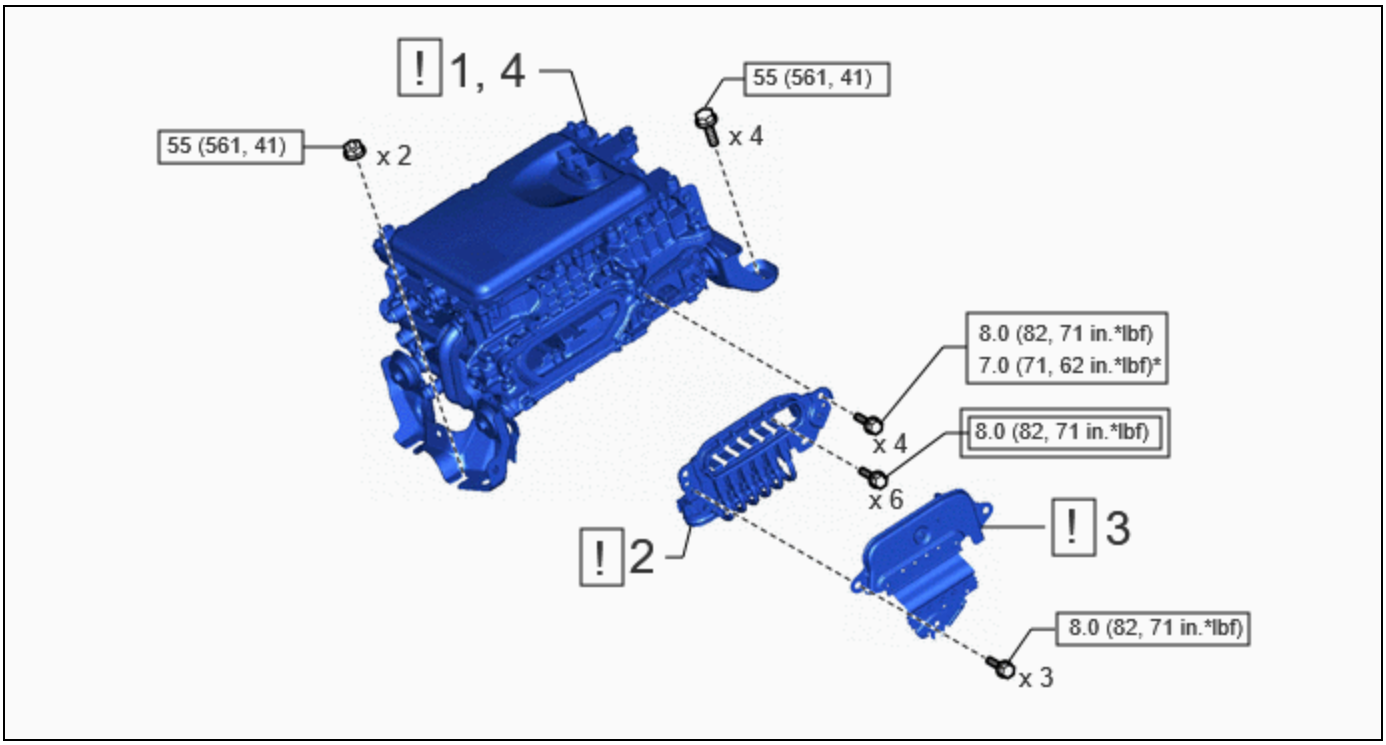
Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM1000000029Y4P
Model Year Start: 2023	**Model:** Prius	**Prod Date Range:** [12/2022 -]
Title: HYBRID / BATTERY CONTROL: INVERTER WITH CONVERTER (for HEV Model): INSTALLATION; 2023 - 2024 MY Prius [12/2022 -]		

INSTALLATION

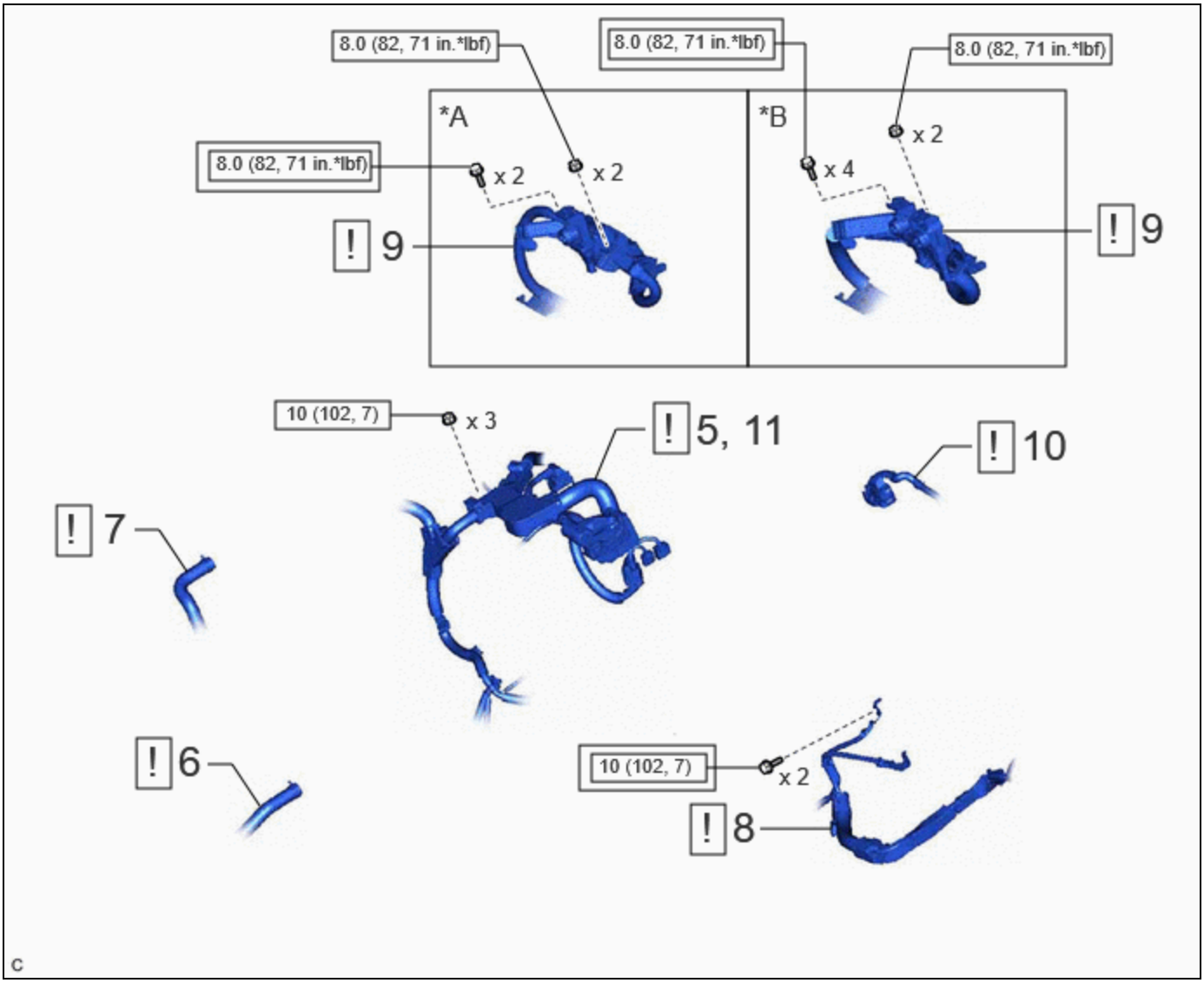
CAUTION / NOTICE / HINT

COMPONENTS (INSTALLATION)



	PROCEDURE	PART NAME CODE	!		
1	SET INVERTER WITH CONVERTER ASSEMBLY	G9200	INFO	-	-
2	MOTOR CABLE	G1148	INFO	-	-
3	UPPER INVERTER COVER	G9221	INFO	-	-
4	INSTALL INVERTER WITH CONVERTER ASSEMBLY	G9200	INFO	-	-

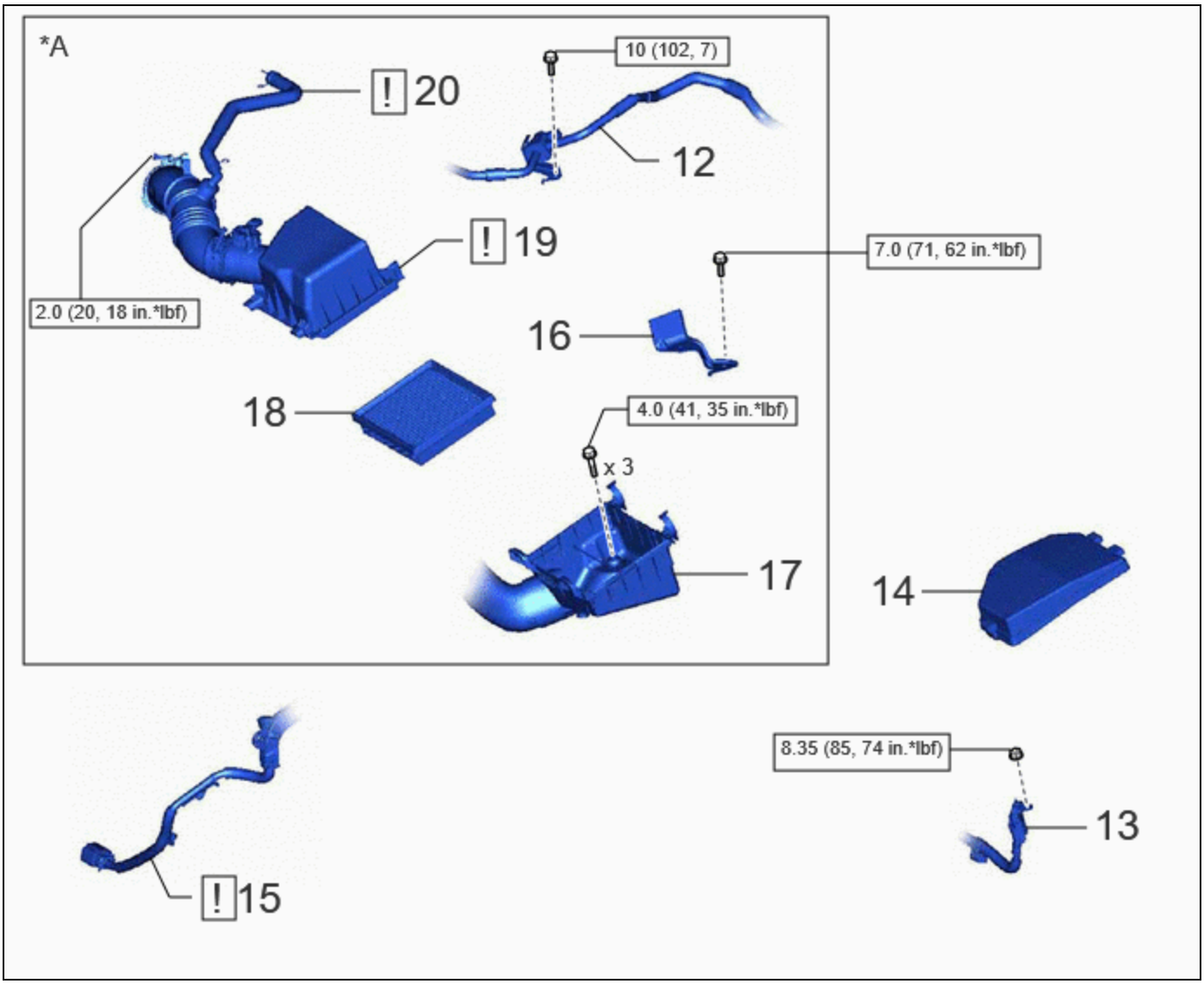
*	For use with a union nut wrench	-	-
	Tightening torque for "Major areas involving basic vehicle performance such as moving/turning/stopping" : N*m (kgf*cm, ft.*lbf)		N*m (kgf*cm, ft.*lbf): Specified torque



	PROCEDURE	PART NAME CODE	!		
5	ENGINE WIRE	82121	INFO	-	-
6	INLET NO. 1 INVERTER COOLING HOSE	G922AA	INFO	-	-
7	OUTLET NO. 1 INVERTER COOLING HOSE	G922C	INFO	-	-
8	NO. 7 ENGINE WIRE	82127D	INFO	-	-
9	FLOOR UNDER WIRE	821H1	INFO	-	-
10	ENGINE ROOM MAIN WIRE	82111	INFO	-	-
11	ENGINE WIRE	82121	INFO	-	-

*A	for 2WD	*B	for 4WD

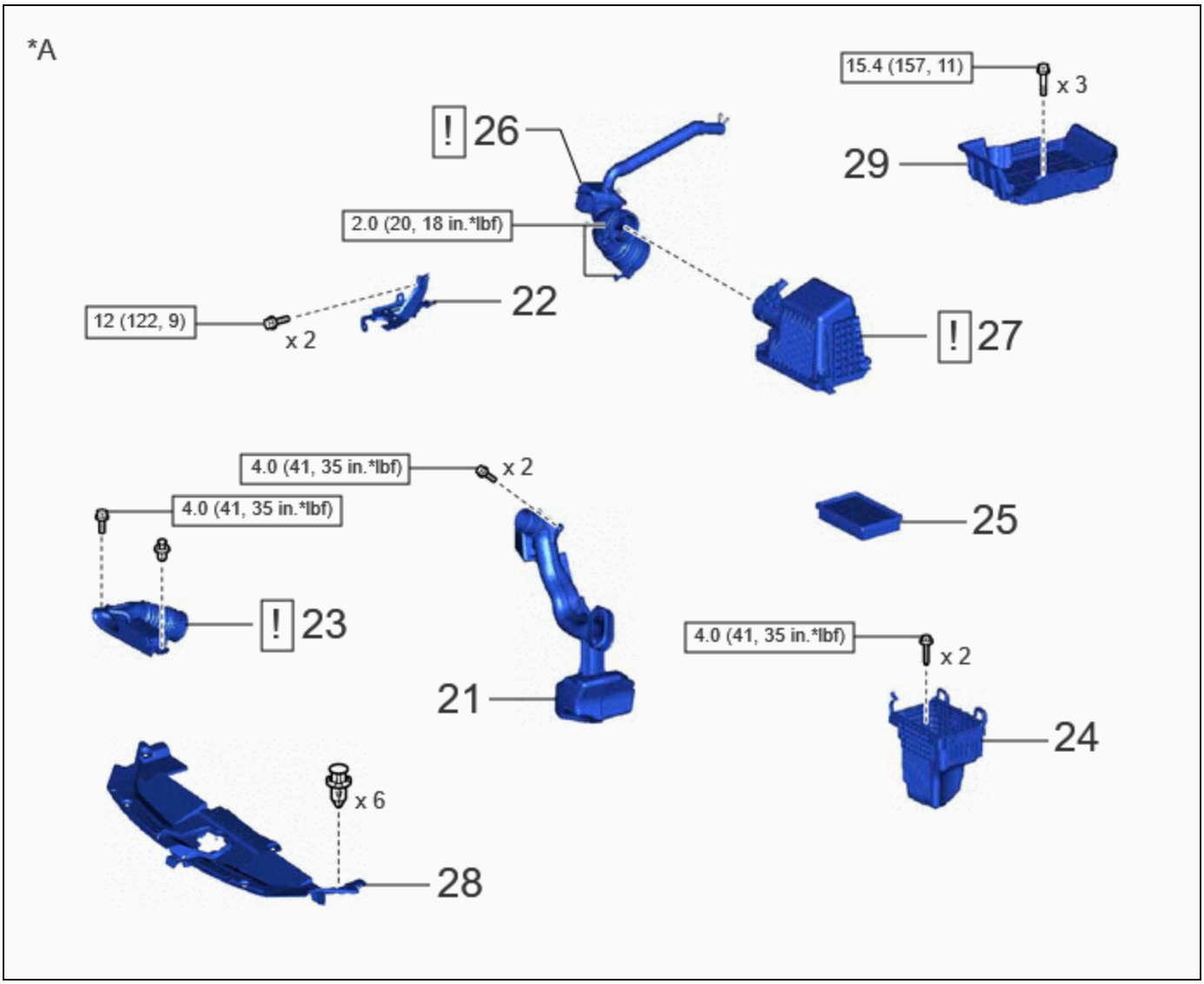
	Tightening torque for "Major areas involving basic vehicle performance such as moving/turning/stopping" : N*m (kgf*cm, ft.*lbf)		N*m (kgf*cm, ft.*lbf): Specified torque



	PROCEDURE	PART NAME CODE	!		
12	VACUUM SWITCHING VALVE ASSEMBLY	25860	-	-	-
13	NO. 3 ENGINE WIRE	82123	-	-	-
14	NO. 2 RELAY BLOCK COVER	82662B	-	-	-
15	HV AIR CONDITIONING WIRE	821H2	INFO	-	-
16	AIR CLEANER BRACKET	17771A	-	-	-
17	AIR CLEANER CASE SUB-ASSEMBLY	17701	-	-	-
18	AIR CLEANER FILTER ELEMENT SUB-ASSEMBLY	17801	-	-	-
19	AIR CLEANER CAP WITH AIR CLEANER HOSE	-	-	-	-

	PROCEDURE	PART NAME CODE	!		⚙
20	NO. 2 VENTILATION HOSE	12262	-	-	-

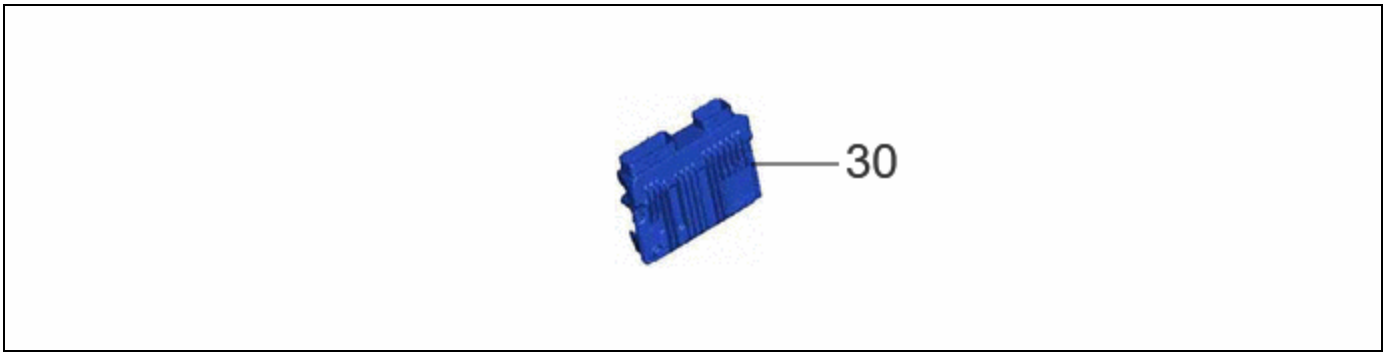
*A	for M20A-FXS	-	-
▭	Tightening torque for "Major areas involving basic vehicle performance such as moving/turning/stopping" : N*m (kgf*cm, ft.*lbf)	▭	N*m (kgf*cm, ft.*lbf): Specified torque



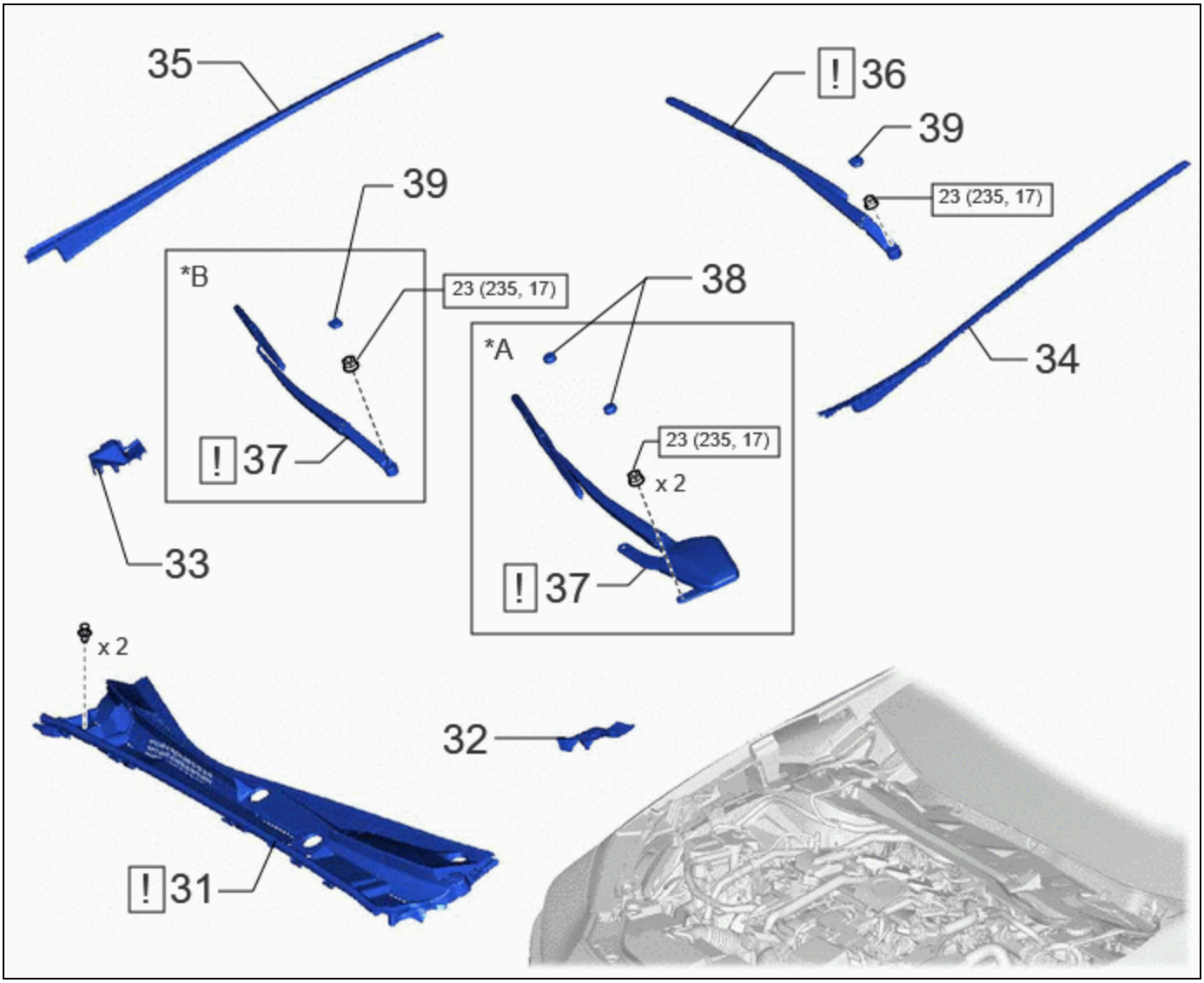
	PROCEDURE	PART NAME CODE	!		⚙
21	INLET NO. 1 AIR CLEANER	17751	-	-	-
22	AIR CLEANER BRACKET	17771A	-	-	-

PROCEDURE		PART NAME CODE			
23	INLET NO. 2 AIR CLEANER	17752	-	-	-
24	AIR CLEANER CASE SUB-ASSEMBLY	17701	-	-	-
25	AIR CLEANER FILTER ELEMENT SUB-ASSEMBLY	17801	-	-	-
26	AIR CLEANER HOSE ASSEMBLY	-	-	-	-
27	AIR CLEANER CAP SUB-ASSEMBLY	17705	-	-	-
28	RADIATOR SUPPORT OPENING COVER	53289A	-	-	-
29	BATTERY CLAMP SUB-ASSEMBLY	74404A	-	-	-

*A	for 2ZR-FXE	-	-
	N*m (kgf*cm, ft.*lbf): Specified torque	-	-



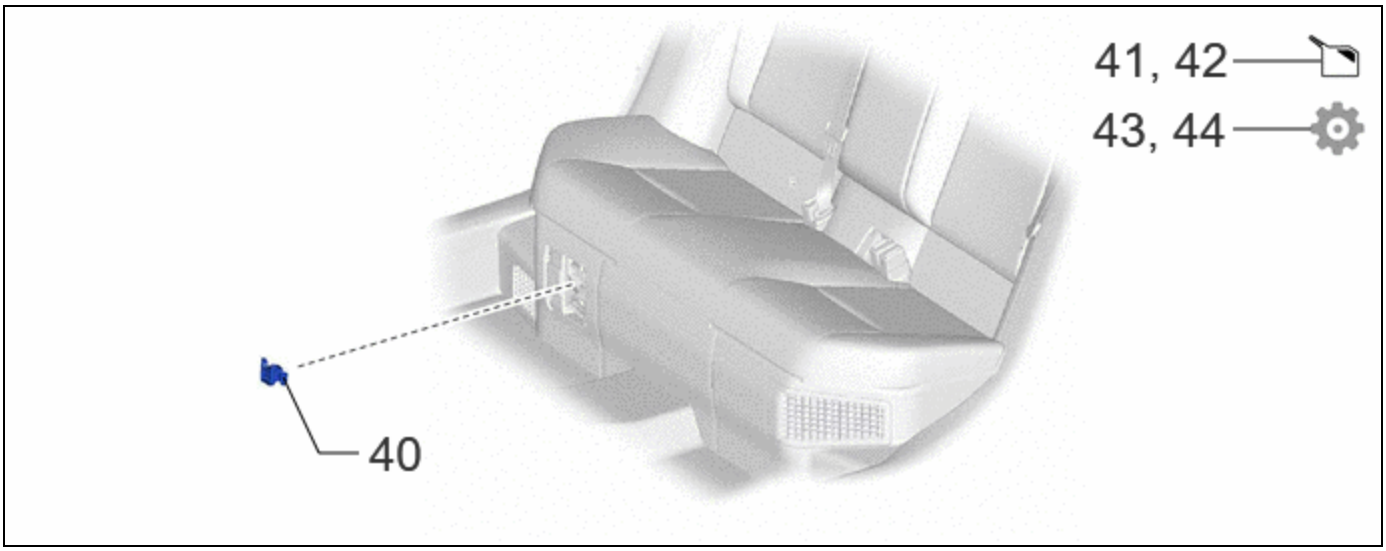
PROCEDURE		PART NAME CODE			
30	ECM	89661	-	-	-



	PROCEDURE	PART NAME CODE	!		
31	COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY	55708	INFO	-	-
32	COWL WATER EXTRACT SHIELD LH	55754F	-	-	-
33	COWL WATER EXTRACT SHIELD RH	55753D	-	-	-
34	WINDSHIELD LOWER OUTSIDE MOULDING LH	75536D	-	-	-
35	WINDSHIELD LOWER OUTSIDE MOULDING RH	75535F	-	-	-
36	FRONT WIPER ARM AND BLADE ASSEMBLY LH	-	INFO	-	-
37	FRONT WIPER ARM AND BLADE ASSEMBLY RH	-	INFO	-	-
38	SHIELD CAP	85247	INFO	-	-
39	FRONT WIPER ARM HEAD CAP	85292B	INFO	-	-

*A	for M20A-FXS	*B	for 2ZR-FXE

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



	PROCEDURE	PART NAME CODE	!		
40	SERVICE PLUG GRIP	G3834	-	-	-
41	ADD COOLANT (for Inverter)	-	-	INFO	-
42	INSPECT FOR COOLANT LEAK (for Inverter)	-	-	INFO	-
43	ECU CONFIGURATION	-	-	-	INFO
44	RESOLVER LEARNING	-	-	-	INFO

PROCEDURE

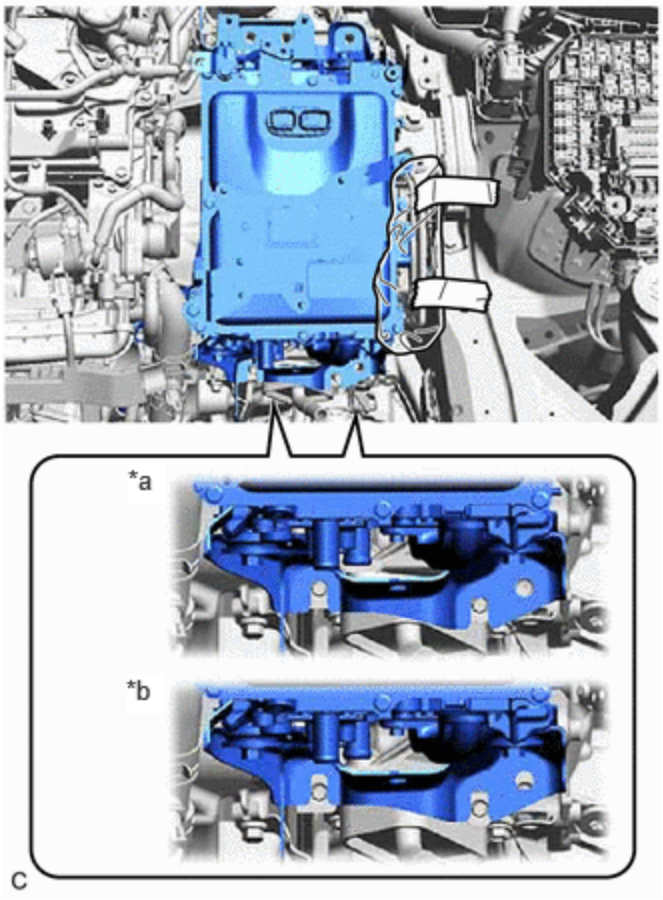
1. SET INVERTER WITH CONVERTER ASSEMBLY

CAUTION:

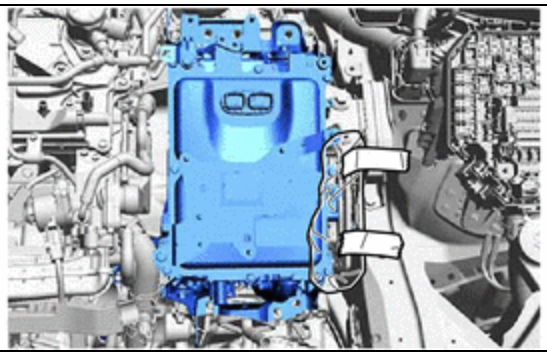
Be sure to wear insulated gloves.

NOTICE:

- When installing the inverter with converter assembly, be careful not to damage the parts around it.
- To prevent damage, do not hold the inverter with converter assembly by the connectors, brackets or cooling pipes.
- To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.
- Make sure that the inverter with converter assembly is positioned so that the stud bolts are in contact with the base of the U-shaped portions of the No. 1 inverter bracket.



*a: Correct
*b: Incorrect



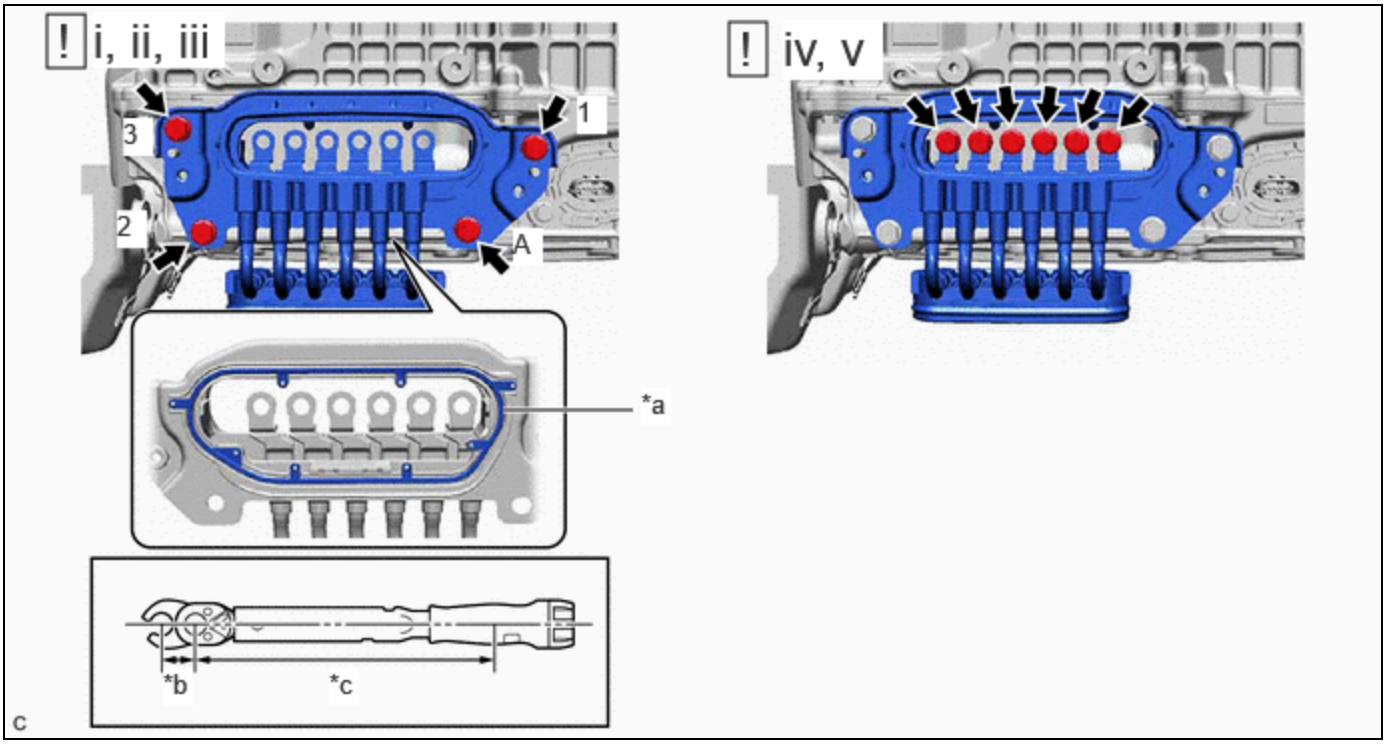
2. CONNECT MOTOR CABLE

CAUTION:

Be sure to wear insulated gloves.

NOTICE:

Do not allow any foreign matter or water to enter the inverter with converter assembly.



*a	Waterproof Seal	-	-

(1) Temporarily install the motor cable to the inverter with converter assembly with the 4 bolts,

NOTICE:

- Do not touch the waterproof seal or terminals of the motor cable.
- Do not damage the terminals, connector housing or inverter with converter assembly during connection.
- Be careful to avoid cutting or pinching the waterproof seal during installation.

(2) Fully tighten the 3 bolts in the order shown in the illustration.

Torque:

8.0 N·m {82 kgf·cm}

(3) Using a 10 mm union nut wrench, fully tighten the bolt(A).

Torque:

Specified Tightening Torque :

8.0 N·m {82 kgf·cm, 71 in·lbf}

HINT:

- Calculate the torque wrench reading when changing the fulcrum length of the torque wrench.

  Click here INFO
- When using a union nut wrench (fulcrum length of 22 mm (0.866 in.)) + torque wrench (fulcrum length of 162 mm (6.38 in.)): 7.0 N*m (71 kgf*cm, 62 in.*lbf)

(4) Temporarily install the 6 bolts.

CAUTION:

Insulate the tool with insulating tape.

NOTICE:

- To prevent the threads from being damaged, temporarily tighten the 6 bolts by hand.
- Do not damage the terminals, connector housing or inverter with converter assembly during connection.

(5) Fully tighten the 6 bolts.

Torque:

8.0 N·m {82 kgf·cm}

CAUTION:

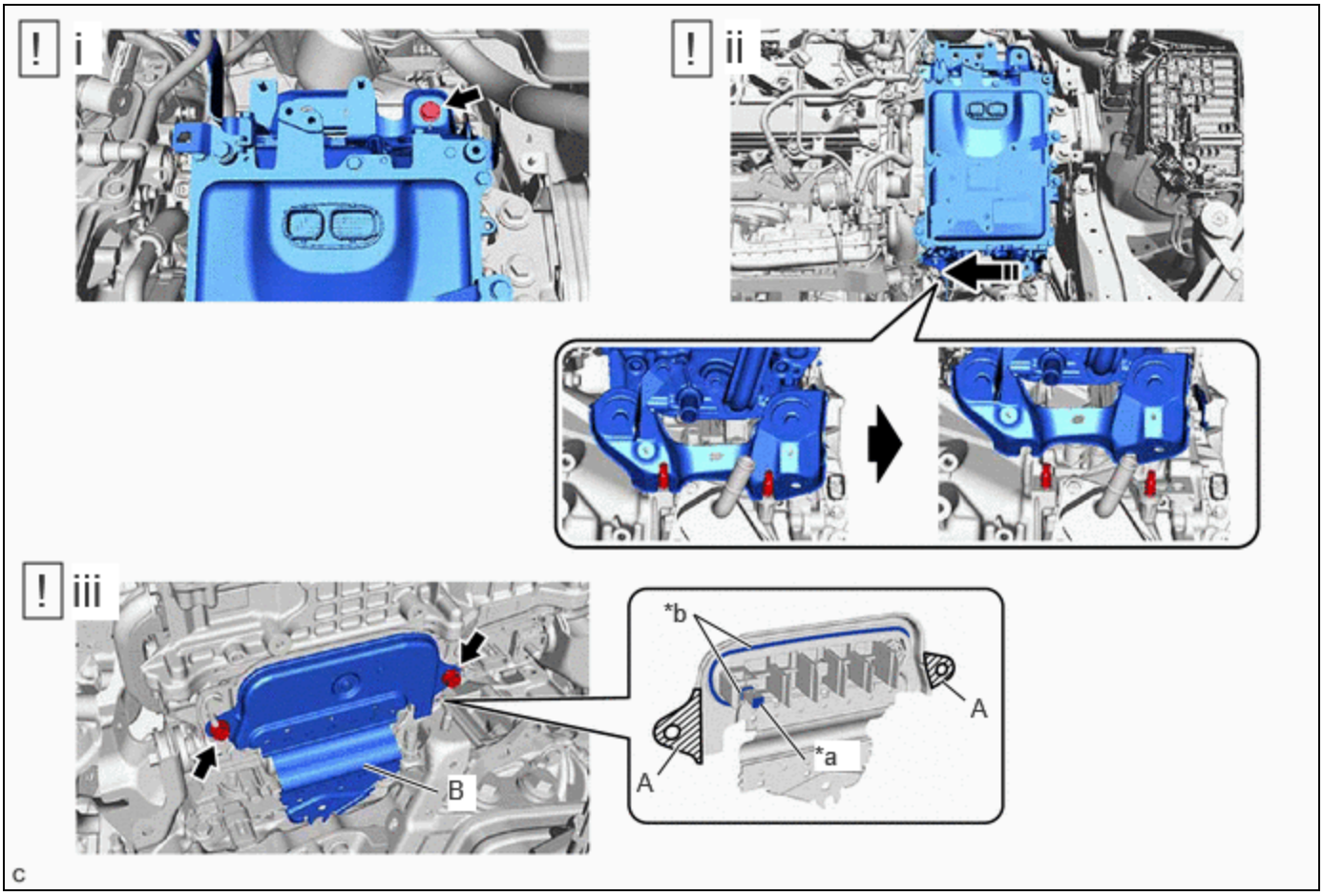
Insulate the tool with insulating tape.

NOTICE:

- Do not damage the terminals, connector housing or inverter with converter assembly during connection.
- Be sure to use a torque wrench to tighten the bolts.

3. INSTALL UPPER INVERTER COVER

!	**CAUTION:** Be sure to wear insulated gloves.



*a	Interlock	*b	Waterproof Seal

(1) To prevent the inverter with converter assembly from falling, temporarily install the bolt in the location shown in the illustration.

(2) Shift the position of the inverter with converter assembly and temporarily set it on top of the stud bolts as shown in the illustration.

NOTICE:

When lifting, make sure not to apply force to the motor cable.

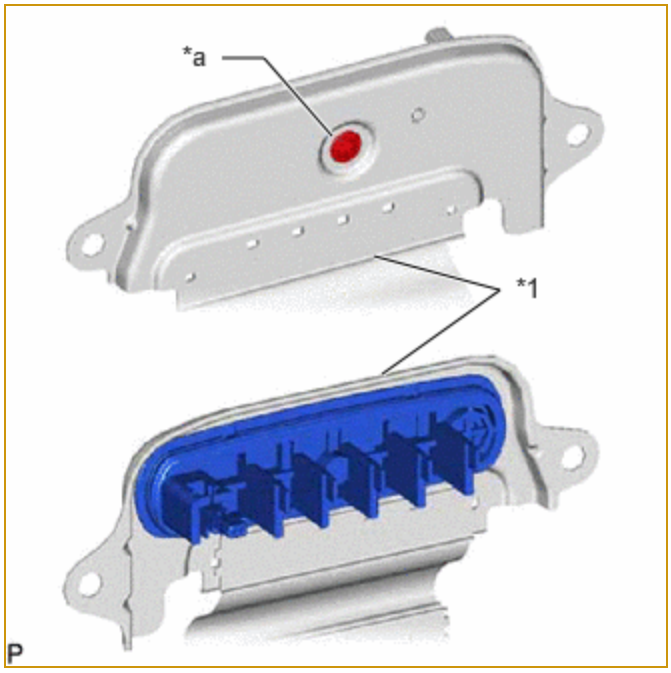
(3) Install the inverter cover to the inverter with converter assembly with the 2 bolts.

Torque:

8.0 N·m {82 kgf·cm}

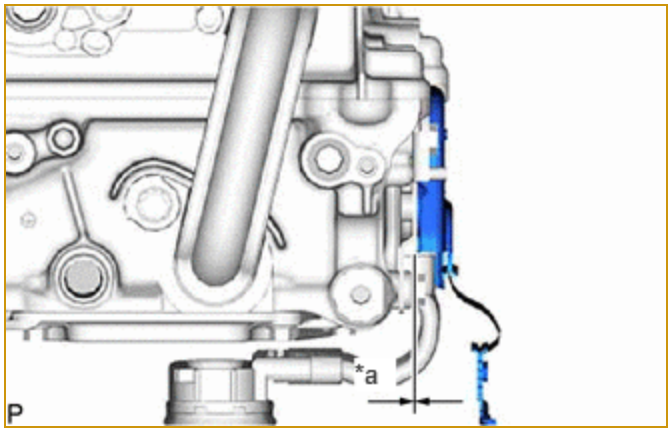
NOTICE:

- To avoid deforming portion (A) of the inverter cover, do not hold portion (A) when installing.
- Be careful not to scratch or damage portion (B) of the inverter cover.
- Visually confirm that the inverter cover waterproof seal is securely installed before installing the upper inverter cover.
- Do not touch the waterproof seal of the upper inverter cover.
- Make sure that the interlock is fully engaged.
- Do not damage the terminals, interlock connector or inverter with converter assembly during installation.
- Do not allow any foreign matter or water to enter the inverter with converter assembly.
- Do not remove or excessively tighten the screw of the upper inverter cover.

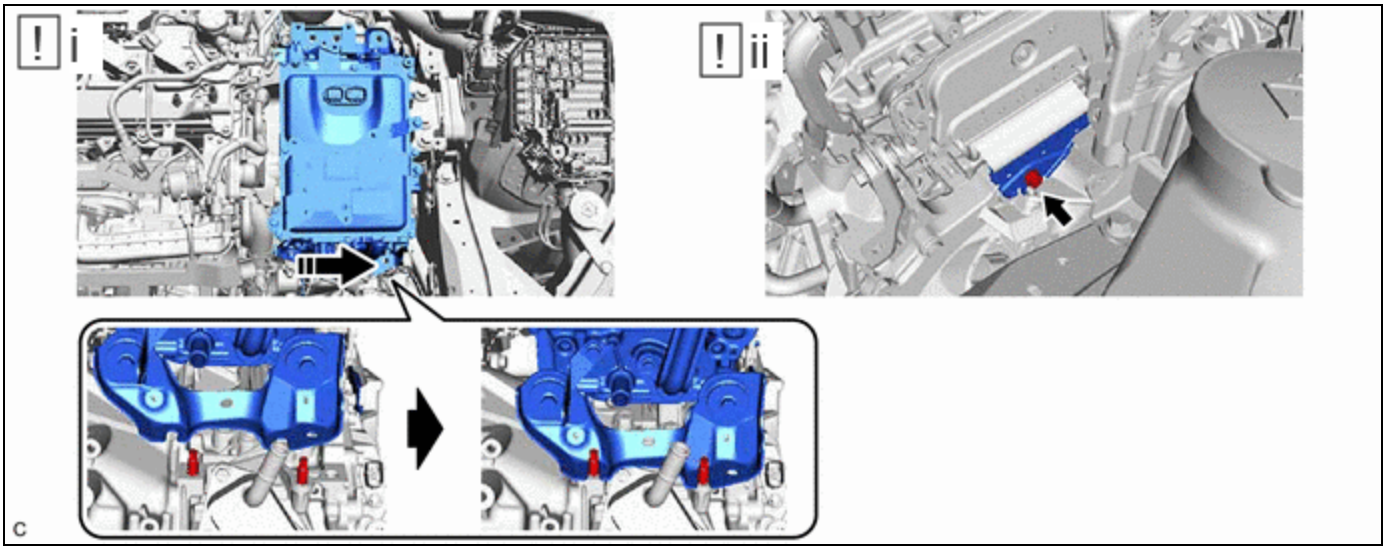


*1	Inverter Cover
*a	Screw

- Although the upper inverter cover may feel loose, this is not due to a malfunction.
- Push in the upper inverter cover until it contacts the inverter with converter assembly.



*a	No Gap



(1) Shift the position of the inverter with converter assembly and temporarily set it on the hybrid vehicle transaxle assembly as shown in the illustration.

NOTICE:

When lifting, make sure not to apply force to the motor cable.

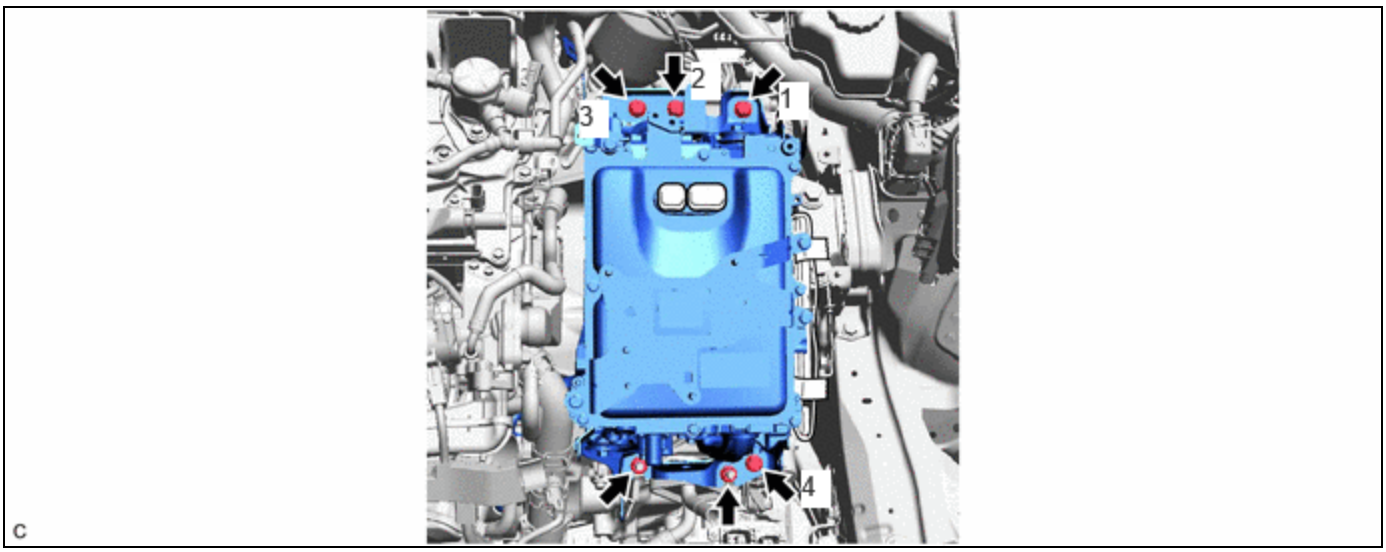
(2) Install the inverter cover with the bolt to the hybrid vehicle transaxle assembly.

Torque:

8.0 N·m {82 kgf·cm}

4. INSTALL INVERTER WITH CONVERTER ASSEMBLY

!	**CAUTION:** Be sure to wear insulated gloves.

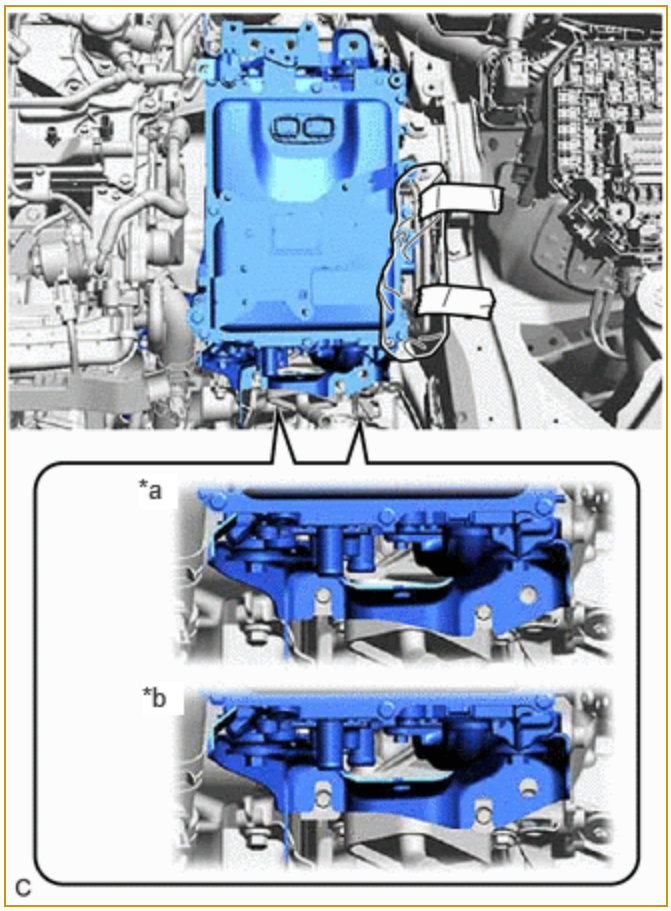


(1) Temporarily install the inverter with converter assembly with the 5 bolts and 2 nuts.

NOTICE:

- When installing the inverter with converter assembly, be careful not to damage the parts around it.
- To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.

- Make sure that the inverter with converter assembly is positioned so that the stud bolts are in contact with the base of the U-shaped portions of the No. 1 inverter bracket.



*a	Correct
*b	Incorrect

HINT:

If the bolts and nuts are not tightened appropriately, the inverter with converter assembly may make an abnormal noise.

(2) Fully tighten the 4 bolts in the order shown in the illustration.

Torque:

55 N·m {561 kgf·cm, 41 ft·lbf}

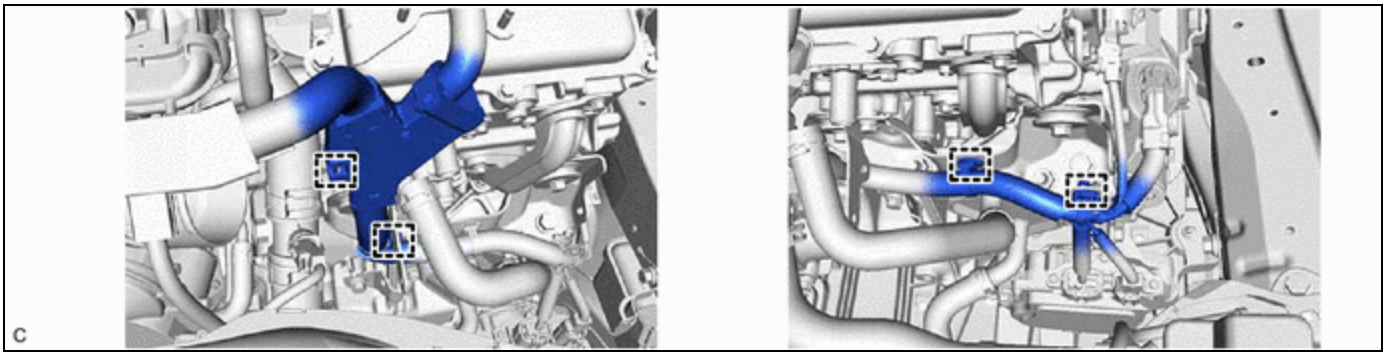
(3) Fully tighten the 2 nuts.

Torque:

55 N·m {561 kgf·cm, 41 ft·lbf}

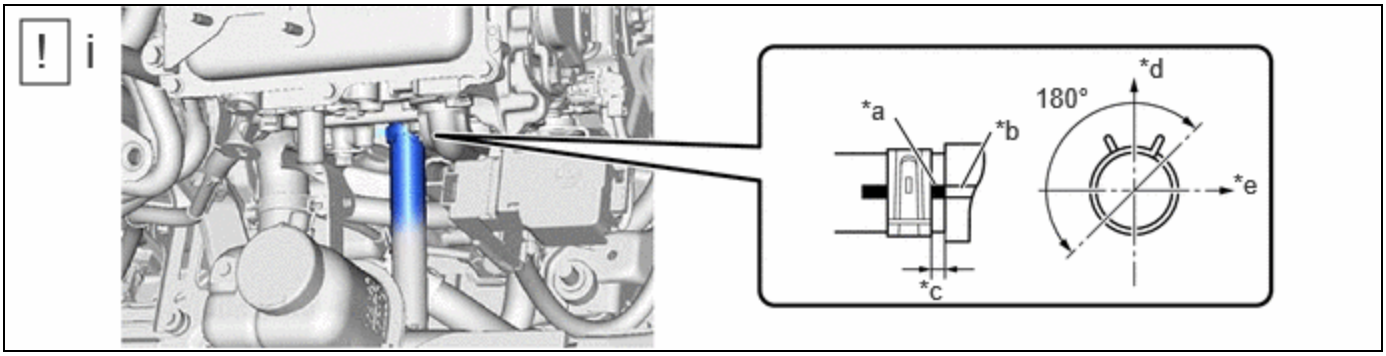
5. CONNECT ENGINE WIRE

!	**CAUTION:** Be sure to wear insulated gloves.



6. CONNECT INLET NO. 1 INVERTER COOLING HOSE

(a) for 2ZR-FXE:



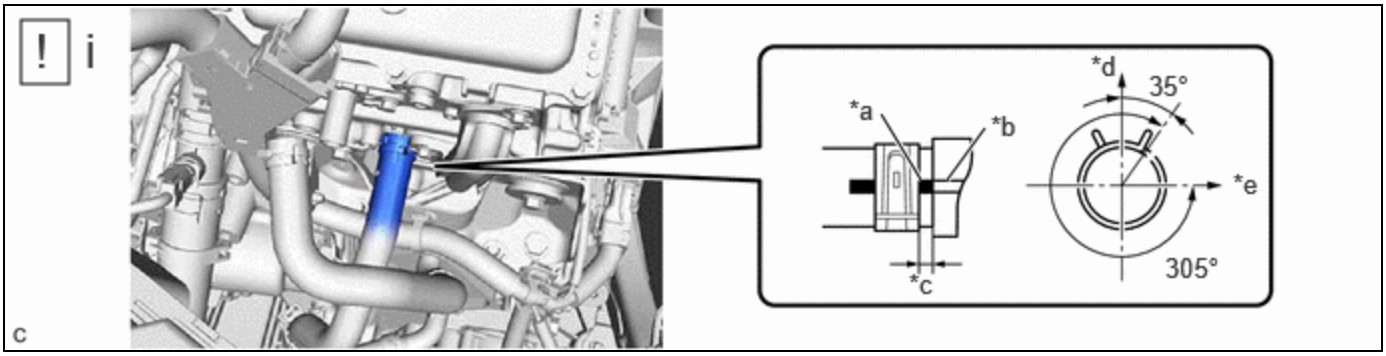
*a	Alignment Mark	*b	Rib
*c	2 to 11 mm (0.0787 to 0.4331 in.)	*d	Up
*e	LH Side	-	-

(1) Connect the inlet No. 1 inverter cooling hose to the inverter with converter assembly and slide the clip to secure it.

NOTICE:

- To prevent foreign matter from entering the inverter with converter assembly and inverter cooling system, do not remove the pieces of cloth from the pipe and disconnected hose until installation.
- Make sure to align the alignment mark of the hose with the rib of the inverter with converter assembly.
- Make sure that the clip is positioned as shown in the illustration.

(b) for M20A-FXS:



*a	Alignment Mark	*b	Rib
*c	2 to 11 mm (0.0787 to 0.4331 in.)	*d	Up
*e	LH Side	-	-

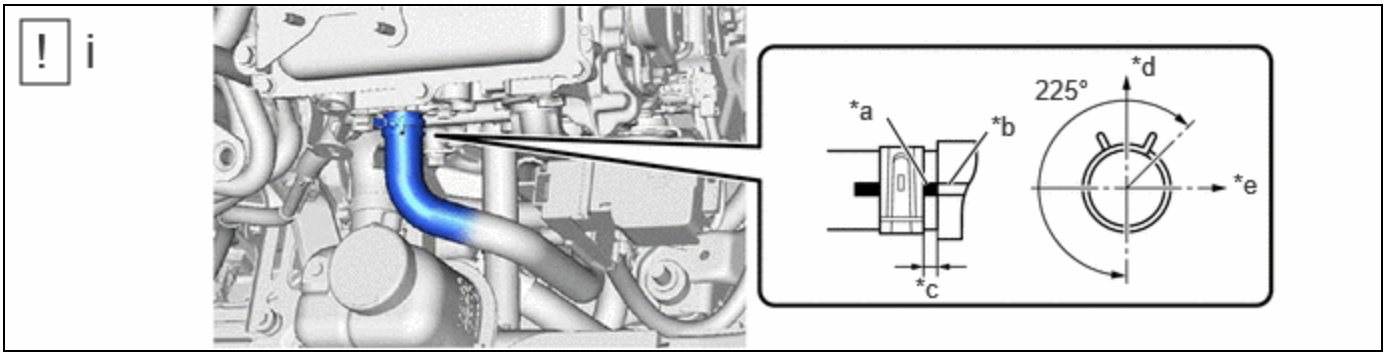
(1) Connect the inlet No. 1 inverter cooling hose to the inverter with converter assembly and slide the clip to secure it.

NOTICE:

- To prevent foreign matter from entering the inverter with converter assembly and inverter cooling system, do not remove the pieces of cloth from the pipe and disconnected hose until installation.
- Make sure to align the alignment mark of the hose with the rib of the inverter with converter assembly.
- Make sure that the clip is positioned as shown in the illustration.

7. CONNECT OUTLET NO. 1 INVERTER COOLING HOSE

(a) for 2ZR-FXE:



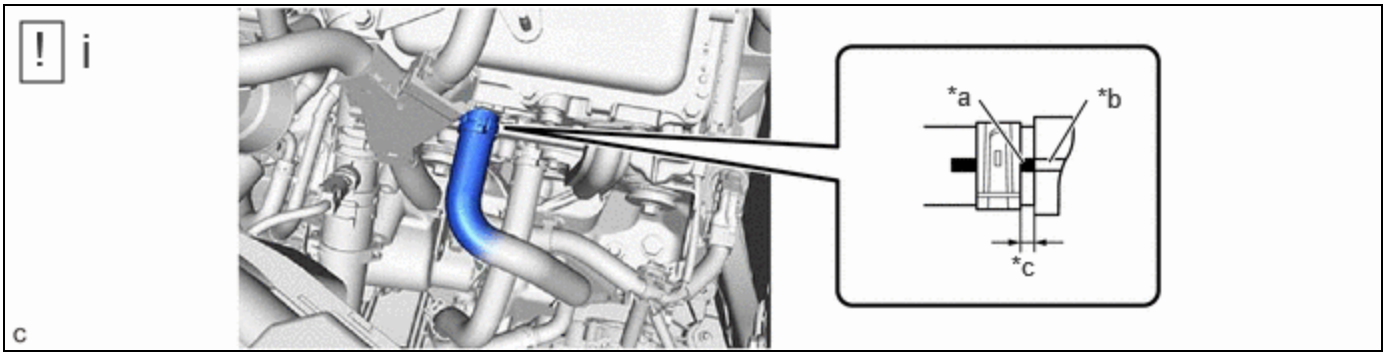
*a	Alignment Mark	*b	Rib
*c	2 to 11 mm (0.0787 to 0.4331 in.)	*d	Up
*e	LH Side	-	-

(1) Connect the outlet No. 1 inverter cooling hose to the inverter with converter assembly and slide the clip to secure it.

NOTICE:

- To prevent foreign matter from entering the inverter with converter assembly and inverter cooling system, do not remove the pieces of cloth from the pipe and disconnected hose until installation.
- Make sure to align the alignment mark of the hose with the rib of the inverter with converter assembly.
- Make sure that the clip is positioned as shown in the illustration.

(b) for M20A-FXS:



*a	Alignment Mark	*b	Rib
*c	2 to 11 mm (0.0787 to 0.4331 in.)	-	-

(1) Connect the outlet No. 1 inverter cooling hose to the inverter with converter assembly and slide the clip to secure it.

NOTICE:

- To prevent foreign matter from entering the inverter with converter assembly and inverter cooling system, do not remove the pieces of cloth from the pipe and disconnected hose until installation.
- Make sure to align the alignment mark of the hose with the rib of the inverter with converter assembly.

8. CONNECT NO. 7 ENGINE WIRE

CAUTION:

Be sure to wear insulated gloves.

Torque:

10 N·m {102 kgf·cm, 7 ft·lbf}

9. CONNECT FLOOR UNDER WIRE

CAUTION:

Be sure to wear insulated gloves.

NOTICE:

- Do not allow any foreign matter or water to enter the inverter with converter assembly.
- Do not touch the waterproof seal or terminals of the connector.
- Do not damage the terminals, connector housing or inverter with converter assembly when connecting the connector.

Torque:

8.0 N·m {82 kgf·cm, 71 in·lbf}

10. CONNECT ENGINE ROOM MAIN WIRE

CAUTION:

Be sure to wear insulated gloves.

NOTICE:

- To prevent the threads from being damaged, temporarily tighten the nut by hand.
- Do not touch the waterproof seal or terminals of the connectors.
- To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.
- Do not damage the terminals, connector housing or inverter with converter assembly when connecting the connectors.

11. CONNECT ENGINE WIRE

CAUTION:

Be sure to wear insulated gloves.

NOTICE:

- To prevent the threads from being damaged, temporarily tighten the nut by hand.
- Do not touch the waterproof seal or terminals of the connectors.
- To prevent damage due to static electricity, do not touch the terminals of the disconnected connectors.
- Do not damage the terminals, connector housing or inverter with converter assembly when connecting the connectors.

Torque:

10 N·m {102 kgf·cm, 89 in·lbf}

12. CONNECT NO. 1 VACUUM SWITCHING VALVE ASSEMBLY (for M20A-FXS)

Torque:

10 N·m {102 kgf·cm, 7 ft·lbf}

13. CONNECT NO. 3 ENGINE WIRE

Torque:

8.35 N·m {85 kgf·cm, 74 in·lbf}

14. INSTALL NO. 2 RELAY BLOCK COVER

15. CONNECT HV AIR CONDITIONING WIRE

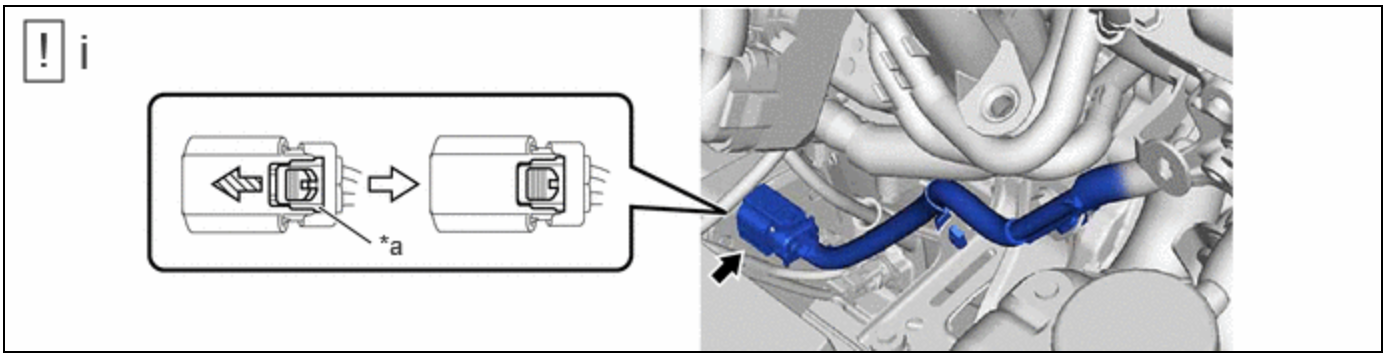
CAUTION:

Be sure to wear insulated gloves.

NOTICE:

- Do not allow any foreign matter or water to enter the inverter with converter assembly.
- Do not touch the waterproof seal or terminals of the connector.
- Do not damage the terminals, connector housing or inverter with converter assembly when connecting the connector.

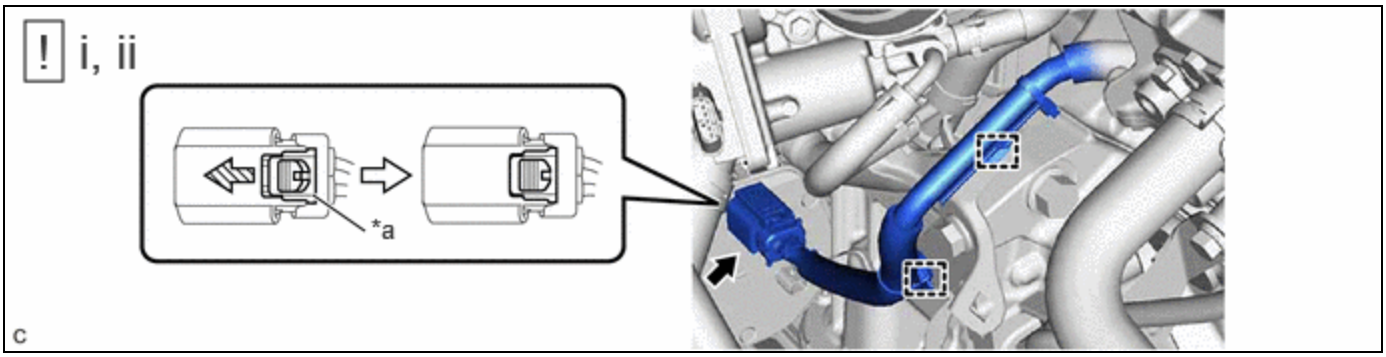
(a) for 2ZR-FXE



*a	Green-colored Lock	-	-
⇒	Slide	-	-

(1) Connect the connector and slide the green-colored lock as shown in the illustration to securely lock it.

(b) for M20A-FXS



*a	Green-colored Lock	-	-

	Slide	-	-

(1) Connect the connector and slide the green-colored lock as shown in the illustration to securely lock it.

(2) Engage the 2 clamps.

16. INSTALL AIR CLEANER BRACKET (for M20A-FXS)

Torque:

7.0 N·m {71 kgf·cm, 62 in·lbf}

17. INSTALL AIR CLEANER CASE SUB-ASSEMBLY (for M20A-FXS)

Torque:

4.0 N·m {41 kgf·cm, 35 in·lbf}

18. INSTALL AIR CLEANER FILTER ELEMENT SUB-ASSEMBLY (for M20A-FXS)

19. INSTALL AIR CLEANER CAP WITH AIR CLEANER HOSE (for M20A-FXS)

20. CONNECT NO. 2 VENTILATION HOSE (for M20A-FXS)

21. INSTALL INLET NO. 1 AIR CLEANER (for 2ZR-FXE)

Click here INFO

22. INSTALL AIR CLEANER BRACKET (for 2ZR-FXE)

Click here INFO

23. INSTALL INLET NO. 2 AIR CLEANER (for 2ZR-FXE)

Click here INFO

24. INSTALL AIR CLEANER CASE SUB-ASSEMBLY (for 2ZR-FXE)

Click here INFO

25. INSTALL AIR CLEANER FILTER ELEMENT SUB-ASSEMBLY (for 2ZR-FXE)

26. INSTALL AIR CLEANER HOSE ASSEMBLY (for 2ZR-FXE)

27. INSTALL AIR CLEANER CAP SUB-ASSEMBLY (for 2ZR-FXE)

28. INSTALL RADIATOR SUPPORT OPENING COVER (for 2ZR-FXE)

29. INSTALL BATTERY CLAMP SUB-ASSEMBLY (for 2ZR-FXE)

Torque:

15.4 N·m {157 kgf·cm, 11 ft·lbf}

30. INSTALL ECM

- for M20A-FXS:

  Click here INFO
- for 2ZR-FXE:

  Click here INFO

31. INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY

	Click here INFO

32. INSTALL COWL WATER EXTRACT SHIELD RH

33. INSTALL COWL WATER EXTRACT SHIELD LH

34. INSTALL WINDSHIELD LOWER OUTSIDE MOULDING LH

35. INSTALL WINDSHIELD LOWER OUTSIDE MOULDING RH

36. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY LH

	Click here INFO

37. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY RH

	Click here INFO

38. INSTALL SHIELD CAP (for M20A-FXS)

39. INSTALL FRONT WIPER ARM HEAD CAP

40. INSTALL SERVICE PLUG GRIP

Click here INFO

41. ADD COOLANT (for Inverter)

Click here INFO

42. INSPECT FOR COOLANT LEAK (for Inverter)

Click here INFO

43. PERFORM ECU CONFIGURATION

Click here INFO

44. PERFORM RESOLVER LEARNING

- for M20A-FXS:

  Click here INFO
- for 2ZR-FXE:

  Click here INFO