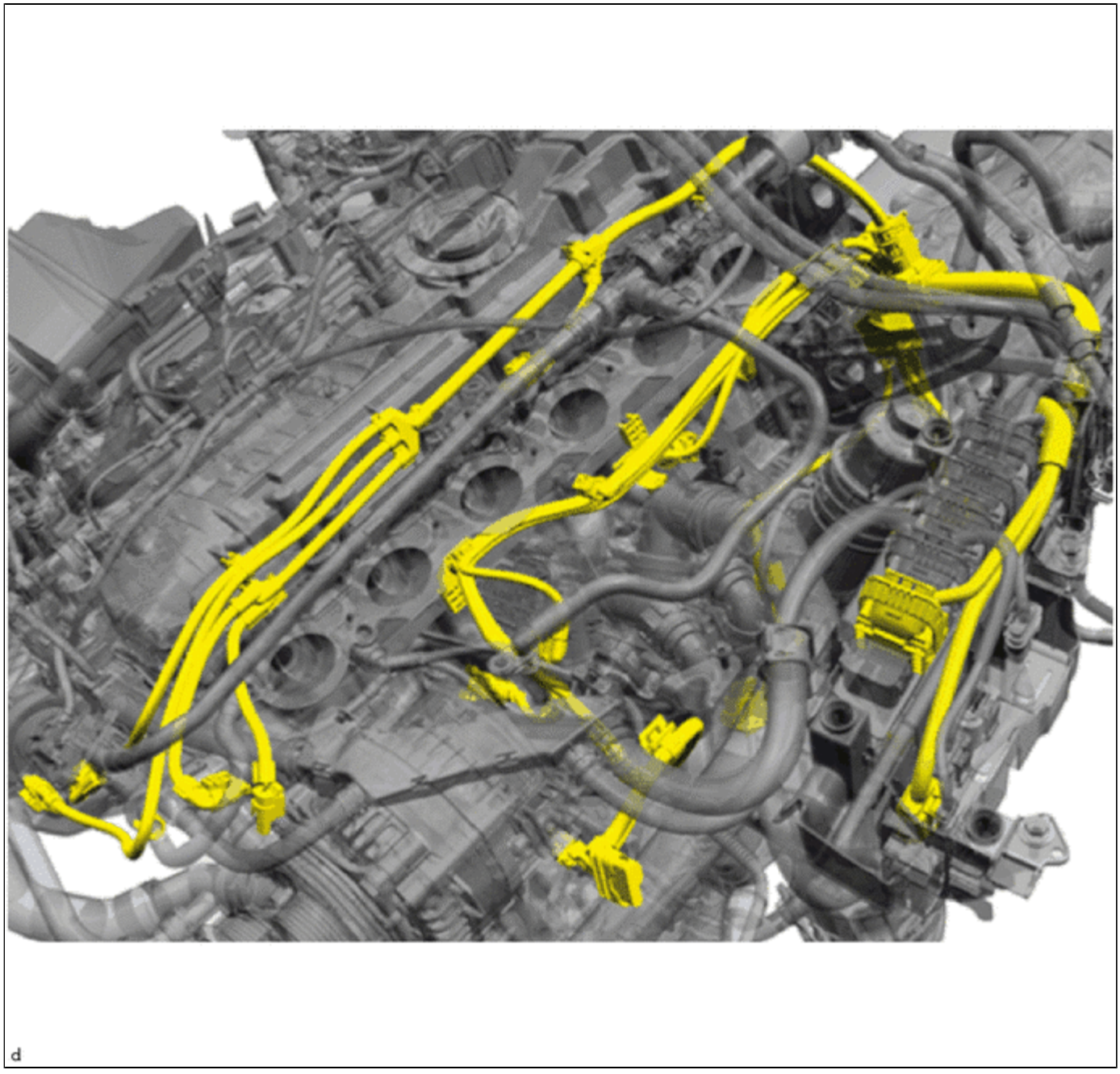
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDH9
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE WIRE HARNESS (for No. 1): INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL ENGINE WIRE

Overview: Engine wire



NOTICE:

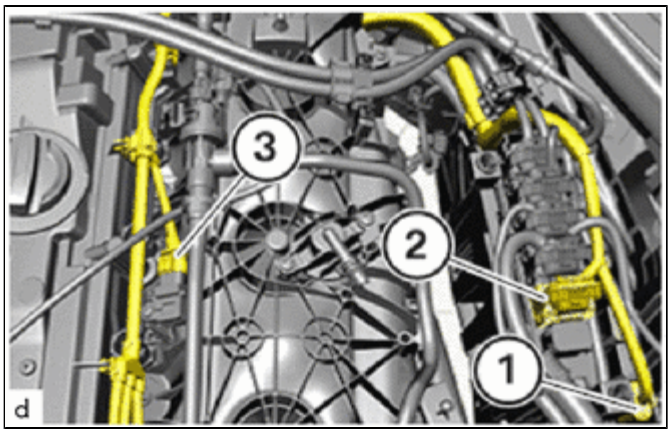
- Improper routing of cables and wiring harnesses.

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Trapped, crushed or damaged cables may cause short circuits and malfunctions.

- Route all cables without abrasions, do not trap and crush.

(a) Thread in and install the engine wire.



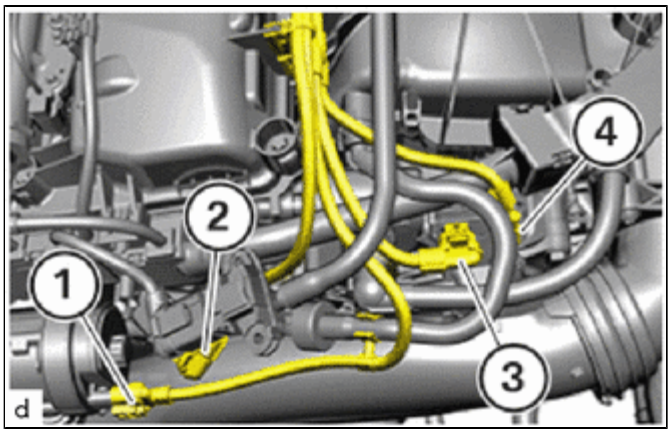
(b) Secure all clamps

(c) Route the connector (1) to the No. 1 integration relay.

(d) Route the connector (2) to the ECM.

(e) Connect and lock the connector (3) of the vacuum sensor assembly.

(f) Connect and lock the connector (1) of the water pump assembly (for Turbo).



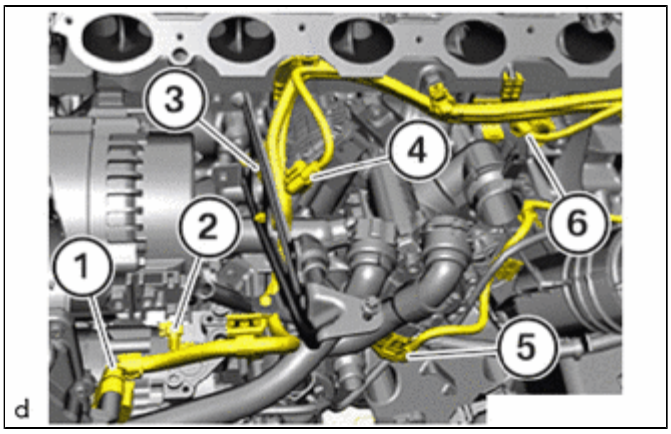
(g) Connect and lock the connector (2) of the No. 2 engine wire.

(h) Connect and lock the connector (3) of the air pressure sensor.

(i) Connect and lock the connector (4) for the inlet air temperature sensor.

(j) Connect and lock the connector (1) for the throttle body with motor assembly.

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(k) Connect and lock the connector (2) for the generator assembly.

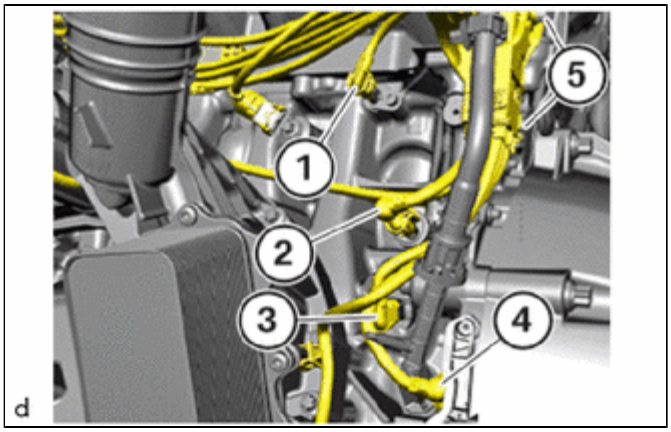
(l) Connect and lock the connector (3) of the knock sensor of cylinders 1 to 3.

(m) Connect and lock the connector (4) for the water valve with bracket assembly.

(n) Connect and lock the lower connector (5) of the water valve with bracket assembly.

(o) Connect and lock the connector (6) of the knock sensor of cylinders 4 to 6.

(p) Connect and lock the connector (1) of the oil temperature sensor.



(q) Connect and lock the connector (2) for the oil pressure sensor.

(r) Connect and lock the connector (3) of the oil pressure control valve assembly.

(s) Connect and lock the connector (4) for the crankshaft position sensor.

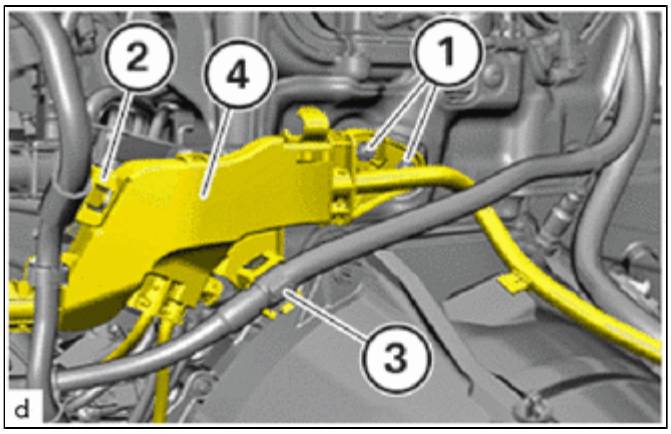
(t) Tighten the T30 bolts (5).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(u) Mount cable channel (4).

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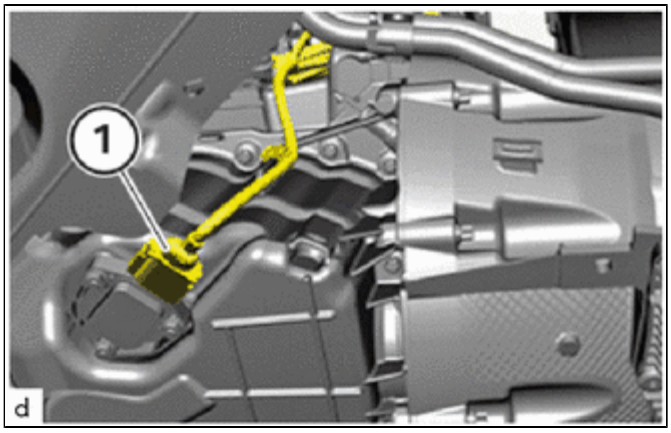
(v) Tighten the E8 bolts (1).

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

(w) Lock clamp (2).

(x) Secure positive battery cable at the clamp (3).



(y) Connect and lock the connector (1) of the engine oil level sensor.

2. INSTALL INTAKE MANIFOLD

Click here INFO

3. INSTALL OIL PAN COVER

Click here INFO

4. INSTALL FRONT SUSPENSION MEMBER LOWER PROTECTOR

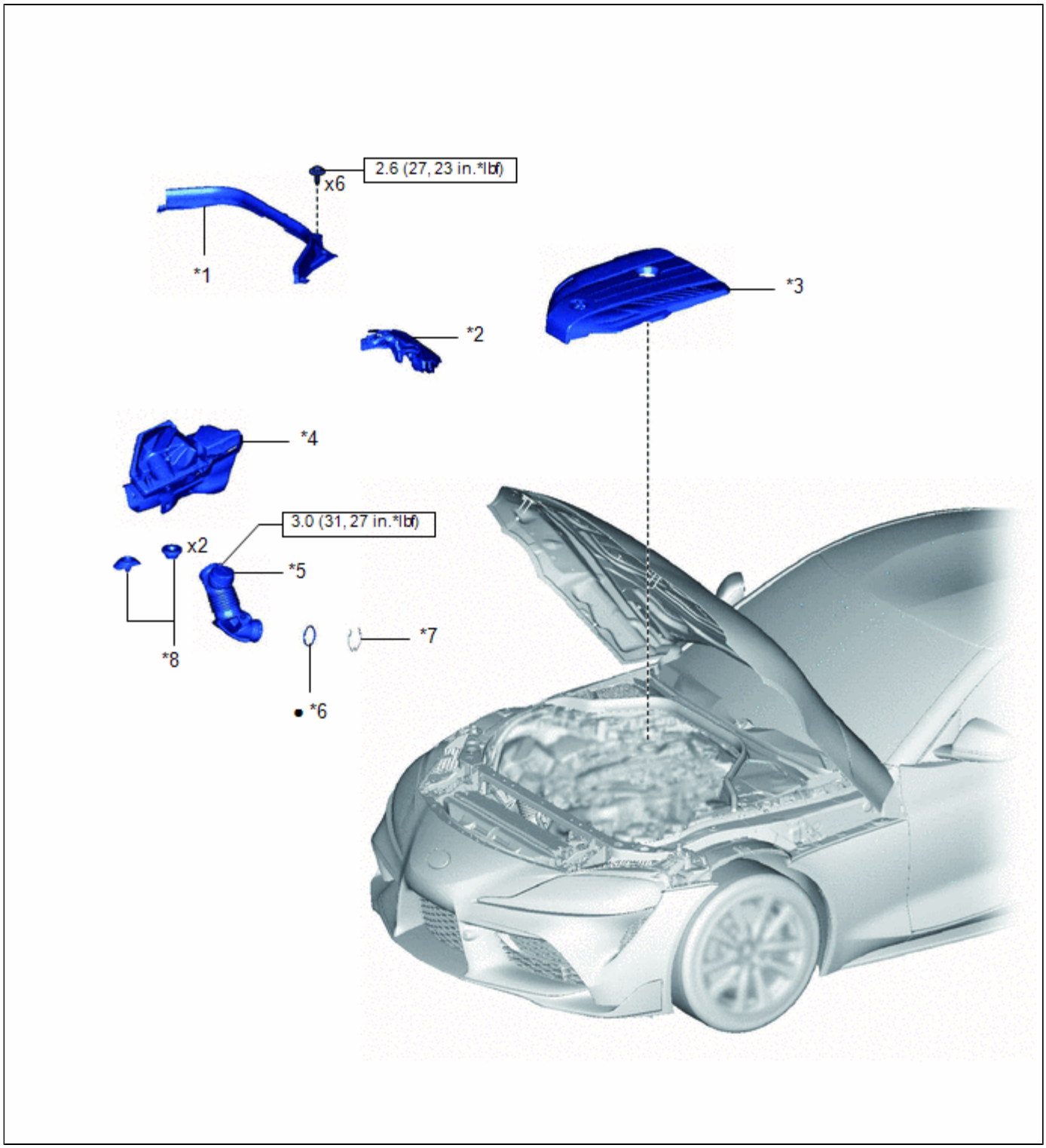
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDHA
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE WIRE HARNESS (for No. 2): COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION

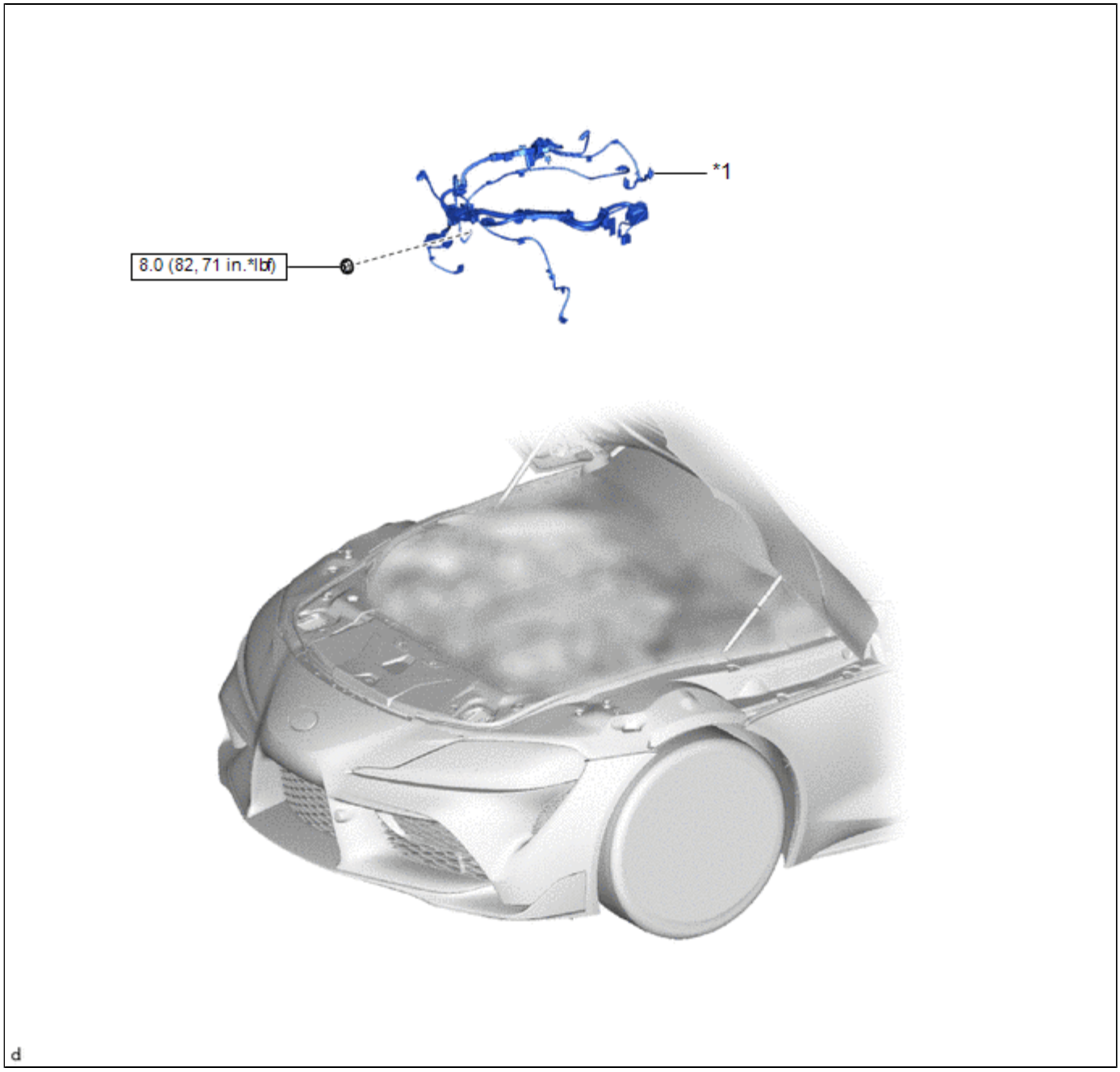


*1	COWL TOP VENTILATOR LOUVER	*2	NO. 1 ENGINE COVER

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	PROTECTOR		
*3	NO. 1 ENGINE COVER SUB-ASSEMBLY	*4	AIR CLEANER ASSEMBLY
*5	AIR CLEANER HOSE ASSEMBLY	*6	GASKET
*7	CLAMP	*8	AIR CLEANER SUPPORT
□	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION



*1	NO. 2 ENGINE WIRE	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDHB
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE WIRE HARNESS (for No. 2): REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

Click here INFO

2. REMOVE FRONT SUSPENSION BRACE UPPER CENTER

Click here INFO

3. REMOVE COWL TOP VENTILATOR LOUVER PROTECTOR

Click here INFO

4. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

5. REMOVE NO. 1 ENGINE COVER

Click here INFO

6. REMOVE AIR CLEANER ASSEMBLY

Click here INFO

7. REMOVE AIR CLEANER HOSE ASSEMBLY

Click here INFO

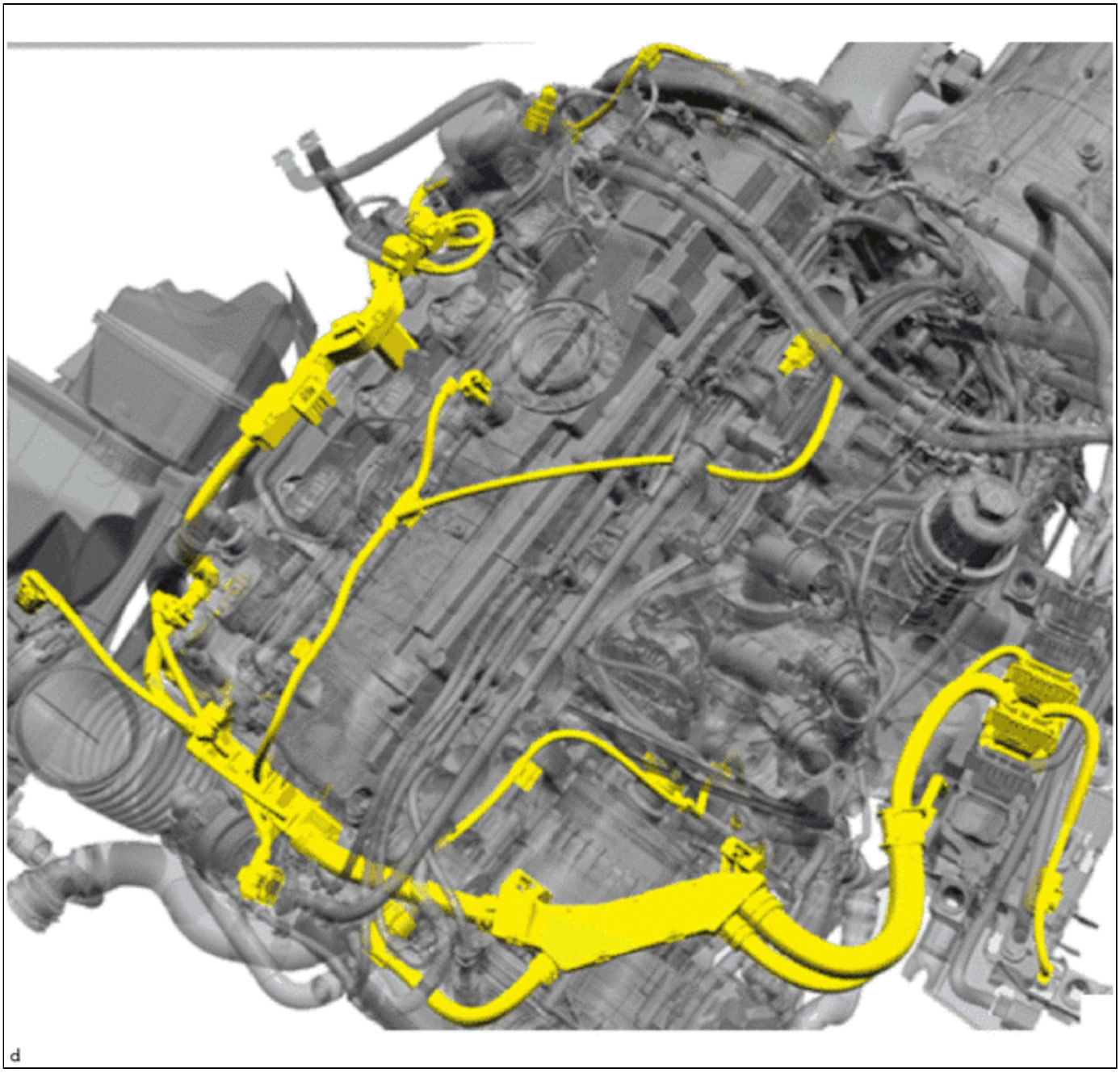
8. REMOVE FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

9. REMOVE NO. 2 ENGINE WIRE

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Overview: No. 2 engine wire



NOTICE:

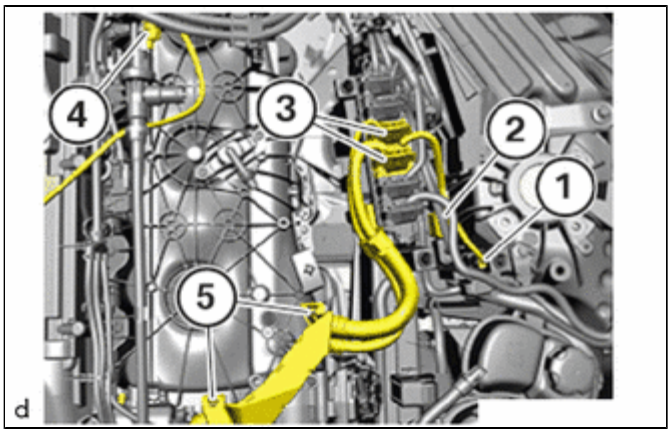
- Damage to wires when disconnecting connectors and plug connections.

  Sheared wires can cause a short circuit.

  - Do not pull on the wires when disconnecting connectors and plug connections.

(a) Unlock connector (1) and pull off.

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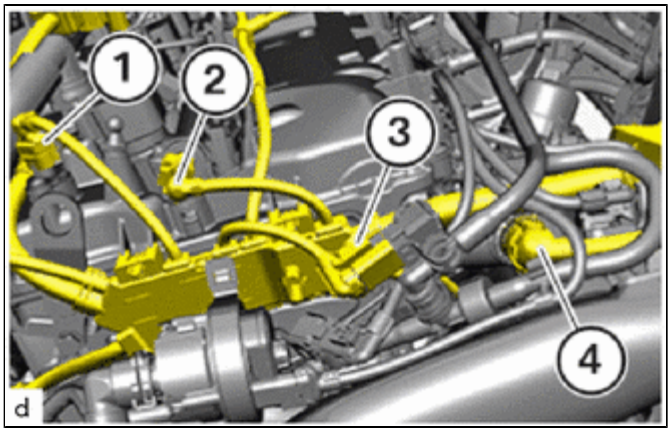
(b) Disconnect connector (2) from the No. 1 integration relay.

(c) Disconnect connector (3) from ECM.

(d) Unlock and disconnect the connector (4) of the No. 1 check valve.

(e) Loosen clamps (5).

(f) Unlock and disconnect the connector (1) of the camshaft position sensor (for Exhaust Side).

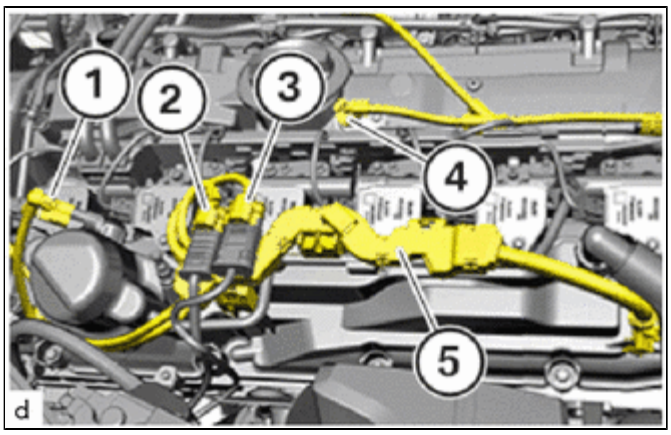


(g) Unlock and disconnect the connector (2) of the fuel delivery pipe.

(h) Unlock and disconnect the connector (3) on the No. 1 fuel vapor feed hose.

(i) Unlock and disconnect the connector (4) of the servo motor.

(j) Unlock and disconnect the connector (1) of the fuel pump assembly (for High Pressure).



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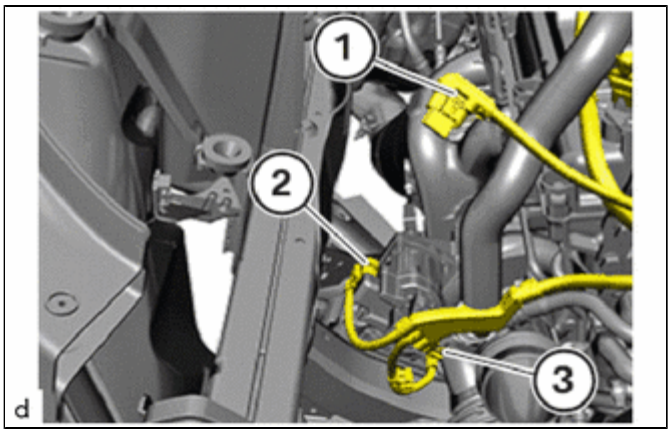
(k) Unlock and disconnect connector (2) of oxygen sensor.

(l) Unlock and disconnect the connector (3) of the wide range air fuel ratio sensor.

(m) Unlock and disconnect the connector (4) of the camshaft position sensor (for Intake Side).

(n) Unlock cable channel (5) and detach from cylinder head cover.

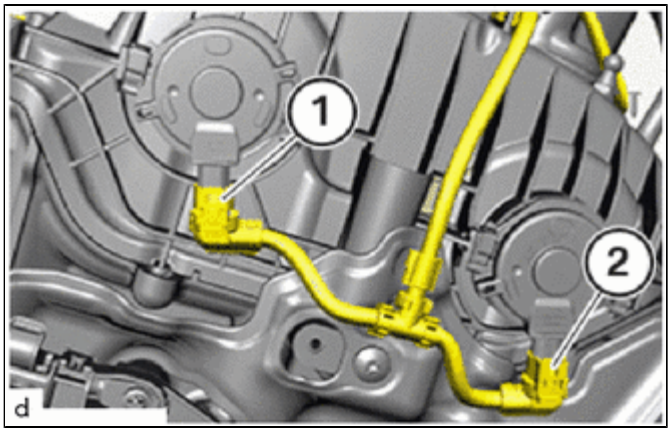
(o) Unlock and disconnect the connector (1) of the intake mass air flow meter sub-assembly.



(p) Unlock and disconnect the connector (2) of the turbocharger actuator and link assembly.

(q) Unlock and disconnect the connector (3) of the compressor inlet elbow.

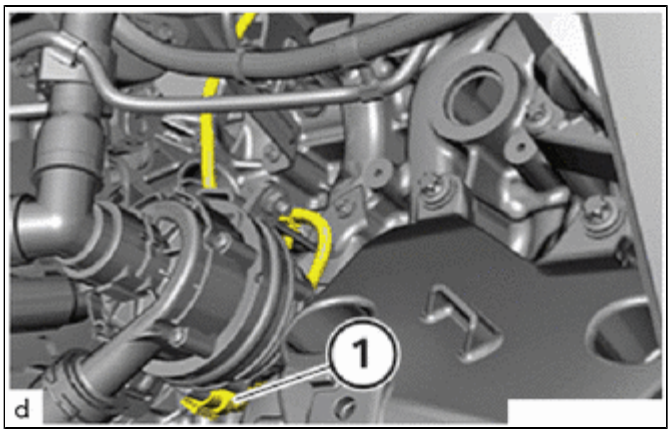
(r) Unlock and disconnect the connector (1) of the vanos actuator (for Intake Side).



(s) Unlock and disconnect the connector (2) of the vanos actuator (for Exhaust Side).

(t) Unlock and disconnect the connector (1) of the water pump assembly (for Heater).

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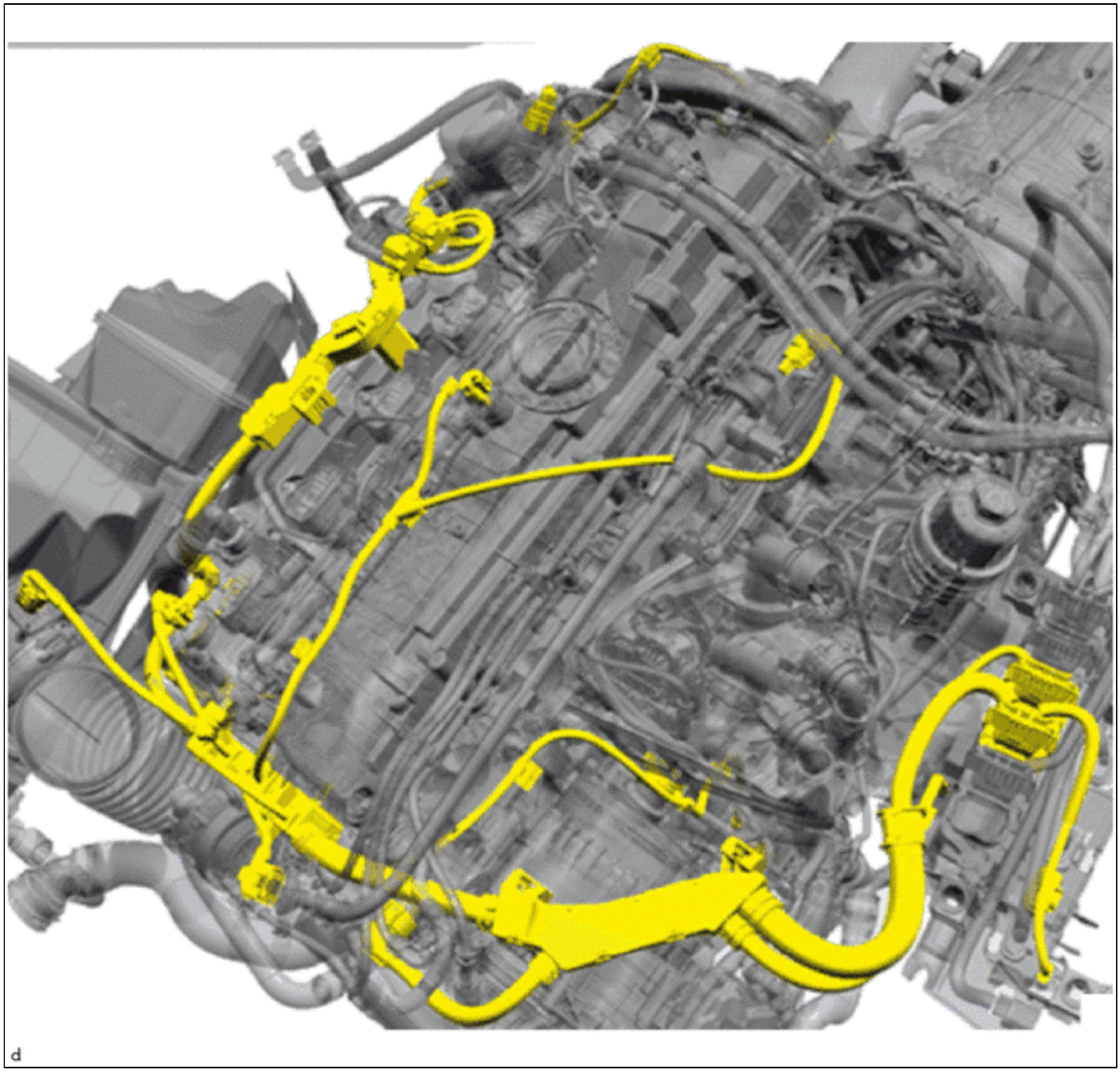
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDHC
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ENGINE WIRE HARNESS (for No. 2): INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL NO. 2 ENGINE WIRE

Overview: No. 2 engine wire



NOTICE:

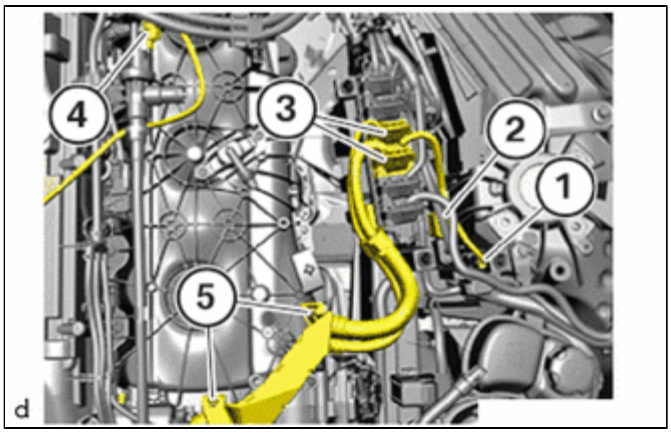
- Improper routing of cables and wiring harnesses.

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Trapped, crushed or damaged cables may cause short circuits and malfunctions.

- Route all cables without abrasions, do not trap and crush.

(a) Thread in and install the No. 2 engine wire.



(b) Secure all clamps.

(c) Connect and lock the connector (1).

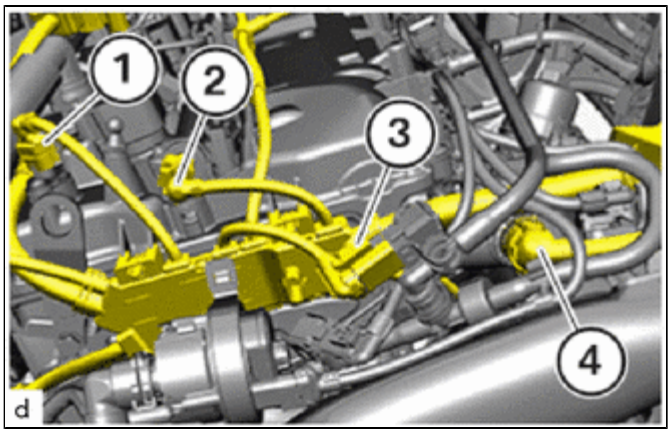
(d) Route the connector (2) to the No. 1 integration relay.

(e) Route the connector (3) to the ECM.

(f) Connect and lock the connector (4) for the No. 1 check valve.

(g) Secure clamps (5).

(h) Connect and lock the connector (1) of the camshaft position sensor (for Exhaust Side).



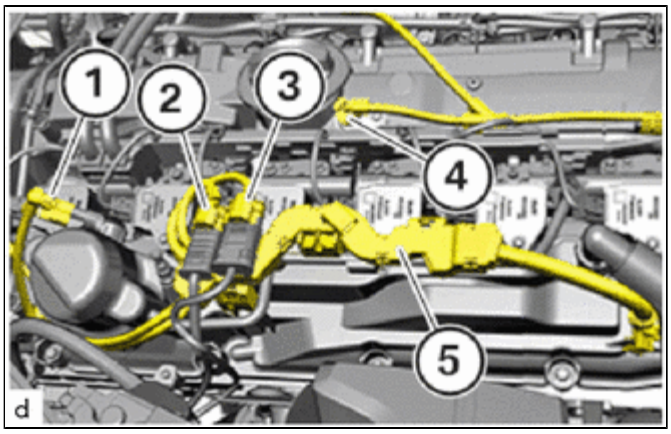
(i) Connect and lock the connector (2) of the fuel delivery pipe.

(j) Connect and lock the connector (3) on the No. 1 fuel vapor feed hose.

(k) Connect and lock the connector (4) of the servo motor.

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(l) Connect and lock the connector (1) of the fuel pump assembly (for High Pressure).



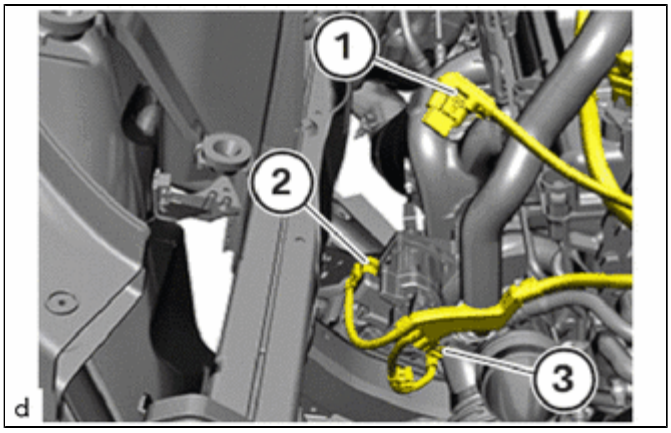
(m) Connect and lock the connector (2) of the oxygen sensor.

(n) Connect and lock the connector (3) of the wide range air fuel ratio sensor.

(o) Connect and lock the connector (4) of the camshaft position sensor (for Intake Side).

(p) Secure cable channel (5) on the cylinder head cover.

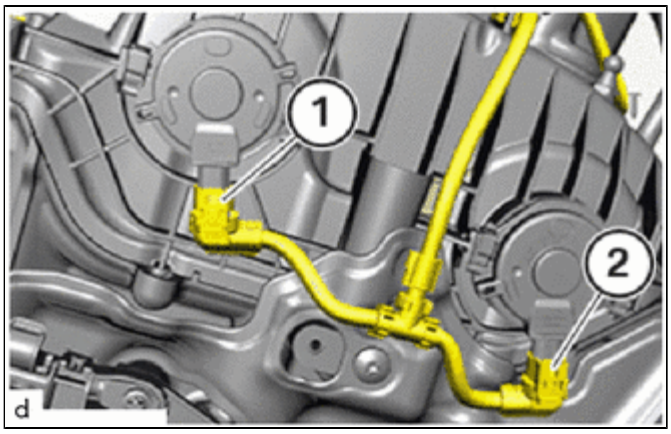
(q) Connect and lock the connector (1) of the intake mass air flow meter sub-assembly.



(r) Connect the connector (2) of the turbocharger actuator and link assembly and lock it.

(s) Connect and lock the connector (3) of the compressor inlet elbow.

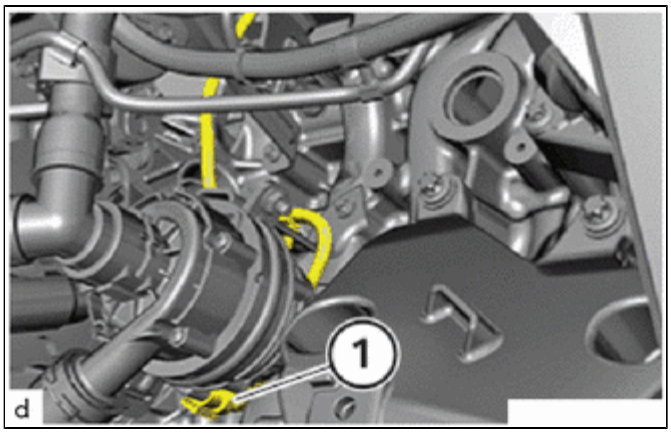
(t) Connect and lock the connector (1) of the vanos actuator (for Intake Side).



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(u) Connect and lock the connector (2) of the vanos actuator (for Exhaust Side).

(v) Connect and lock the connector (1) of the water pump assembly (for Heater).



2. INSTALL FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

3. INSTALL NO. 1 ENGINE COVER

Click here INFO

4. INSTALL COWL TOP VENTILATOR LOUVER PROTECTOR

Click here INFO

5. INSTALL FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

6. INSTALL NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

7. INSTALL AIR CLEANER HOSE ASSEMBLY

Click here INFO

8. INSTALL AIR CLEANER ASSEMBLY

Click here INFO

9. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

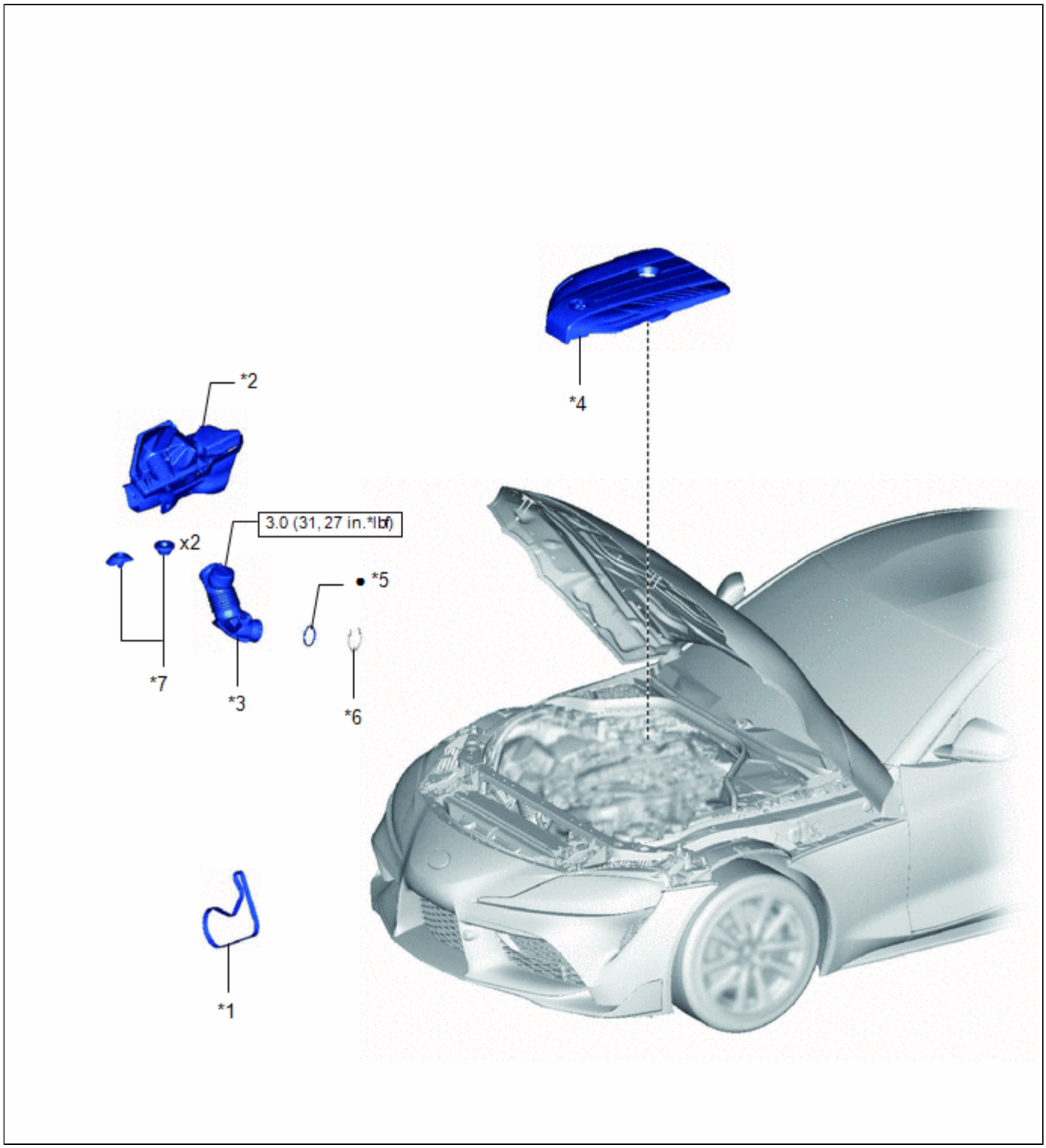
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFU
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): FRONT CRANKSHAFT OIL SEAL: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION

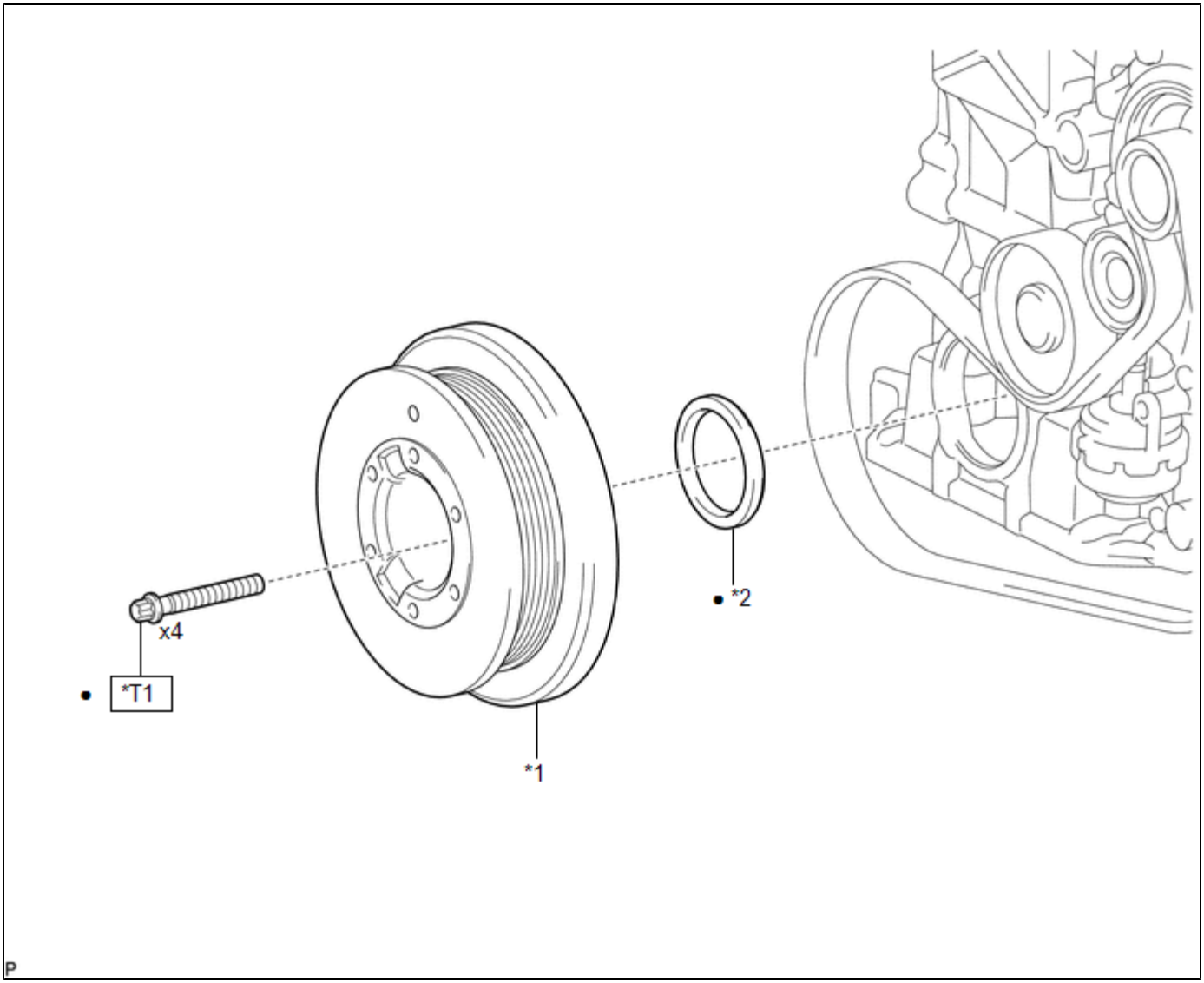


*1	FAN AND GENERATOR V BELT	*2	AIR CLEANER ASSEMBLY

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*3	AIR CLEANER HOSE ASSEMBLY	*4	NO. 1 ENGINE COVER SUB-ASSEMBLY
*5	GASKET	*6	CLIP
*7	AIR CLEANER SUPPORT	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION



*1	CRANKSHAFT PULLEY ASSEMBLY	*2	FRONT CRANKSHAFT OIL SEAL
□	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st: 40 (408, 30) 2nd: Turn 120°	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFV
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): FRONT CRANKSHAFT OIL SEAL: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

Click here INFO

2. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

3. REMOVE AIR CLEANER ASSEMBLY

Click here INFO

4. REMOVE AIR CLEANER HOSE ASSEMBLY

Click here INFO

5. REMOVE FAN SHROUD

Click here INFO

6. REMOVE FAN AND GENERATOR V BELT

Click here INFO

7. REMOVE FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

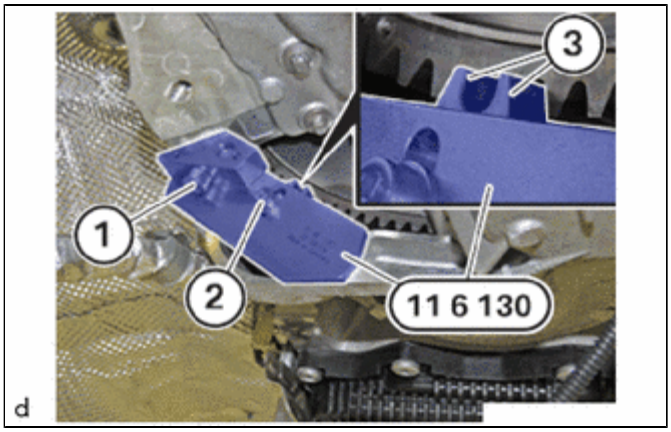
8. REMOVE STARTER ASSEMBLY

Click here INFO

9. REMOVE CRANKSHAFT PULLEY ASSEMBLY

(a) Position special tool 0 496 595 (11 6 130) and fasten with bolt (1).

SST: 09700-WA040

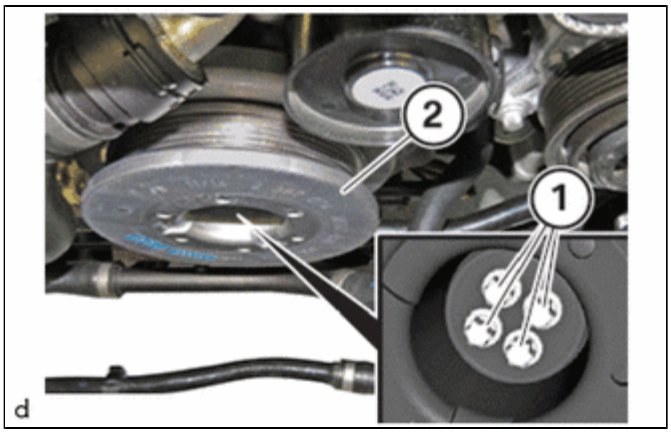


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(b) Slide counter support on the bolt (2) in direction of flywheel sub-assembly and turn the engine on the crankshaft pulley assembly until the gearing (3) engages in the flywheel sub-assembly.

(c) Tighten the bolt (2).

(d) Release E12 bolts (1) and remove the crankshaft pulley assembly (2) from the top.



10. REMOVE FRONT CRANKSHAFT OIL SEAL

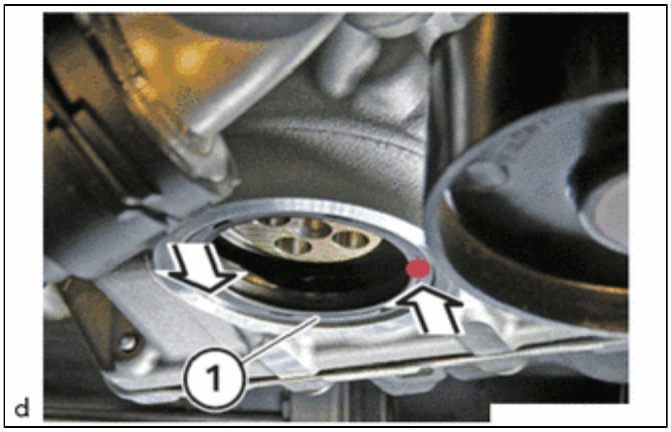
NOTICE:

- Scratches.

  Tools and sharp-edged components can cause scratches.

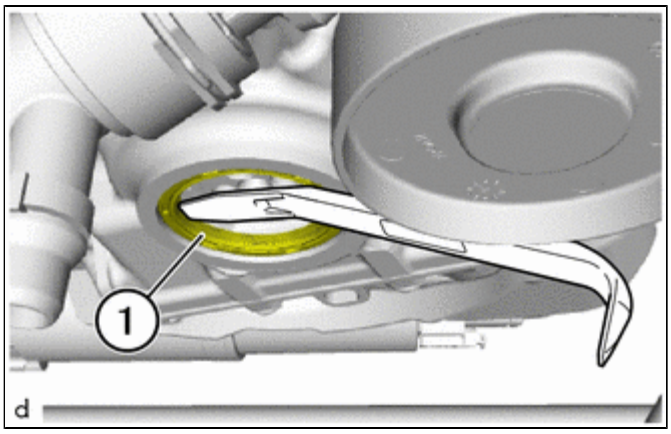
  - Protect working area.
  - Handle tools and components carefully.

(a) Drive in the front crankshaft oil seal (1) in the marked area with a punch to approx. 1 cm deep.



(b) Carefully lever out and remove the front crankshaft oil seal (1).

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFW
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): FRONT CRANKSHAFT OIL SEAL: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL FRONT CRANKSHAFT OIL SEAL

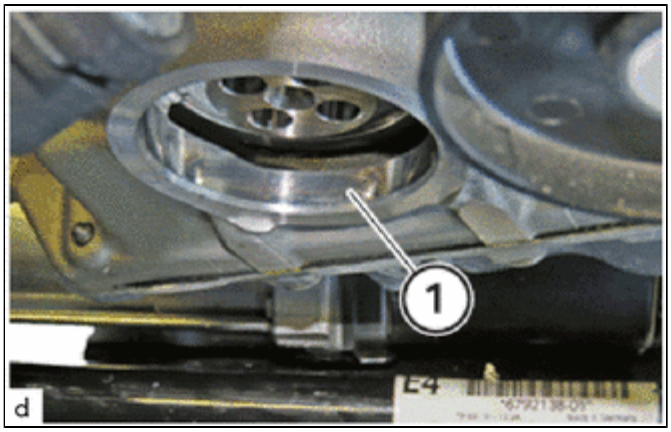
NOTICE:

- Front crankshaft oil seal damage.

  Touching the sealing lip (inner) and applying oil to the front crankshaft oil seal will lead to its destruction.

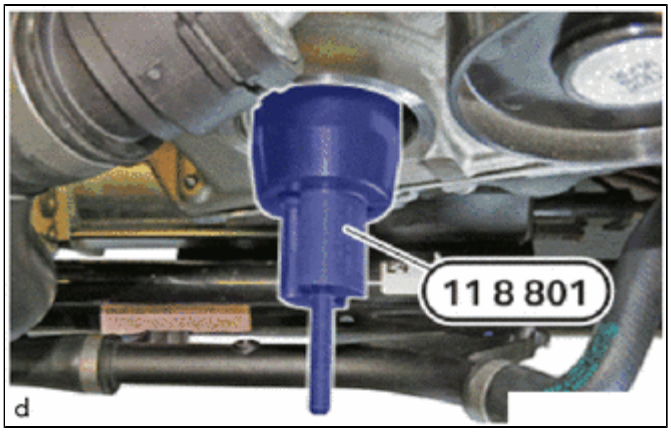
  - Do not touch the sealing lip (inner) of the front crankshaft oil seal.
  - Do not apply oil to the front crankshaft oil seal.
  - Install the front crankshaft oil seal dry.

(a) Clean sealing surface (1).



(b) Clean the special tool 0 496 128 (11 8 801) from the set of special tools 0 496 127 (11 8 800) and coat it with fresh engine oil.

SST: 09200-WA080

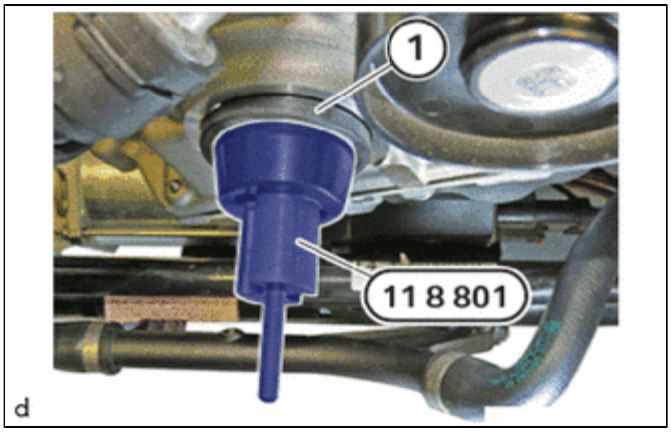


(c) Position the special tool 0 496 128 (11 8 801) from the set of special tools 0 496 127 (11 8 800) on the crankshaft and bolt it on.

SST: 09200-WA080

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(d) Replace front crankshaft oil seal (1).

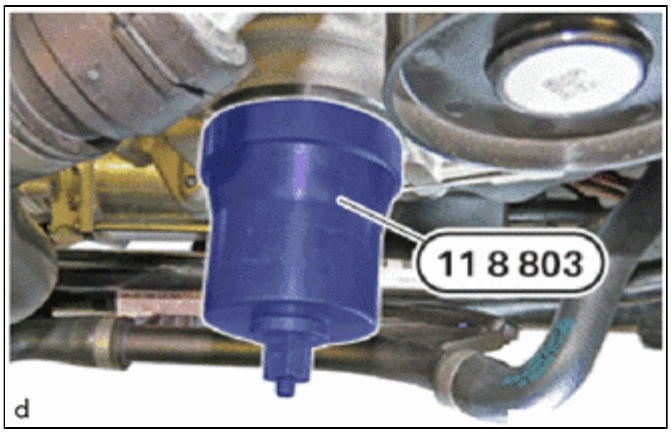


(e) Carefully slide the front crankshaft oil seal (1) straight in a rotational movement onto the special tool 0 496 128 (11 8 801) from the set of special tools 0 496 127 (11 8 800) until the front crankshaft oil seal is positioned flush against the cylinder block sub-assembly.

SST: 09200-WA080

(f) Position the special tool 0 496 130 (11 8 803) from the set of special tools 0 496 127 (11 8 800) and bolt on hand-tight with the nut.

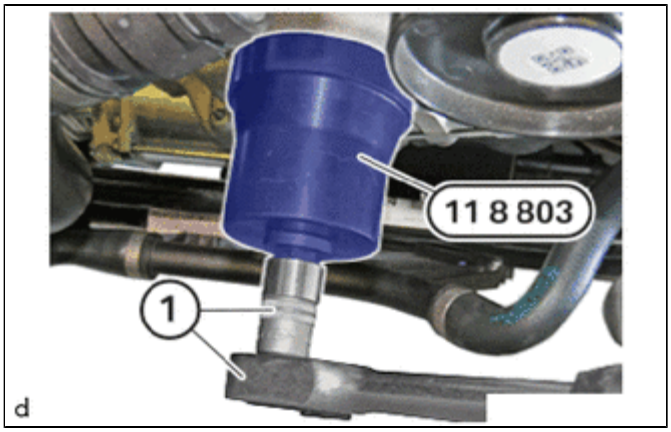
SST: 09200-WA080



(g) Ensure that the front crankshaft oil seal moves in evenly.

(h) Bolt in the special tool (sleeve) 0 496 130 (11 8 803) from the set of special tools 0 496 127 (11 8 800) with the tool (1) until the special tool (sleeve)0 496 130 (11 8 803) is flush with the cylinder block sub-assembly.

SST: 09200-WA080



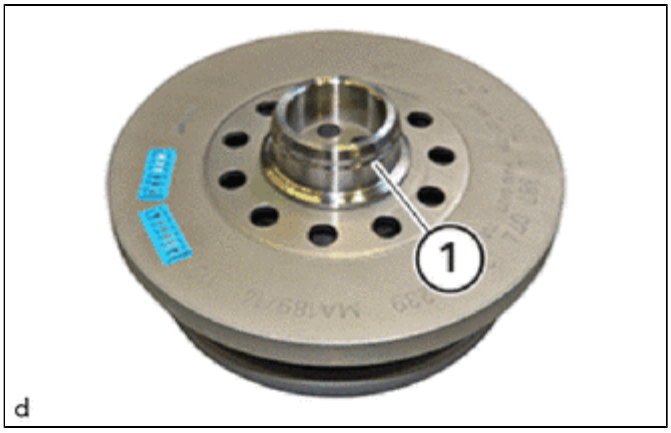
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2. INSTALL CRANKSHAFT PULLEY ASSEMBLY

HINT:

When removing and installing or replacing the crankshaft pulley assembly, the front crankshaft oil seal must be replaced.

(a) Clean the sealing surface (1) from oil and contamination.



(b) Check if the special tool 0 496 595 (11 6 130) is installed and positioned correctly.

SST: 09700-WA040

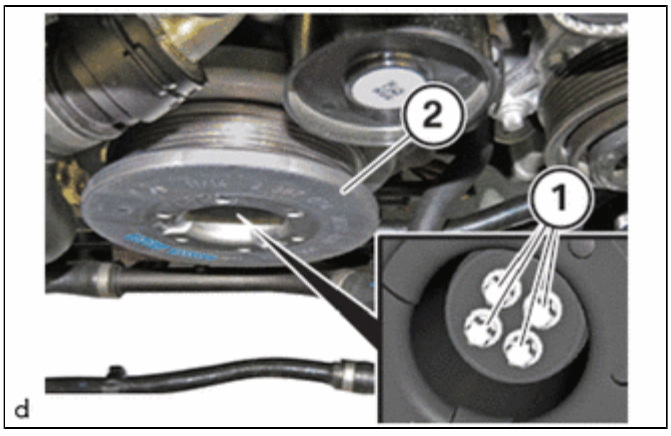
(c) Special tool 0 496 595 (11 6 130) not installed.

SST: 09700-WA040

(d) Install special tool 0 496 595 (11 6 130).

SST: 09700-WA040

(1) Install crankshaft pulley assembly (2) from the top and position correctly.



(2) Tighten the E12 bolts (1).

Torque:

40 N·m {408 kgf·cm, 30 ft·lbf}

(3) Using SST, tighten the bolts an additional 120°.

SST: 09900-WA010

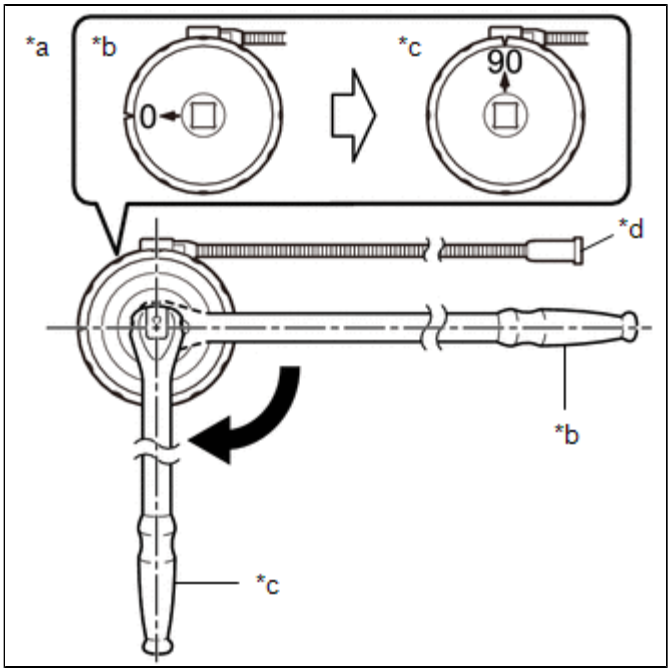
HINT:

- The magnetic portion is used to secure the gauge to the vehicle.

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After first adjusting the needle of the gauge to 0°, tighten to the specified angle.

- Perform the work procedure carefully so that the gauge, etc. does not become tilted.



*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

(4) Remove special tool 0 496 595 (11 6 130).

SST: 09700-WA040

3. INSTALL STARTER ASSEMBLY

Click here INFO

4. INSTALL FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

5. INSTALL FAN AND GENERATOR V BELT

Click here INFO

6. INSTALL FAN SHROUD

Click here INFO

7. INSTALL AIR CLEANER HOSE ASSEMBLY

Click here INFO

8. INSTALL AIR CLEANER ASSEMBLY

Click here INFO

9. INSTALL NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here INFO

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10. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

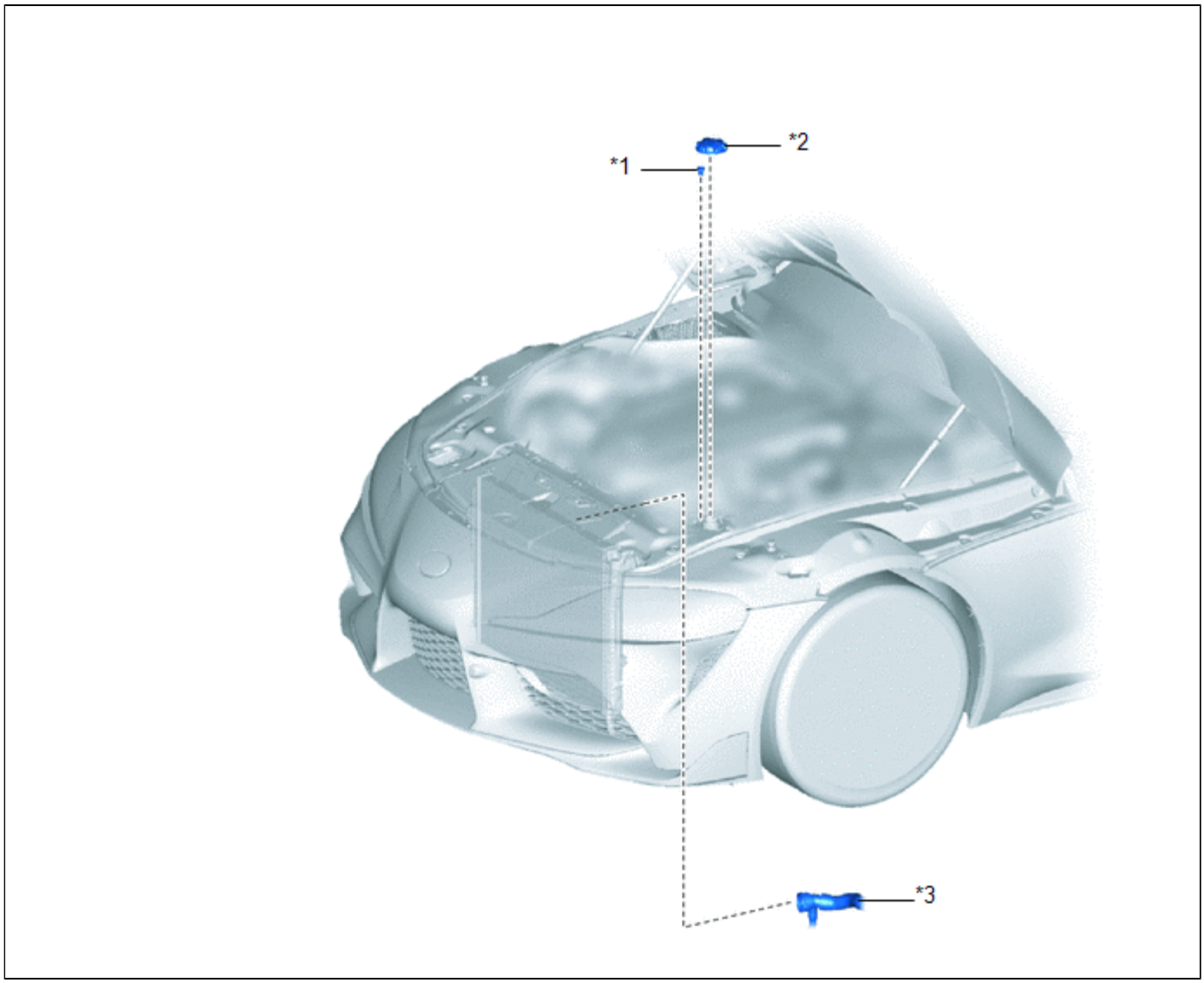
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGM
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): OIL FILTER BRACKET: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

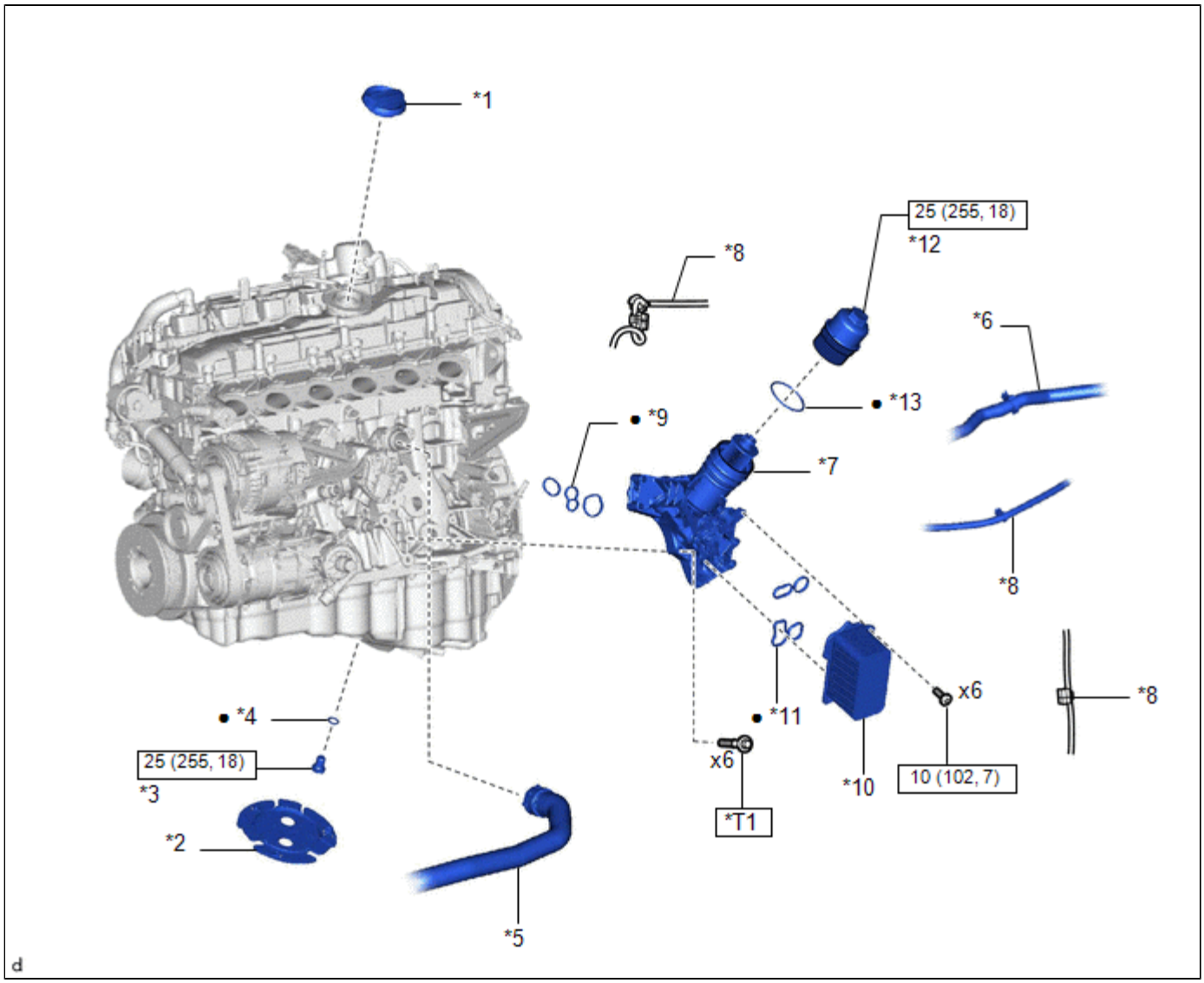
ILLUSTRATION



*1	BLEEDER SCREW	*2	RESERVE TANK CAP SUB-ASSEMBLY
*3	NO. 1 RADIATOR HOSE	-	-

ILLUSTRATION

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*1	OIL FILLER CAP ASSEMBLY	*2	NO. 4 CENTER ENGINE UNDER COVER
*3	OIL PAN DRAIN PLUG	*4	OIL PAN DRAIN PLUG GASKET
*5	NO. 2 RADIATOR HOSE	*6	ALTERNATOR WIRE
*7	OIL FILTER BRACKET	*8	ENGINE WIRE
*9	OIL FILTER BRACKET GASKET	*10	OIL COOLER ASSEMBLY
*11	OIL COOLER GASKET	*12	OIL FILTER CAP ASSEMBLY
*13	O-RING	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st : 4.0 (41, 35 in.*lbf) 2nd : 10 (102, 7)	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGN
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): OIL FILTER BRACKET: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

HINT:

Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

PROCEDURE

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

Click here INFO

2. REMOVE FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

3. REMOVE AIR CLEANER HOSE ASSEMBLY

Click here INFO

4. REMOVE OIL FILLER CAP ASSEMBLY

Click here INFO

5. REMOVE OIL FILTER CAP ASSEMBLY

Click here INFO

6. DRAIN ENGINE COOLANT (for High Pressure)

Click here INFO

7. REMOVE INTAKE MANIFOLD

Click here INFO

8. REMOVE OIL PAN DRAIN PLUG

Click here INFO

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9. INSTALL OIL PAN DRAIN PLUG

Click here INFO

10. REMOVE OIL FILTER BRACKET

CAUTION:

- Hot fluids.

  Risk of scalding!

  - Conduct all work in the vehicle wearing appropriate personal protective equipment only.

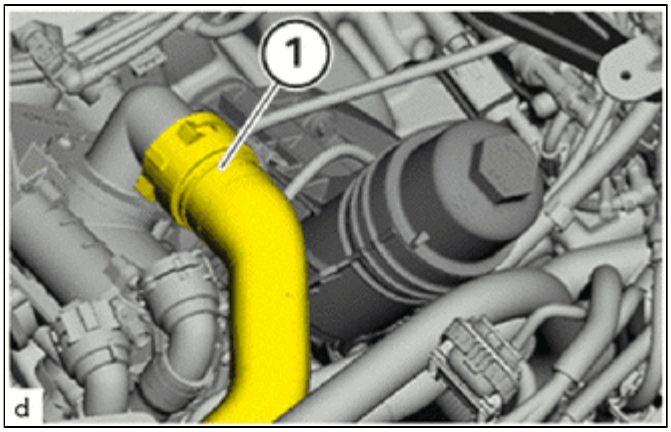
NOTICE:

To provide a better overview: Illustration of surrounding parts in removed state.

HINT:

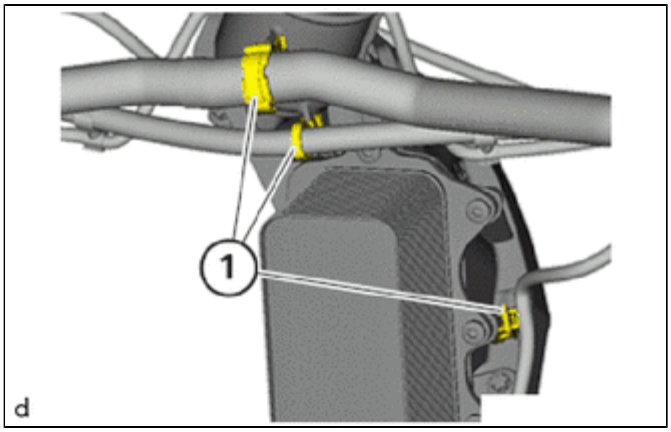
Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.

(a) Unlock No. 2 radiator hose (1) and pull off.



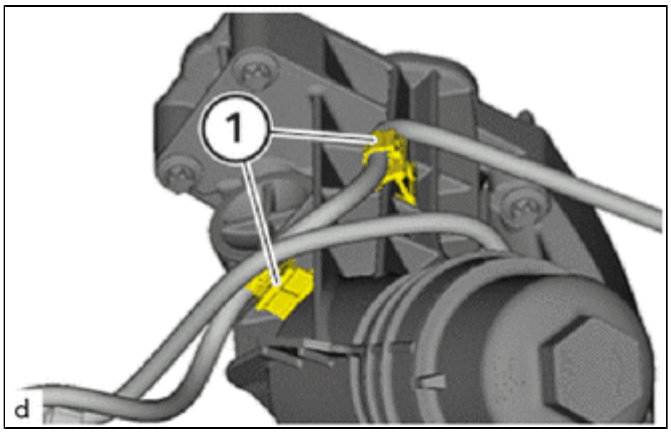
(b) Place No. 2 radiator hose (1) to one side.

(c) Unclip the alternator wire and engine wire (1).



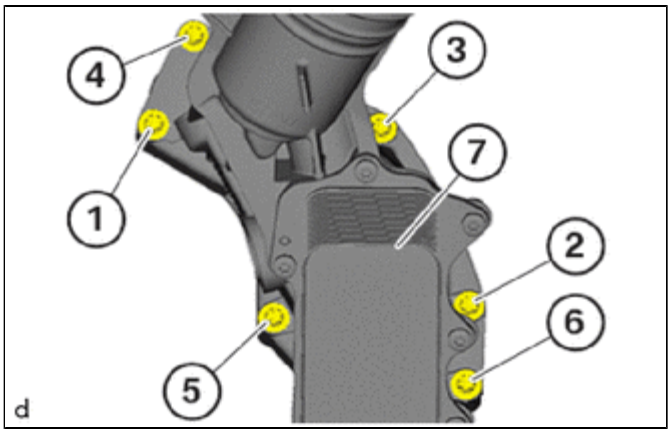
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(d) Unclip the engine wire (1).



(e) Loosen E10 bolt (1) to (6).

(1) The bolts (2) and (6) must be unscrewed from the bottom.



(f) Guide out the oil filter bracket (7) upwards and remove.

11. REMOVE OIL COOLER ASSEMBLY

Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGO
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): OIL FILTER BRACKET: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL OIL COOLER ASSEMBLY

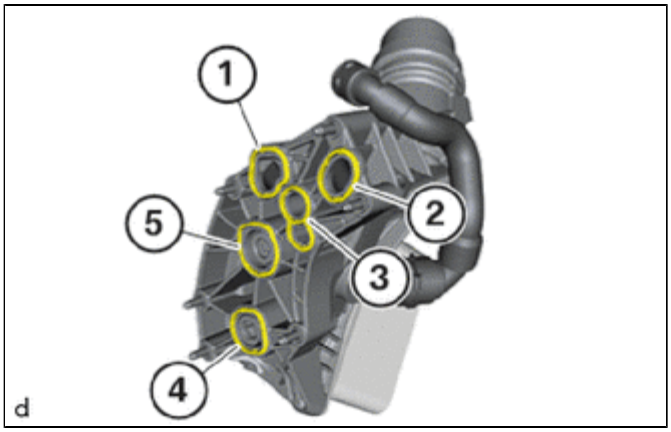
Click here INFO

2. INSTALL OIL FILTER BRACKET

HINT:

To provide a better overview: Illustration of surrounding parts in removed state.

(a) Clean the sealing surfaces on the engine block.



NOTICE:

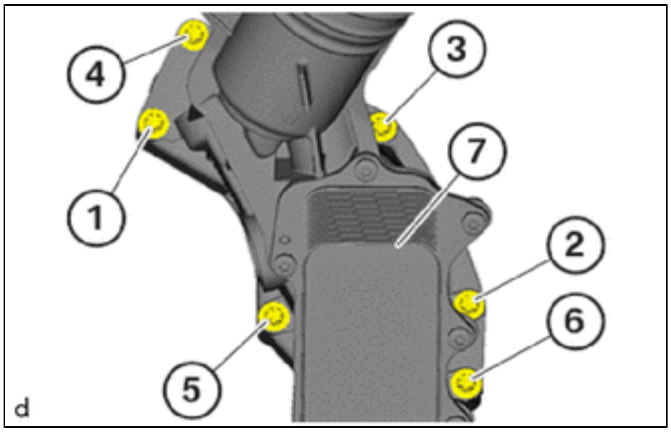
- Damage to the surface.

  The use of metal-cutting tools (e.g. sandpaper) to clean the surfaces can damage them and lead to leaks or engine damage.

  - Do not use any metal-cutting tools.

(b) Replace oil filter bracket gasket (1) to (5).

(c) Insert and install the oil filter bracket (7) from the top.



(d) Tighten E10 bolts in the order (1) to (6).

(1) The bolts (2) and (6) must be tightened from the bottom.

Torque:

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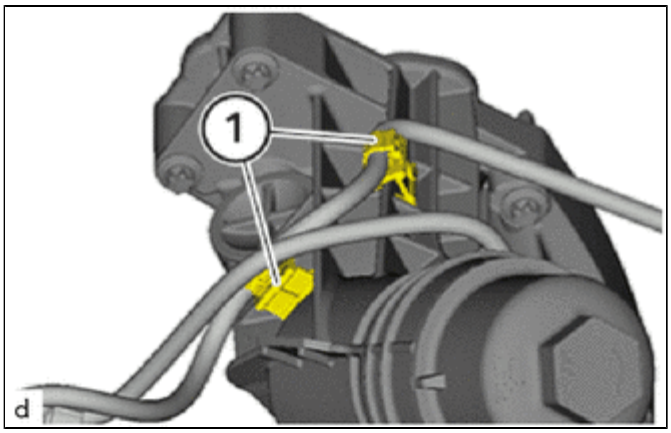
1st :

4.0 N·m {41 kgf·cm, 35 in·lbf}

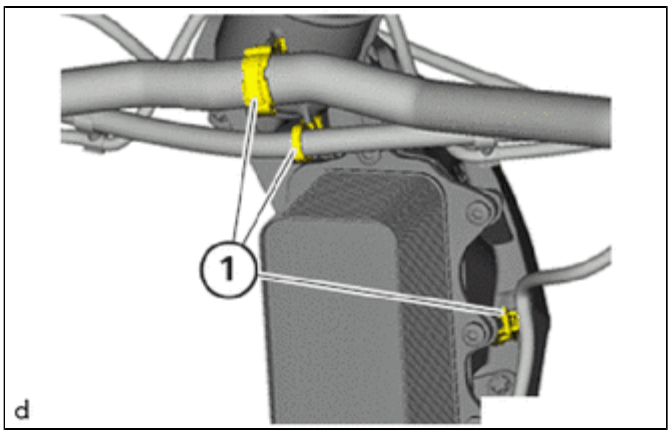
2nd :

10 N·m {102 kgf·cm, 7 ft·lbf}

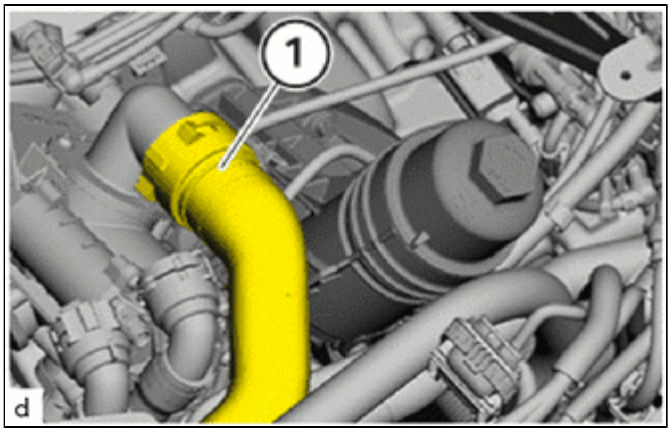
(e) Clip in the engine wire (1).



(f) Clip in the alternator wire and engine wire (1).



(g) Connect and lock the No. 2 radiator hose (1).



HINT:

Make sure that the connections are locked correctly. The locks must engage audibly.

3. INSTALL INTAKE MANIFOLD

Click here INFO

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4. INSTALL OIL FILTER CAP ASSEMBLY

Click here INFO

5. ADD ENGINE OIL

Click here INFO

6. INSTALL OIL FILLER CAP ASSEMBLY

Click here INFO

7. INSTALL NO. 1 ENGINE UNDER COVER ASSEMBLY

Click here INFO

8. INSTALL FRONT SUSPENSION MEMBER LOWER PROTECTOR

Click here INFO

9. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Click here INFO

10. ADD ENGINE COOLANT (for High Pressure)

Click here INFO

11. INSPECT ENGINE COOLANT

Click here INFO

12. INSPECT FOR ENGINE OIL LEAK

Click here INFO

13. CHECK ENGINE OIL LEVEL

Click here INFO

14. PERFORM CBS RESET

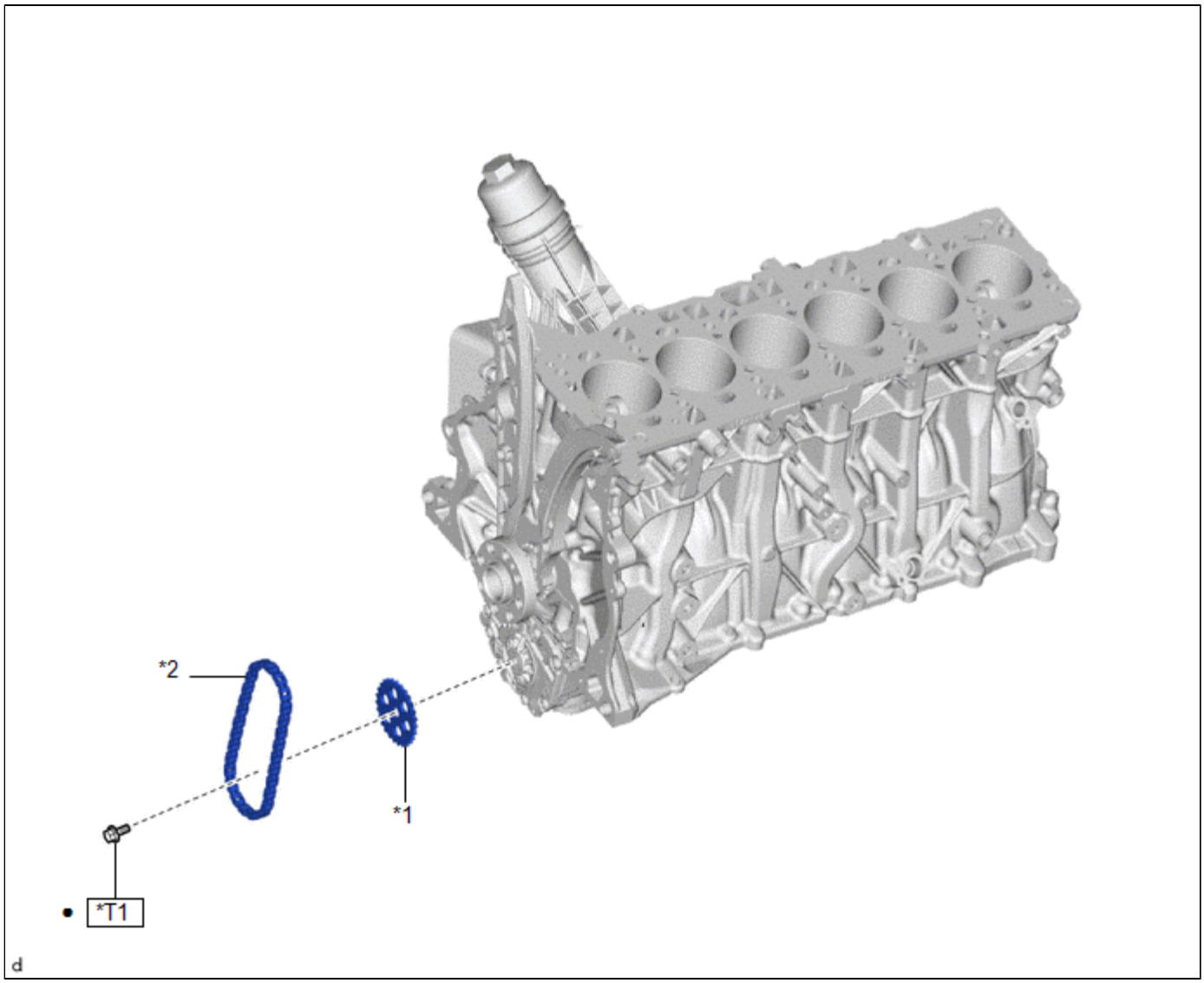
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGY
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): OIL PUMP DRIVE CHAIN: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	OIL PUMP DRIVE SHAFT SPROCKET	*2	OIL PUMP DRIVE CHAIN SUB-ASSEMBLY
☐	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st: 5.0 (51, 44 in.*lbf) 2nd: Turn 90°	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGZ
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): OIL PUMP DRIVE CHAIN: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

1. REMOVE CHAIN SUB-ASSEMBLY

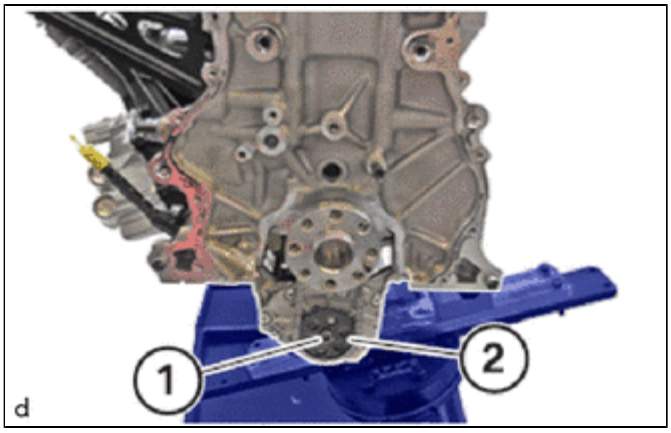
Click here INFO

2. REMOVE OIL PUMP DRIVE CHAIN SUB-ASSEMBLY

(a) Loosen T45 bolt (1).

HINT:

The thread is a left-hand thread.



(b) Use the SST to counter-hold the oil pump drive shaft sprocket.

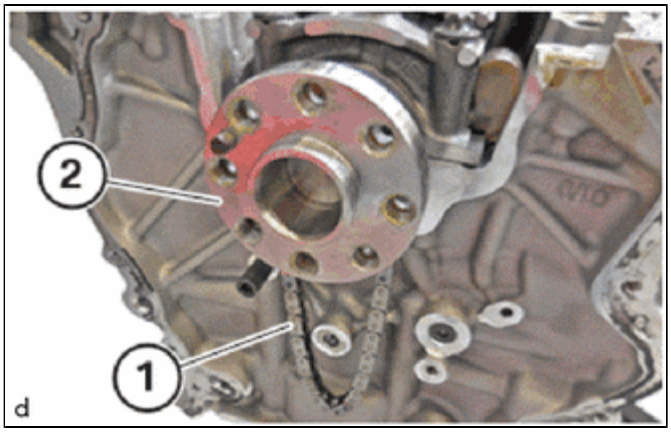
SST: 09960-10010

09962-01000

09963-00700

(c) Guide out and remove oil pump drive shaft sprocket (2).

(d) Guide out and remove oil pump drive chain sub-assembly (1) from crankshaft (2).



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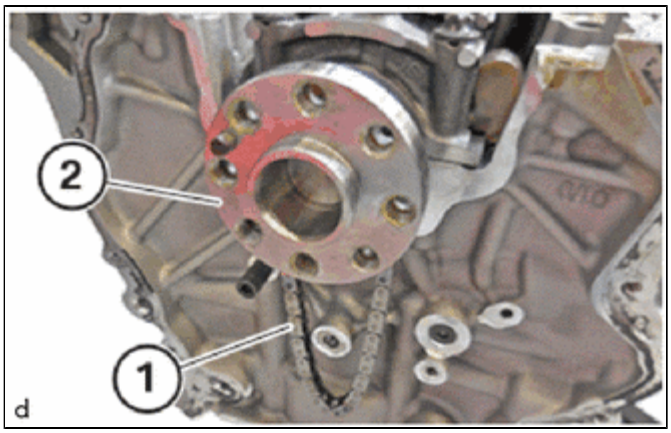
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDH0
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): OIL PUMP DRIVE CHAIN: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL OIL PUMP DRIVE CHAIN SUB-ASSEMBLY

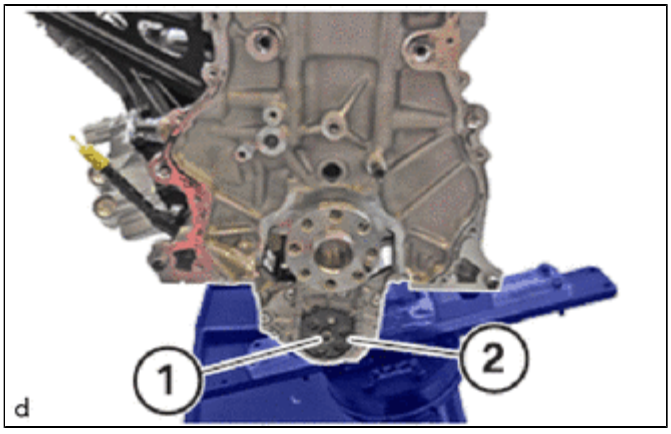
(a) Guide in and install oil pump drive chain sub-assembly (1) on crankshaft (2).



(b) Position oil pump drive shaft sprocket (2) on the oil pump assembly so that the labelling on the oil pump drive shaft sprocket (2) is facing away from the oil pump assembly.

HINT:

The thread is a left-hand thread.



(c) Insert the oil pump drive shaft sprocket (2) in the oil pump drive chain sub-assembly.

(d) Replace the bolt (1).

(e) Hold the oil pump drive shaft sprocket (2), tighten the T45 bolt (1).

SST: 09960-10010

09962-01000

09963-00700

Torque:

5.0 N·m {51 kgf·cm, 44 in·lbf}

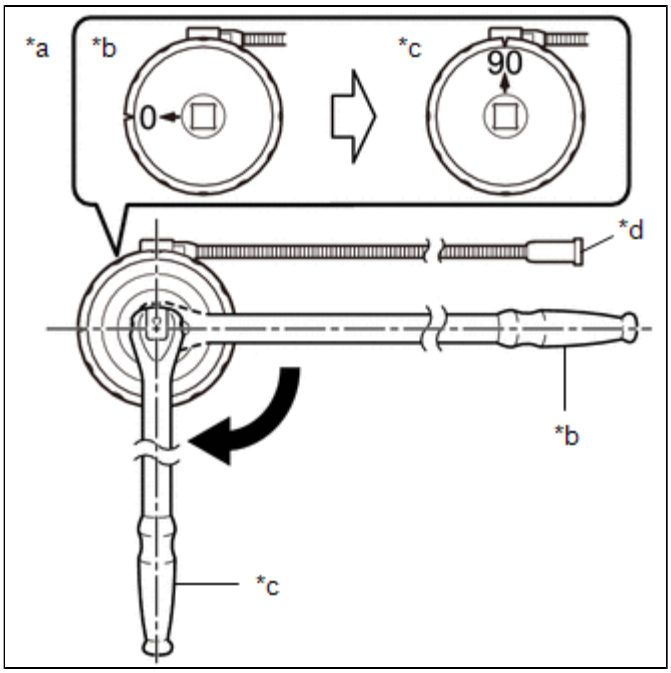
(f) Using SST, tighten the T45 bolt (1) an additional 90°.

SST: 09900-WA010

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HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.



*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

2. INSTALL CHAIN SUB-ASSEMBLY

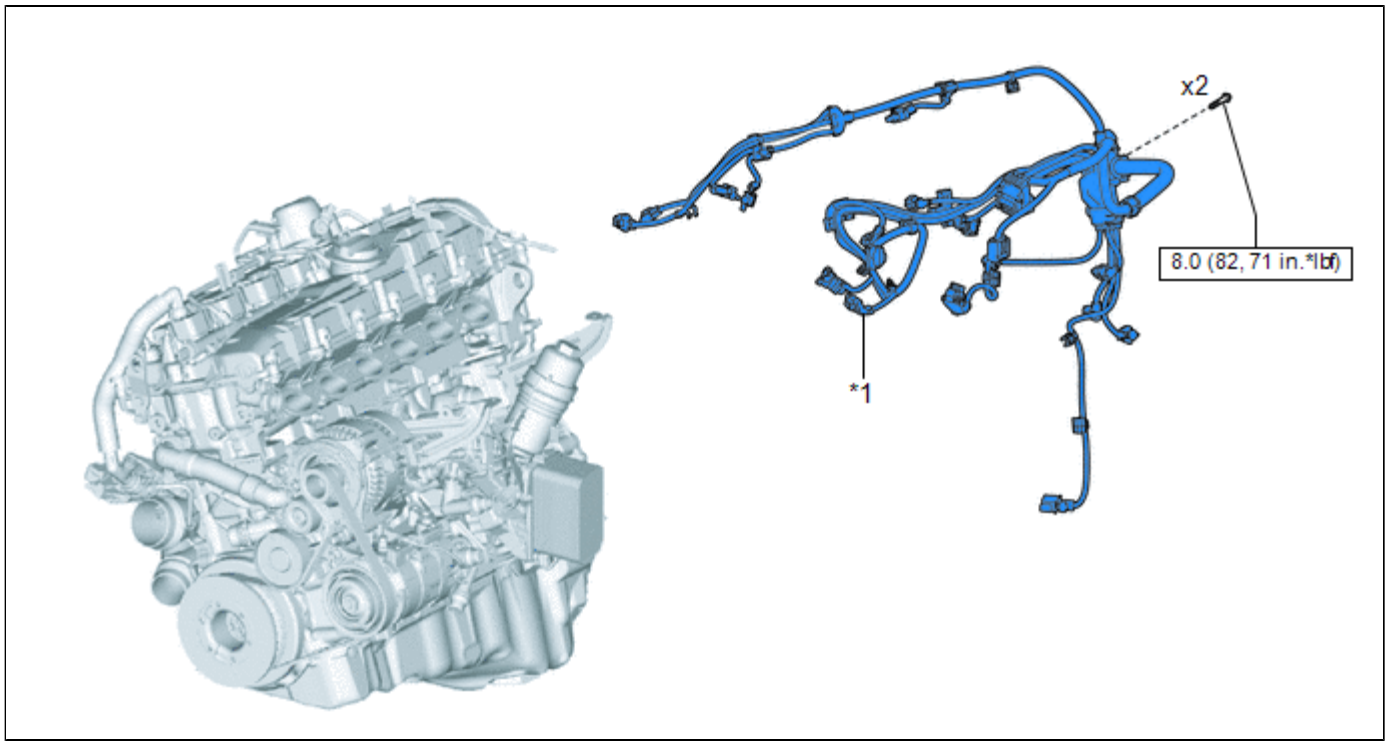
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDHD
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): PISTON: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

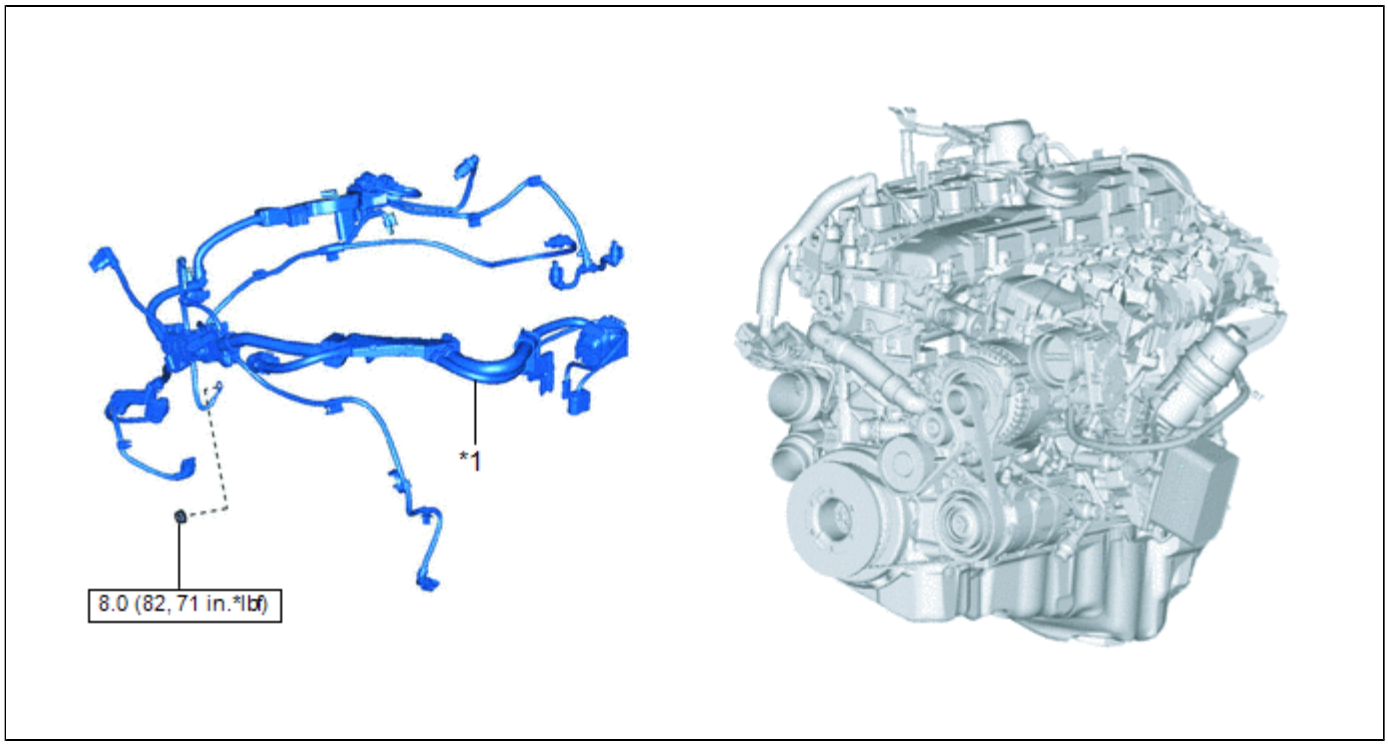
ILLUSTRATION



*1	ENGINE WIRE	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

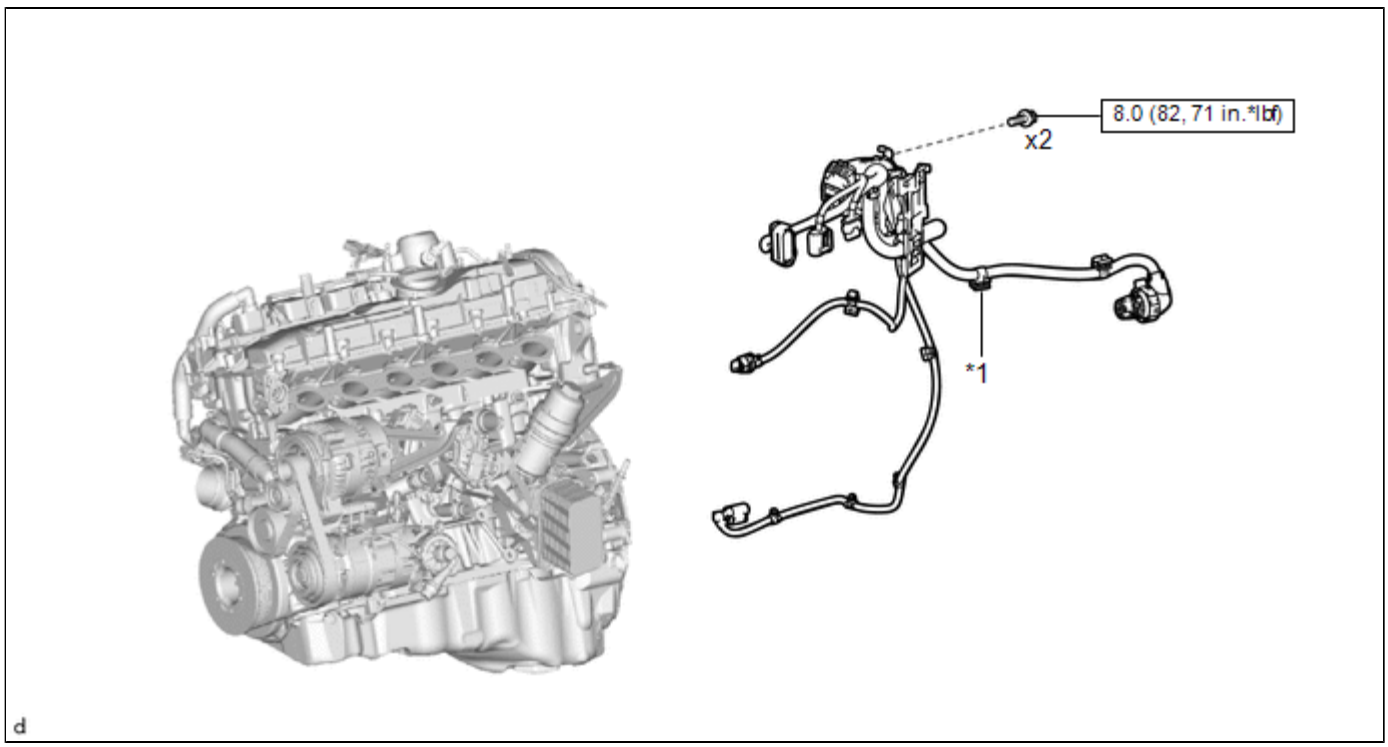
ILLUSTRATION

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*1	NO. 2 ENGINE WIRE	-	-

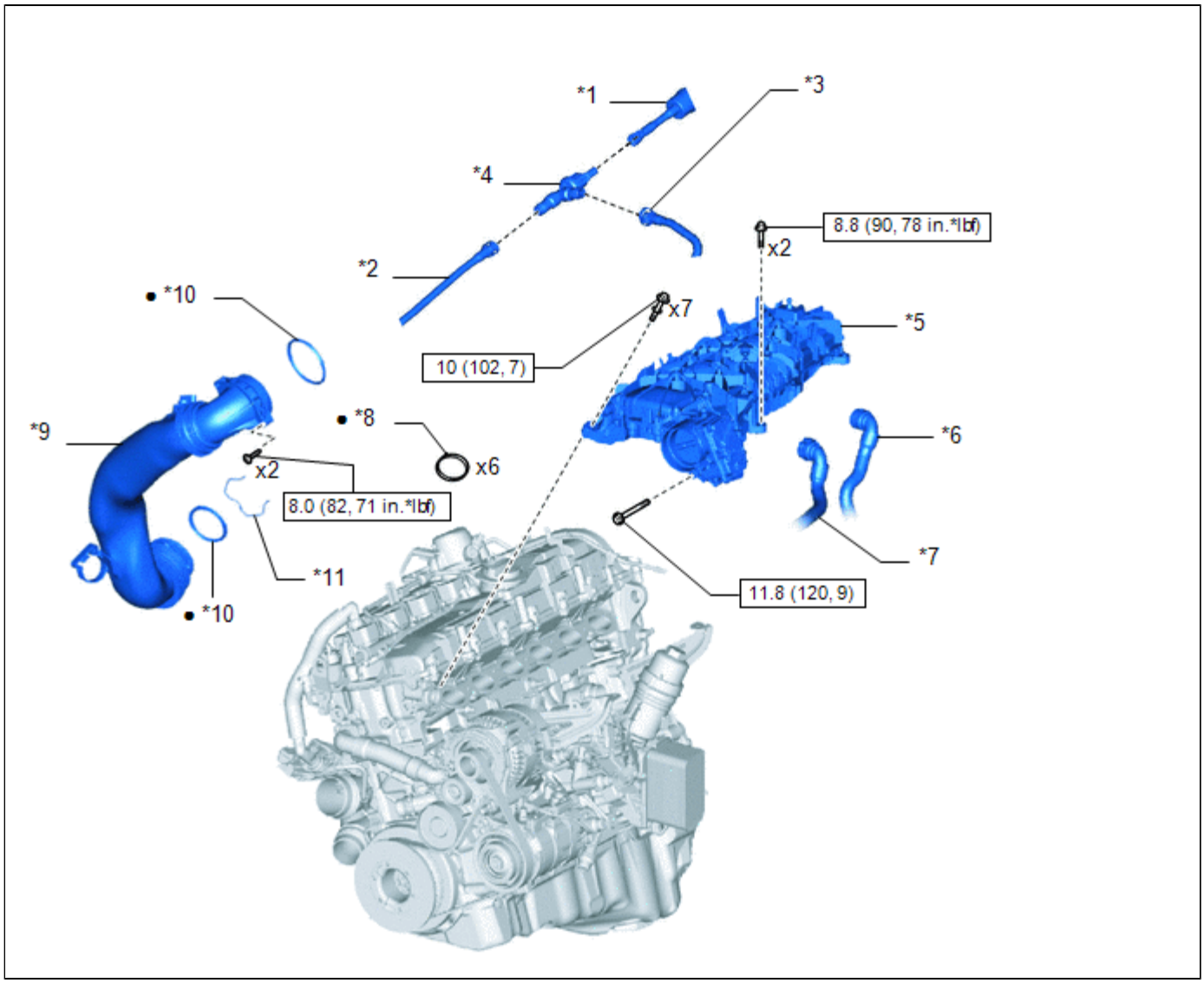
ILLUSTRATION



*1	TRANSMISSION WIRE	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

ILLUSTRATION

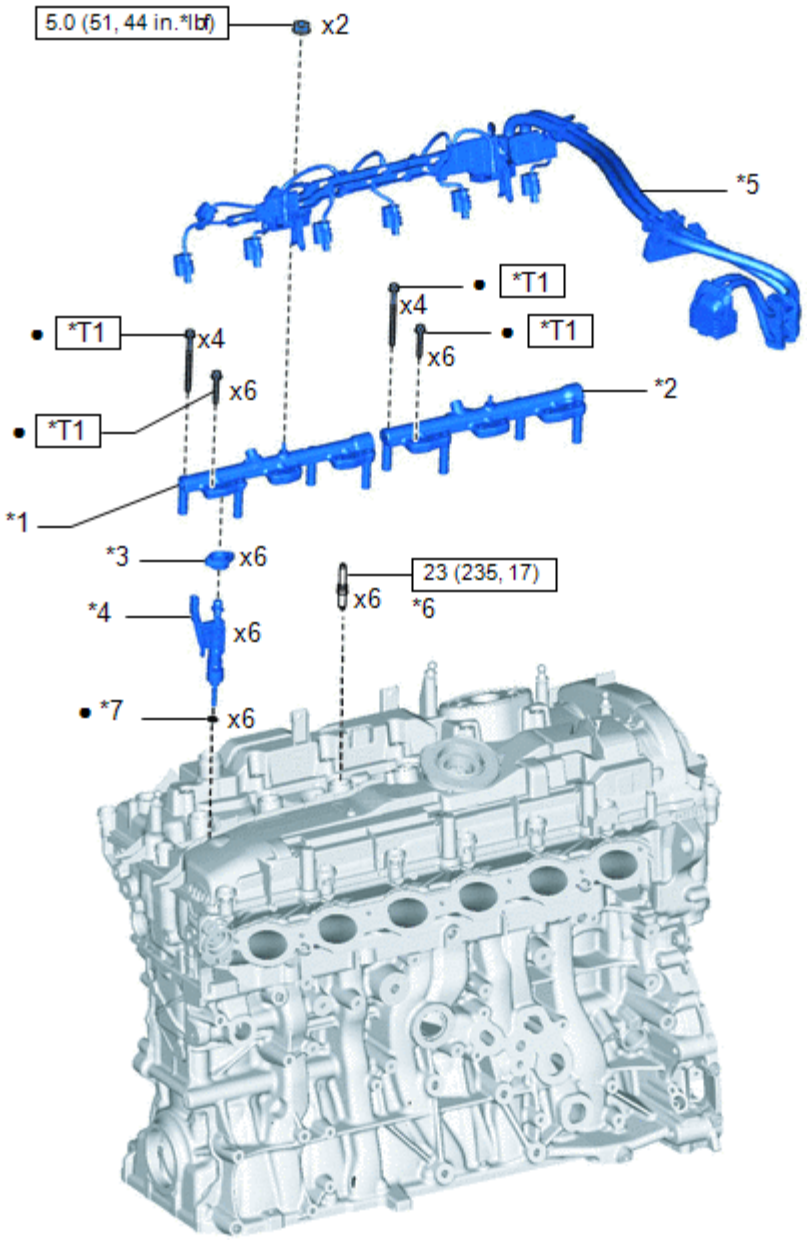
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*1	NO. 2 FUEL VAPOR FEED HOSE	*2	NO. 1 FUEL VAPOR FEED HOSE
*3	NO. 3 FUEL VAPOR FEED HOSE	*4	NO. 1 CHECK VALVE
*5	INTAKE MANIFOLD	*6	NO. 5 WATER BY-PASS HOSE
*7	NO. 7 WATER BY-PASS HOSE	*8	NO. 1 INTAKE MANIFOLD TO HEAD GASKET
*9	NO. 2 AIR CLEANER HOSE	*10	SEALING RING
*11	AIR HOSE CLAMP	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

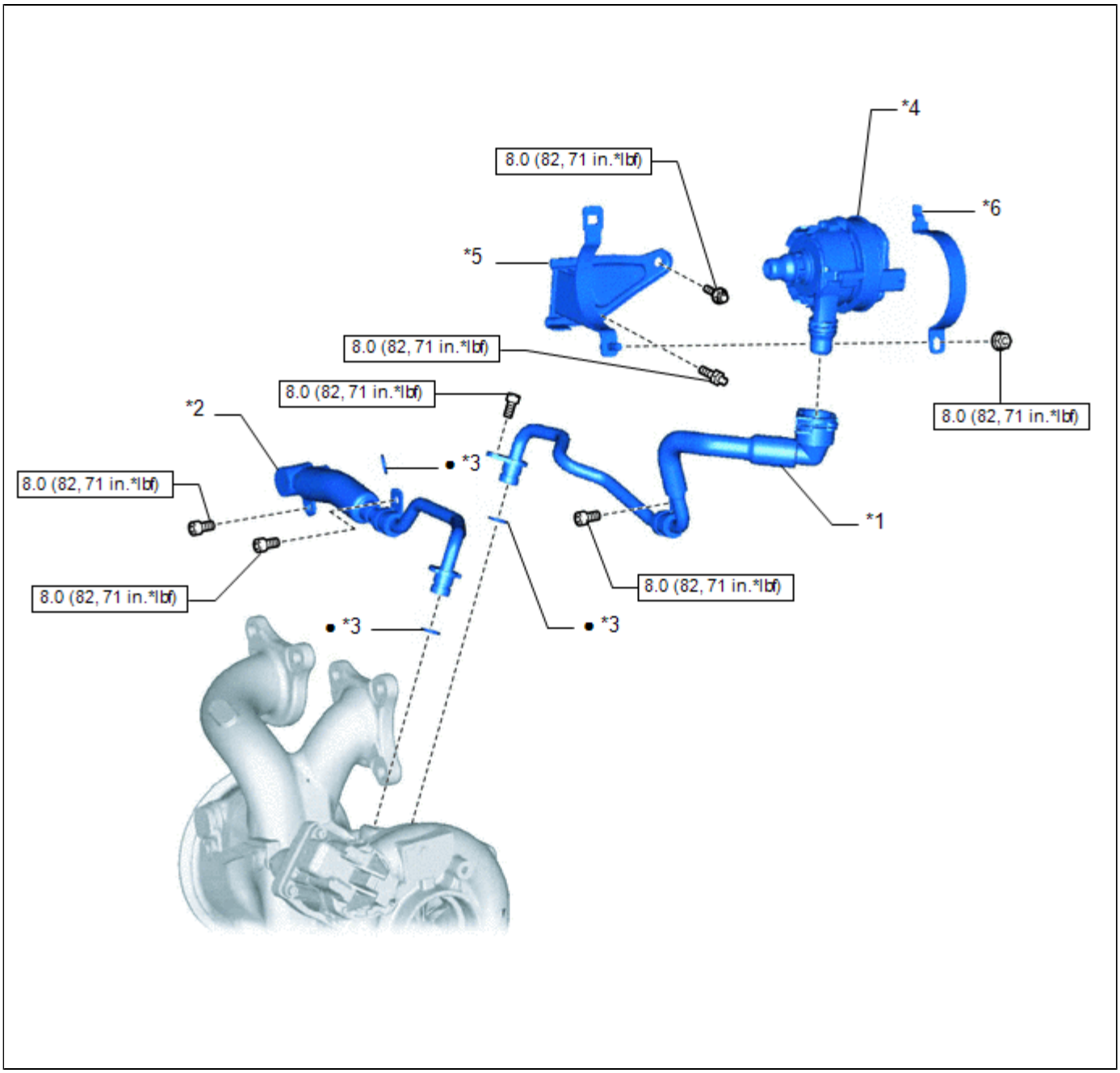
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*1	FUEL DELIVERY PIPE	*2	NO. 2 FUEL DELIVERY PIPE
*3	HOLDER	*4	FUEL INJECTOR ASSEMBLY
*5	NO. 4 ENGINE WIRE	*6	SPARK PLUG
*7	O-RING	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st: 5.0 (51, 44 in.*lbf) 2nd: Turn 90°	-	-

ILLUSTRATION

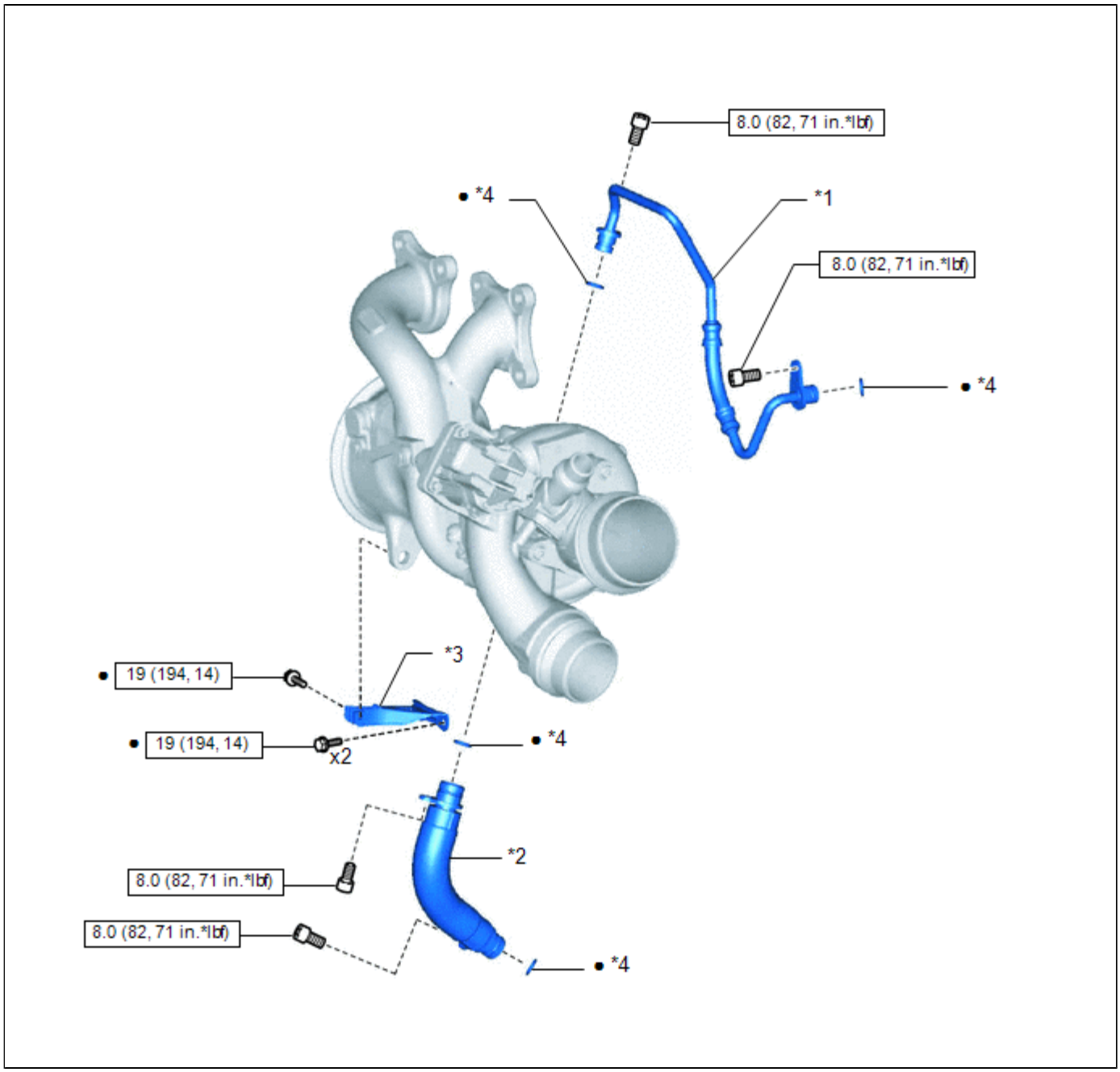
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*1	NO. 1 TURBO WATER PIPE SUB-ASSEMBLY	*2	NO. 2 TURBO WATER PIPE SUB-ASSEMBLY
*3	O-RING	*4	WATER PUMP ASSEMBLY
*5	NO. 1 WATER PUMP BRACKET SUB-ASSEMBLY	*6	NO. 2 WATER PUMP BRACKET SUB-ASSEMBLY
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

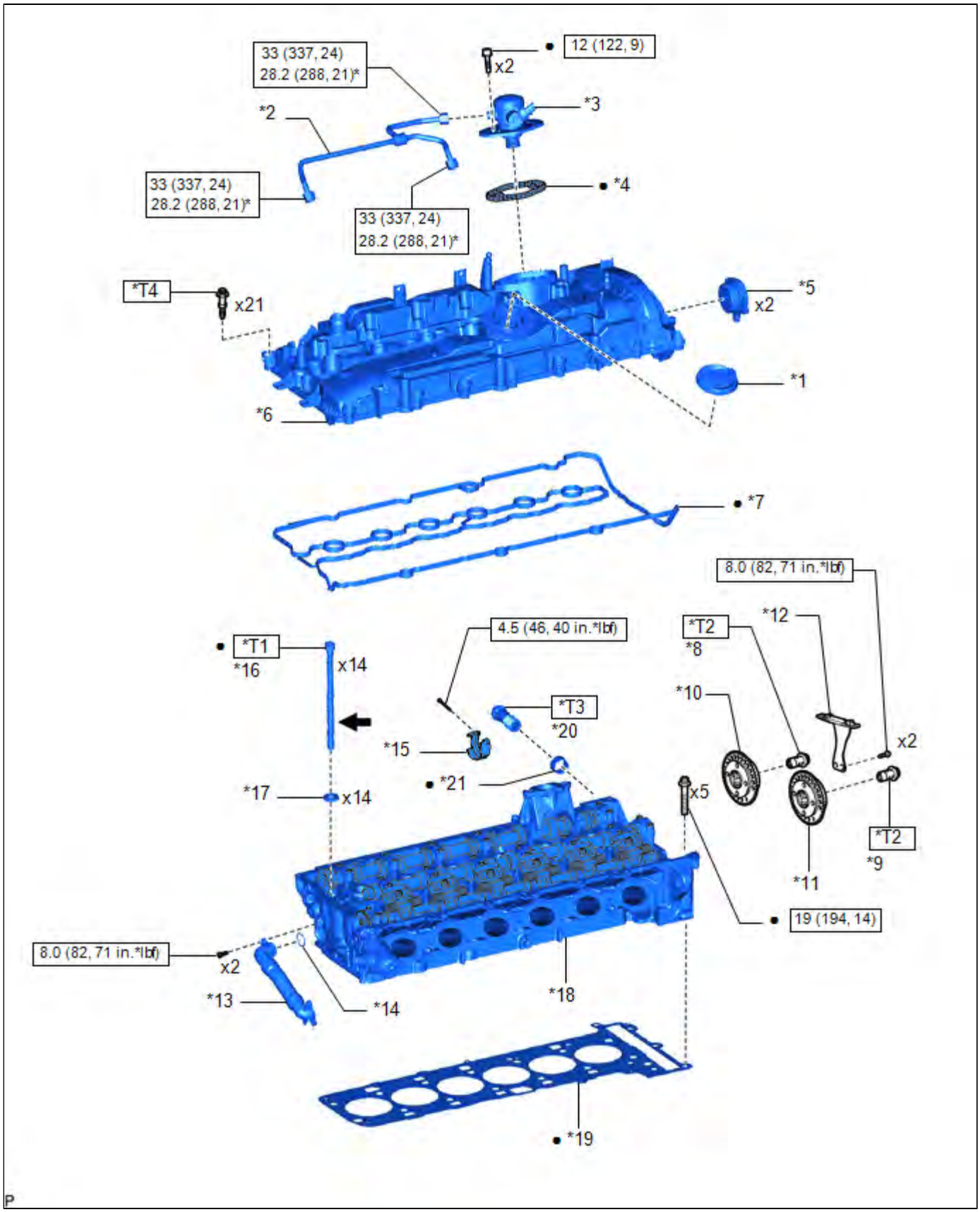
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*1	TURBO OIL INLET PIPE SUB-ASSEMBLY	*2	TURBO OIL OUTLET PIPE
*3	TURBOCHARGER STAY	*4	O-RING
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

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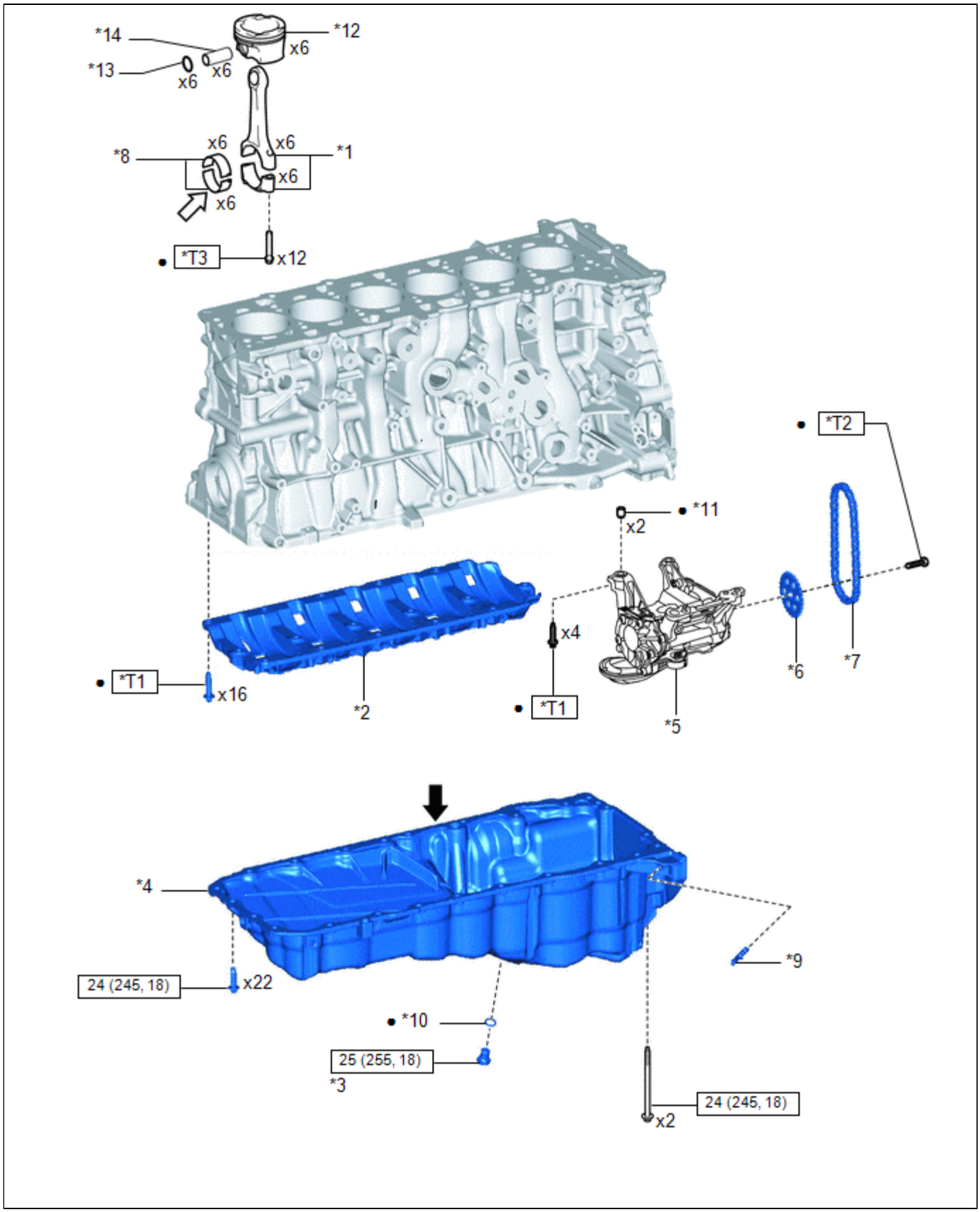
*1	OIL FILLER CAP ASSEMBLY	*2	NO. 1 FUEL PIPE SUB-ASSEMBLY
*3	FUEL PUMP ASSEMBLY	*4	FUEL PUMP SPACER GASKET
*5	CAM TIMING OIL CONTROL SOLENOID ASSEMBLY	*6	CYLINDER HEAD COVER SUB-ASSEMBLY
			EXHAUST CAMSHAFT TIMING GEAR

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*7	CYLINDER HEAD COVER GASKET	*8	CENTER BOLT ASSEMBLY
*9	INTAKE CAMSHAFT TIMING GEAR CENTER BOLT ASSEMBLY	*10	CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY
*11	CAMSHAFT TIMING GEAR ASSEMBLY	*12	CHAIN DAMPER GUIDE
*13	NO. 2 WATER BY-PASS HOSE	*14	O-RING
*15	CAMSHAFT SENSOR WHEEL	*16	CYLINDER HEAD SET BOLT
*17	CYLINDER HEAD SET PLATE WASHER	*18	CYLINDER HEAD SUB-ASSEMBLY
*19	CYLINDER HEAD GASKET	*20	NO. 1 CHAIN TENSIONER ASSEMBLY
*21	SEALING SLEEVE	-	-
	N*m (kgf*cm, ft.*lbf): Specified torque	*	For use with a union nut wrench
•	Non-reusable part		Engine oil
*T1	1st: 30 (306, 22) 2nd: Turn 90° 3rd: Turn 180°	*T2	1st: 10 (102, 7) 2nd: 30 (306, 22) 3rd : 50 (510, 37) 4th : Turn 35°
*T3	1st: 20 (204, 15) 2nd: Turn 40°	-	-

ILLUSTRATION

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*1	CONNECTING ROD SUB-ASSEMBLY	*2	NO. 1 OIL PAN BAFFLE PLATE
*3	OIL PAN DRAIN PLUG	*4	OIL PAN SUB-ASSEMBLY

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*5	OIL PUMP ASSEMBLY	*6	OIL PUMP DRIVE SHAFT GEAR
*7	OIL PUMP DRIVE CHAIN SUB-ASSEMBLY	*8	CONNECTING ROD BEARING
*9	SEALING CAP	*10	OIL PAN DRAIN PLUG GASKET
*11	OIL PUMP SET PIN	*12	PISTON SUB-ASSEMBLY W/PIN
*13	PISTON PIN HOLE SNAP RING	*14	PISTON PIN
	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
	Loctite 5970 Flange Sealant		Engine oil
*T1	1st: 15 (153, 11) 2nd: Turn 45°	*T2	1st: 5.0 (51, 44 in.*lbf) 2nd: Turn 90°
*T3	1st: 20 (204, 15) 2nd: Turn 70° 3rd: Turn 70°	-	-

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Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): PISTON: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

1. REMOVE ENGINE ASSEMBLY

Click here INFO

2. REMOVE SPARK PLUG

Click here INFO

3. REMOVE NO. 2 AIR CLEANER HOSE

Click here INFO

4. REMOVE OIL FILTER CAP ASSEMBLY

Click here INFO

5. REMOVE OIL PAN DRAIN PLUG

Click here INFO

6. INSTALL OIL PAN DRAIN PLUG

Click here INFO

7. INSTALL OIL FILTER CAP ASSEMBLY

Click here INFO

8. REMOVE NO. 1 FUEL PIPE SUB-ASSEMBLY

Click here INFO

9. REMOVE FUEL PUMP ASSEMBLY

Click here INFO

10. REMOVE FUEL INJECTOR ASSEMBLY (for Front Side)

Click here INFO

11. REMOVE FUEL INJECTOR ASSEMBLY (for Rear Side)

Click here INFO

12. REMOVE CAM TIMING OIL CONTROL SOLENOID ASSEMBLY

Click here INFO

13. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY

Click here

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INFO

14. REMOVE INTAKE MANIFOLD

Click here INFO

15. REMOVE OUTLET TURBO OIL PIPE

Click here INFO

16. REMOVE TURBOCHARGER STAY

Click here INFO

17. SET NO. 1 CYLINDER TO TDC (COMPRESSION)

Click here INFO

18. REMOVE NO. 1 CHAIN TENSIONER ASSEMBLY

Click here INFO

19. LOOSEN RELEASING INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

20. LOOSEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

21. REMOVE INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

22. REMOVE EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

23. REMOVE CAMSHAFT TIMING GEAR ASSEMBLY

Click here INFO

24. REMOVE CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

Click here INFO

25. REMOVE SST

Click here INFO

26. REMOVE CYLINDER HEAD SUB-ASSEMBLY

Click here INFO

27. REMOVE CYLINDER HEAD GASKET

Click here INFO

28. REMOVE OIL PAN SUB-ASSEMBLY

Click here INFO

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29. REMOVE OIL PUMP ASSEMBLY

Click here INFO

30. REMOVE NO. 1 OIL PAN BAFFLE PLATE

Click here INFO

31. REMOVE CONNECTING ROD SUB-ASSEMBLY

NOTICE:

- Damage on the cylinder wall and oil spray nozzles.

  Major force can scratch the cylinder wall and bend the oil spray nozzles.

  - Carefully move the piston and connecting rod sub-assembly in the engine block.
- Piston, gudgeon pin, connecting rod sub-assembly and connecting rod bearings are matched to each other and balanced.

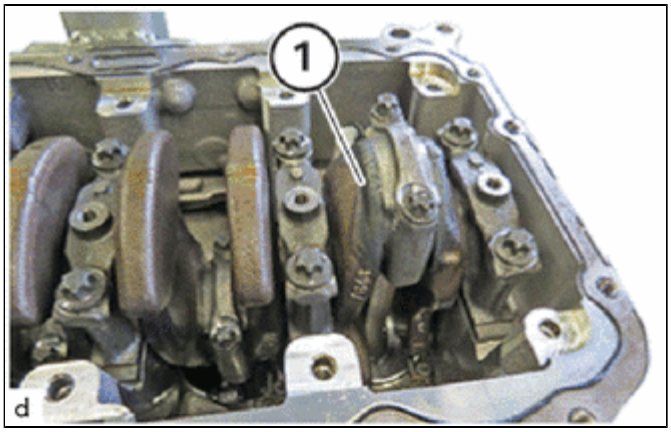
  Always install the piston, gudgeon pin, connecting rod and connecting rod bearing shells in the cylinder from which they were removed.
- The connecting rod sub-assemblies of the engine are balanced and are matched to each other.

  A single connecting rod sub-assembly is not permitted to be replaced. Always replace all connecting rod sub-assemblies.

HINT:

The description is for one component only. The procedure is identical for all further components.

(a) Turn the crankshaft until the connecting rod bearing journal (1) reaches a vertical position.



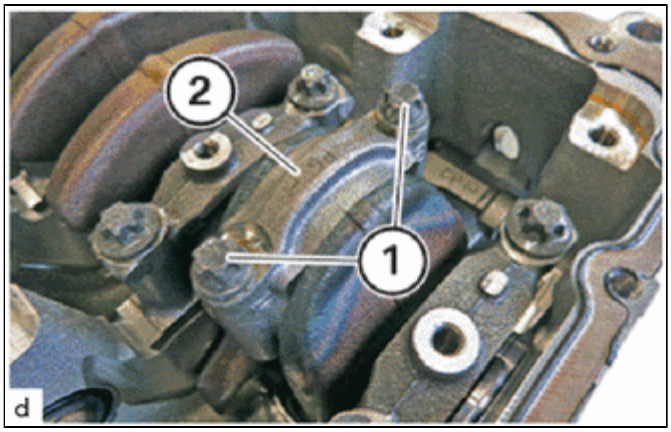
(b) Loosen E12 bolts (1).

NOTICE:

- Engine damage caused by incorrectly installed connecting rod bearings and connecting rod bearing caps.

  Engine damage may result from incorrectly installing connecting rod bearings and connecting rod bearing caps.

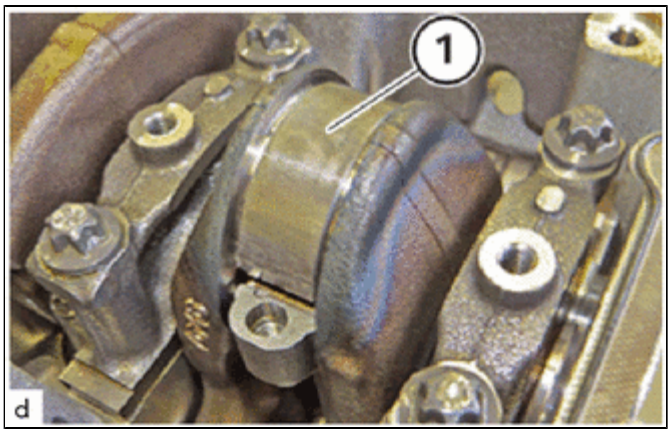
  - Always install all connecting rod bearings and connecting rod bearing caps in the same position from which they were removed.



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(c) Remove the connecting rod bearing cap (2) and put to one side in the correct order.

(d) Remove connecting rod bearing (1).



NOTICE:

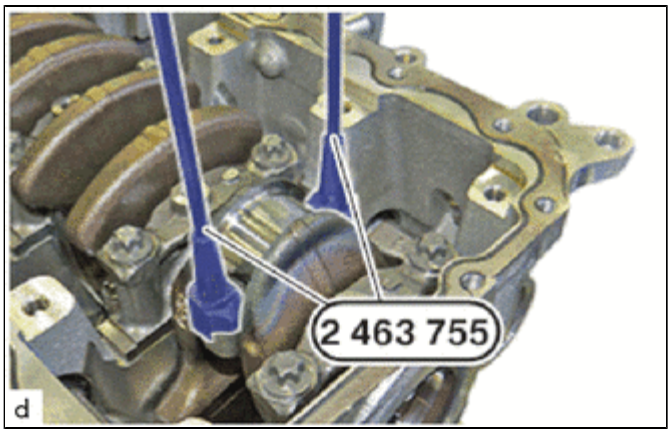
- Engine damage caused by incorrectly installed connecting rod bearings and connecting rod bearing caps.

  Engine damage may result from incorrectly installing connecting rod bearings and connecting rod bearing caps.

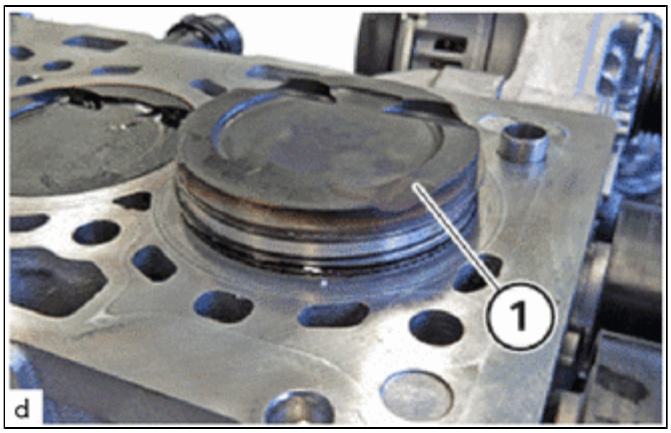
  - Always install all connecting rod bearings and connecting rod bearing caps in the same position from which they were removed.

(e) Bolt special tool 2 463 755 in at large connecting rod eye.

SST: 09200-WA730



(f) Push the piston (1) and the connecting rod upwards out of the crankcase.



32. INSPECT PISTON

HINT:

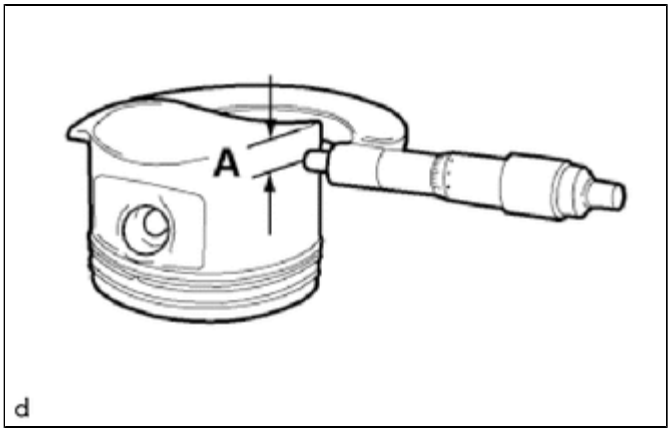
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The description is for one component only. The procedure is identical for all further components.

(a) Position measuring bolt in area (A) and measure piston installation clearance transversely to gudgeon pin.

Piston diameter:

Distance (A) to the lower end of the piston skirt	Nominal dimension of piston diameter
14 mm (0.551 in.)	81.938 to 81.956 mm (3.226 to 3.227 in.)
26 mm (1.02 in.)	81.870 to 81.884 mm (3.223 to 3.224 in.)
49 mm (1.93 in.)	81.285 to 81.309 mm (3.200 to 3.201 in.)



HINT:

If the piston diameter is not as specified, replace the piston.

33. REMOVE PISTON PIN HOLE SNAP RING

NOTICE:

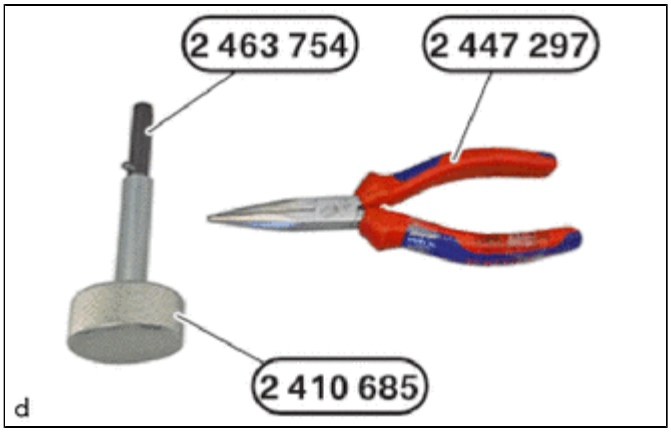
The description is for one component only. The procedure is identical for all further components.

HINT:

Wear safety goggles.

(a) Use special tools 2 463 754 , 2 410 685 and 2 447 297 to remove the piston from the connecting rod sub-assembly.

SST: 09200-WA580
SST: 09200-WA750
SST: 09900-WA150



(b) Use special tool 2 447 297 to remove the piston pin hole snap ring.

SST: 09900-WA150

CAUTION:

- Spring preload.

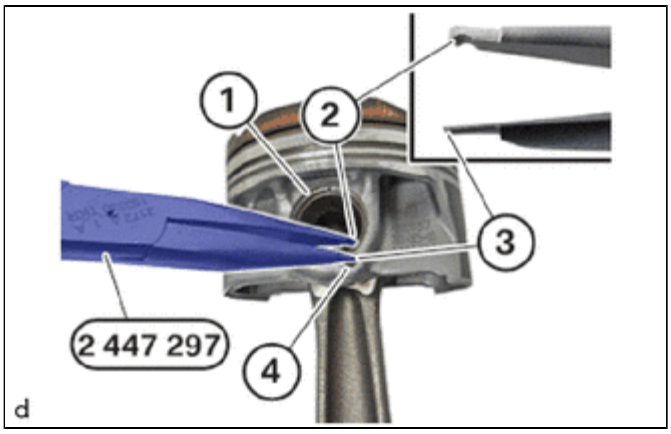
  Danger of injury!

  - The use of the specified special tool for the

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disassembly or installation is mandatory.

- Wear safety goggles.



(c) Insert the flat side (3) of the special tool into the groove (4).

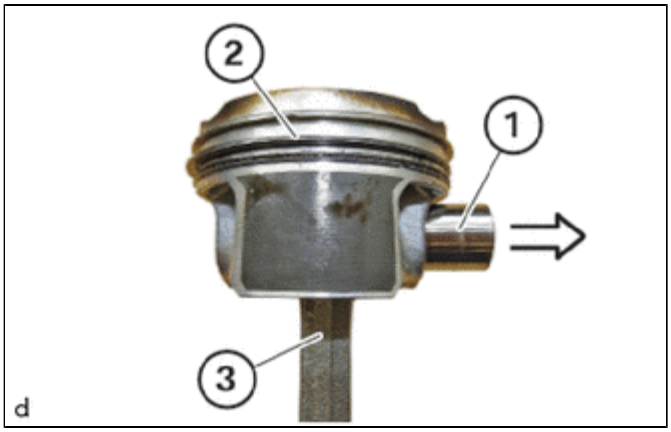
(d) Remove piston pin hole snap ring (1).

HINT:

Piston and piston pin are matched to each other.

Always install piston and piston pin together and do not switch by mistake.

(e) Check whether the piston pin (1) demonstrates tangible play in the piston.



(f) Check whether the piston pin (1) can be removed without excessive force.

(g) Removing the piston pin (1) is very difficult, or piston pin (1) has noticeable play.

(1) Replace the piston (2) and the Piston pin (1).

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDHF
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): PISTON: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

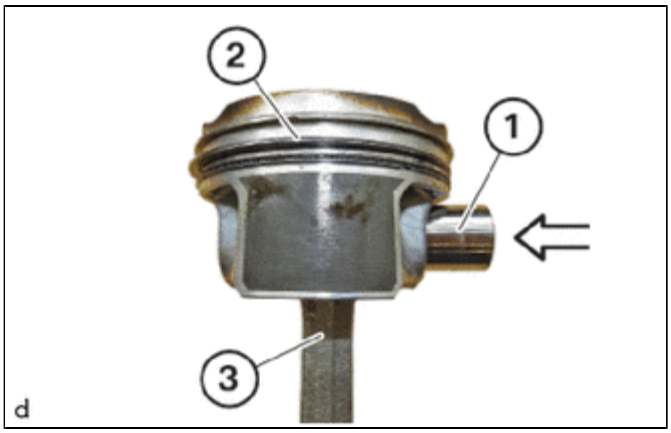
1. INSTALL PISTON

(a) Install piston pin (1) in piston (2) and connecting rod (3).

HINT:

Piston and piston pin are matched to each other.

Always install piston and piston pin together and do not switch by mistake.



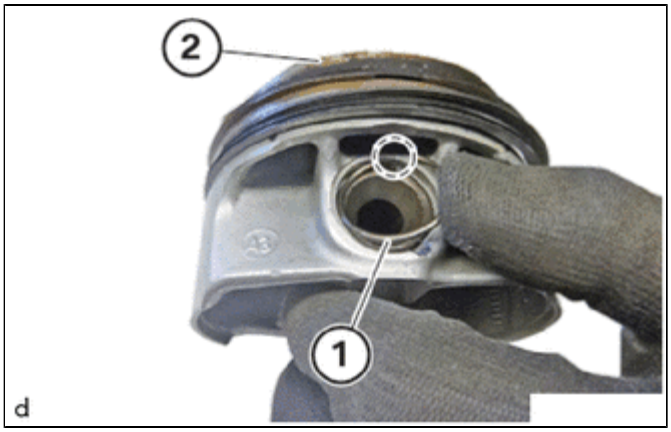
(b) Position the piston pin hole snap ring (1) such that the opening in the marked area of the piston pin hole snap ring points in the direction of the piston top side (2).

CAUTION:

- Piston pin hole snap ring with preload.

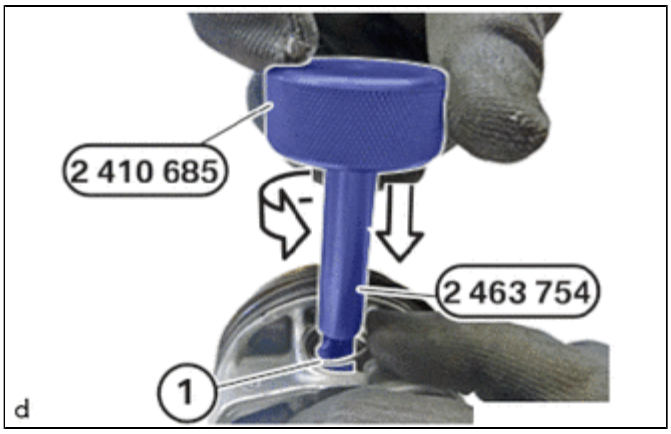
  Danger of injury!

  - The use of the specified special tool for the disassembly or installation is mandatory.
  - Wear safety goggles.



(c) Preload the piston pin hole snap ring (1) using your thumb.

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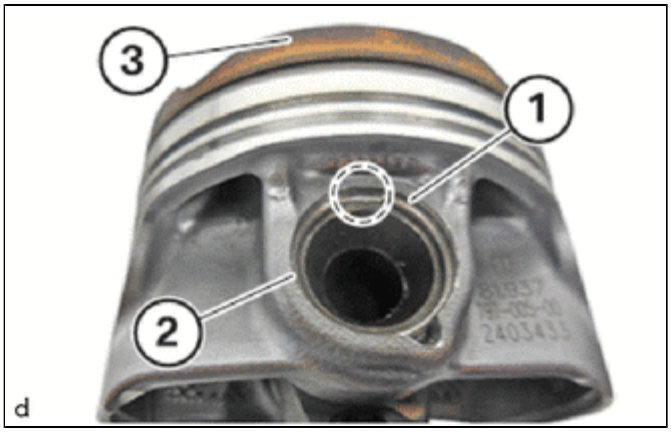
(d) Simultaneously press the piston pin hole snap ring into the piston using special tools 2 410 685 and 2 463 754.

SST: 09200-WA580
SST: 09200-WA750

(e) Twist and reposition special tool 2 410 685 and completely press the piston pin hole snap ring into the piston.

SST: 09200-WA580

(f) Check whether the piston pin hole snap ring (1) has been correctly positioned in the groove (2).



(g) Check whether the opening in the marked area of the piston pin hole snap ring is pointing towards the piston top side (3).

2. INSPECT CYLINDER BORE

HINT:

The description is for one component only. The procedure is identical for all further components.

(a) Cylinder barrel is cleaned.

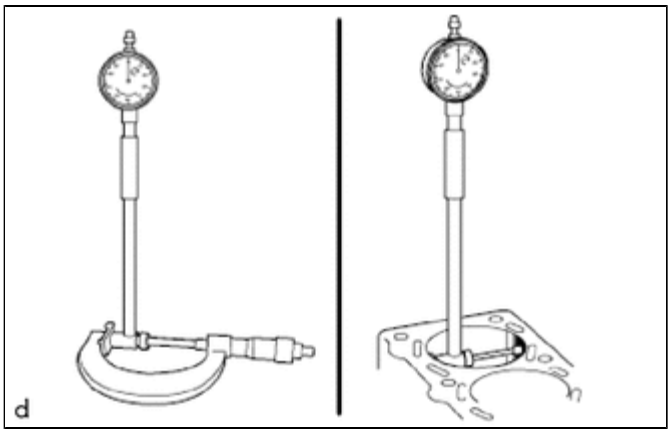
(b) Adjusting measuring bolt to nominal dimension of cylinder bore.

Cylinder bore:

Distance from the upper edge of the cylinder barrel to the measuring point	Diameter of cylinder bore	Permitted irregularity of the cylinder

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		bore
0 to 60 mm (0 to 2.36 in.)	82.000 to 82.014 mm (3.228 to 3.229 in.)	0.007 mm (0.000276 in.)
60 to 80 mm (2.36 to 3.15 in.)	82.008 to 82.022 mm (3.2287 to 3.2292 in.)	0.007 mm (0.000276 in.)
80 to 115 mm (3.15 to 4.53 in.)	82.021 to 82.037 mm (3.2292 to 3.2298 in.)	0.007 mm (0.000276 in.)
115 to 135 mm (4.53 to 5.31 in.)	82.033 to 82.057 mm (3.230 to 3.231 in.)	0.010 mm (0.000394 in.)



(c) Insert internal measuring device into the micrometer and set to zero.

(d) With the internal measuring device, measure the cylinder at the following points and check the deviations from the nominal dimension.

(1) Lower third of the cylinder bore in direction of travel,

(2) Lower third of the cylinder bore transversely to direction of travel,

(3) Middle third of the cylinder bore in direction of travel,

(4) Middle third of the cylinder bore transversely to direction of travel,

(5) Upper third of the cylinder bore in direction of travel,

(6) Upper third of the cylinder bore transversely to direction of travel.

Cylinder bore:

Distance from the upper edge of the cylinder barrel to the measuring point	Diameter of cylinder bore	Permitted irregularity of the cylinder bore
0 to 60 mm (0 to 2.36 in.)	82.000 to 82.014 mm (3.228 to 3.229 in.)	0.007 mm (0.000276 in.)
60 to 80 mm (2.36 to 3.15 in.)	82.008 to 82.022 mm (3.2287 to 3.2292 in.)	0.007 mm (0.000276 in.)
80 to 115 mm (3.15 to 4.53 in.)	82.021 to 82.037 mm (3.2292 to 3.2298 in.)	0.007 mm (0.000276 in.)
115 to 135 mm (4.53 to 5.31 in.)	82.033 to 82.057 mm (3.230 to 3.231 in.)	0.010 mm (0.000394 in.)

HINT:

If the cylinder bore is not as specified, replace the crankcase.

3. INSTALL CONNECTING ROD SUB-ASSEMBLY

NOTICE:

- Damage on the cylinder wall and oil spray nozzles.

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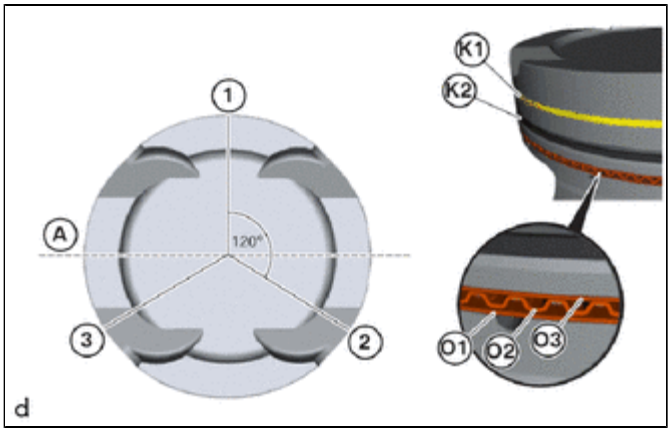
Major force can scratch the cylinder wall and bend the oil spray nozzles.

- Carefully move the piston and connecting rod in the engine block.

HINT:

The description is for one component only. The procedure is identical for all further components.

(a) Align the contact points of all piston rings by 120° each.



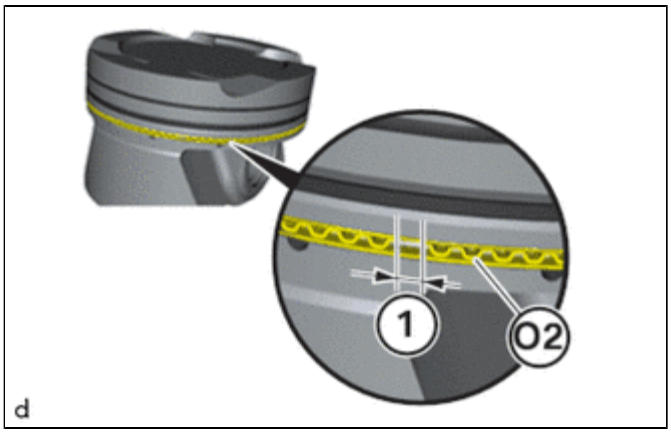
(b) Do not position contact points over axis of piston pin (A).

POSITION NUMBER	DESCRIPTION
1	12 o'clock position
2	4 o'clock position
3	8 o'clock position
A	Axis of piston pin
K1	1. Piston ring (plain rectangular compression ring)
K2	2. Piston ring (taper faced piston ring)
O1	Oil scraper ring below
O2	Spiral expander
O3	Oil scraper ring above

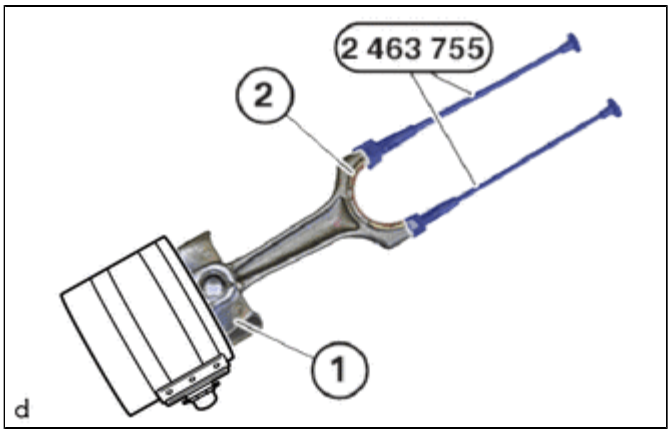
PISTON RING	ALIGN AT THE FOLLOWING POSITION
Upper oil scraper ring (O3)	Align at the 12 o'clock position (1)
Spiral expander (O2)	Align at the 4 o'clock position (2)
Lower oil scraper ring (O1)	Align at the 8 o'clock position (3)
Taper faced piston ring (K2)	Align at the 12 o'clock position (1)
Plain rectangular compression ring (K1)	Align at the 4 o'clock position (2)

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(c) Make sure that contact point (1) does not overlap spring (O2).



(d) Coat the pistons (1) and piston rings lightly with oil.

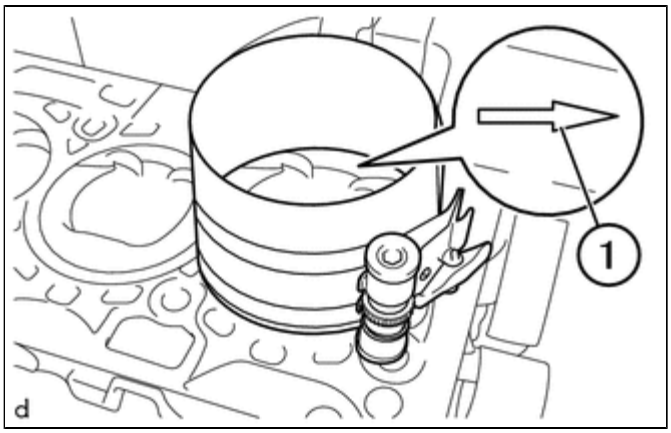


(e) Insert the piston (1) with the piston rings into the piston ring compressor.

(f) Bolt special tool 2 463 755 on at large connecting rod eye (2).

SST: 09200-WA730

(g) Align the piston so that the arrow (1) points to cylinder 1.



(h) Insert piston with the connecting rod into the piston ring compressor and guide it into the cylinder.

NOTICE:

- Damage on the cylinder wall and oil spray nozzles.

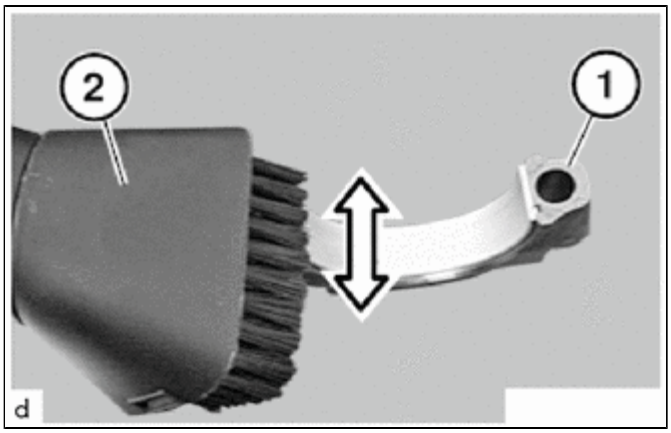
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Major force can scratch the cylinder wall and bend the oil spray nozzles.

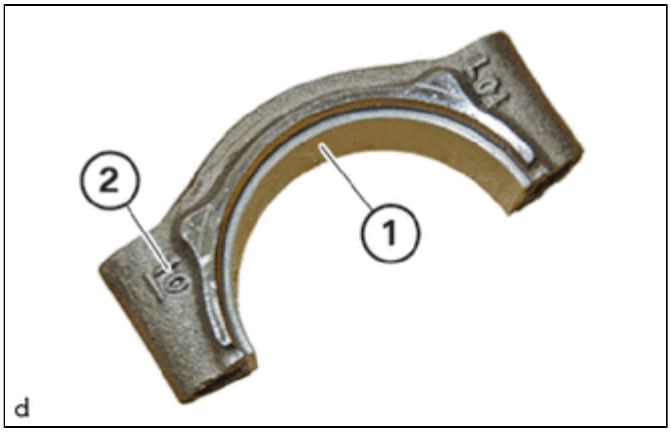
- Carefully move the piston and connecting rod in the engine block.

4. INSTALL CONNECTING ROD CAP

(a) Vacuum the connecting rod bearing and cracked surface (1) with a vacuum cleaner (2).



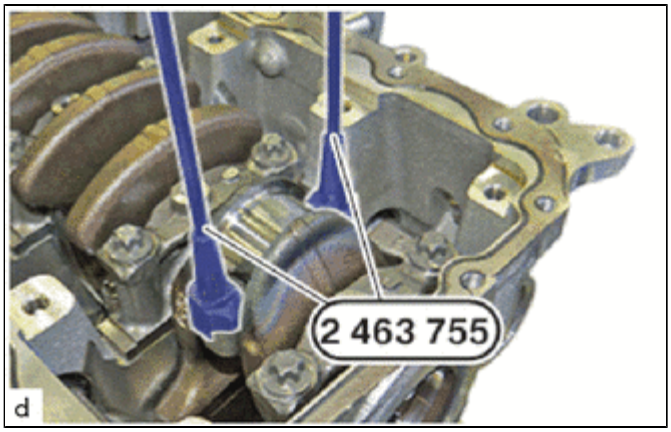
(b) Insert the connecting rod bearing (1) into the connecting rod bearing cap (2).



(c) Apply a light coat of oil to the connecting rod bearing (1).

(d) If necessary, bolt the special tool (assembly tool) 2 463 755 into the large connecting rod eye.

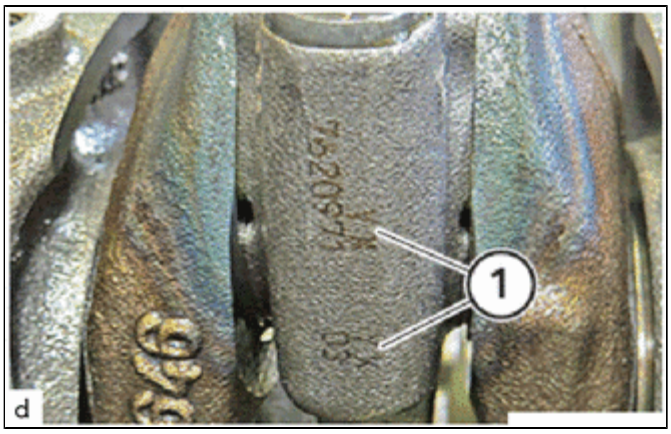
SST: 09200-WA730



(e) Pull the connecting rod up to the connecting rod bearing journal.

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(f) Attach the connecting rod bearing caps to the connecting rod until the designations (1) match.



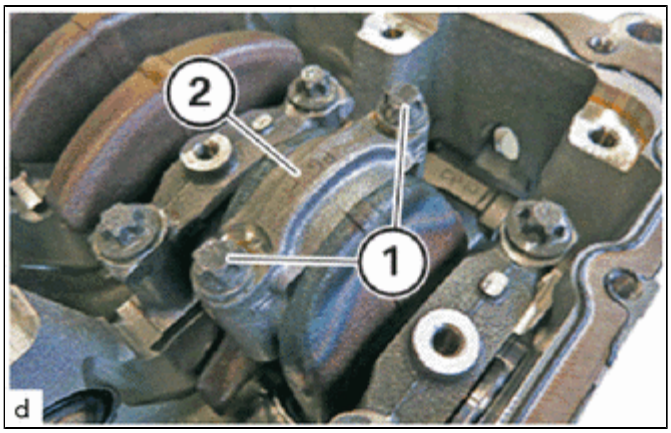
NOTICE:

- Engine damage caused by incorrectly installed connecting rod bearings and connecting rod bearing caps.

  Engine damage may result from incorrectly installing connecting rod bearings and connecting rod bearing caps.

  - Always install all connecting rod bearings and connecting rod bearing caps in the same position from which they were removed.

(g) Replace bolts (1).



(h) Step 1:

(1) Tighten the E12 bolts (1).

Torque:

20 N·m {204 kgf·cm, 15 ft·lbf}

(i) Step 2:

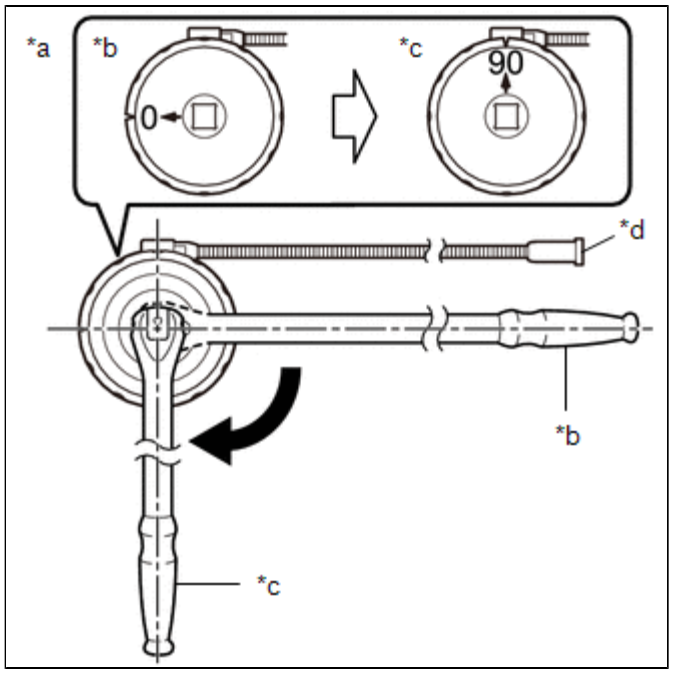
(1) Tighten the bolts (1) 70° with the special tool 0 490 504 (00 9 120).

SST: 09900-WA010

HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.

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*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

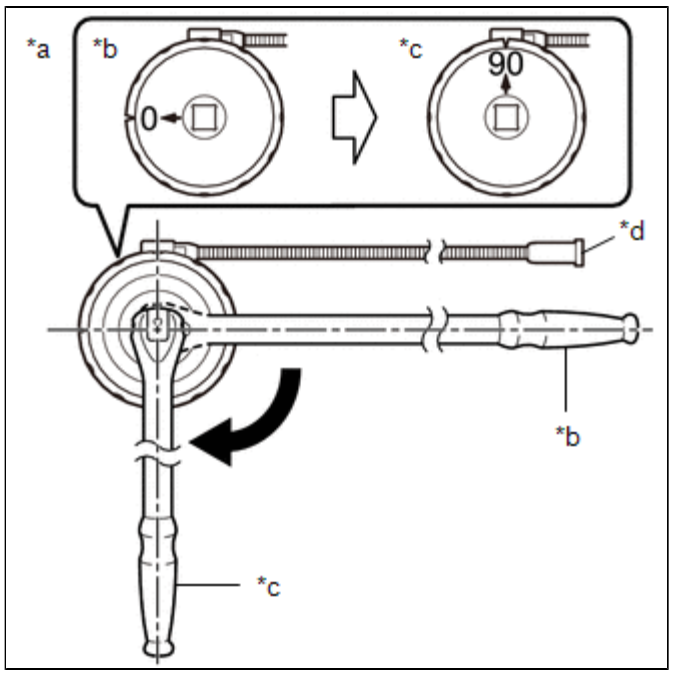
(j) Step 3:

(1) Tighten the bolts (1) another 70° with the special tool 0 490 504 (00 9 120).

SST: 09900-WA010

HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.



*a	Example

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*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

5. INSTALL NO. 1 OIL PAN BAFFLE PLATE

Click here INFO

6. INSTALL OIL PUMP ASSEMBLY

Click here INFO

7. INSTALL OIL PAN SUB-ASSEMBLY

Click here INFO

8. SEALING OIL DUCT

Click here INFO

9. CLEAN SEALING SURFACES

Click here INFO

10. INSTALL CYLINDER HEAD GASKET

Click here INFO

11. SET NO. 1 CYLINDER TO TDC (COMPRESSION)

Click here INFO

12. INSTALL CYLINDER HEAD SUB-ASSEMBLY

Click here INFO

13. INSPECT AND ADJUST CAMSHAFT WITH SPECIAL TOOL

Click here INFO

14. INSTALL CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

Click here INFO

15. TEMPORARILY TIGHTEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

16. INSTALL CAMSHAFT TIMING GEAR ASSEMBLY

Click here INFO

17. TEMPORARILY TIGHTEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

18. PRETENSION TIMING CHAIN WITH SPECIAL TOOL

Click here INFO

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19. TIGHTEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

20. TIGHTEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

21. REMOVE SST

Click here INFO

22. INSTALL NO. 1 CHAIN TENSIONER ASSEMBLY

Click here INFO

23. INSPECT AND ADJUST CAMSHAFT SUB-ASSEMBLY

Click here INFO

24. INSTALL SPARK PLUG

Click here INFO

25. INSTALL TURBOCHARGER STAY

Click here INFO

26. INSTALL OUTLET TURBO OIL PIPE

Click here INFO

27. INSTALL INTAKE MANIFOLD

Click here INFO

28. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY

Click here INFO

29. INSTALL CAM TIMING OIL CONTROL SOLENOID ASSEMBLY

Click here INFO

30. REPLACE FUEL INJECTOR SEAL

Click here INFO

31. INSTALL FUEL INJECTOR ASSEMBLY (for Rear Side)

Click here INFO

32. INSTALL FUEL INJECTOR ASSEMBLY (for Front Side)

Click here INFO

33. ADJUST FUEL PUMP LIFTER ASSEMBLY

Click here INFO

34. INSTALL FUEL PUMP ASSEMBLY

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Click here INFO

35. INSTALL NO. 1 FUEL PIPE SUB-ASSEMBLY

Click here INFO

36. ADD ENGINE OIL

Click here INFO

37. INSTALL NO. 2 AIR CLEANER HOSE

Click here INFO

38. INSTALL ENGINE ASSEMBLY

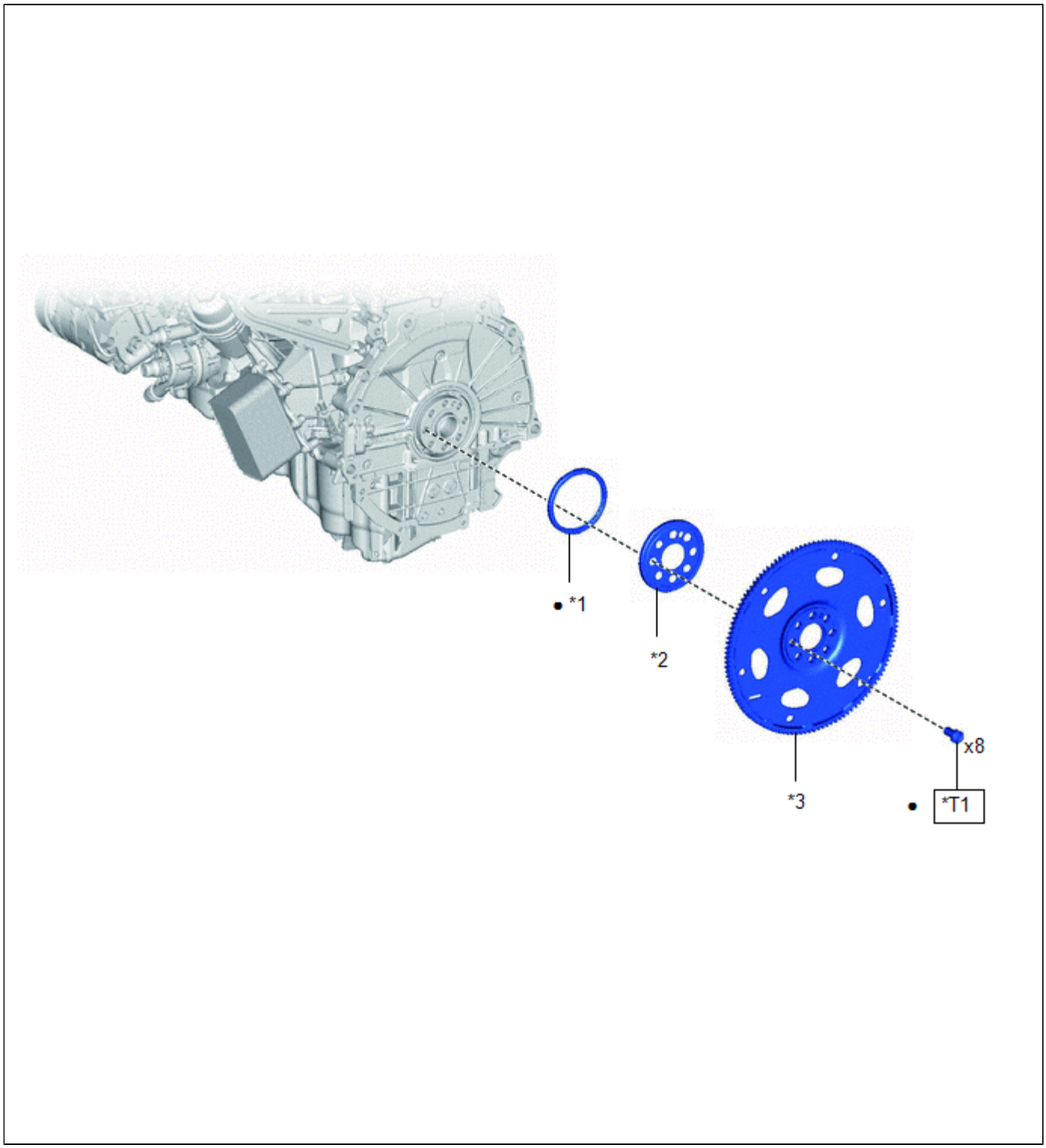
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFX
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): REAR CRANKSHAFT OIL SEAL: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	TIMING CHAIN COVER OIL SEAL	*2	NO. 1 CRANK ANGLE SENSOR PLATE

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*3	DRIVE PLATE AND RING GEAR SUB-ASSEMBLY	-	-
	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st: 45 (459, 33) 2nd: Turn 40°	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFY
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): REAR CRANKSHAFT OIL SEAL: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

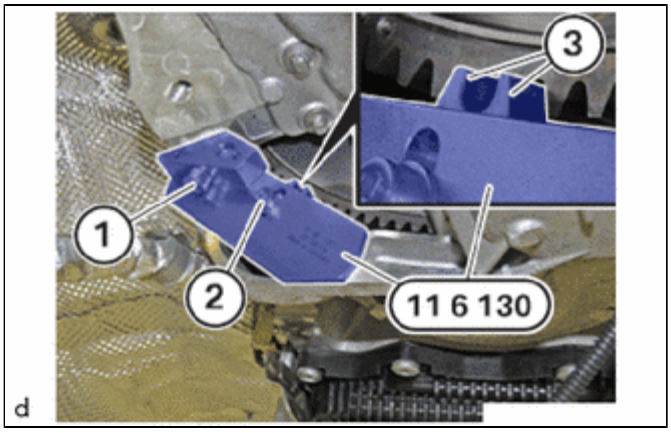
1. REMOVE AUTOMATIC TRANSMISSION ASSEMBLY

Click here INFO

2. REMOVE DRIVE PLATE AND RING GEAR SUB-ASSEMBLY

(a) Position special tool 0 496 595 (11 6 130) and fasten with bolt (1).

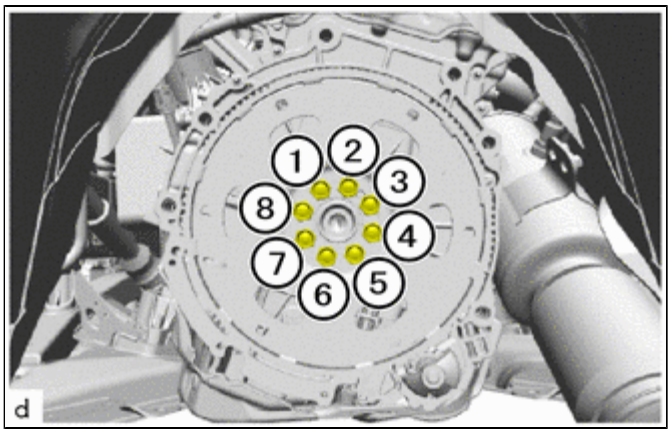
SST: 09700-WA040



(b) Slide counter support on the bolt (2) in direction of drive plate and ring gear sub-assembly and turn the engine on the crankshaft pulley assembly until the gearing (3) engages in the drive plate and ring gear sub-assembly.

(c) Tighten the bolt (2).

(d) Loosen bolts (1) to (8).



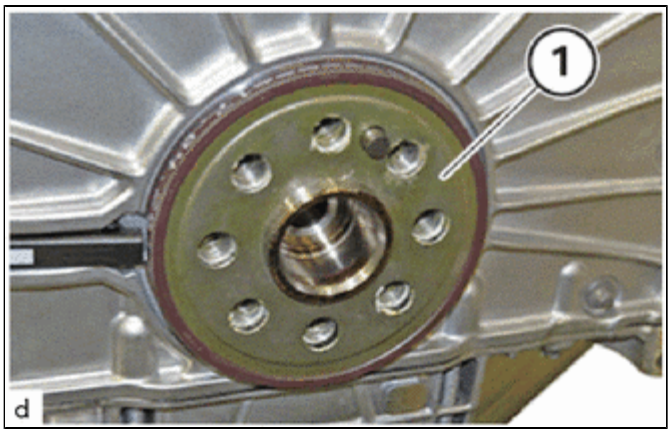
(e) Remove special tool 0 496 595 (11 6 130).

SST: 09700-WA040

3. REMOVE TIMING CHAIN COVER OIL SEAL

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(a) Remove the No. 1 crank angle sensor plate (1).

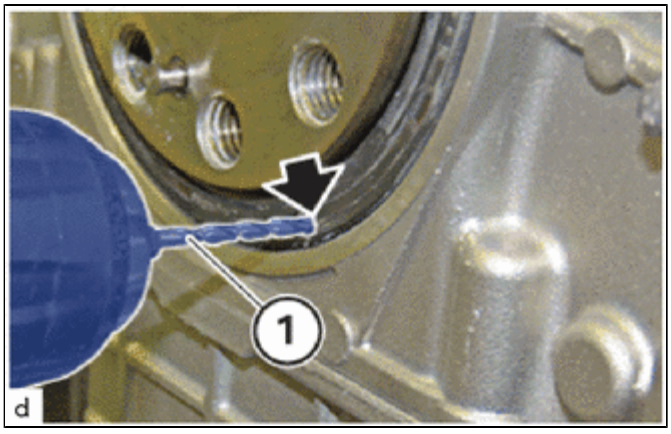


(b) Protect the No. 1 crank angle sensor plate from swarf with a plastic bag.

(1) The No. 1 crank angle sensor plate is magnetic.

(c) Drill a hole at the timing chain cover oil seal (arrow).

(1) For this purpose, use a drill (1) with a maximum diameter of 2.5 mm.

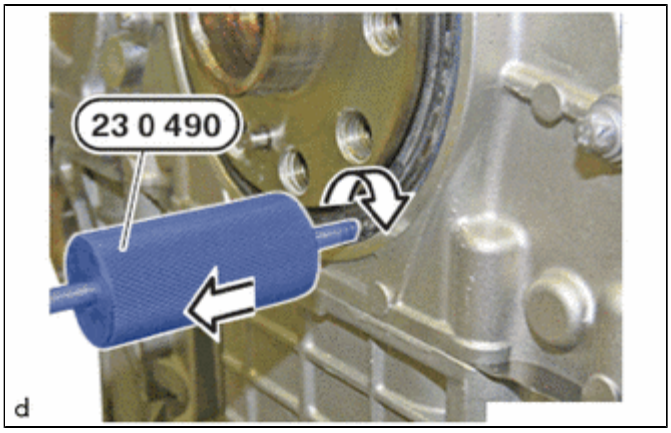


(d) Remove the swarf immediately with the vacuum cleaner.

(1) The swarf must not be removed with compressed air.

(e) Bolt in special tool 0 491 454 (23 0 490) in direction of arrow.

SST: 09200-WA140



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(f) Drive out timing chain cover oil seal with the impact weight in direction of arrow.

(g) Replace the timing chain cover oil seal.

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFZ
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): REAR CRANKSHAFT OIL SEAL: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL TIMING CHAIN COVER OIL SEAL

NOTICE:

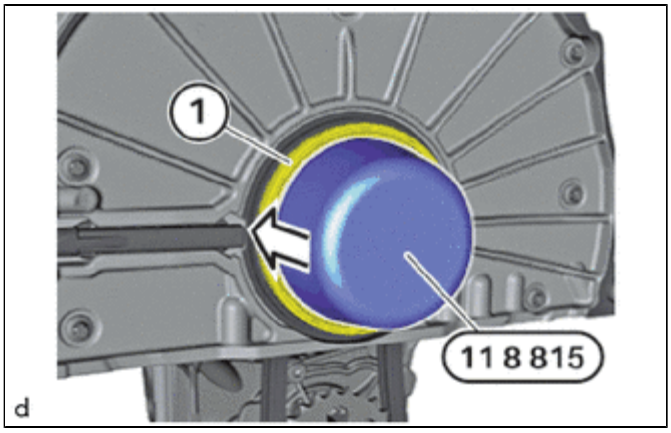
- Timing chain cover oil seal damage.

  Touching the sealing lip (inner) and applying oil to the timing chain cover oil seal will lead to its destruction.

  - Do not touch the sealing lip (inner) of the timing chain cover oil seal.
  - Do not apply oil to the timing chain cover oil seal.
  - Install the timing chain cover oil seal dry.

(a) Fit special tool 0 496 137 (11 8 815) on the crankshaft.

SST: 09200-WA090

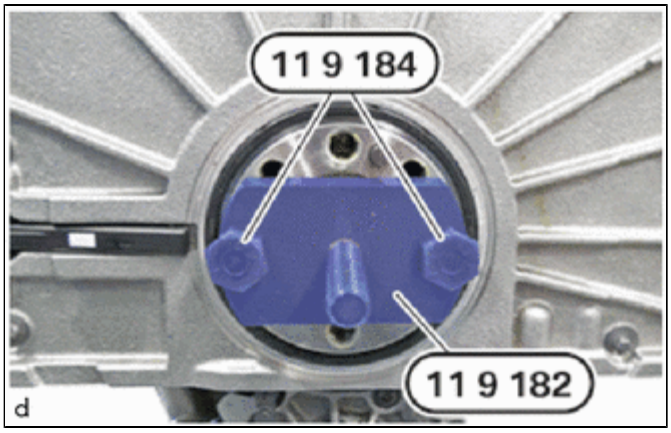


(b) Carefully remove the timing chain cover oil seal (1) with a rotational movement via special tool 0 496 137 (11 8 815) until the timing chain cover oil seal is in flush contact with the timing gear case.

SST: 09200-WA090

(1) The timing chain cover oil seal must not be tilted in the process.

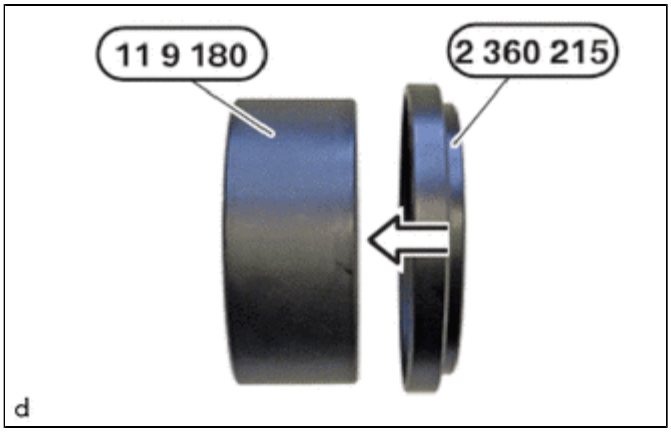
(c) Secure special tool 0 494 029 (11 9 182) to the crankshaft using special tool 0 494 031 (11 9 184).



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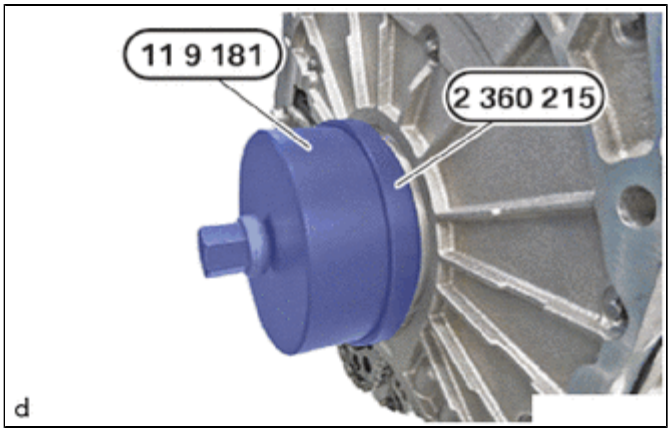
(d) Connect special tool 2 360 215 to special tool 0 493 881 (11 9 180).

SST: 09200-WA060
SST: 09200-WA070



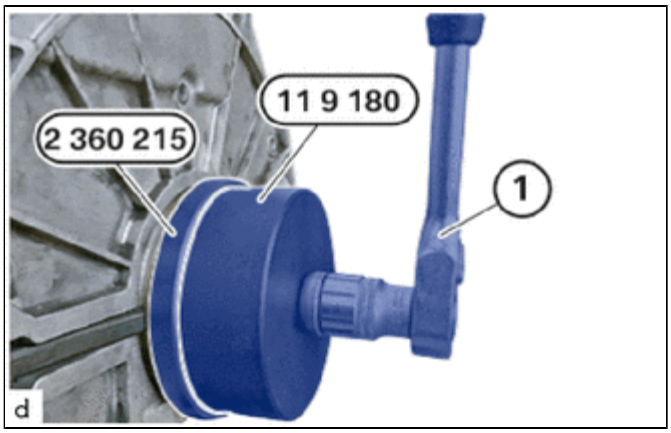
(e) Draw in the timing chain cover oil seal using special tools 0 494 028 (11 9 181) and 2 360 215 in conjunction with special tool 0 494 030 (11 9 183).

SST: 09200-WA620
SST: 09200-WA060



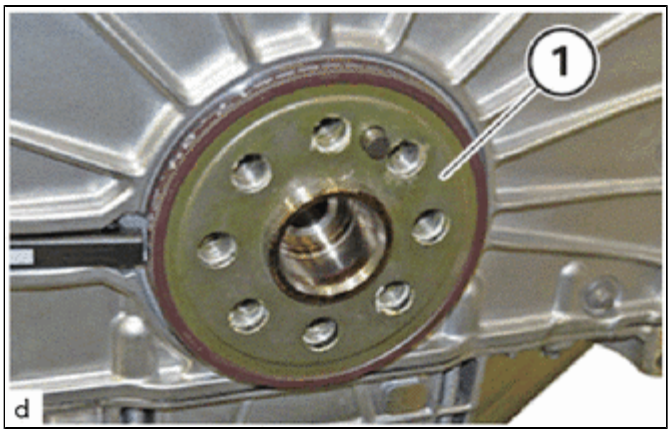
(f) Bolt in the timing chain cover oil seal using special tools 2 360 215 , 0 493 881 (11 9 180) and the tool (1) up to the stop.

SST: 09200-WA060
SST: 09200-WA070



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(g) Ensure the correct mounting orientation of the No. 1 crank angle sensor plate (1).



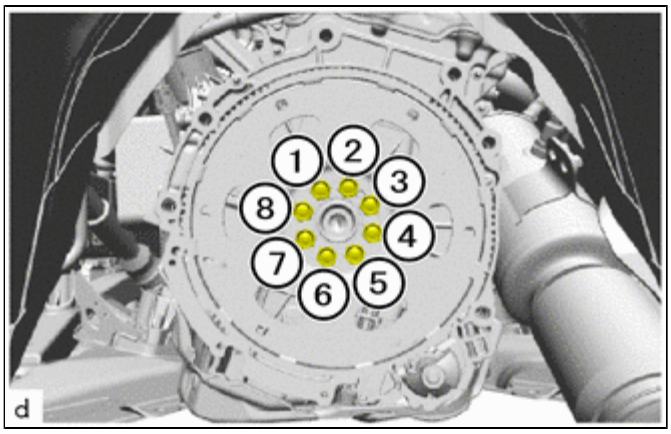
(h) Position the No. 1 crank angle sensor plate (1) on the crankshaft.

2. INSTALL DRIVE PLATE AND RING GEAR SUB-ASSEMBLY

(a) Replace bolts (1) to (8).

HINT:

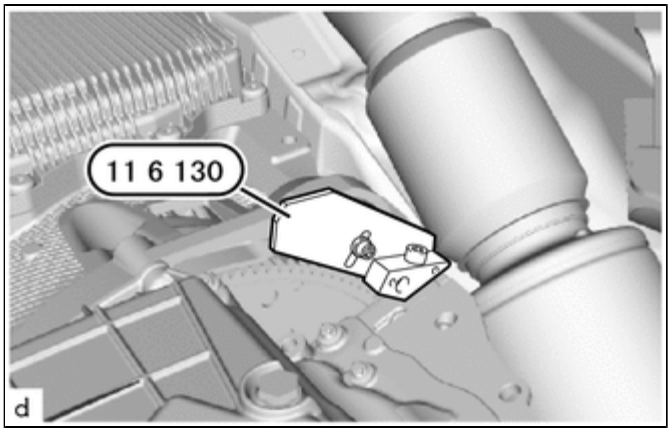
Clean bolt thread.



(b) Position the drive plate and ring gear sub-assembly and apply the bolts (1) to (8) hand-tight.

(c) Check if the special tool 0 496 595 (11 6 130) is installed and positioned correctly.

SST: 09700-WA040



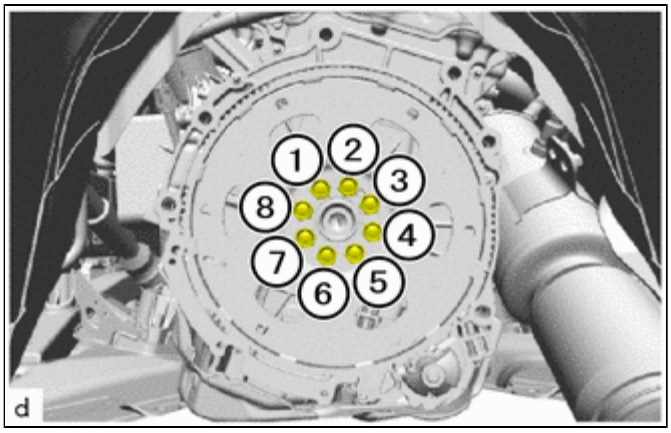
(d) Install special tool 0 496 595 (11 6 130).

SST: 09700-WA040

(e) Secure drive plate and ring gear sub-assembly with special tool 0 496 595 (11 6 130).

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SST: 09700-WA040



(f) Tighten bolts (1) to (8).

Torque:

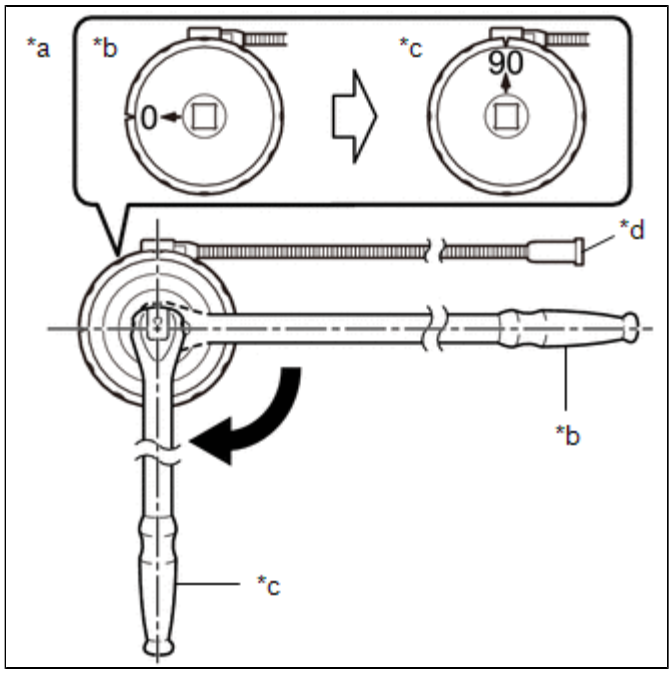
45 N·m {459 kgf·cm, 33 ft·lbf}

(g) Using SST, tighten the bolts an additional 40°.

SST: 09900-WA010

HINT:

- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.



*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

(h) Remove special tool 0 493 938 (11 9 260).

SST: 09200-WA200

3. INSTALL AUTOMATIC TRANSMISSION ASSEMBLY

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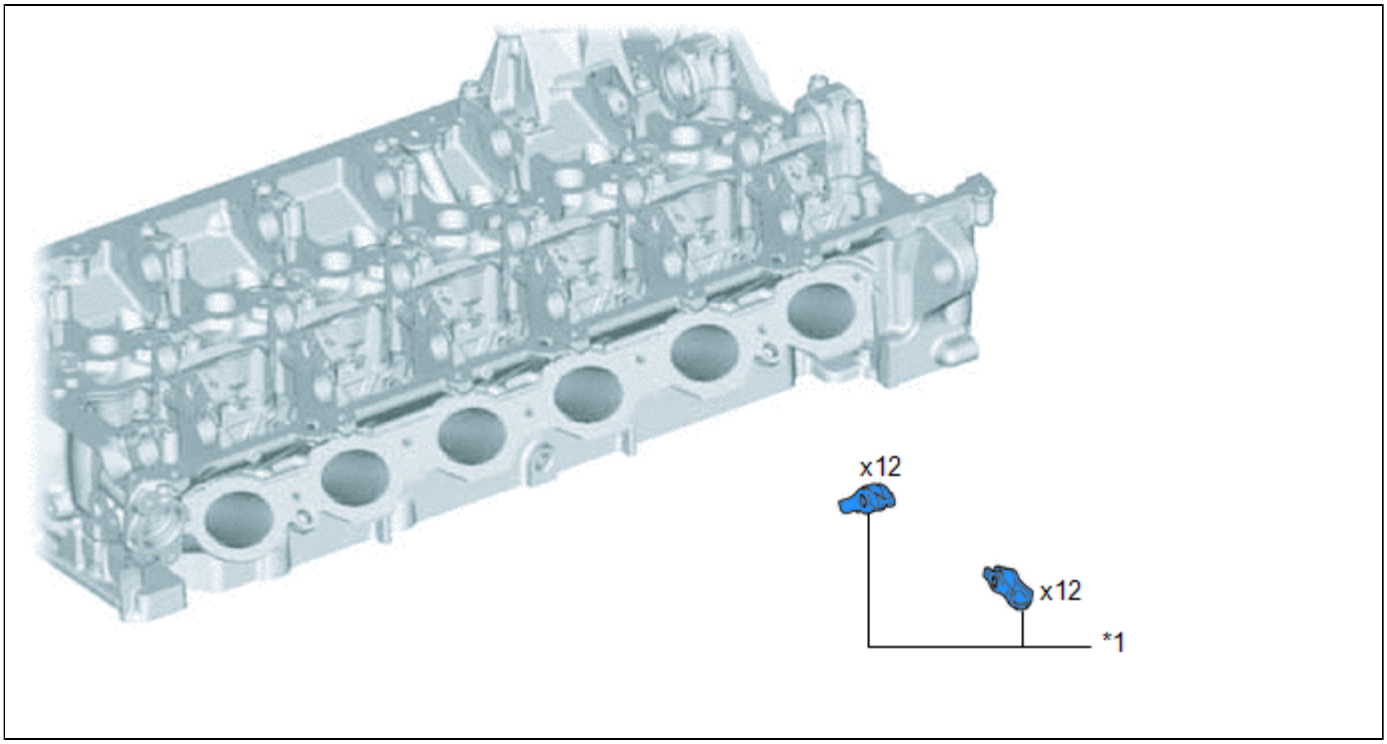


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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF9
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ROCKER ARM: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFA
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ROCKER ARM: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

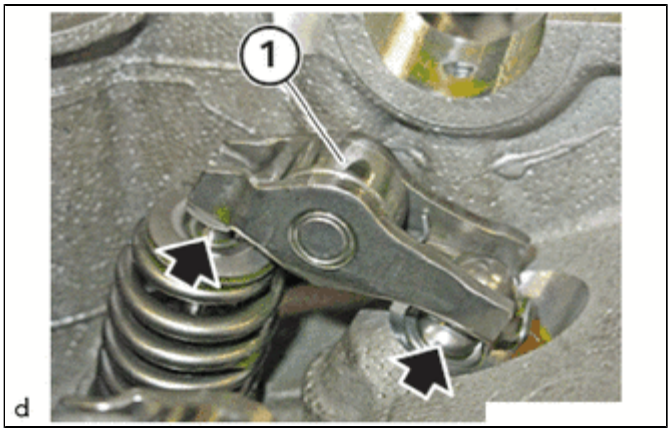
PROCEDURE

1. REMOVE CAMSHAFT

Click here INFO

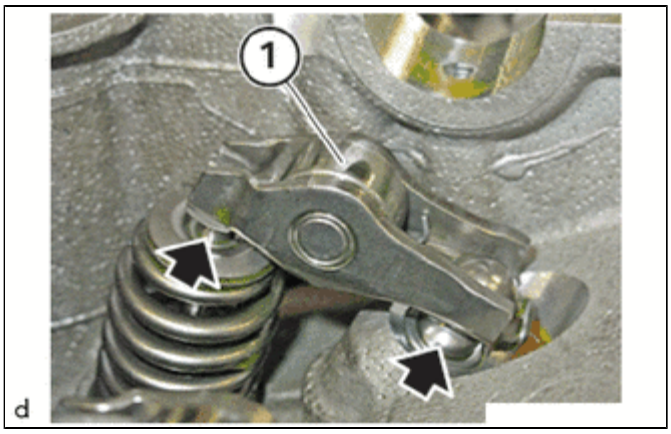
2. REMOVE NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

(a) Detach and remove the No. 1 valve rocker arm sub-assemblies (1) on the intake side from the valve lash adjuster clearance compensating elements (arrows).



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(b) Detach and remove the No. 1 valve rocker arm sub-assemblies (1) on the exhaust side from the valve lash adjuster clearance compensating elements (arrows).



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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFB
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): ROCKER ARM: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

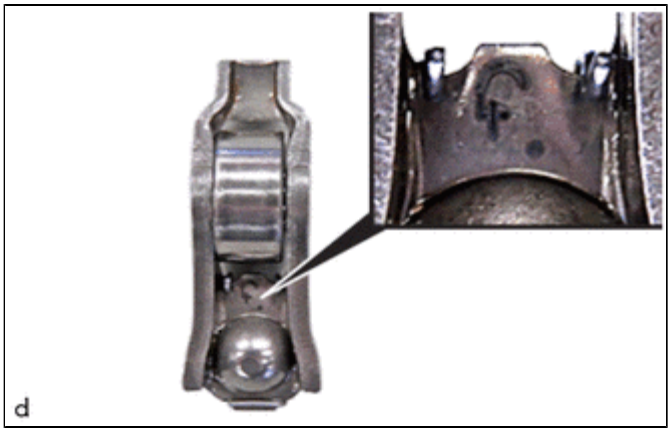
PROCEDURE

1. INSTALL NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

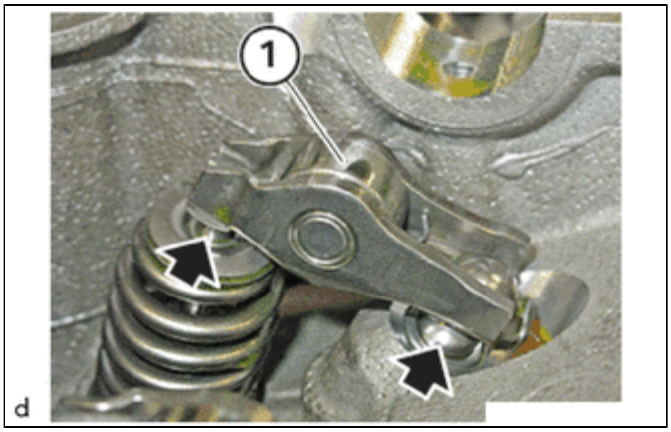
(a) Observe the classification of the No. 1 valve rocker arm sub-assembly.

(1) The classification from 1 to 5 is printed on the respective No. 1 valve rocker arm sub-assembly.

CLASSIFICATION	IDLE SPEED
1	Repair case - slow engine speed when idling
2	Installed as standard/initial installation
3	Installed as standard/initial installation
4	Installed as standard/initial installation
5	Repair case - high engine speed when idling



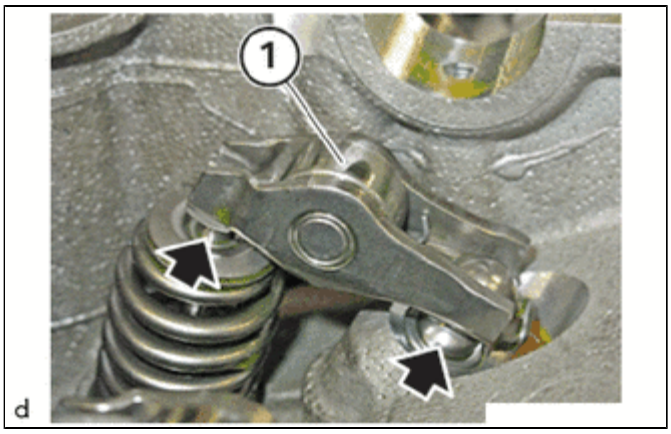
(b) Install the No. 1 valve rocker arm sub-assemblies (1) on the intake side.



(c) Make sure the No. 1 valve rocker arm sub-assemblies are correctly positioned on the valve lash adjuster clearance compensating elements (arrows) and on the intake valves.

(d) Install the No. 1 valve rocker arm sub-assemblies (1) on the exhaust side.

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(e) Make sure the No. 1 valve rocker arm sub-assemblies are correctly positioned on the valve lash adjuster clearance compensating elements (arrows) and on the exhaust valves.

2. INSTALL CAMSHAFT

Click here INFO

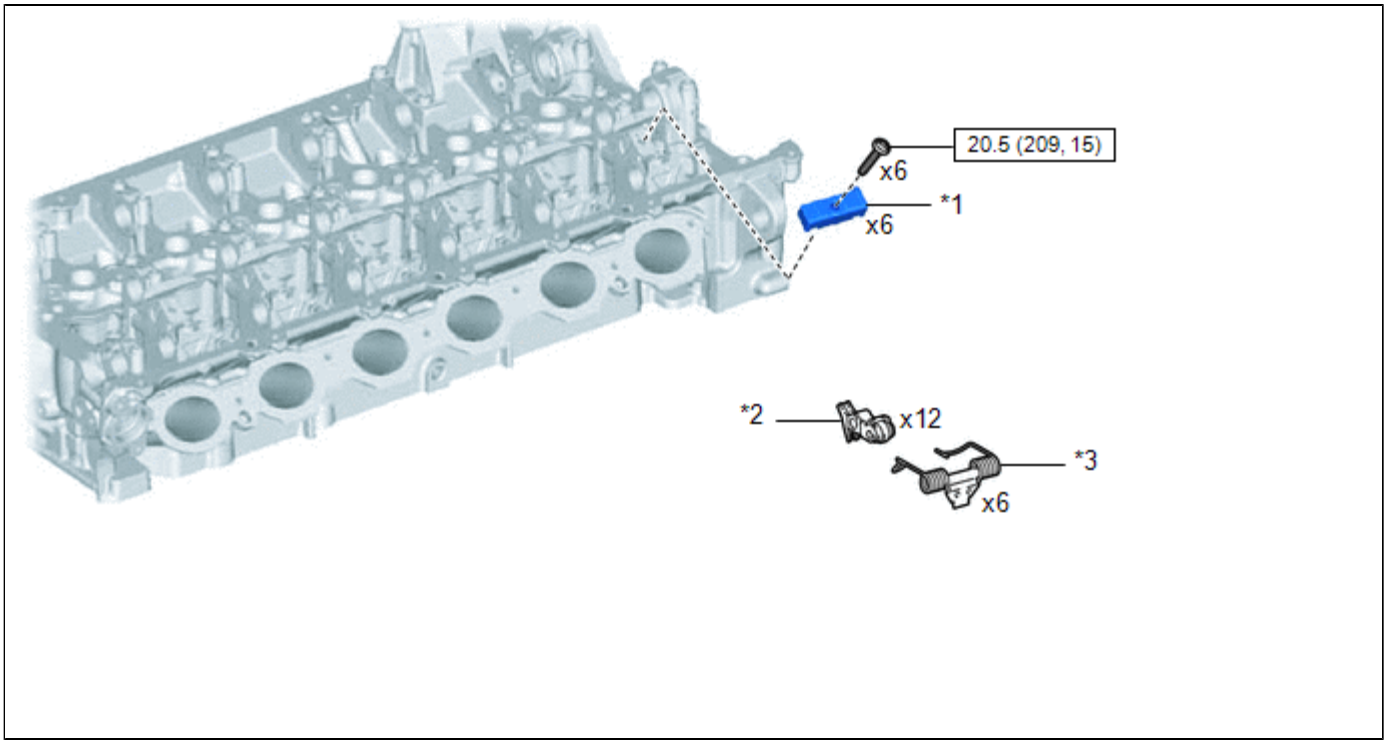
TOYOTA

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG7
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): TENSION ARM: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	GATE	*2	INTERMEDIATE LEVER
*3	TORSION SPRING	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG8
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): TENSION ARM: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY

Click here INFO

2. REMOVE INTAKE MANIFOLD

Click here INFO

3. ADJUST SERVO MOTOR

Click here INFO

4. INSPECT AND ADJUST CAMSHAFT

Click here INFO

5. INSPECT AND ADJUST CAMSHAFT (CYLINDERS 3 AND 4)

Click here INFO

6. REMOVE TORSION SPRING

Click here INFO

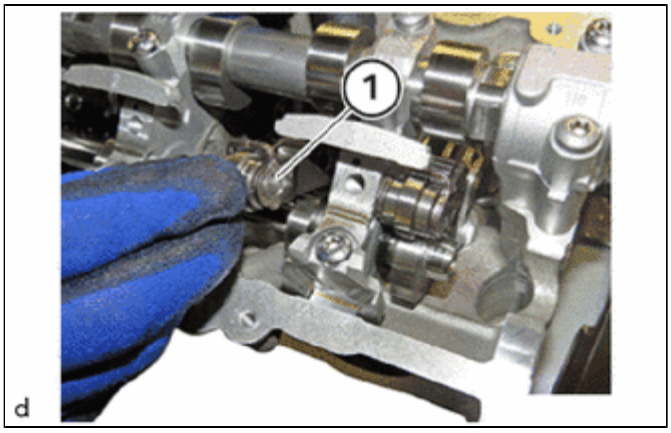
7. REMOVE GATE

Click here INFO

8. REMOVE INTERMEDIATE LEVER

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(a) Remove the intermediate lever (1).



(b) Repeat the step for all intermediate levers (1).

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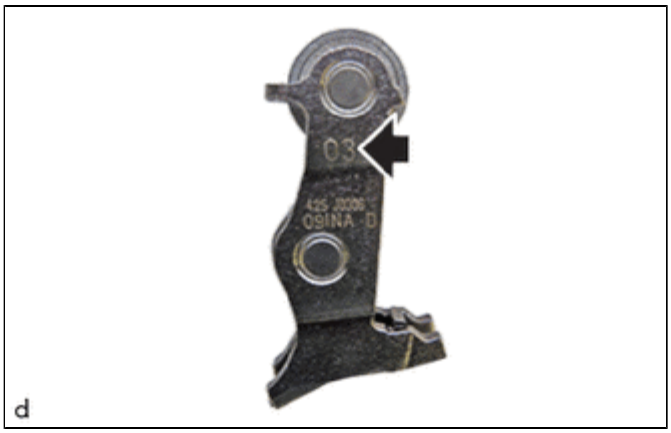
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDG9
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): TENSION ARM: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSPECT INTERMEDIATE LEVER

(a) Check the intermediate lever classification (arrows).



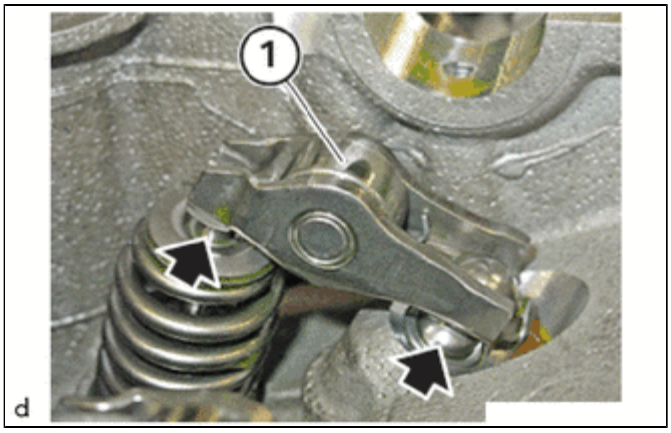
HINT:

- All intermediate levers are classified. Only one classification may be used per engine.

  All intermediate levers must be installed in the same position in an engine which has already been in use.

2. INSPECT NO.1 VALVE ROCKER ARM SUB-ASSEMBLY

(a) Make sure the mounting orientation (arrows) of the No. 1 valve rocker arm sub-assemblies (1) is correct.



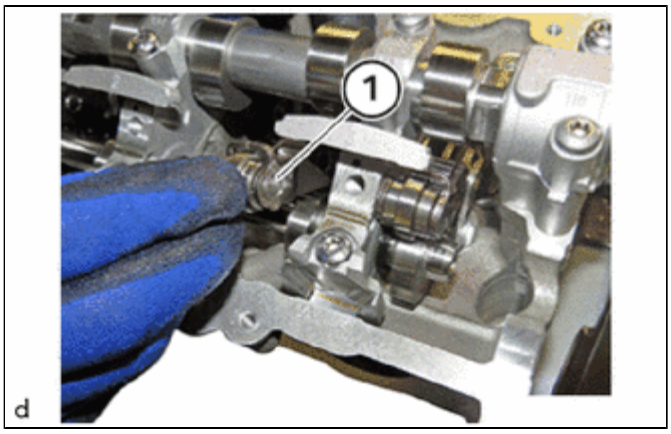
HINT:

The No. 1 valve rocker arm sub-assemblies may slip slightly when the camshaft is positioned. Make sure No. 1 valve rocker arm sub-assemblies are correctly positioned on the valve Lash adjuster assemblies and on valves.

3. INSTALL INTERMEDIATE LEVER

(a) Guide in and install intermediate lever (1).

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(b) Repeat the step for all intermediate levers (1).

4. INSTALL GATE

Click here INFO

5. INSTALL TORSION SPRING

Click here INFO

6. INSTALL INTAKE MANIFOLD

Click here INFO

7. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY

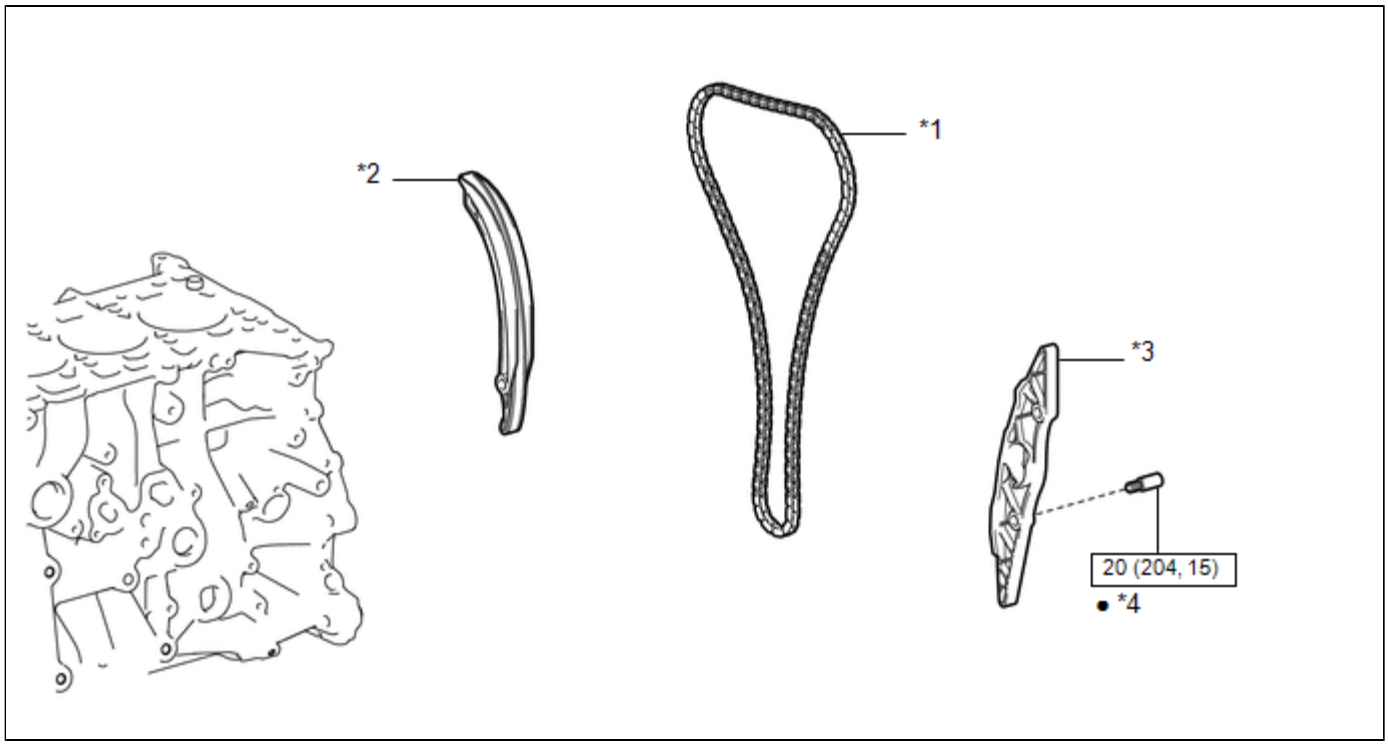
Click here INFO

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFF
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): TIMING CHAIN: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	CHAIN SUB-ASSEMBLY	*2	CHAIN TENSIONER SLIPPER
*3	NO. 1 CHAIN VIBRATION DAMPER	*4	BEARING JOURNAL
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFG
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): TIMING CHAIN: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

1. REMOVE TIMING GEAR CASE

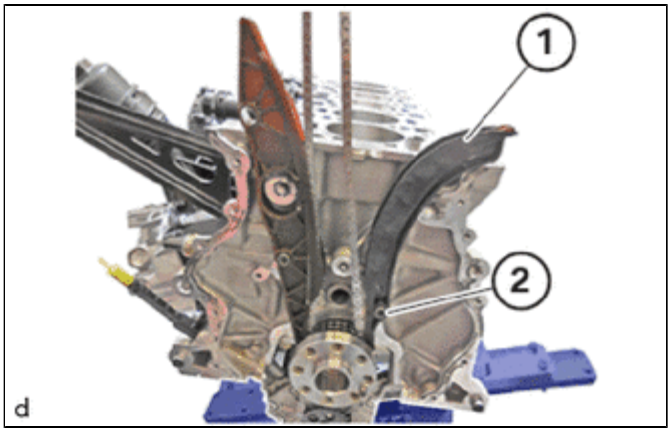
Click here INFO

2. REMOVE CHAIN SUB-ASSEMBLY

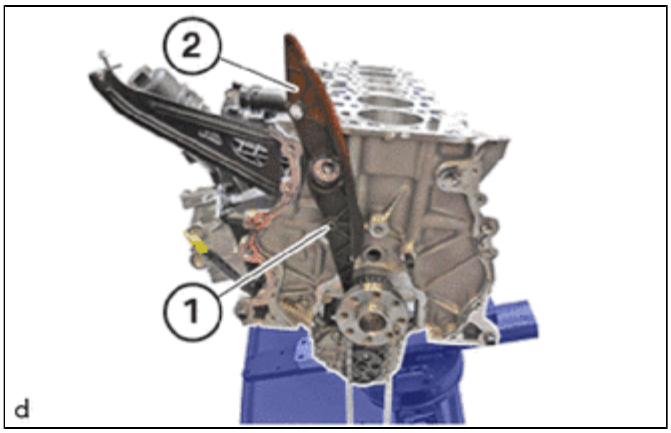
(a) Thread the chain tensioner slipper (1) out of the bearing journal (2) and remove.

HINT:

The bearing journal (2) does not have to be removed.



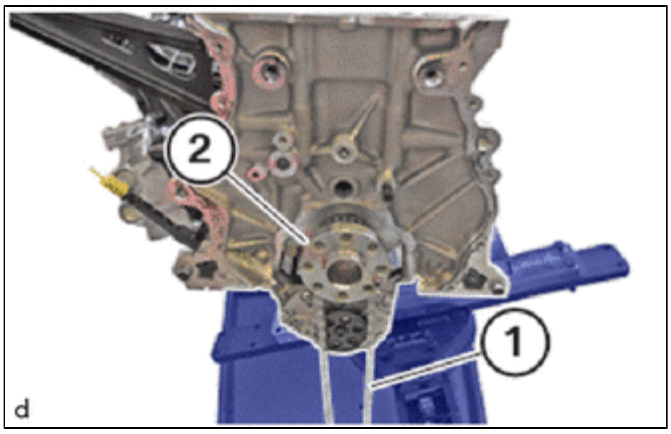
(b) Using a T45 "TORX" socket wrench, loosen the bearing journals (1).



(c) Guide out the No. 1 chain vibration damper (2) and remove.

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(d) Pull chain sub-assembly (1) out from the crankshaft (2) and remove.



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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDFH
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): TIMING CHAIN: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL CHAIN SUB-ASSEMBLY

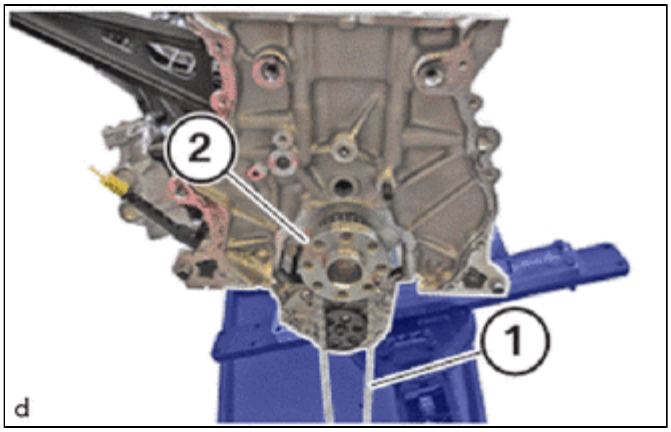
NOTICE:

- Contaminant or foreign body.

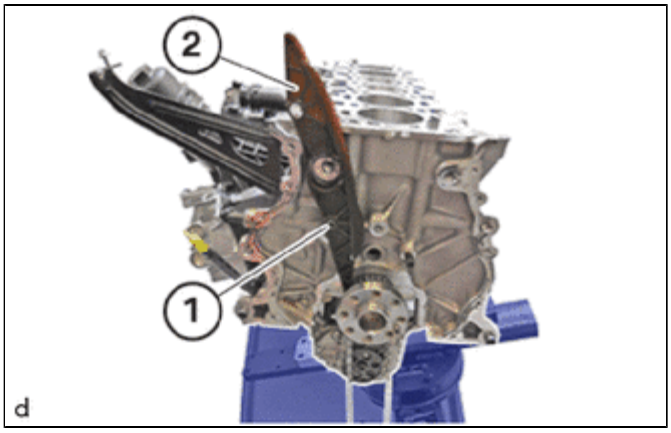
  Contamination can result in malfunctions, operating failure or leaks.

  - Adhere to the utmost cleanliness.
  - Protect components from contamination e.g. by covering.
  - Close off line connections with seal plugs.

(a) Pull chain sub-assembly (1) in on the crankshaft (2) and install.



(b) Replace bearing journal (1).



(c) Insert and position the No. 1 chain vibration damper (2).

HINT:

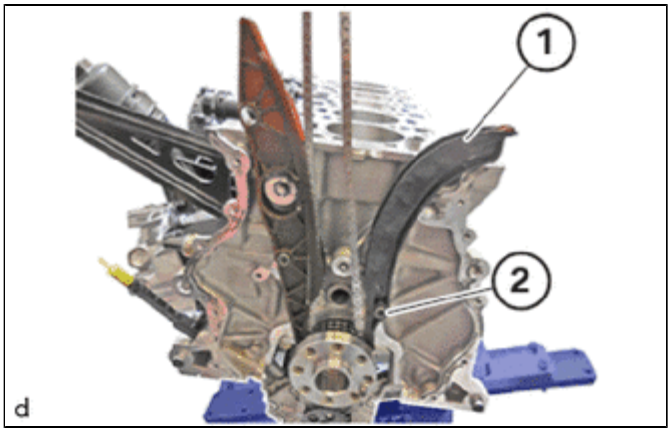
Clean bolt thread.

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(d) Using a T45 "TORX" socket wrench, tighten the bearing journals (1).

Torque:

20 N·m {204 kgf·cm, 15 ft·lbf}



(e) Insert and install the chain tensioner slipper (1) on the bearing journal (2).

2. INSTALL TIMING GEAR CASE

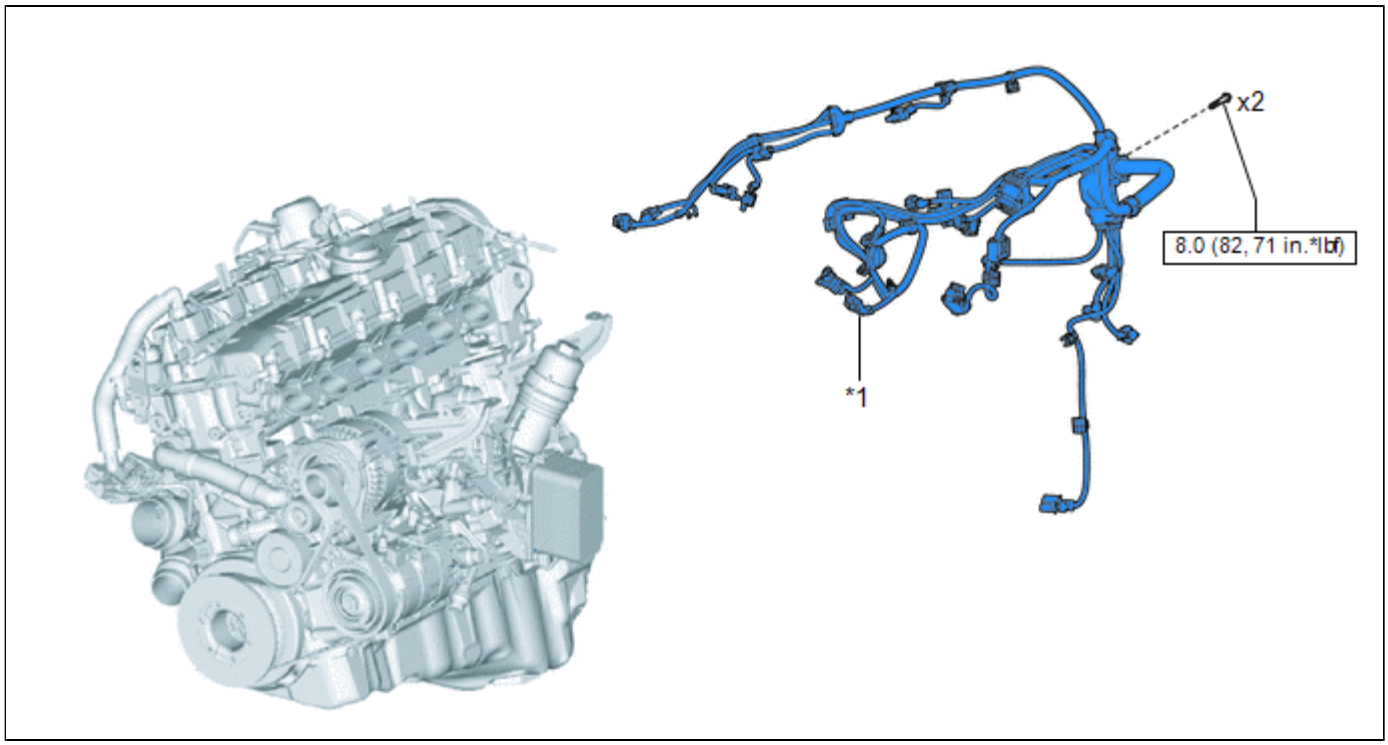
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGP
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): TIMING GEAR CASE: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

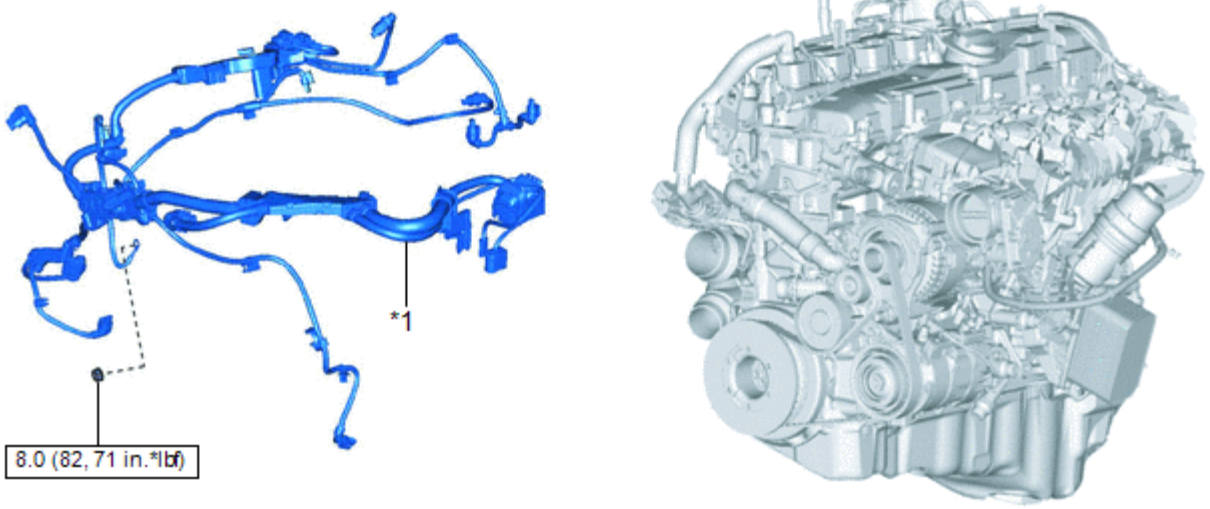
ILLUSTRATION



*1	ENGINE WIRE	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

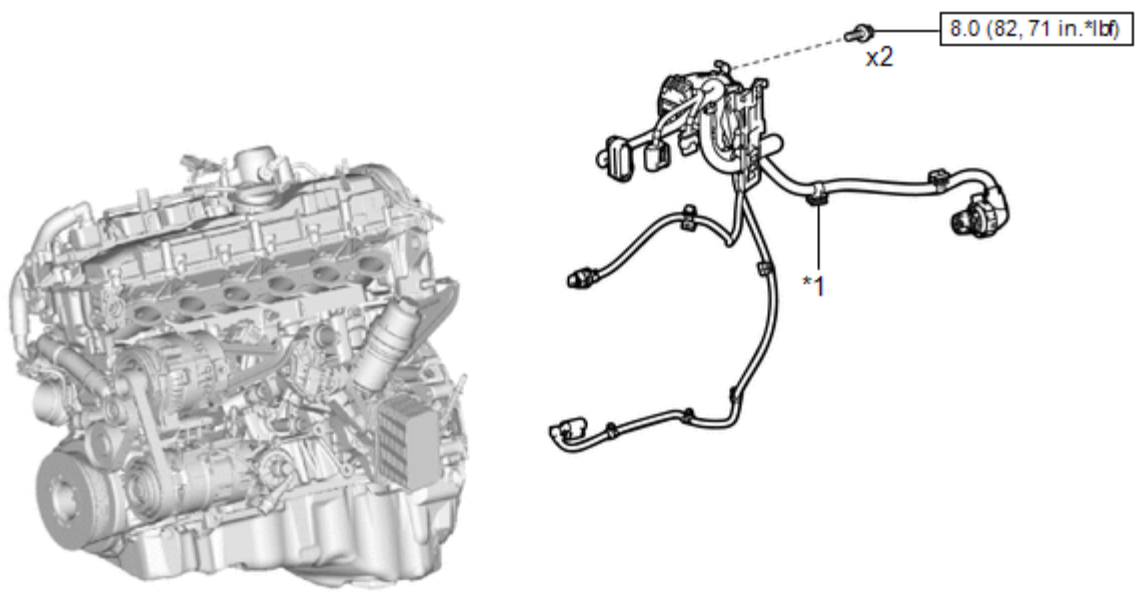
ILLUSTRATION

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*1	NO. 2 ENGINE WIRE	-	-
☐	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

ILLUSTRATION



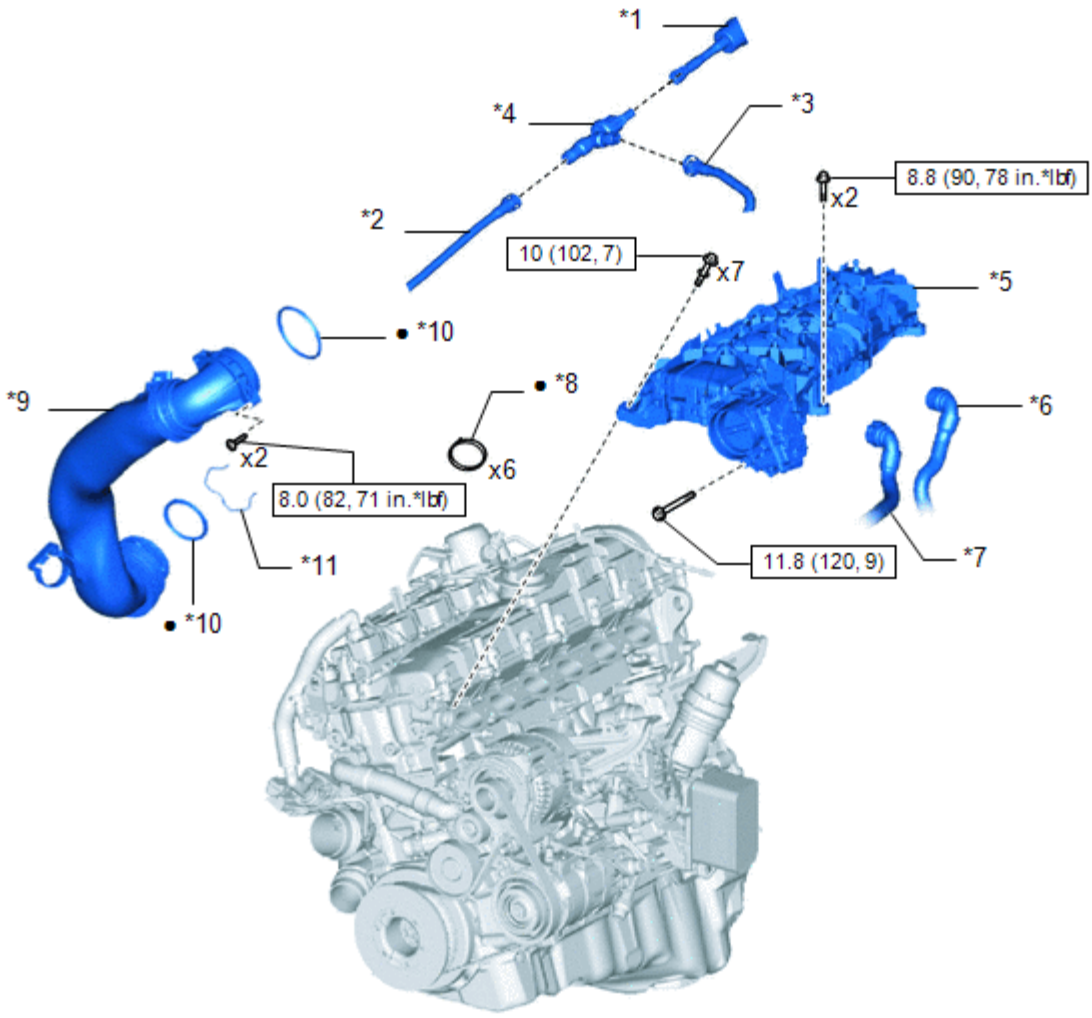
d

*1	TRANSMISSION WIRE	-	-
	N*m (kgf*cm, ft.*lbf): Specified		

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▭	torque	-	-

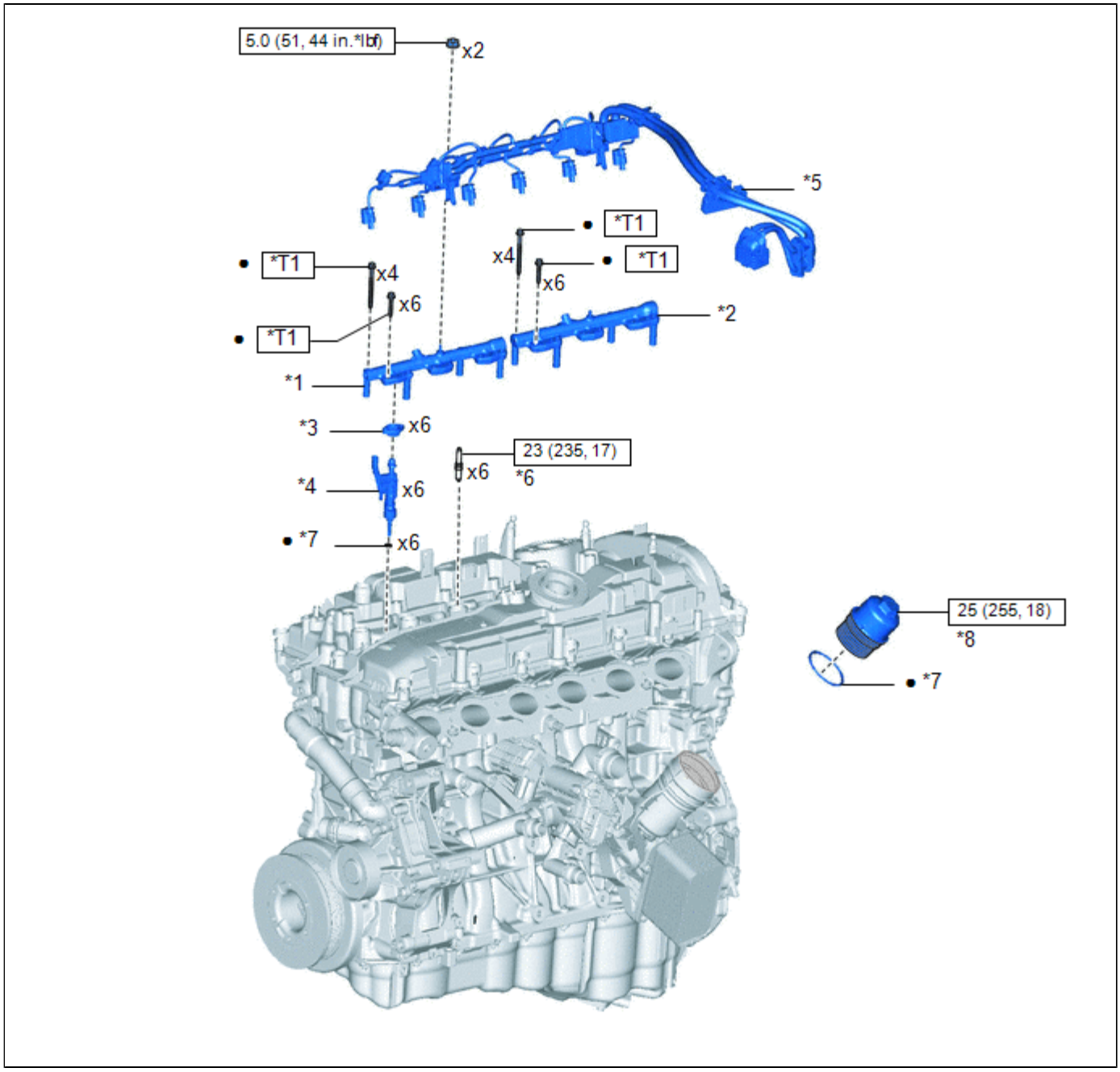
ILLUSTRATION



*1	NO. 2 FUEL VAPOR FEED HOSE	*2	NO. 1 FUEL VAPOR FEED HOSE
*3	NO. 3 FUEL VAPOR FEED HOSE	*4	NO. 1 CHECK VALVE
*5	INTAKE MANIFOLD	*6	NO. 5 WATER BY-PASS HOSE
*7	NO. 7 WATER BY-PASS HOSE	*8	NO. 1 INTAKE MANIFOLD TO HEAD GASKET
*9	NO. 2 AIR CLEANER HOSE	*10	SEALING RING
*11	AIR HOSE CLAMP	-	-
▭	N*m (kgf*cm, ft.*lbf): Specified torque	-	-

ILLUSTRATION

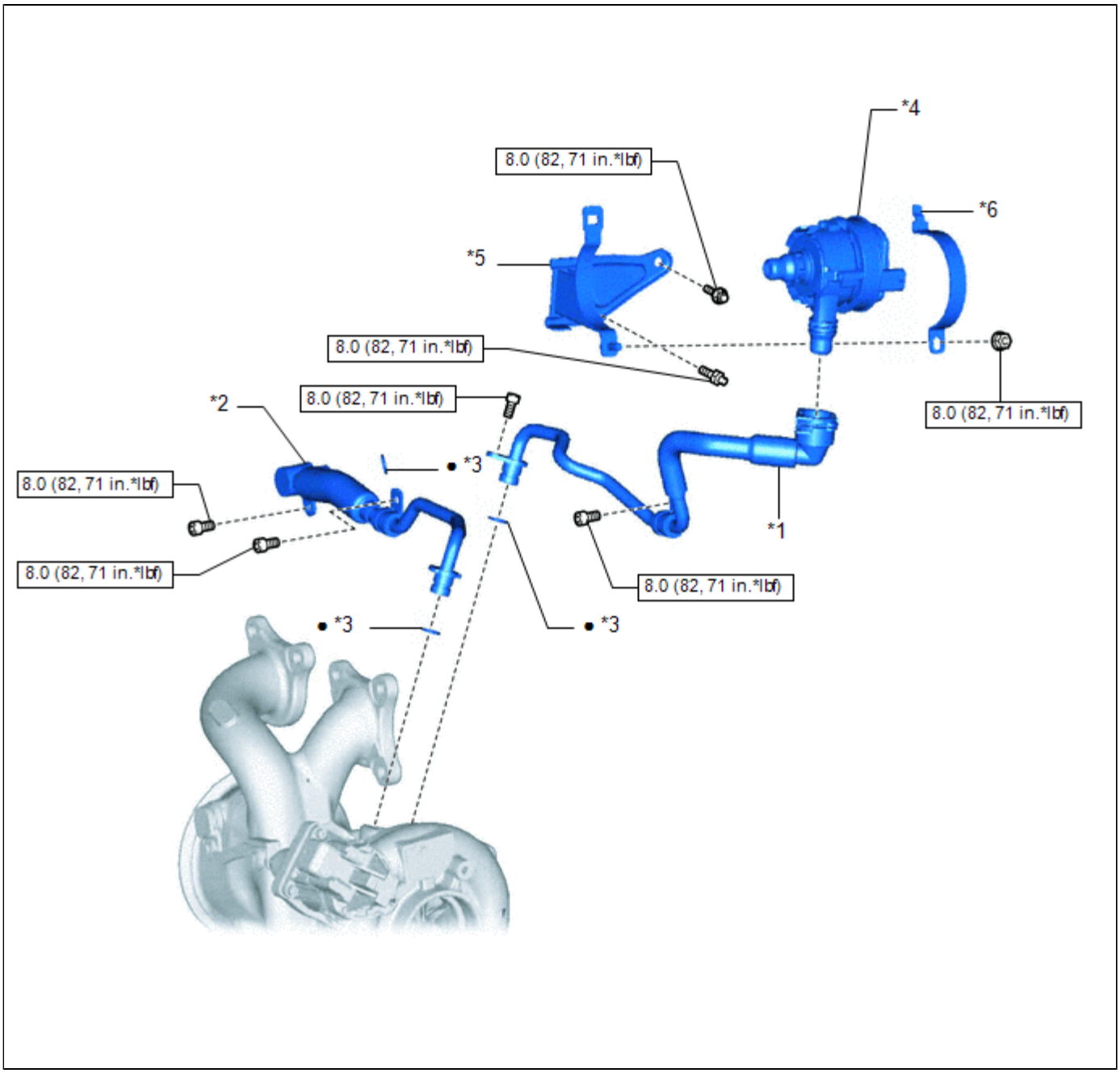
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*1	FUEL DELIVERY PIPE	*2	NO. 2 FUEL DELIVERY PIPE
*3	HOLDER	*4	FUEL INJECTOR ASSEMBLY
*5	NO. 4 ENGINE WIRE	*6	SPARK PLUG
*7	O-RING	*8	OIL FILTER CAP ASSEMBLY
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
*T1	1st: 5.0 (51, 44 in.*lbf) 2nd: Turn 90°	-	-

ILLUSTRATION

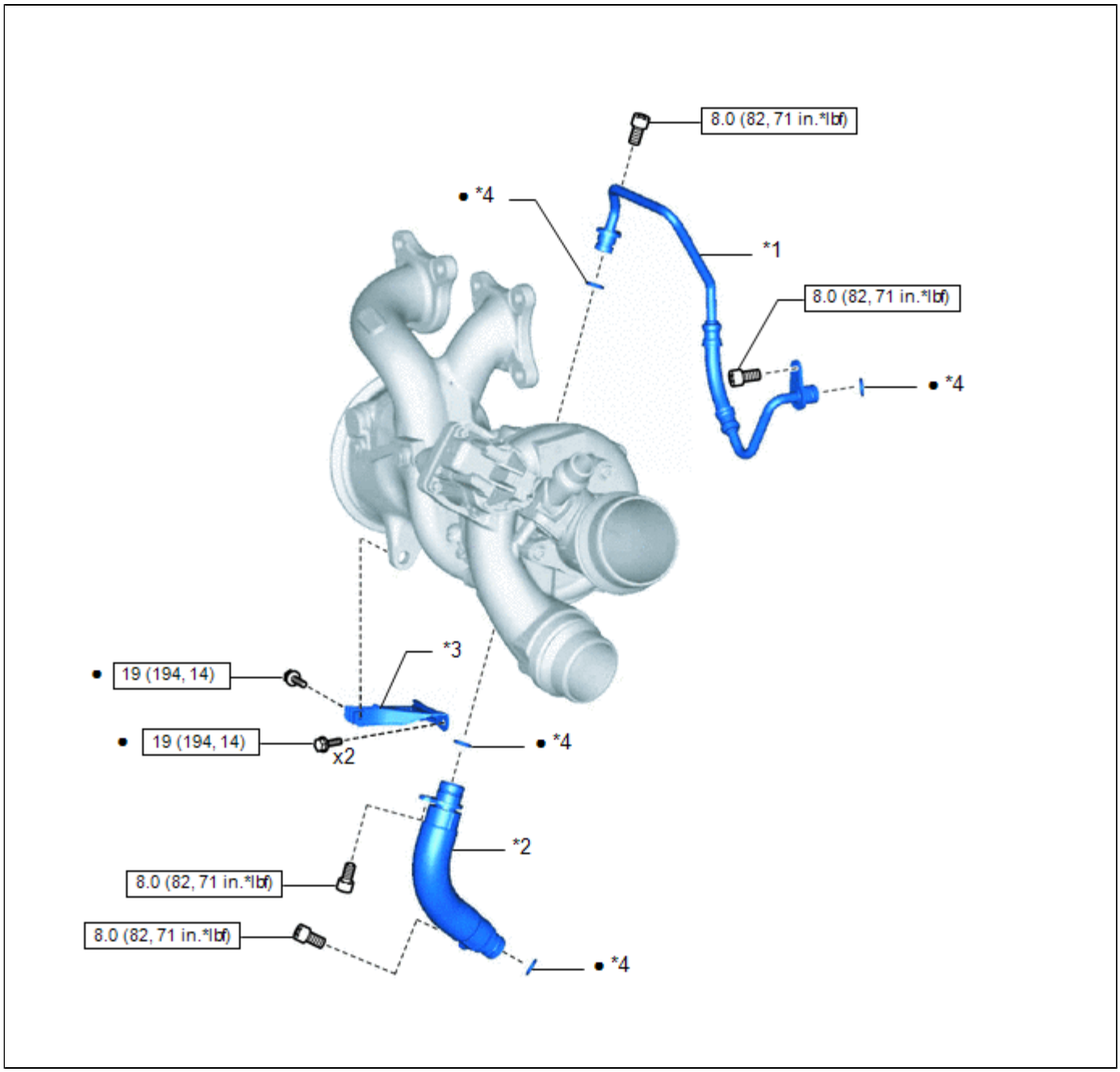
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*1	NO. 1 TURBO WATER PIPE SUB-ASSEMBLY	*2	NO. 2 TURBO WATER PIPE SUB-ASSEMBLY
*3	O-RING	*4	WATER PUMP ASSEMBLY
*5	NO. 1 WATER PUMP BRACKET SUB-ASSEMBLY	*6	NO. 2 WATER PUMP BRACKET SUB-ASSEMBLY
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

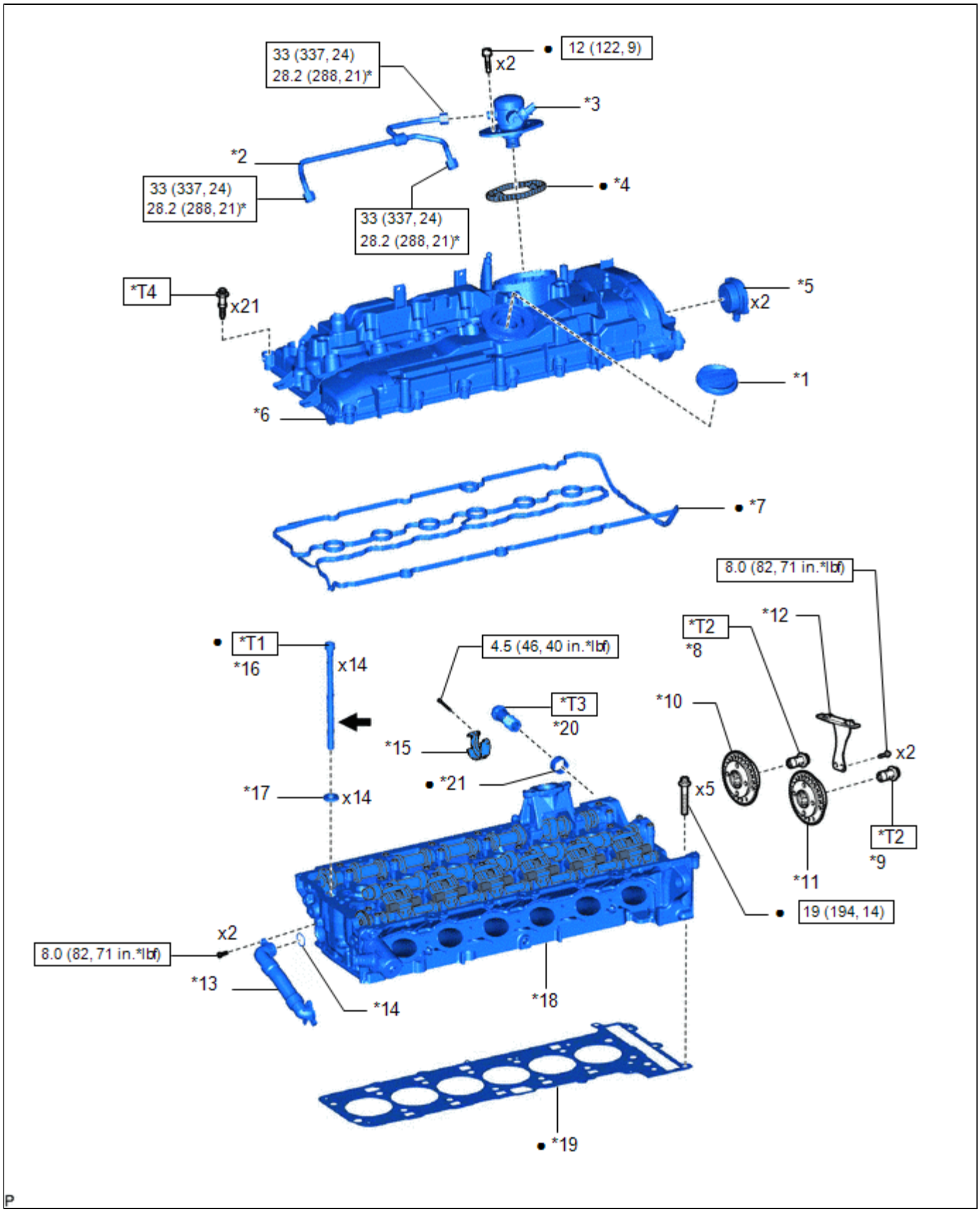
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*1	TURBO OIL INLET PIPE SUB-ASSEMBLY	*2	TURBO OIL OUTLET PIPE
*3	TURBOCHARGER STAY	*4	O-RING
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

ILLUSTRATION

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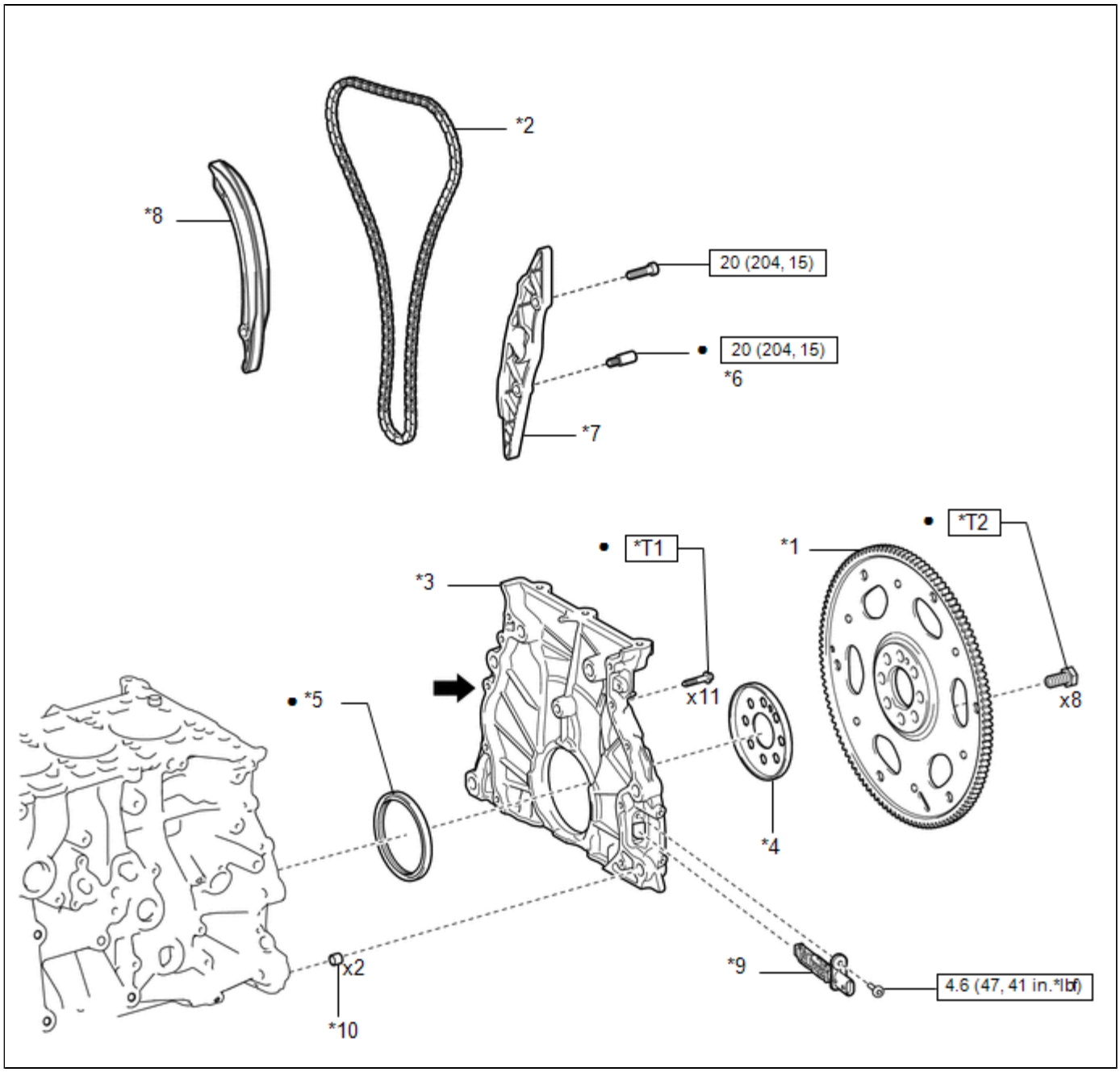
*1	OIL FILLER CAP ASSEMBLY	*2	NO. 1 FUEL PIPE SUB-ASSEMBLY
*3	FUEL PUMP ASSEMBLY	*4	FUEL PUMP SPACER GASKET
*5	CAM TIMING OIL CONTROL SOLENOID ASSEMBLY	*6	CYLINDER HEAD COVER SUB-ASSEMBLY
			EXHAUST CAMSHAFT TIMING GEAR

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*7	CYLINDER HEAD COVER GASKET	*8	CENTER BOLT ASSEMBLY
*9	INTAKE CAMSHAFT TIMING GEAR CENTER BOLT ASSEMBLY	*10	CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY
*11	CAMSHAFT TIMING GEAR ASSEMBLY	*12	CHAIN DAMPER GUIDE
*13	NO. 2 WATER BY-PASS HOSE	*14	O-RING
*15	CAMSHAFT SENSOR WHEEL	*16	CYLINDER HEAD SET BOLT
*17	CYLINDER HEAD SET PLATE WASHER	*18	CYLINDER HEAD SUB-ASSEMBLY
*19	CYLINDER HEAD GASKET	*20	NO. 1 CHAIN TENSIONER ASSEMBLY
*21	SEALING SLEEVE	-	-
	N*m (kgf*cm, ft.*lbf): Specified torque	*	For use with a union nut wrench
•	Non-reusable part		Engine oil
*T1	1st: 30 (306, 22) 2nd: Turn 90° 3rd: Turn 180°	*T2	1st: 10 (102, 7) 2nd: 30 (306, 22) 3rd : 50 (510, 37) 4th : Turn 35°
*T3	1st: 20 (204, 15) 2nd: Turn 40°	-	-

ILLUSTRATION

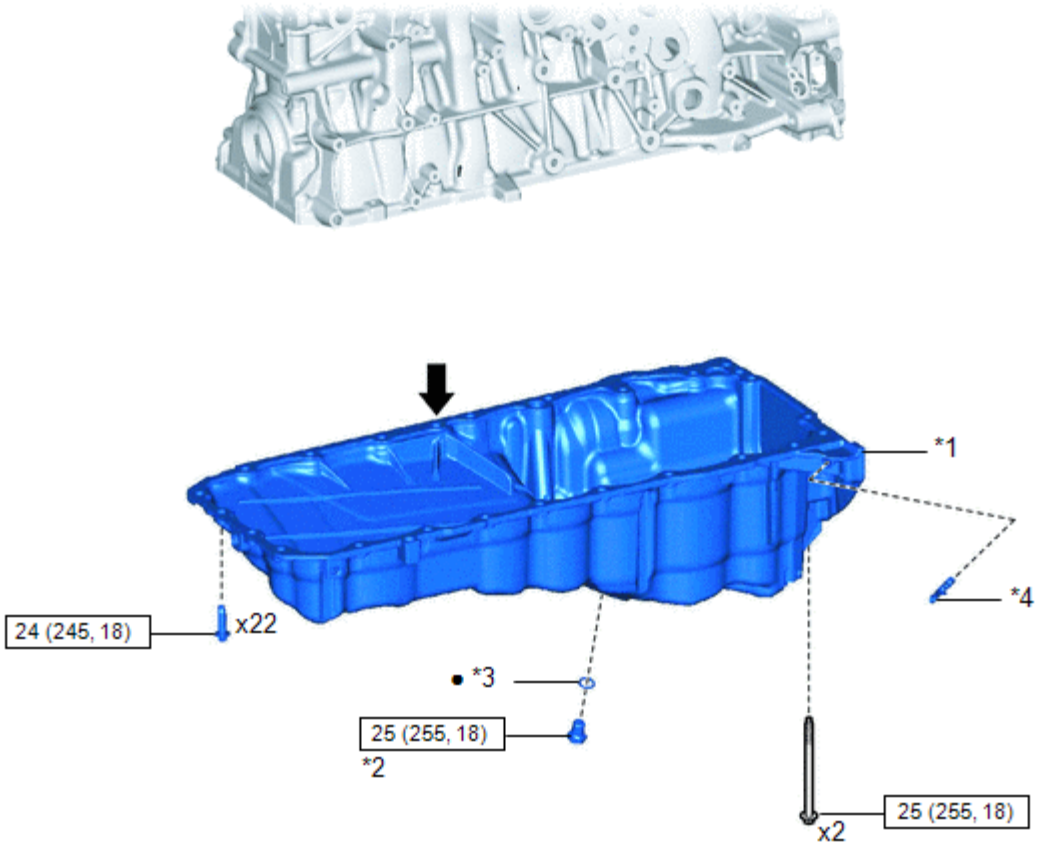
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*1	FLYWHEEL SUB-ASSEMBLY	*2	CHAIN SUB-ASSEMBLY
*3	TIMING GEAR CASE	*4	NO. 1 CRANK ANGLE SENSOR PLATE
*5	TIMING CHAIN COVER OIL SEAL	*6	BEARING JOURNAL
*7	NO. 1 CHAIN VIBRATION DAMPER	*8	CHAIN TENSIONER SLIPPER
*9	CRANKSHAFT POSITION SENSOR	*10	RING PIN
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
➡	Loctite 5970 Flange Sealant	-	-
*T1	1st: 8.0 (82, 71 in.*lbf) 2nd: Turn 90°	*T2	1st: 45 (459, 33) 2nd: Turn 40°

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ILLUSTRATION



*1	OIL PAN SUB-ASSEMBLY	*2	OIL PAN DRAIN PLUG
*3	OIL PAN DRAIN PLUG GASKET	*4	SEAL CAP
▭	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part
➡	Loctite 5970 Flange Sealant	-	-

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Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): TIMING GEAR CASE: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

1. REMOVE ENGINE ASSEMBLY

Click here INFO

2. REMOVE SPARK PLUG

Click here INFO

3. REMOVE NO. 2 AIR CLEANER HOSE

Click here INFO

4. REMOVE OIL FILTER CAP ASSEMBLY

Click here INFO

5. REMOVE OIL PAN DRAIN PLUG

Click here INFO

6. INSTALL OIL PAN DRAIN PLUG

Click here INFO

7. REMOVE NO. 1 FUEL PIPE SUB-ASSEMBLY

Click here INFO

8. REMOVE FUEL PUMP ASSEMBLY

Click here INFO

9. REMOVE FUEL INJECTOR ASSEMBLY (for Front Side)

Click here INFO

10. REMOVE FUEL INJECTOR ASSEMBLY (for Rear Side)

Click here INFO

11. REMOVE CAM TIMING OIL CONTROL SOLENOID ASSEMBLY

Click here INFO

12. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY

Click here INFO

13. INSTALL OIL FILTER CAP ASSEMBLY

Click here

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INFO

14. REMOVE INTAKE MANIFOLD

Click here INFO

15. REMOVE OUTLET TURBO OIL PIPE

Click here INFO

16. REMOVE TURBOCHARGER STAY

Click here INFO

17. SET NO. 1 CYLINDER TO TDC (COMPRESSION)

Click here INFO

18. REMOVE NO. 1 CHAIN TENSIONER ASSEMBLY

Click here INFO

19. LOOSEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

20. LOOSEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

21. REMOVE INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

22. REMOVE EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

23. REMOVE CAMSHAFT TIMING GEAR ASSEMBLY

Click here INFO

24. REMOVE CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

Click here INFO

25. REMOVE SST

Click here INFO

26. REMOVE CYLINDER HEAD SUB-ASSEMBLY

Click here INFO

27. REMOVE CYLINDER HEAD GASKET

Click here INFO

28. REMOVE DRIVE PLATE AND RING GEAR SUB-ASSEMBLY

Click here INFO

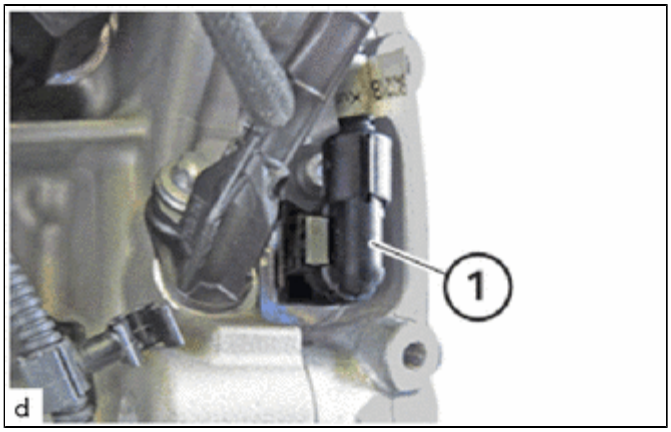
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29. REMOVE OIL PAN SUB-ASSEMBLY

Click here INFO

30. REMOVE TIMING GEAR CASE

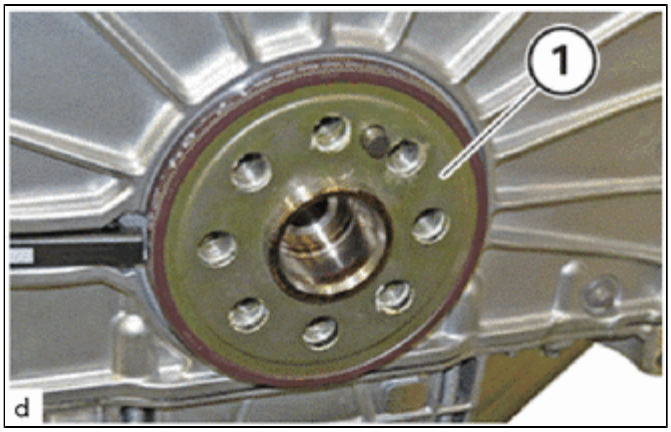
(a) Unlock the connector (1) and pull it off the crank position sensor.



(b) Remove the No. 1 crank angle sensor plate (1) from the crankshaft.

HINT:

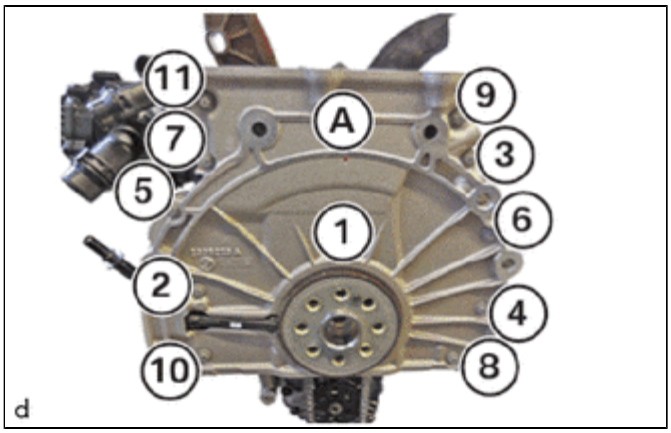
Increment wheel is magnetic. Protect the increment wheel from contact with metallic swarf after disassembly.



(c) Loosen E8 bolts in the order (11) to (1).

HINT:

Increased force may be necessary during disassembly because the component is bonded with liquid seal packing.



(d) Carefully loosen and remove the timing gear case (A).

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31. REMOVE CRANKSHAFT POSITION SENSOR

NOTICE:

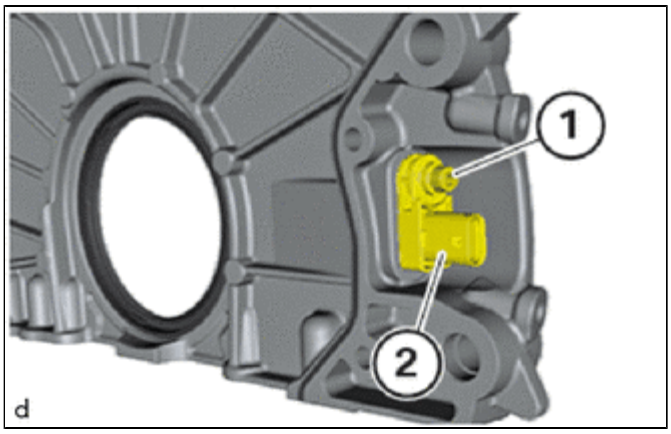
- Electrostatic discharge.

  Damage to or destruction of electrical components.

  - Only touch the housings of electrical components. Do not touch pins or multi-pin connectors directly.
  - For additional information see:

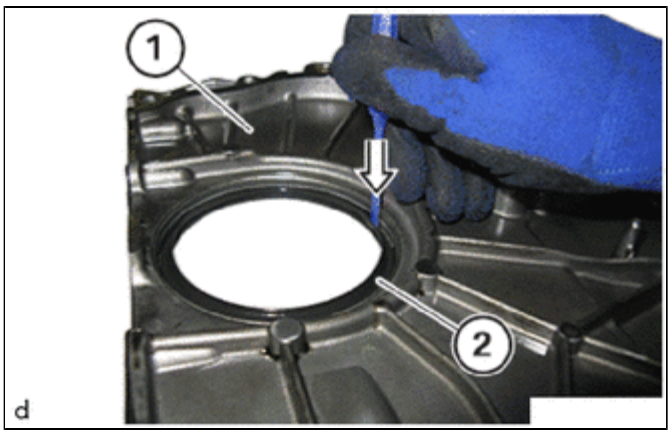
    Click here INFO

(a) Unscrew the 4 mm hexagon bolt (1) and remove the crank position sensor (2).



32. REMOVE TIMING CHAIN COVER OIL SEAL

(a) Drive out the timing chain cover oil seal (2) from the timing gear case (1).



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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGR
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): TIMING GEAR CASE: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL CRANKSHAFT POSITION SENSOR

NOTICE:

- Electrostatic discharge.

  Damage to or destruction of electrical components.

  - Only touch the housings of electrical components. Do not touch pins or multi-pinconnectors directly.
  - For additional information

    Click here INFO

(a) Guide in and install crank position sensor (2).

(b) Tighten down 4 mm hexagon bolt.

Torque:

4.6 N·m {47 kgf·cm, 41 in·lbf}

(c) Connect connectors and lock.

HINT:

The connector must engage audibly.

2. INSTALL TIMING GEAR CASE

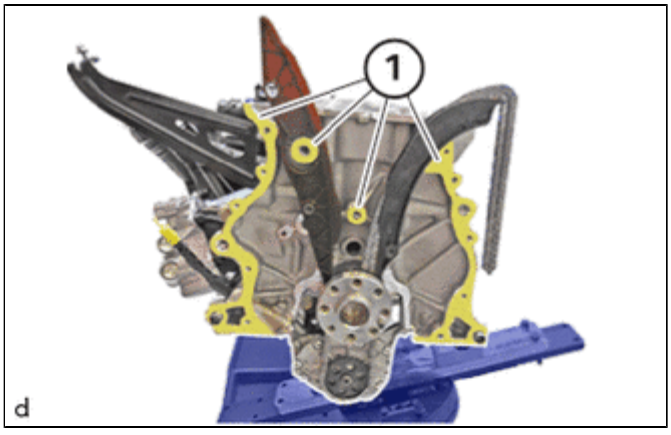
NOTICE:

- Damage to the surface.

  The use of metal-cutting tools (e.g. sandpaper) to clean the surfaces can damage them and lead to leaks or engine damage.

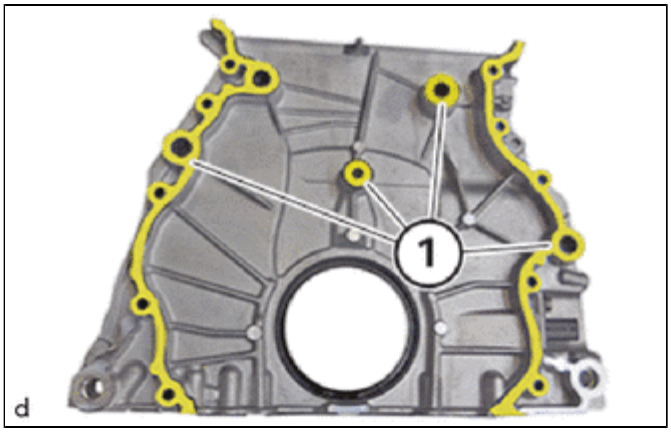
  - Do not use any metal-cutting tools.

(a) Clean sealing surfaces (1).



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(b) Clean sealing surfaces (1).



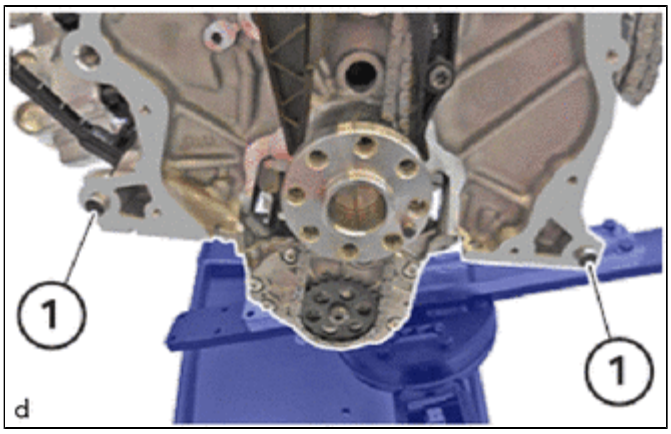
NOTICE:

- Damage to the surface.

  The use of metal-cutting tools (e.g. sandpaper) to clean the surfaces can damage them and lead to leaks or engine damage.

  - Do not use any metal-cutting tools.

(c) Check the ring pins (1) for damage and replace if necessary.



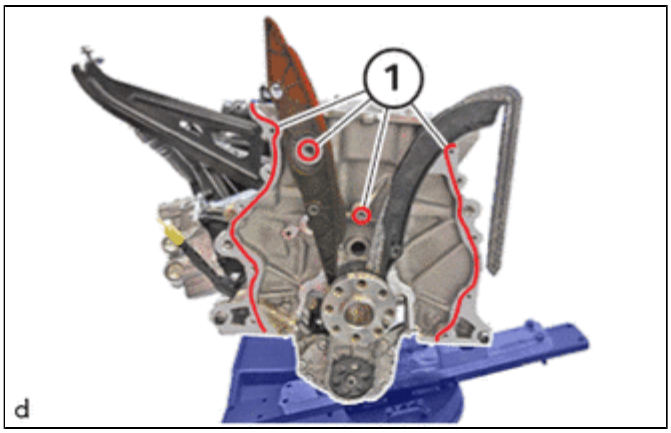
(d) Check for correct fit of ring pins(1).

(e) Load the sealer gun with the seal packing.

Seal Packing:
Loctite 5970 Flange Sealant

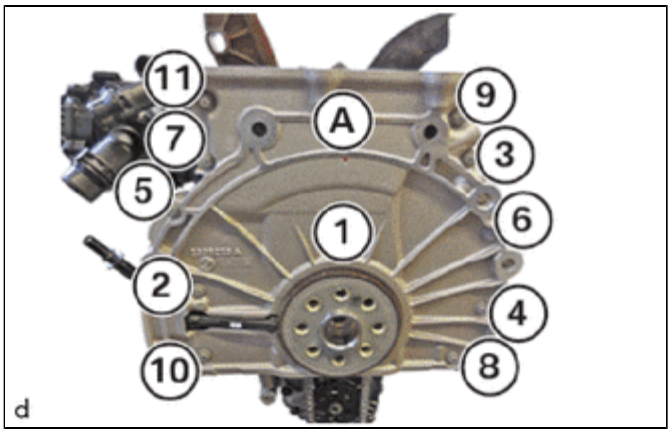
(f) Apply the seal packing in area (1) along the inner edge.

Height of the sealing bead:
2.0 to 2.5 mm (0.0787 to 0.0984 in.)



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(g) Replace bolts (1) to (11).



(h) Carefully mount the timing gear case (A).

(i) Tighten the E8 bolts in sequence (1) to (11).

Torque:

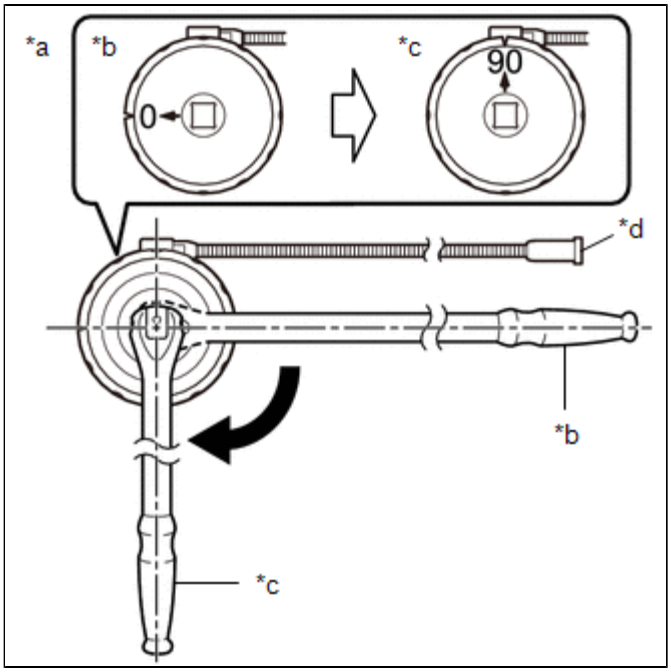
8.0 N·m {82 kgf·cm, 71 in·lbf}

(j) Using SST, tighten the E10 bolts an additional 90°.

SST: 09900-WA010

HINT:

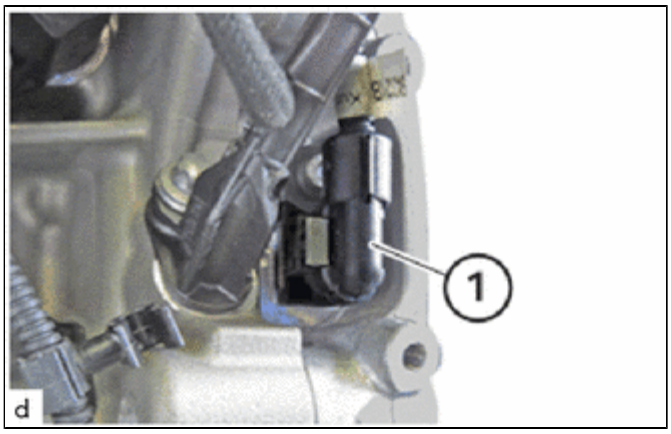
- The magnetic portion is used to secure the gauge to the vehicle.
- After first adjusting the needle of the gauge to 0°, tighten to the specified angle.
- Perform the work procedure carefully so that the gauge, etc. does not become tilted.



*a	Example
*b	Before Tightening
*c	After Tightening
*d	Magnetic Portion

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(k) Connect connectors (1) and lock. The connector (1) must engage audibly.



3. INSTALL TIMING CHAIN COVER OIL SEAL

Click here INFO

4. INSTALL OIL PAN SUB-ASSEMBLY

Click here INFO

5. INSTALL DRIVE PLATE AND RING GEAR SUB-ASSEMBLY

Click here INFO

6. SEALING OIL DUCT

Click here INFO

7. CLEAN SEALING SURFACE

Click here INFO

8. INSTALL CYLINDER HEAD GASKET

Click here INFO

9. SET NO. 1 CYLINDER TO TDC (COMPRESSION)

Click here INFO

10. INSTALL CYLINDER HEAD SUB-ASSEMBLY

Click here INFO

11. ADJUST CAMSHAFT

Click here INFO

12. INSTALL CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY

Click here INFO

13. TEMPORARILY TIGHTEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

14. INSTALL CAMSHAFT TIMING GEAR ASSEMBLY

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Click here INFO

15. TEMPORARILY TIGHTEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

16. TEMPORARILY INSTALL CHAIN SUB-ASSEMBLY

Click here INFO

17. TIGHTEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

18. TIGHTEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY

Click here INFO

19. REMOVE SST

Click here INFO

20. INSTALL NO. 1 CHAIN TENSIONER ASSEMBLY

Click here INFO

21. INSPECT CAMSHAFT TIMING

Click here INFO

22. INSTALL SPARK PLUG

Click here INFO

23. INSTALL TURBOCHARGER STAY

Click here INFO

24. INSTALL OUTLET TURBO OIL PIPE

Click here INFO

25. INSTALL INTAKE MANIFOLD

Click here INFO

26. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY

Click here INFO

27. INSTALL CAM TIMING OIL CONTROL SOLENOID ASSEMBLY

Click here INFO

28. REPLACE FUEL INJECTOR SEAL

Click here INFO

29. INSTALL FUEL INJECTOR ASSEMBLY (for Rear Side)

Click here INFO

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30. INSTALL FUEL INJECTOR ASSEMBLY (for Front Side)

Click here INFO

31. ADJUST FUEL PUMP LIFTER ASSEMBLY

Click here INFO

32. INSTALL FUEL PUMP ASSEMBLY

Click here INFO

33. INSTALL NO. 1 FUEL PIPE SUB-ASSEMBLY

Click here INFO

34. ADD ENGINE OIL

Click here INFO

35. INSTALL NO. 2 AIR CLEANER HOSE

Click here INFO

36. INSTALL ENGINE ASSEMBLY

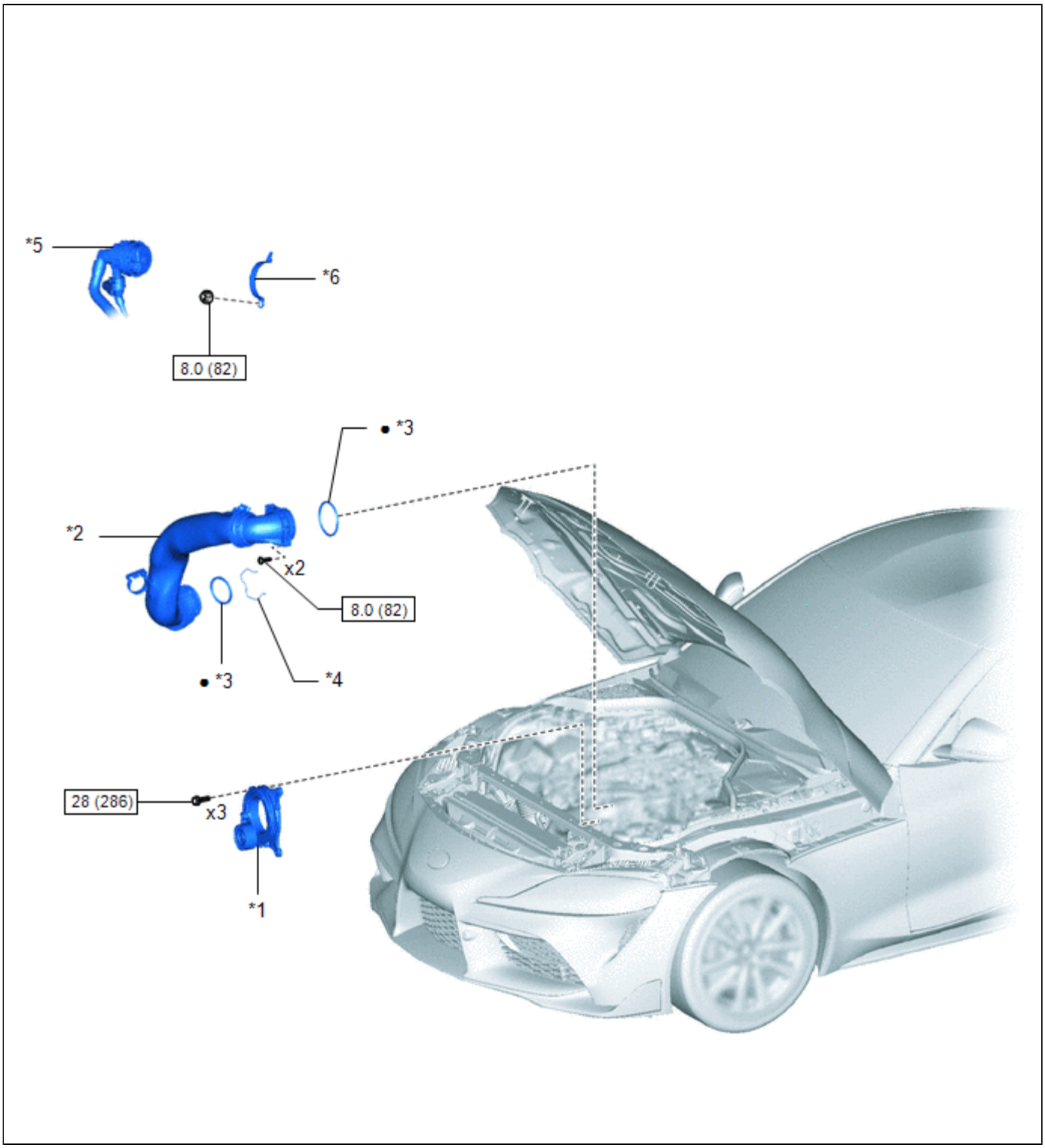
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF3
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): V-RIBBED BELT TENSIONER: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	V-RIBBED BELT TENSIONER	*2	NO. 2 AIR CLEANER HOSE

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	ASSEMBLY		
*3	SEALING RING	*4	AIR HOSE CLAMP OR CLIP
*5	WATER PUMP ASSEMBLY	*6	NO. 2 WATER PUMP BRACKET SUBASSEMBLY
	N*m (kgf*cm, ft.*lbf): Specified torque	•	Non-reusable part

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF4
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): V-RIBBED BELT TENSIONER: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

PROCEDURE

1. REMOVE FAN AND GENERATOR V BELT

Click here INFO

2. SEPARATE ELECTRIC WATER PUMP ASSEMBLY

Click here INFO

3. REMOVE NO. 2 AIR CLEANER HOSE

Click here INFO

4. REMOVE V-RIBBED BELT TENSIONER ASSEMBLY

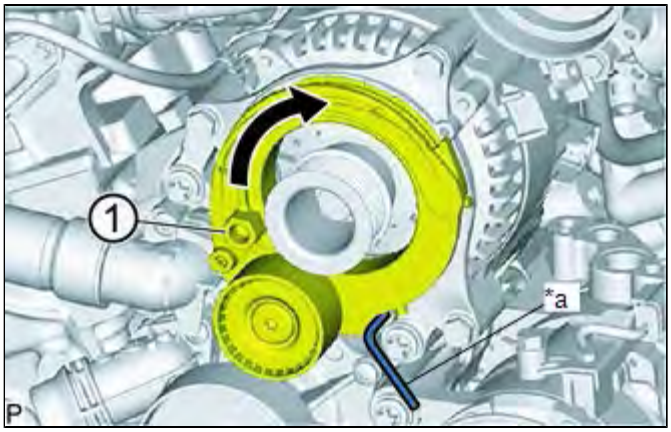
CAUTION:

- Component with preload.

  Danger of injury!

  - Reduce preload as far as possible before disassembly. Relieve component.

(a) Increase the preload of the v-ribbed belt tensioner assembly of the generator assembly on the hexagon head (1).

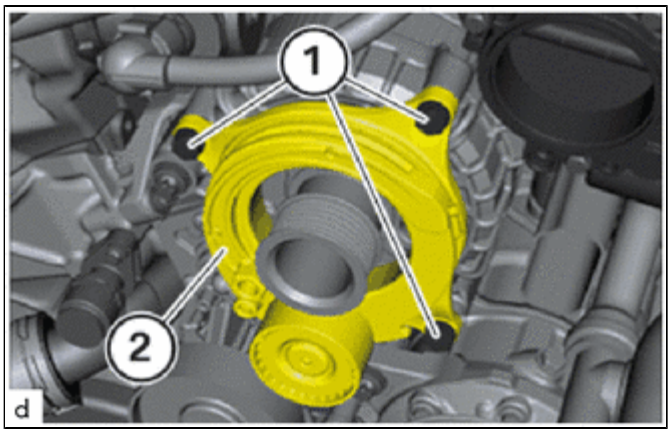


*a	4 mm Hexagon Wrench

(b) Remove 4 mm hexagon wrench.

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(c) Loosen bolts (1).



(d) Remove the v-ribbed belt tensioner assembly (2) of the generator assembly.

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDF5
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): V-RIBBED BELT TENSIONER: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL V-RIBBED BELT TENSIONER ASSEMBLY

CAUTION:

- Component with preload.

  Danger of injury!

  - Reduce preload as far as possible before disassembly. Relieve component.

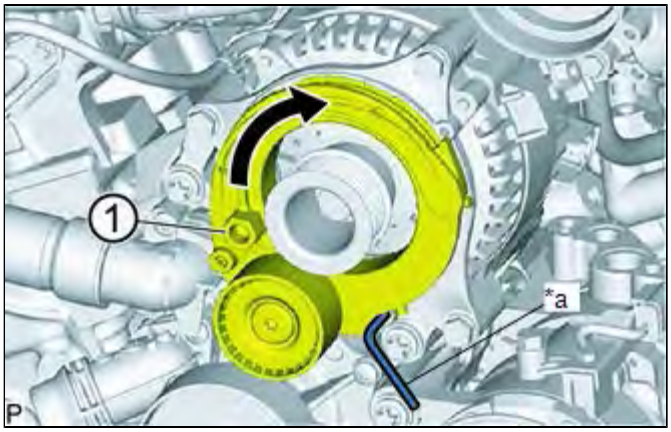
(a) Position the v-ribbed belt tensioner assembly of the generator assembly.

(b) Tighten the bolts.

Torque:

28 N·m {286 kgf·cm, 21 ft·lbf}

(c) Increase the preload of the v-ribbed belt tensioner assembly of the generator assembly on the hexagon head (1).



*a	4 mm Hexagon Wrench

(d) Secure the v-ribbed belt tensioner assembly of the generator assembly with the 4 mm hexagon wrench.

2. INSTALL NO. 2 AIR CLEANER HOSE

Click here INFO

3. CONNECT ELECTRIC WATER PUMP ASSEMBLY

Click here INFO

4. INSTALL FAN AND GENERATOR V BELT

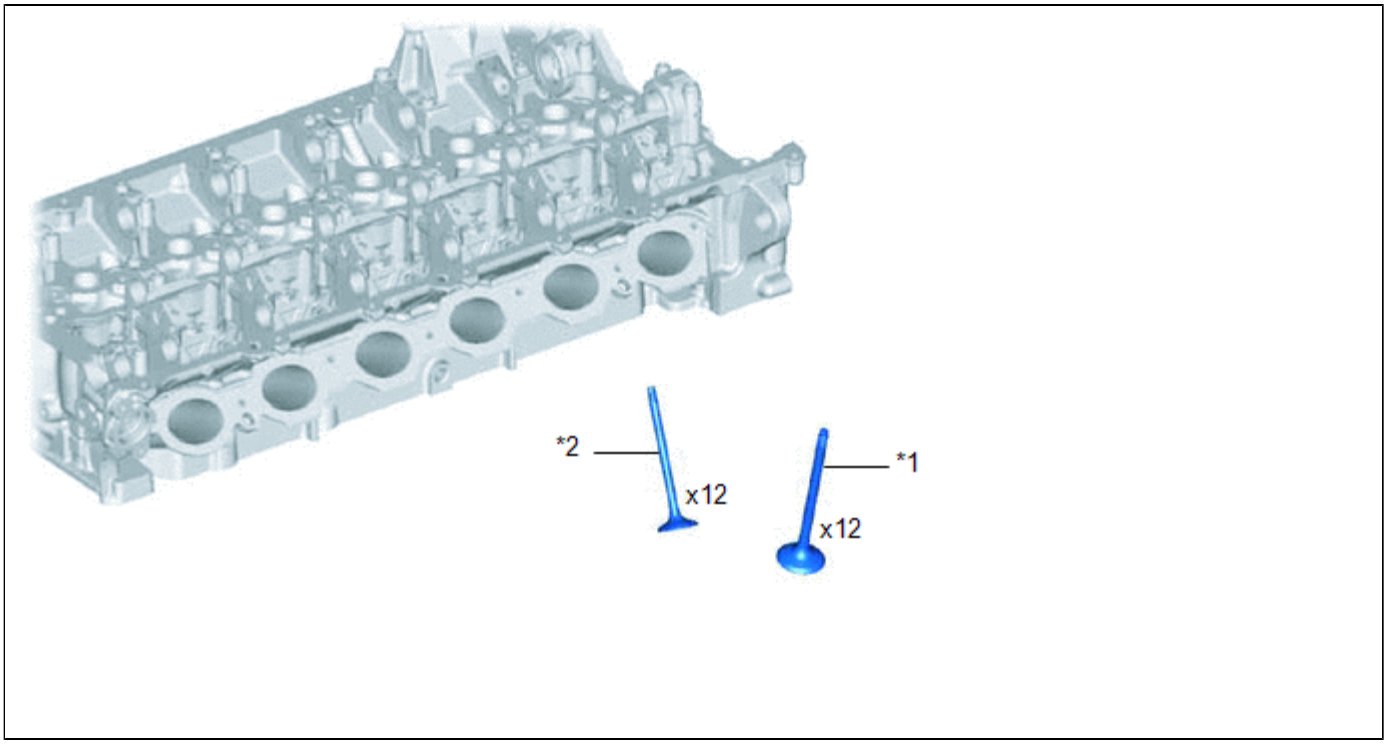
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDHG
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): VALVE: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	INTAKE VALVE	*2	EXHAUST VALVE

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDHH
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): VALVE: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

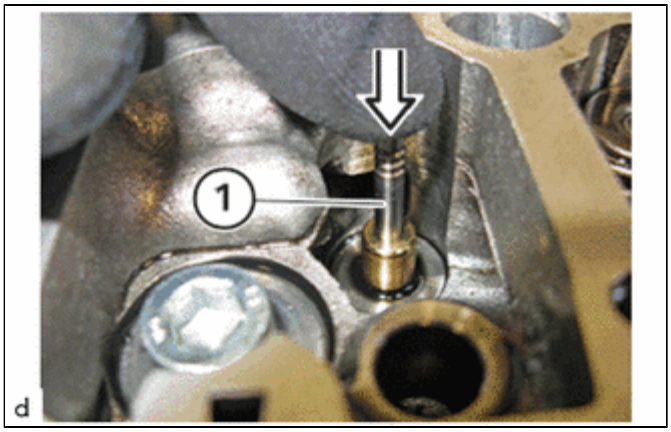
PROCEDURE

1. REMOVE VALVE STEM OIL SEAL

Click here INFO

2. REMOVE INTAKE VALVE

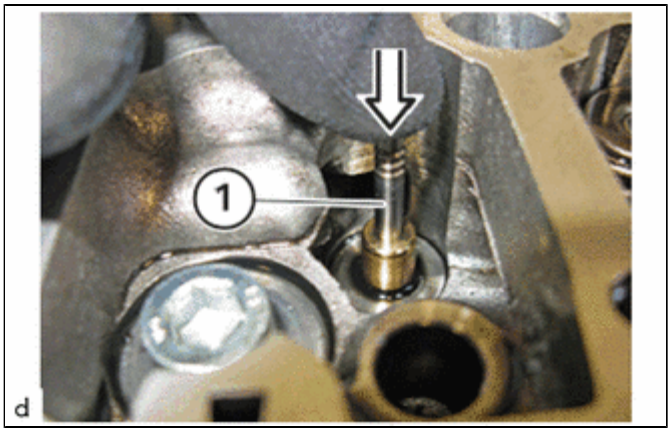
(a) Slide intake valve (1) in direction of arrow.



(b) Remove the intake valve (1).

3. REMOVE EXHAUST VALVE

(a) Slide exhaust valve (1) in direction of arrow.



(b) Remove the exhaust valve (1).

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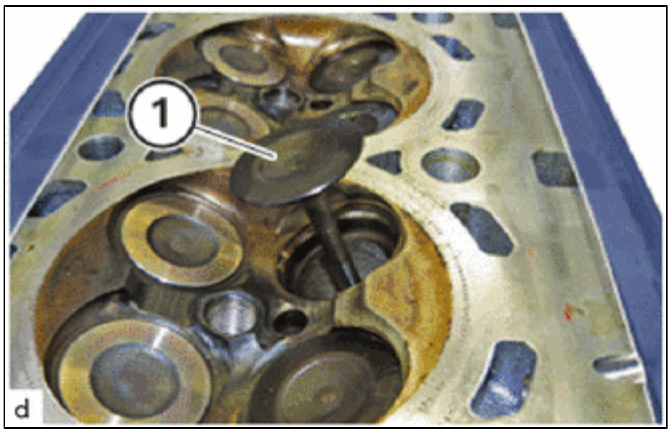
Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDHI
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): VALVE: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

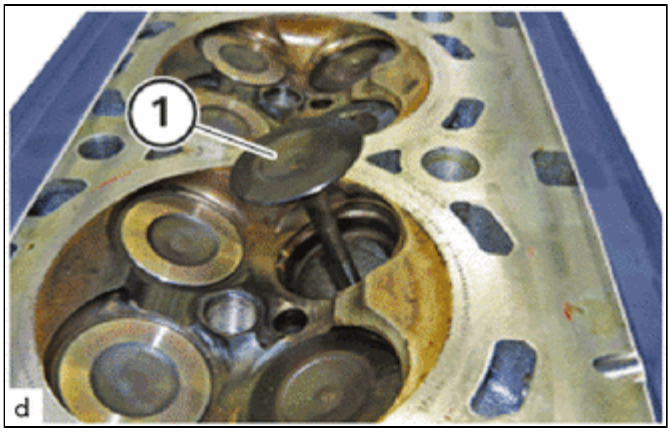
1. INSTALL INTAKE VALVE

(a) Carefully push the intake valve (1) into the cylinder head sub-assembly.



2. INSTALL EXHAUST VALVE

(a) Carefully push the exhaust valve (1) into the cylinder head sub-assembly.



3. INSTALL VALVE STEM OIL SEAL

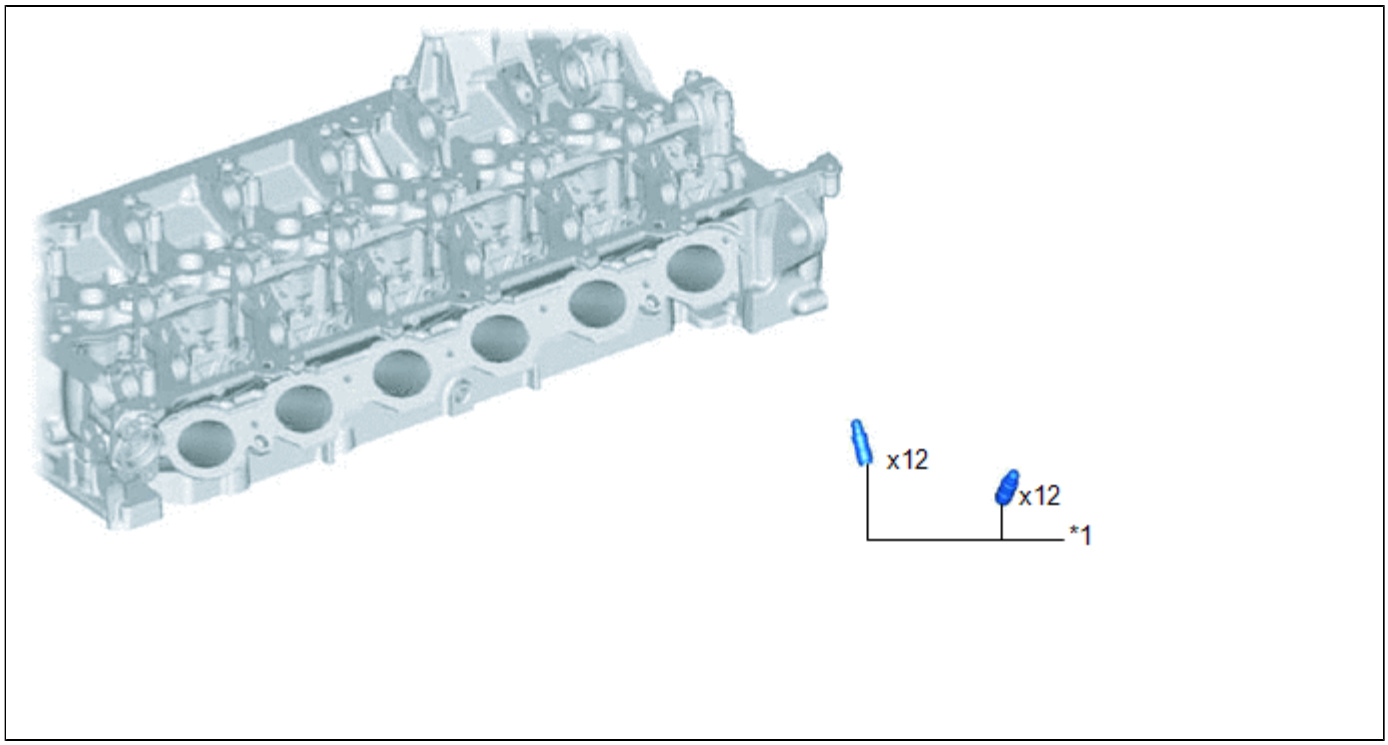
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGJ
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): VALVE LASH ADJUSTER: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	VALVE LASH ADJUSTER ASSEMBLY	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGK
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): VALVE LASH ADJUSTER: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. REMOVE NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

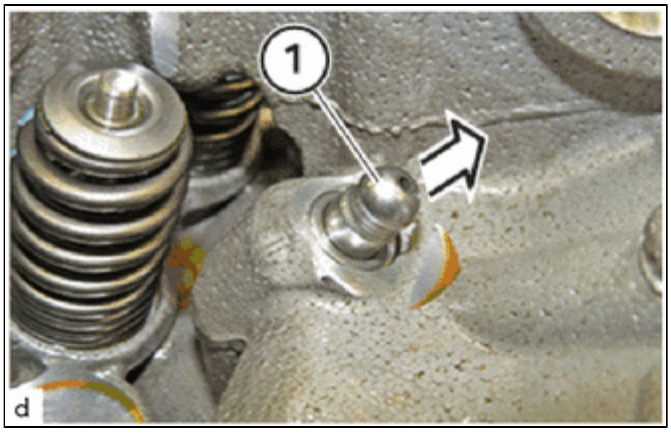
Click here INFO

2. REMOVE VALVE LASH ADJUSTER ASSEMBLY

NOTICE:

If the valve lash adjuster assemblies are reused, they must be reinstalled at the same position.

(a) Remove all valve lash adjuster assemblies (1) in the direction of arrow to the top.



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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGL
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): VALVE LASH ADJUSTER: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

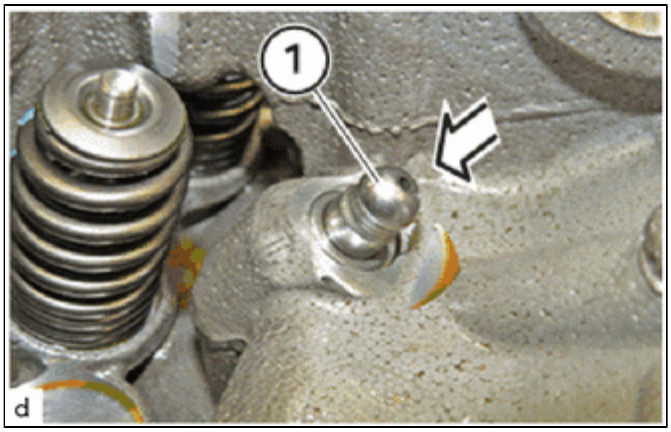
PROCEDURE

1. INSTALL VALVE LASH ADJUSTER ASSEMBLY

NOTICE:

If the valve lash adjuster assemblies are reused, they must be reinstalled at the same position.

(a) Insert and install all valve lash adjuster assemblies (1) in the direction of the arrow.



2. INSTALL NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

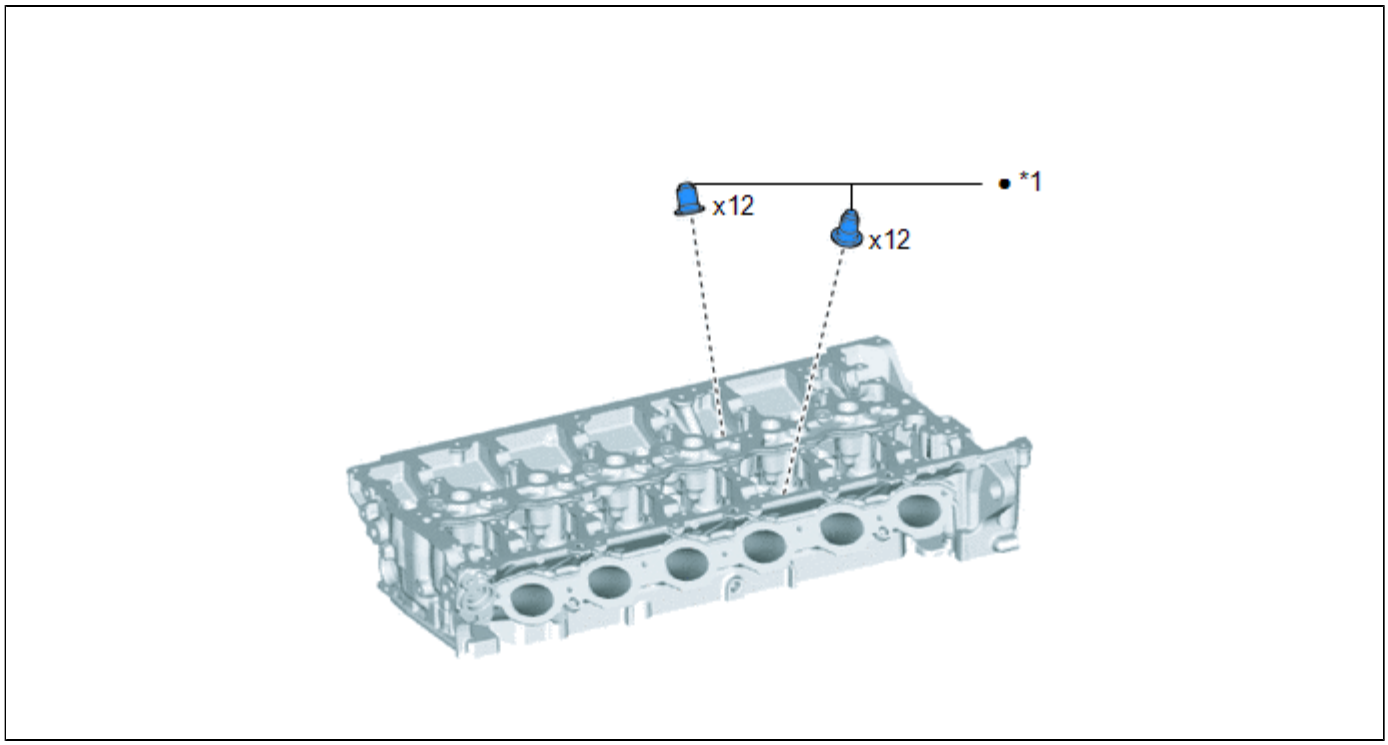
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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGG
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): VALVE STEM OIL SEAL: COMPONENTS; 2020 MY Supra [03/2019 -]		

COMPONENTS

ILLUSTRATION



*1	VALVE STEM OIL SEAL	-	-
•	Non-reusable part	-	-

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Last Modified: 09-05-2019	6.9:8.0.49	**Doc ID:** RM100000001JDGH
Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): VALVE STEM OIL SEAL: REMOVAL; 2020 MY Supra [03/2019 -]		

REMOVAL

CAUTION / NOTICE / HINT

CAUTION:

- Hot surfaces.

  Risk of burning!

  - Perform all work only on components that have cooled down.

- Working on 12 V vehicle electrical system.

  Risk of short circuits! Risk of fire!

  - Detach battery earth lead from battery.

NOTICE:

- Damage to battery terminal, the safety battery terminal or the intelligent battery sensor (IBS).

  Damaged battery terminals can lead to malfunctions or vehicle electrical system faults.

  - Pull off battery terminal from battery pole by carefully moving to and fro. Do not pry off using a tool.

PROCEDURE

1. REMOVE COMPRESSION SPRING

Click here INFO

2. REMOVE VALVE STEM OIL SEAL

NOTICE:

- Contaminant or foreign body.

  Contamination can result in malfunctions, operating failure or leaks.

  - Adhere to the utmost cleanliness.
  - Protect components from contamination e.g. by covering.
  - Close off line connections with seal plugs.

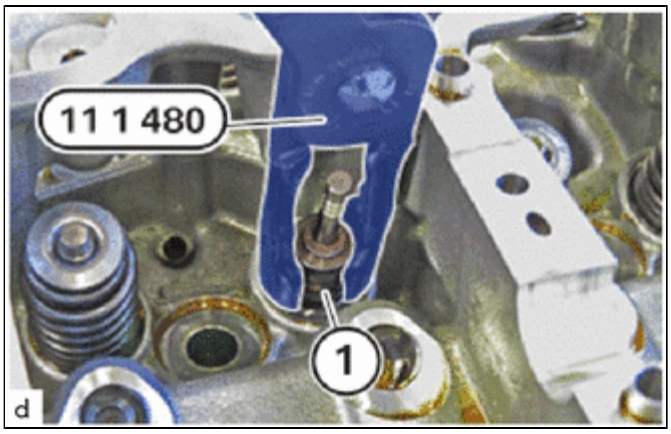
HINT:

The description is for one component only. The procedure is identical for all further components.

(a) Remove the valve stem oil seal (1) using the special tool 0 490 796 (11 1 480).

SST: 09200-WA450

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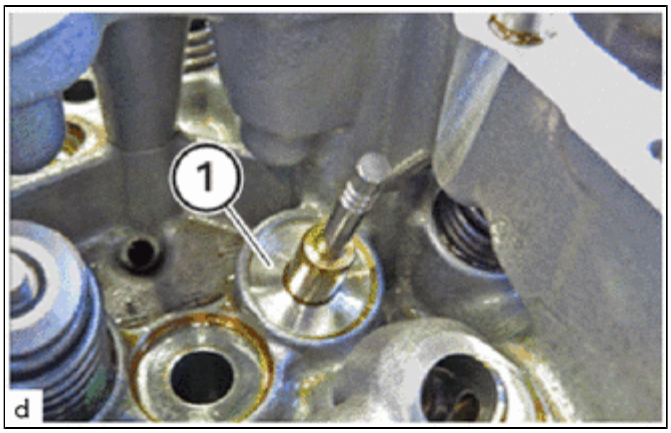
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Model Year Start: 2020	**Model:** Supra	**Prod Date Range:** [03/2019 -]
Title: B58 (ENGINE MECHANICAL): VALVE STEM OIL SEAL: INSTALLATION; 2020 MY Supra [03/2019 -]		

INSTALLATION

PROCEDURE

1. INSTALL VALVE STEM OIL SEAL

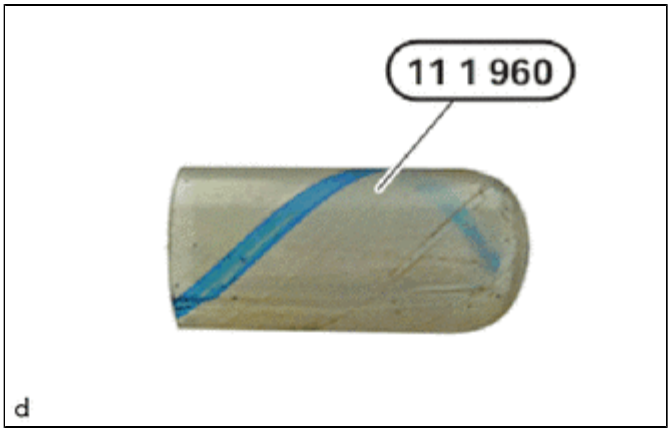
(a) Remove oil and dirt from the contact surface (1).



(b) Replace the valve stem oil seal (1).

(c) Make sure that the special tool 0 490 797 (11 1 960) is used when installing the valve stem oil seal.

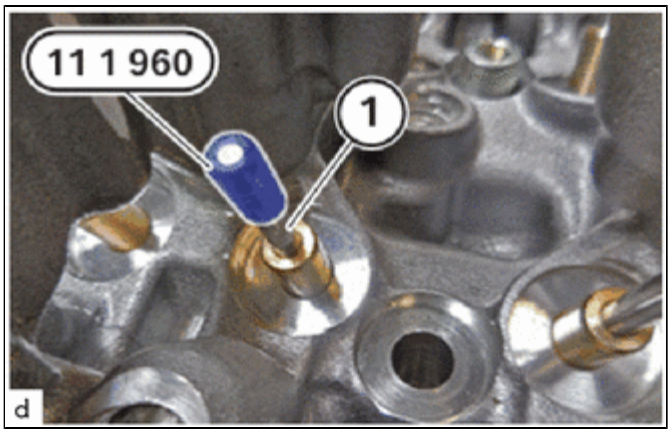
SST: 09200-WA710



(d) Guide in and install the special tool 0 490 797 (11 1 960) on valve (1).

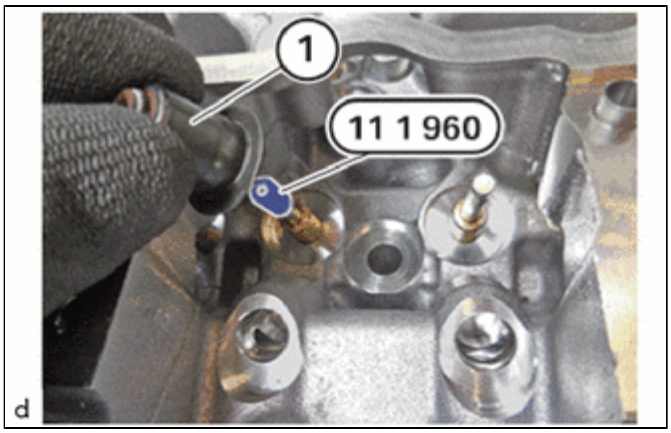
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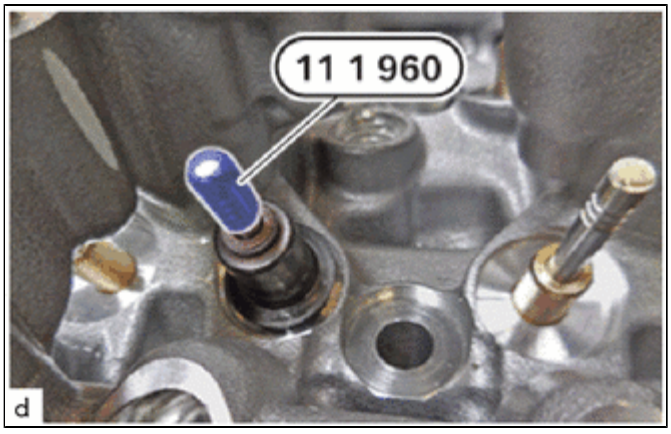
(e) Guide in and install valve stem seal (1) on the special tool 0 490 797 (11 1 960).

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(f) Guide the special tool 0 490 797 (11 1 960) out and remove.

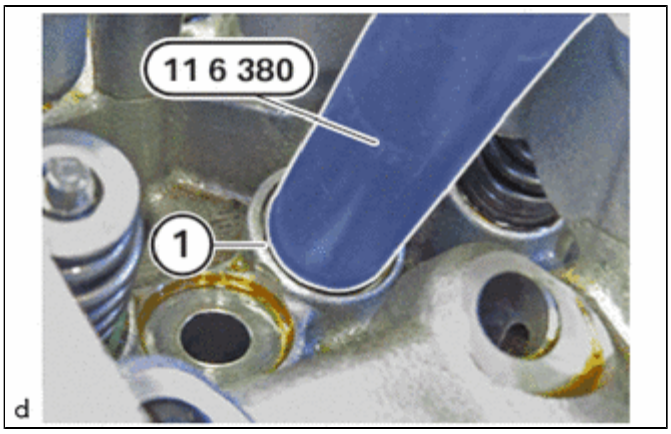
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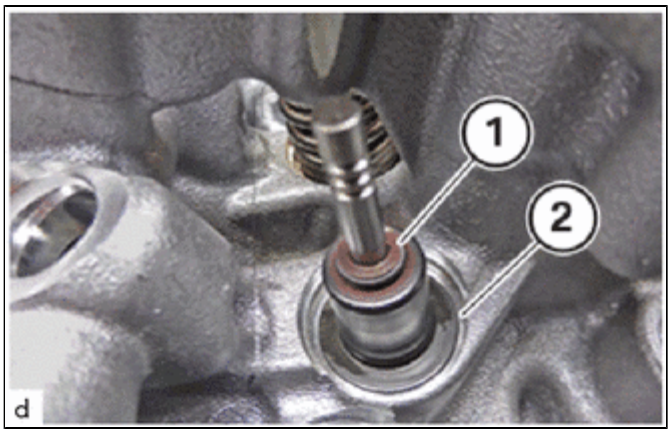
(g) Press the valve stem oil seal (1) onto the cylinder head till the limitposition using special tool 0 493 249 (11 6 380).

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(h) Ensure that valve stem oil seal (1) is positioned correctly on cylinder head sub-assembly (2).



2. INSTALL COMPRESSION SPRING

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