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<b>Model Year Start:</b> 2020	<b>Model:</b> Supra	<b>Prod Date Range:</b> [03/2019 - ]
<b>Title:</b> B58 (ENGINE MECHANICAL): PISTON: INSTALLATION; 2020 MY Supra [03/2019 - ]		

## INSTALLATION

### PROCEDURE

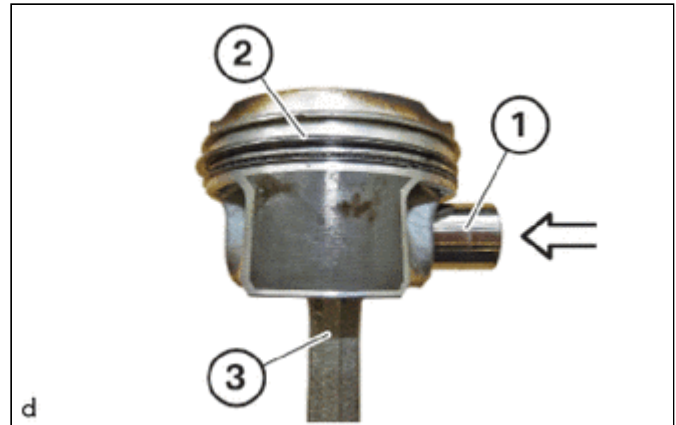
#### 1. INSTALL PISTON

- (a) Install piston pin (1) in piston (2) and connecting rod (3).

**HINT:**

Piston and piston pin are matched to each other.

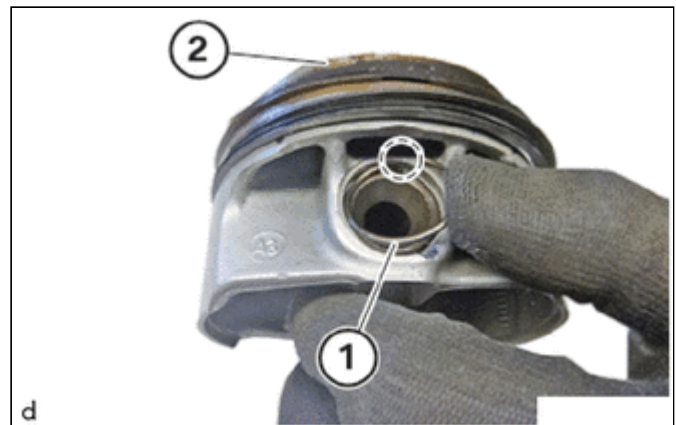
Always install piston and piston pin together and do not switch by mistake.



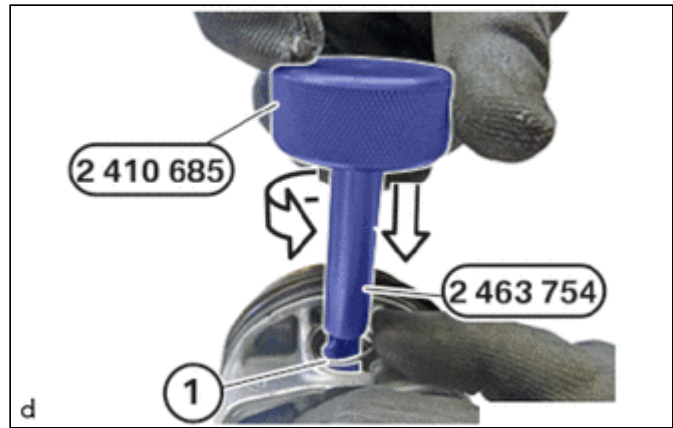
- (b) Position the piston pin hole snap ring (1) such that the opening in the marked area of the piston pin hole snap ring points in the direction of the piston top side (2).

**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.



(d) Simultaneously press the piston pin hole snap ring into the piston using special tools 2 410 685 and 2 463 754.

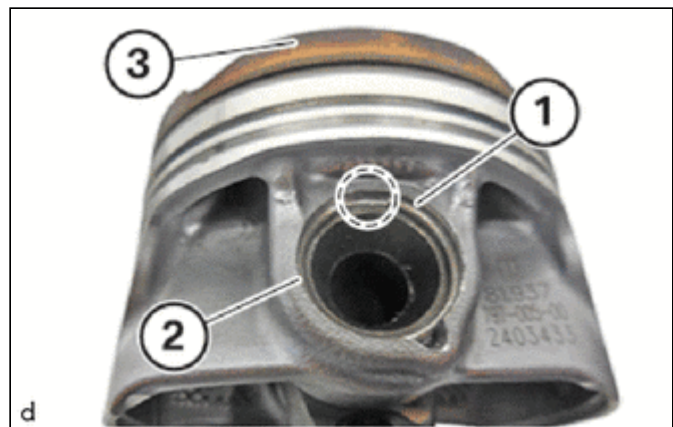
**SST: 09200-WA580**

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(e) Twist and reposition special tool 2 410 685 and completely press the piston pin hole snap ring into the piston.

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(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.

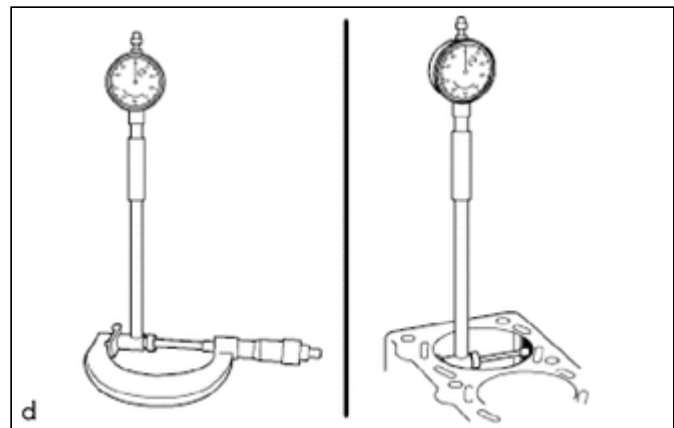
(a) Cylinder barrel is cleaned.

(b) Adjusting measuring bolt to nominal dimension of cylinder bore.

Cylinder bore:

Distance from the upper edge of the cylinder	Diameter of cylinder bore	Permitted irregularity of

barrel to the measuring point		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.)



(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.)
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**HINT:**

If the cylinder bore is not as specified, replace the crankcase.

**3. INSTALL CONNECTING ROD SUB-ASSEMBLY**

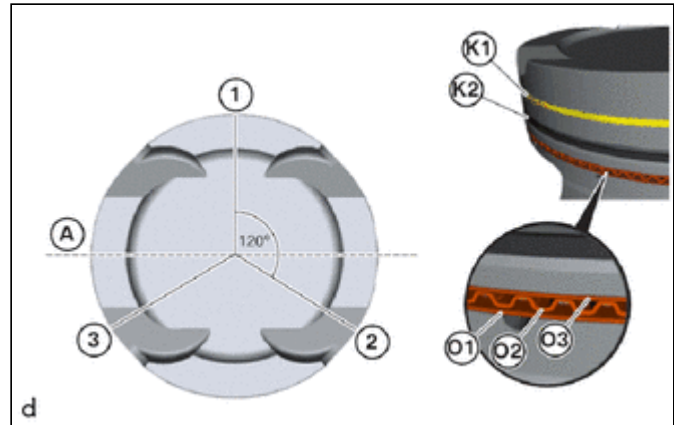
**NOTICE:**

- Damage on the cylinder wall and oil spray nozzles.
- 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.

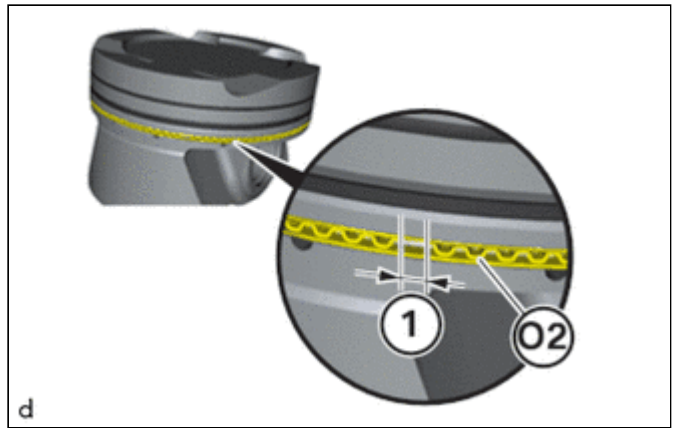


(b) Do not position contact points over axis of piston pin (A).

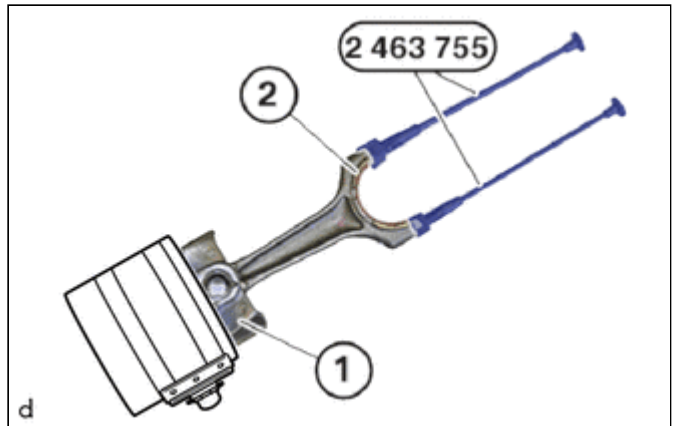
POSITION NUMBER	DESCRIPTION
1	12 o'clock position
2	4 o'clock position
3	8 o'clock position
A	Axis of piston pin
K1	1. Piston ring (plain rectangular compression ring)
K2	2. Piston ring (taper faced piston ring)
O1	Oil scraper ring below
O2	Spiral expander
O3	Oil scraper ring above

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)

(c) Make sure that contact point (1) does not overlap spring (O2).



(d) Coat the pistons (1) and piston rings lightly with oil.

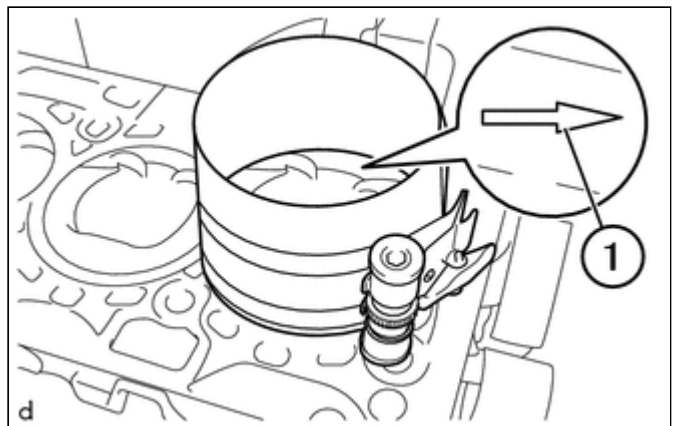


(e) Insert the piston (1) with the piston rings into the piston ring compressor.

(f) Bolt special tool 2 463 755 on at large connecting rod eye (2).

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(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:**

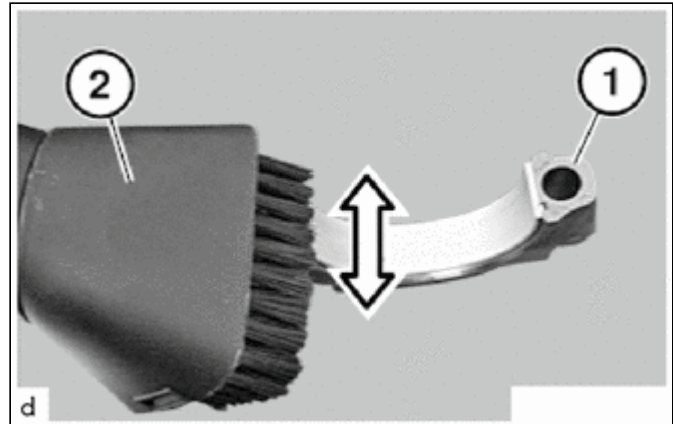
- Damage on the cylinder wall and oil spray nozzles.

Major force can scratch the cylinder wall and bend the oil spray nozzles.

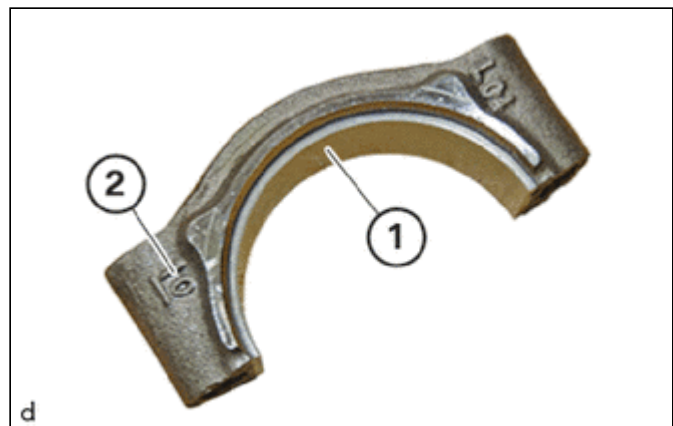
- Carefully move the piston and connecting rod in the engine block.

#### 4. INSTALL CONNECTING ROD CAP

- (a) Vacuum the connecting rod bearing and cracked surface (1) with a vacuum cleaner (2).



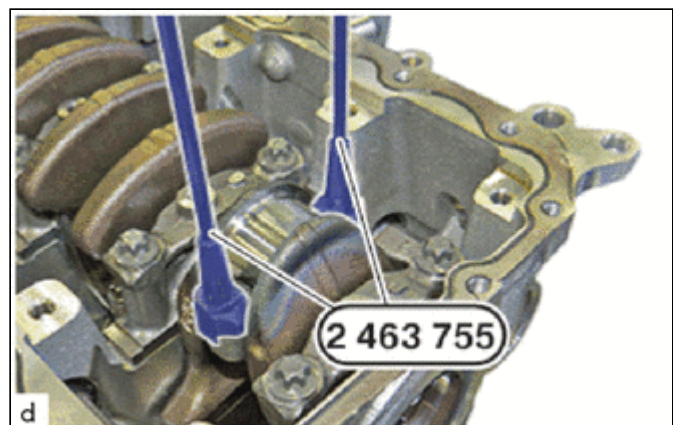
- (b) Insert the connecting rod bearing (1) into the connecting rod bearing cap (2).



- (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.

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- (e) Pull the connecting rod up to the connecting rod bearing journal.

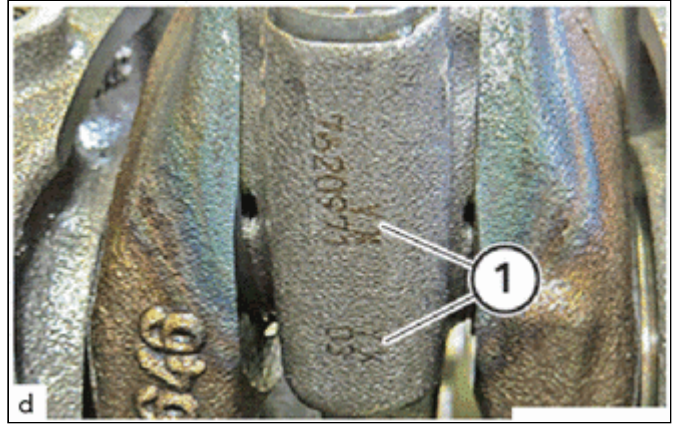
(f) Attach the connecting rod bearing caps to the connecting rod until the designations (1) match.

**NOTICE:**

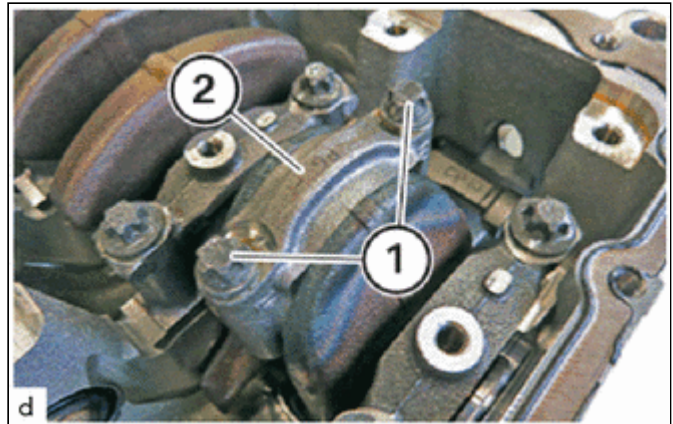
- Engine damage caused by incorrectly installed connecting rod bearings and connecting rod bearing caps.

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}**

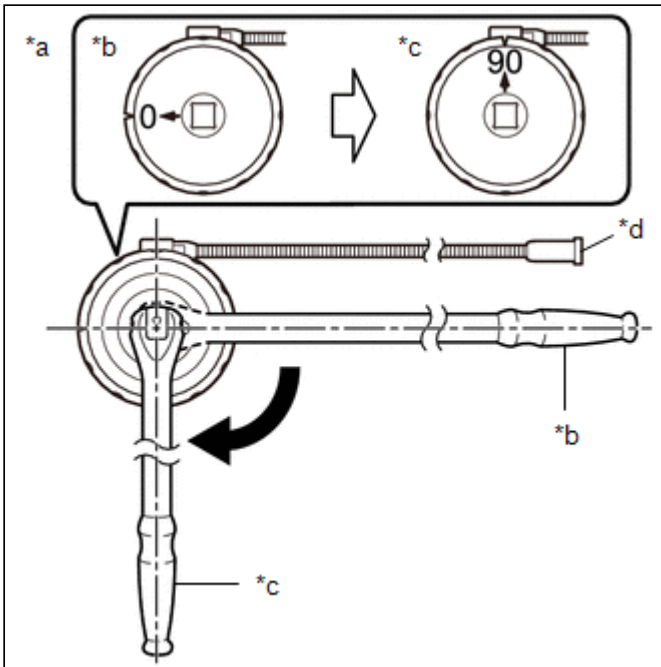
(i) Step 2:

(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.



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

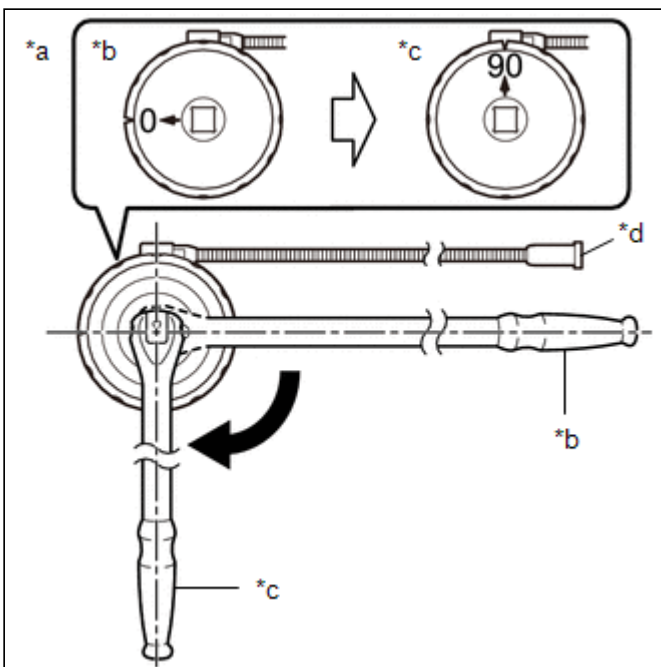
(j) Step 3:

(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**

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## **6. INSTALL OIL PUMP ASSEMBLY**

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## **7. INSTALL OIL PAN SUB-ASSEMBLY**

Click here [INFO](#)

## **8. SEALING OIL DUCT**

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## **9. CLEAN SEALING SURFACES**

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## **10. INSTALL CYLINDER HEAD GASKET**

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## **11. SET NO. 1 CYLINDER TO TDC (COMPRESSION)**

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## **12. INSTALL CYLINDER HEAD SUB-ASSEMBLY**

Click here [INFO](#)

## **13. INSPECT AND ADJUST CAMSHAFT WITH SPECIAL TOOL**

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## **14. INSTALL CAMSHAFT TIMING EXHAUST GEAR ASSEMBLY**

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## **15. TEMPORARILY TIGHTEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY**

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## **16. INSTALL CAMSHAFT TIMING GEAR ASSEMBLY**

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## **17. TEMPORARILY TIGHTEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY**

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## **18. PRETENSION TIMING CHAIN WITH SPECIAL TOOL**

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## **19. TIGHTEN EXHAUST CAMSHAFT TIMING GEAR BOLT ASSEMBLY**

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## **20. TIGHTEN INTAKE CAMSHAFT TIMING GEAR BOLT ASSEMBLY**

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## **21. REMOVE SST**

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## **22. INSTALL NO. 1 CHAIN TENSIONER ASSEMBLY**

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## **23. INSPECT AND ADJUST CAMSHAFT SUB-ASSEMBLY**

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## **24. INSTALL SPARK PLUG**

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## **25. INSTALL TURBOCHARGER STAY**

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## **26. INSTALL OUTLET TURBO OIL PIPE**

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## **27. INSTALL INTAKE MANIFOLD**

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## **28. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY**

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## **29. INSTALL CAM TIMING OIL CONTROL SOLENOID ASSEMBLY**

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## **30. REPLACE FUEL INJECTOR SEAL**

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## **31. INSTALL FUEL INJECTOR ASSEMBLY (for Rear Side)**

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## **32. INSTALL FUEL INJECTOR ASSEMBLY (for Front Side)**

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## **33. ADJUST FUEL PUMP LIFTER ASSEMBLY**

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## **34. INSTALL FUEL PUMP ASSEMBLY**

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### **35. INSTALL NO. 1 FUEL PIPE SUB-ASSEMBLY**

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### **36. ADD ENGINE OIL**

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### **37. INSTALL NO. 2 AIR CLEANER HOSE**

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### **38. INSTALL ENGINE ASSEMBLY**

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