 CEBM028500

Shop Manual

PC240LL-10

LOG LOADER
ROAD BUILDER

SERIAL NUMBERS **PC240LL-10 A20601 and up**

ENGINE **6D107E-2**

May 2014

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SAFETY

Safety Notice

Important Safety Notice

Proper service and repair is extremely important for the safe operation of your machine. The service and repair techniques recommended and described in this manual are both effective and safe methods of operation. Some of these operations require the use of tools specially designed for the purpose.

To prevent injury to workers, the symbol ⚠ is used to mark safety precautions in this manual. The cautions accompanying this symbol should always be followed carefully. If any dangerous situation arises or may possibly arise, first consider safety, and take the necessary actions to deal with the situation.

General Precautions

Mistakes in operation are extremely dangerous. Read the OPERATION & MAINTENANCE MANUAL carefully BEFORE operating the machine.

1. Before performing any greasing or repairs, read all the precautions given on the decals which are fixed to the machine.

2. When performing any operation, always wear safety shoes and helmet. Do not wear loose work clothes, or clothes with buttons missing.
   - Always wear safety glasses when hitting parts with a hammer.
   - Always wear safety glasses when grinding parts with a grinder, etc.

3. If welding repairs are needed, always have a trained, experienced welder perform the work. When performing welding work, always wear welding gloves, apron, glasses, cap and other clothes suited for welding work.

WARNING! Never modify, weld, cut, or drill on any part of a ROPS structure. Doing so may weaken the structure which could lead to possible failure in a rollover situation.

4. When performing any operation with two or more workers, always agree on the operating procedure before starting. Always inform your fellow workers before starting any step of the operation. Before starting work, hang UNDER REPAIR signs on the controls in the operator's compartment.

5. Only qualified workers must perform the work and operation which require license or qualification.

6. Keep all tools in good condition and learn the correct way to use them. Before starting work, thoroughly check the tools, machine, forklift truck, service car, etc.

7. Decide a place in the repair workshop to keep tools and removed parts. Always keep the tools and parts in their correct places. Always keep the work area clean and make sure that there is no dirt or oil on the floor. Smoke only in the areas provided for smoking. Never smoke while working.

8. Before starting work, warm up your body thoroughly to start work under good conditions. Avoid continuous work for long hours and take rests at proper intervals to keep your body in good condition. Take rests in specified safe places.

Safety Points

1	Good arrangement
2	Correct work clothes
3	Following work standard
4	Making and checking signs
5	Prohibition of operation and handling by unlicensed workers
6	Safety check before starting work
7	Wearing protective goggles (for cleaning or grinding work)
8	Wearing shielding goggles and protectors (for welding work)
9	Good physical condition and preparation
10	Precautions against work which you are not used to or work with which you are too familiar

Preparations For Work

1. Before adding oil or making repairs, park the machine on hard, level ground, and block the wheels or tracks to prevent the machine from moving.

2. Before starting work, lower blade, ripper, bucket or any other work equipment to the ground. If this is not possible, insert the safety pin or use blocks to prevent the work equipment from falling. In addition, be sure to lock all the control levers and hang warning signs on them.

3. When disassembling or assembling, support the machine with blocks, jacks or stands before starting work.

4. Remove all mud and oil from the steps or other places used to get on and off the machine. Always use the handrails, ladders or steps when getting on or off the machine. Never jump on or off the machine. If it is impossible to use the handrails, ladders or steps, use a stand to provide safe footing.

Precautions During Work

1. When removing oil filler cap, drain plug or hydraulic pressure measuring plugs, loosen them slowly to prevent the oil from spurting out. Before disconnecting or removing components of the oil, coolant or air circuits, first remove the pressure completely from the circuit.

2. The coolant and oil in the circuits are hot when the engine is stopped, so be careful not to get burned. Wait for the oil and coolant to cool before performing any work on the oil or coolant circuits.

3. Before starting work, shut down the engine. When working on or around a rotating part, in particular, shut down the engine. When checking the machine without stopping the engine (measuring oil pressure, revolving speed, temperature, etc.) take extreme care not to get rolled or caught in rotating or moving parts.

4. For the machine equipped with a battery disconnect switch, before starting the work, check that the system operating lamp is turned OFF, and then turn the battery disconnect switch to the OFF (o) position and pull the switch key out. For machines with a battery disconnect switch, before starting the work, remove the leads from the battery. ALWAYS remove the lead from the negative (-) terminal first.

5. When raising heavy components, use a hoist or crane. Check that the wire rope, chains and hooks are free from damage. Always use lifting equipment which has ample capacity. Install the lifting equipment at the correct places. Use a hoist or crane and operate slowly to prevent the component from hitting any other part. Do not work with any part still raised by the hoist or crane.

6. When removing covers which are under internal pressure or under pressure from a spring, always leave two bolts in position on opposite sides. Slowly release the pressure, then slowly loosen the bolts to remove.

7. When removing components, be careful not to break or damage the wiring. Damaged wiring may cause electrical fires.

8. When removing piping, stop the fuel or oil from spilling out. If any fuel or oil drips on to the floor, wipe it up immediately. Fuel or oil on the floor can cause you to slip, or can even start fires.

9. Never use flammable liquids to clean parts, use only non-flammable approved cleaning solutions to clean parts.

10. Be sure to assemble all parts again in their original places. Replace any damaged part with new parts.
    - When installing hoses and wires, be sure that they will not be damaged by contact with other parts when the machine is being operated.

11. When installing high pressure hoses, make sure that they are not twisted. Damaged tubes are dangerous, so be extremely careful when installing tubes for high pressure circuits. Also check that connecting parts are correctly installed.

12. When assembling or installing parts, always use the specified tightening torques. When installing protective parts such as guards, or parts which vibrate violently or rotate at high speed, be particularly careful to check that they are installed correctly.

13. When aligning two holes, never insert your fingers or hand. Be careful not to get your fingers caught in a hole.

14. When measuring hydraulic pressure, check that the measuring tool is correctly assembled before taking any measurements.

15. Take care when removing or installing the tracks of track-type machines. When removing the track, the track separates suddenly, so never let anyone stand at either end of the track.

16. If the engine is operated for a long time in a place which is not ventilated well, you may suffer from gas poisoning. Accordingly, open the windows and doors to ventilate well.

17. Precautions for disconnecting and connecting hoses and tubes in air conditioner circuit.
    A. Disconnection

        i. Ask a qualified person for collection, and charge of the refrigerant

        ii. Never release the refrigerant (R134a) to the atmosphere.

        iii. When loosening the nuts fixing air conductance hoses and tubes, be sure to use two wrenches; one to fix and the other to loosen the nut.

WARNING! Collect the air conditioner refrigerant gas (R134a).
If the refrigerant gas (R134a) gets in your eyes, you may lose your sight, and if it touches your skin, you may suffer from frostbite. Accordingly, when collecting or adding it, you must be qualified for handling the refrigerant and wear protective goggles, gloves and clothing with long sleeves.

    B. Connection
        i. When installing the air conditioner circuit hoses and tubes, take care that dirt, dust, water, etc. will not enter them.

        ii. When connecting the air conditioner hoses and tubes, check that O-rings (1) are fitted to their joints.

        iii. Once an O-ring is used, it is deformed and deteriorated. Accordingly, do not reuse it.

        iv. When removing O-rings, use a soft tool so that the piping will not be damaged.

        v. Check that each O-ring is not damaged or deteriorated.

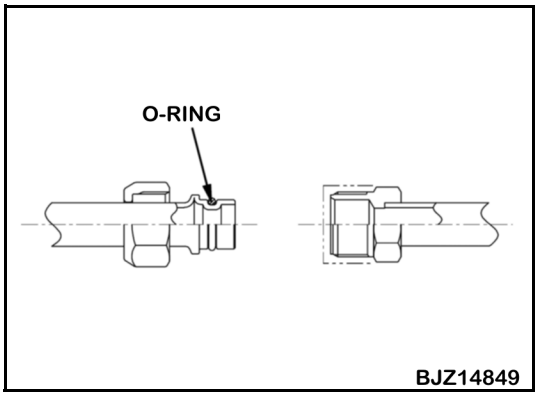
        vi. Apply compressor oil for refrigerant (R134a)

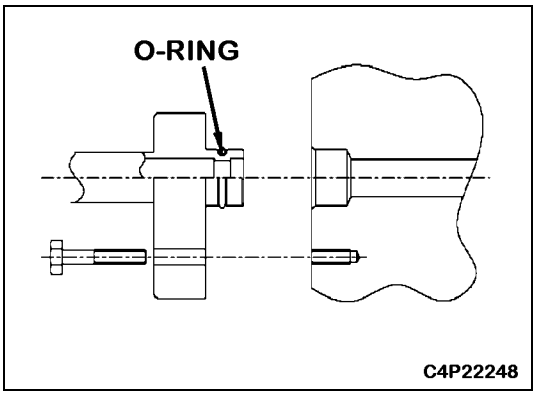
★ However, do not apply oil to the threads portion of a bolt, nut or union.

Manufacturer	Part Name
DENSO	ND-OIL8
VALEO THERMAL SYSTEMS	ZXL100PG (equivalent to PAG46)
SANDEN	SP-10

        vii. When tightening nuts of the air conditioner hoses and tubes, be sure to use two wrenches; one to fix the nut and the other to tighten the nut to the specified torque (Use a torque wrench for tightening).

★ Example of O-ring (Fitted to every joint of hoses and tubes)
★ For tightening torque, see the precautions for installation in each section of "Disassembly and Assembly."





18. When jump starting the machine, only use a machine of similar size and voltage. Never use a arc welder or other electrical generating equipment to jump start the machine. Carefully review the safety and procedures for jump starting the machine.

GENERAL

This shop manual has been prepared as an aid to improve the quality of repairs by giving the serviceman an accurate understanding of the product and by showing him the correct way to perform repairs and make judgments. Make sure you understand the contents of this manual and use it to full effect at every opportunity.

This shop manual mainly contains the necessary technical information for operations performed in a service workshop. For ease of understanding, the manual is divided into the following sections. These sections are further divided into each main group of components.

GENERAL

This section lists the general machine dimensions, performance specifications, component weights, and fuel, coolant and lubricant specification charts.

STRUCTURE AND FUNCTION

This section explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting.

STANDARD VALUE TABLE
This section explains the standard values for new machine and judgment criteria for testing, adjusting and troubleshooting. This standard value table is used to check the standard values in testing and adjusting and to judge parts in troubleshooting.

TESTING AND ADJUSTING

This section explains checks to be made before and after performing repairs, as well as adjustments to be made at completion of the checks and repairs.

TROUBLESHOOTING

Troubleshooting charts correlating “Problems” to “Causes” are also included in this section.

DISASSEMBLY AND ASSEMBLY

This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

MAINTENANCE STANDARD

This section gives the judgment standards when inspecting disassembled parts.

AIR CONDITIONER

This section covers the structure, function and troubleshooting information for the machine’s air conditioning system.

DIAGRAMS AND SCHEMATICS

This section has the foldout drawings for the machine.

NOTICE

The specifications contained in this shop manual are subject to change at any time and without any advance notice. Contact your distributor for the latest information.

HOW TO READ THE SHOP MANUAL

Volumes

Shop manuals are issued as a guide to performing repairs. They are divided as follows:

Chassis volume: Issued for every machine model
Engine volume: Issued for each engine series

Electrical volume: Each issued as one to cover all models
Attachment volume: Each issued as one to cover all models

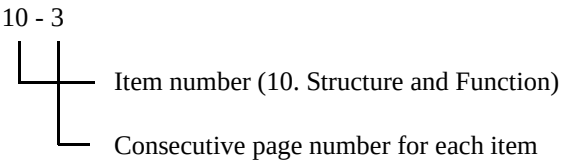
These various volumes are designed to avoid duplication of information. Therefore to deal with all repairs for any model, it is necessary that chassis, engine, electrical and attachment be available.

Distribution And Updating

Any additions, amendments or other changes will be sent to your distributors. Get the most up-to-date information before you start any work.

Filing Method

1. See the page number on the bottom of the page. File the pages in correct order.
2. Following examples show how to read the page number:
   Example:



3. Additional pages: Additional pages are indicated by a hyphen (-) and numbered after the page number. File as in the example.
   Example:

10-4
10-4-1
10-4-2
Added pages
10-5

Revised Edition Mark

When a manual is revised, an edition mark (①②③…) is recorded on the bottom outside corner of the pages.

Revisions

Revised pages are shown at the LIST OF REVISED PAGES between the title page and SAFETY page.

Symbols

So the shop manual can be of ample practical use, important places for safety and quality are marked with the following symbols.

Symbol	Item	Remarks
	Safety	Special safety precautions are necessary when performing the work.
★	Caution	Special technical precautions or other precautions for preserving standards are necessary when performing the work.
	Weight	Weight of parts or systems. Caution necessary when selecting hoisting wire or when working posture is important, etc.
	Tightening torque	Places that require special attention for tightening torque during assembly.
	Coat	Places to be coated with adhesives and lubricants etc.
	Fill	Places where oil, coolant or fuel must be added, and the capacity.
	Drain	Places where oil or coolant must be drained, and quantity to be drained.

HOISTING INSTRUCTIONS

Hoisting

★ If a part cannot be smoothly removed from the machine by hoisting, the following checks should be made.

1. Check for removal of all bolts fastening the part to the relative parts.
2. Check for existence of another part causing interface with the part to be removed.

Making Signs

1. Only one appointed worker must make signs and coworkers must communicate with each other frequently.
2. The appointed signaler must make specified signs clearly at a place where he is well seen from the operator's seat and where he can see the working condition easily.
3. The signaler must always stand in front of the load and guide the operator safely.
   - Do not stand under the load.
   - Do not step on the load.

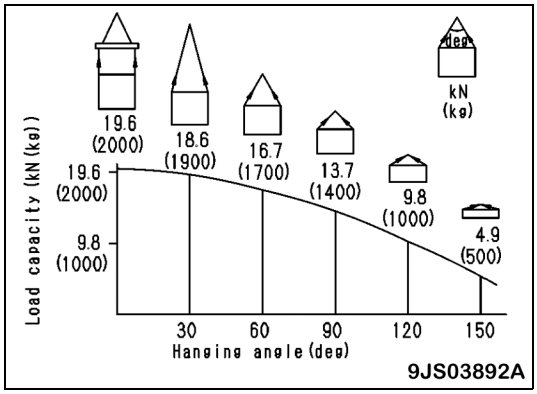
Precautions

Precautions for Sling Work

1. Check the slings before starting sling work.
2. Wear gloves during sling work. Use leather gloves, if available.
3. Measure the weight of the load visually and check its center of gravity.
4. Use a proper sling according to the weight of the load and method of slinging. If the wire ropes you use are too thick when slinging a light load, the load may slip and fall.
5. Do not sling a heavy load with one rope alone, but sling with two or more ropes symmetrically wound on to the load.

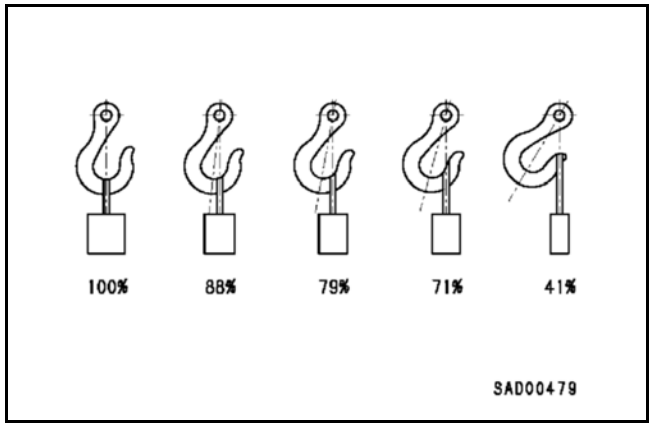
WARNING! Slinging with one rope may cause the load to turn during hoisting, the rope to untwist, or the rope to slip from its original winding position on the load, which can result in a dangerous accident.

6. Limit the hanging angle to 60°, as a rule.
   - Do not sling a heavy load with ropes forming a wide hanging angle from the hook. When hoisting a load with two or more ropes, the force subjected to each rope will increase with the hanging angles.
   - The following table shows the variation of allowable load in kg (lbs) when hoisting is made with two ropes, each of which is allowed to sling up to 1,000 kg (2,205 lbs) vertically, at various hanging angles.
   - When two ropes sling a load vertically, up to 2,000 kg (4,409 lbs) of total weight can be suspended. This weight is reduced to 1,000 kg (2,205 lbs) when two ropes make a 120° hanging angle. On the other hand, two ropes are subject to an excessive force as large as 4,000 kg (8,819 lbs) if they sling a 2,000 kg (4,409 lbs) load at a lifting angle of 150°.



7. When installing wire ropes to an angular load, apply pads to protect the wire ropes. If the load is slippery, apply proper material to prevent the wire rope from slipping.
8. Use the specified eyebolts and fix wire ropes, chains, etc. to them with shackles, etc.

9. Apply wire ropes from the middle portion of the hook.
    - Slinging near the edge of the hook may cause the rope to slip off the hook during hoisting, and a serious accident can result. Hooks have maximum strength at the middle portion.



10. Do not use twisted or kinked wire ropes.

11. When lifting up a load, observe the following.
    - Wind in the crane slowly until wire ropes are stretched. When settling the wire ropes by hand, do not grasp them but press them from above. If you grasp them, your fingers may be caught.
    - After the wire ropes are stretched, stop the crane and check the condition of the slung load, wire ropes, and pads.
    - If the load is unstable or the wire rope or chains are twisted, lower the load and lift it up again.
    - Do not lift the load at a slanted angle.

12. When lowering a load, observe the following.
    - When lowering a load, stop it temporarily at 30 cm (12 in) above the floor, and then lower it slowly.
    - Check that the load is stable, and then remove the sling.
    - Remove kinks and dirt from the wire ropes and chains used for the sling work, and put them in the specified place.

Precautions for Using Mobile Crane

Read the *Operation & Maintenance Manual* provided with the crane in advance and operate the crane safely.

Precautions for Using Overhead Hoist Crane

WARNING! Heavy parts (25 kg (55 lb) or more) must be lifted with a hoist, etc. In the *Disassembly and Assembly* section, every part weighing 25 kg or more is indicated clearly with the symbol.

1. Before starting work, inspect the wire ropes, brake, clutch, controller, rails, overwind stop device, ground fault protection circuit breaker, crane collision prevention device, and power application warning lamp, and check safety.

2. Observe the signs for sling work.

3. Operate the hoist at a safe place.

4. Check the direction indicator plates (east, west, south, and north) and the directions of the control buttons without fail.

5. Do not sling a load at an angle. Do not move the crane while the slung load is swinging.

6. Do not raise or lower a load while the crane is moving longitudinally or laterally.

7. Do not drag a sling.

8. When lifting up a load, stop it just after it leaves the ground and check safety, and then lift it up.

9. Consider the travel route in advance and lift up a load to a safe height.

10. Place the control switch at a position where it will not be an obstacle to work and passage.

11. After operating the hoist, do not swing the control switch.

Remember the position of the main switch so that you can turn off the power immediately in an emergency.

12. If the hoist stops because of a power failure, turn the power switch OFF. When turning on a switch which was turned OFF by the ground fault protection circuit breaker, check that the devices related to that switch are not in operational state.
13. If there is an obstacle around the hoist, stop the operation.

After finishing the work, stop the hoist at the specified position and raise the hook to at least 2 m (6.6 ft) above the floor. Do not leave the sling installed to the hook.

Selecting Wire Ropes

1. Use adequate ropes depending on the weight of parts to be hoisted. Refer to the following table.

Wire ropes (Standard “Z” or “S” twist ropes without galvanizing)		
Rope diameter	Allowable load	
mm	kN	tons
10	9.8	1.0
11.2	13.7	1.4
12.5	15.7	1.6
14	21.6	2.2
16	27.5	2.8
18	35.3	3.6
20	43.1	4.4
22.4	54.9	5.6
30	98.1	10.0
40	176.5	18.0
50	274.6	28.0
60	392.2	40.0

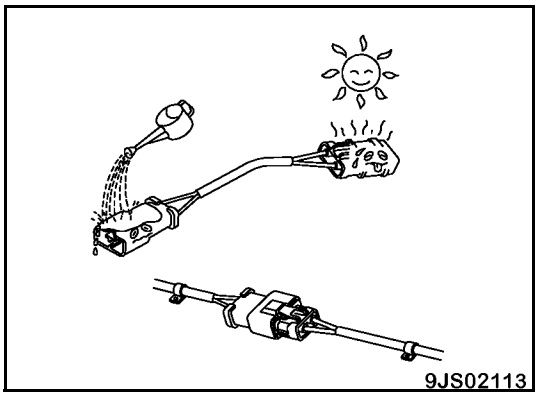
The allowable load value is 1/6 of the breaking strength of the rope used. Safety coefficient: 6

HANDLING ELECTRIC EQUIPMENT AND HYDRAULIC COMPONENTS

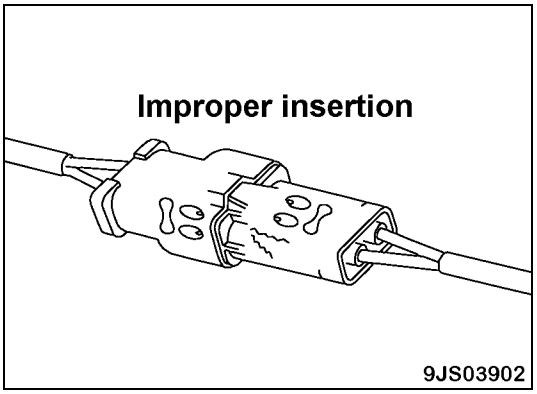
To maintain the performance of the machine over a long period, and to prevent failures or other troubles before they occur, correct operation, maintenance and inspection, troubleshooting, and repairs must be performed. This section deals particularly with correct repair procedures for mechatronics and is aimed at improving the quality of repairs. For this purpose, it gives sections on "Handling Electric Equipment" and "Handling Hydraulic Equipment" (particularly gear oil and hydraulic oil).

Points to Remember When Handling Electric Equipment

1. Handling wiring harnesses and connectors.
   - Wiring harnesses consist of wiring connecting one component to another component, connectors used for connecting and disconnecting one wire from another wire, and protectors or tubes used for protecting the wiring.
   - Compared with other electrical components fitted in boxes or cases, wiring harnesses are more likely to be affected by the direct effects of rain, water, heat, or vibration. Furthermore, during inspection and repair operations, they are frequently removed and installed again, so they are likely to suffer deformation or damage.
   - For this reason, it is necessary to be extremely careful when handling wiring harnesses.


9JS02113

2. Main failures occurring in wiring harness.
   A. Defective contact of connectors (defective contact between male and female).
      - Problems with defective contact are likely to occur because the male connector is not properly inserted into the female connector, or because one or both connectors are deformed or the position is not correctly aligned, or there is corrosion or oxidation of the contact surfaces.



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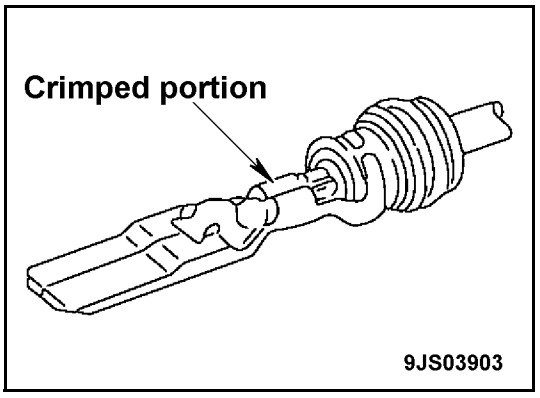
   B. Defective crimping or soldering of connectors.
      - The pins of the male and female connectors are in contact at the crimped terminal or soldered portion, but if there is excessive force brought to bear on the wiring, the plating at the joint will peel and cause improper connection or breakage.



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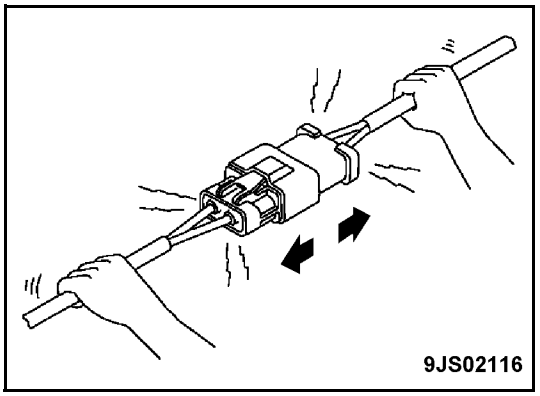
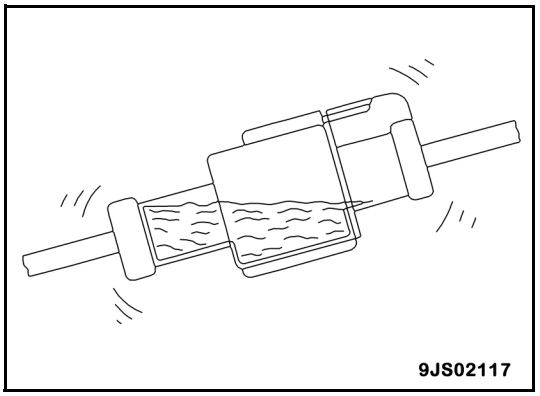
C. Disconnections in wiring.

- If the wiring is held and the connectors are pulled apart, or components are lifted with a crane with the wiring still connected, or a heavy object hits the wiring, the crimping of the connector may separate, or the soldering may be damaged, or the wiring may be broken.



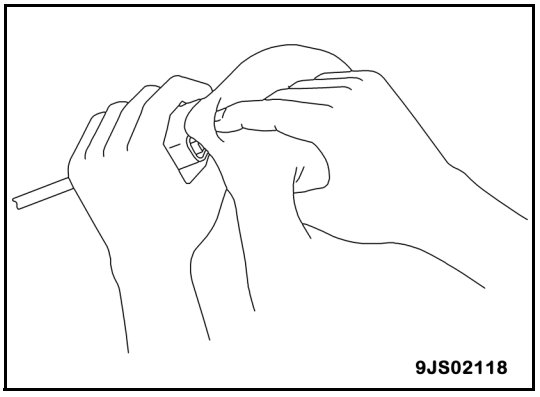
D. High-pressure water entering connector.

- The connector is designed to make it difficult for water to enter (drip-proof structure), but if high-pressure water is sprayed directly on the connector, water may enter the connector, depending on the direction of the water jet.
- Accordingly, take care not splash water over the connector. The connector is designed to prevent water from entering, but at the same time, if water does enter, it is difficult for it to be drained.
- Therefore, if water should get into the connector, the pins will be short-circuited by the water, so if any water gets in, immediately dry the connector or take other appropriate action before passing electricity through it.



E. Oil or dirt stuck to connector.

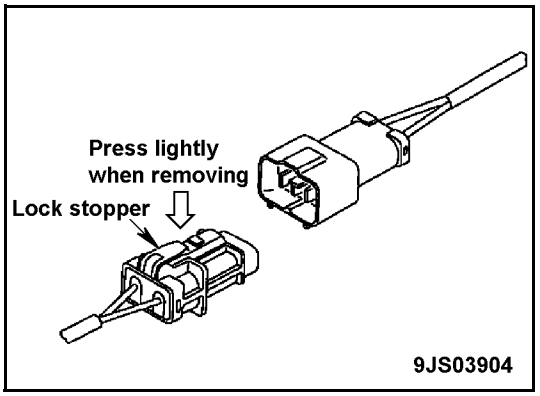
- If oil or grease are stuck to the connector and an oil film is formed on the mating surface between the male and female pins, the oil will not let the electricity pass, so there will be defective contact. If there is oil or grease stuck to the connector, wipe it off with a dry cloth or blow it dry with compressed air and spray it with a contact restorer.
  - ★ When wiping the mating portion of the connector, be careful not to use excessive force or deform the pins.
  - ★ If there is oil or water in the compressed air, the contacts will become even dirtier, so completely remove the oil and water from the compressed air before cleaning with compressed air.



3. Removing, installing, and drying connectors and wiring harnesses

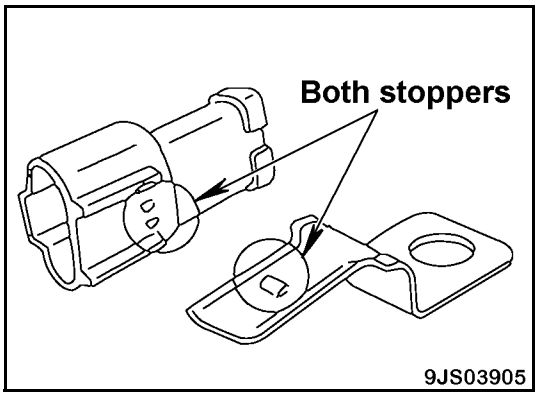
A. Disconnecting connectors.

- Hold the connectors when disconnecting.
  When disconnecting the connectors, hold the connectors. For connectors held by a screw, completely loosen the screw, then hold the male and female connectors in each hand and pull apart. For connectors which have a lock stopper, press the stopper down with your thumb and pull the connectors apart.
  ★ Never pull with one hand.

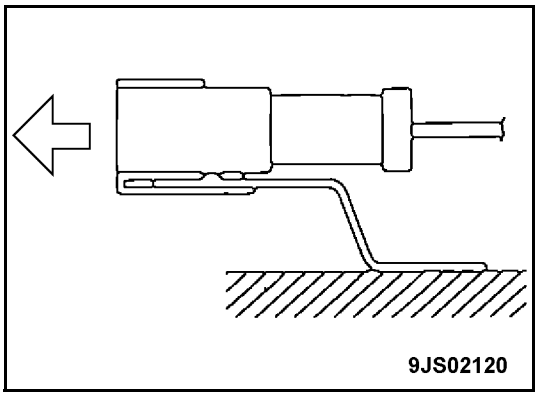


B. When removing from clips

- Both of the connector and clip have stoppers, which are engaged with each other when the connector is installed.

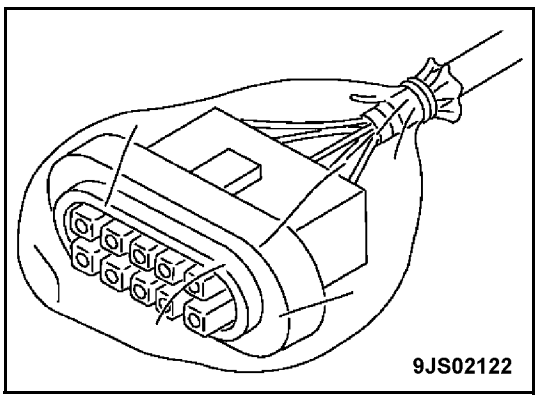


- When removing a connector from a clip, pull connector in a parallel direction to the clip for removing stoppers.
  ★ If the connector is twisted up and down or to the left or right, the housing may break.

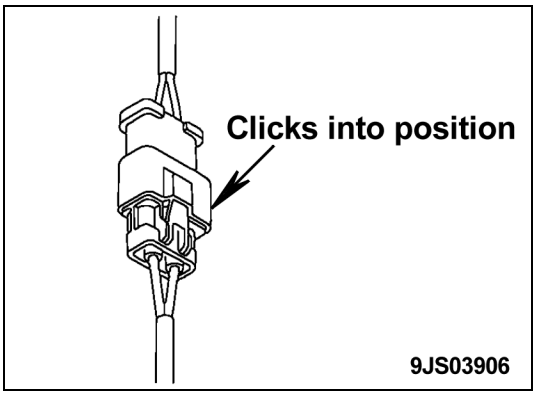


C. Action to take after removing connectors.
After removing any connector, cover it with a vinyl bag to prevent any dust, dirt, oil, or water from entering into the connector portion.

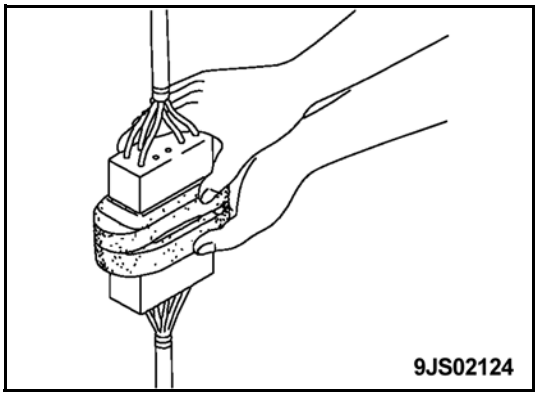
★ If the machine is left disassembled for a long time, it is particularly easy for improper contact to occur, so always cover the connector.



4. Connecting connectors
   A. Check the connector visually.



      - Check that there is no oil, dirt, or water stuck to the connector pins (mating portion). Check that there is no deformation, defective contact, corrosion, or damage to the connector pins. Check that there is no damage or breakage to the outside of the connector.

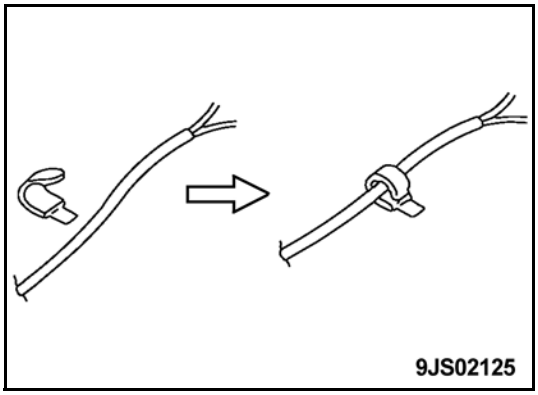


      - If there is any oil, water, or dirt stuck to the connector, wipe it off with a dry cloth. If any water has got inside the connector, warm the inside of the wiring with a dryer, but be careful not to make it too hot as this will cause short circuits.
      - If there is any damage or breakage, replace the connector.

   B. Fix the connector securely.

      - Align the position of the connector correctly, and then insert it securely. For connectors with lock stopper, push in the connector until the stopper clicks into position.

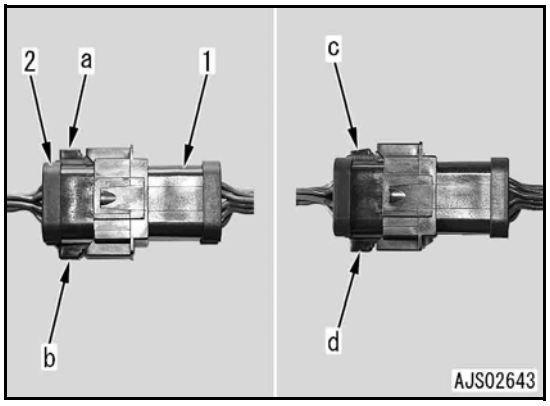
   C. Correct any protrusion of the boot and any misalignment of the wiring harness.



      - For connectors fitted with boots, correct any protrusion of the boot. In addition, if the wiring harness is misaligned, or the clamp is out of position, adjust it to its correct position.

        ★ If the connector cannot be corrected easily, remove the clamp and adjust the position.
        ★ If the connector clamp has been removed, be sure to return it to its original position. Check also that there are no loose clamps.

   D. Connecting DT connectors



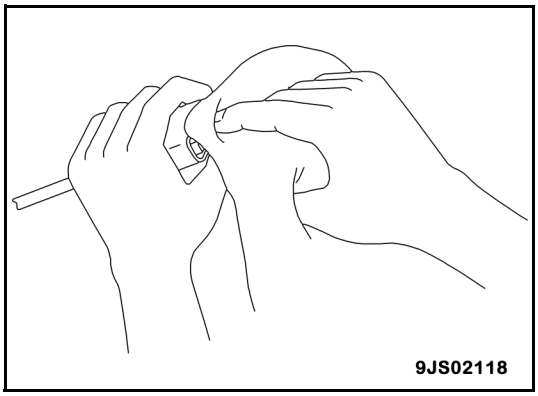
      - Since the DT 8-pin and 12-pin heavy duty wire connectors have two latches respectively, push them in until they click two times.

        1. Male connector
        2. Female connector

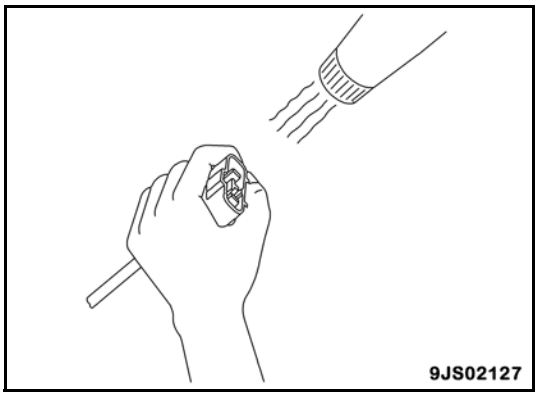
           ★ Normal locking state (Horizontal):a, b, d
           ★ Incomplete locking state (Diagonal):c

E. Drying wiring harness

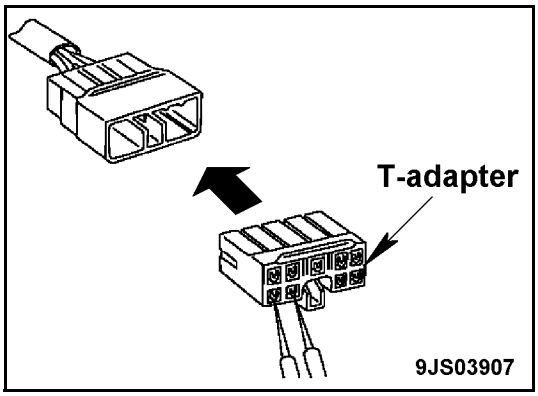
- If there is any oil or dirt on the wiring harness, wipe it off with a dry cloth. Avoid washing it in water or using steam. If the connector must be washed in water, do not use high-pressure water or steam directly on the wiring harness. If water gets directly on the connector, do as follows.
- Disconnect the connector and wipe off the water with a dry cloth.
  - ★ If the connector is blown dry with compressed air, there is the risk that oil in the air may cause defective contact, so remove all oil and water from the compressed air before blowing with air.



- Dry the inside of the connector with a dryer.
- If water gets inside the connector, use a dryer to dry the connector.
  - ★ Hot air from the dryer can be used, but regulate the time that the hot air is used in order not to make the connector or related parts too hot, as this will cause deformation or damage to the connector.



- Perform a continuity test on the connector.
- After drying, leave the wiring harness disconnected and perform a continuity test to check for any short circuits between pins caused by water.
  - ★ After completely drying the connector, blow it with contact restorer and reassemble.



5. Handling of connectors used on engine

★ Mainly, following engines are object for following connectors.

- 95E-5
- 107E-1, 107E-2
- 114E-3, 114E-5
- 125E-5, 125E-6
- 140E-5, 140E-6
- 170E-5
- 12V140E-3

6. Slide, lock type (Type 1) (FRAMATOME-3, FRAMATOME-2)
   - 95/107/114/125/140/170/12V140 Series

   - Various pressure sensors and Ne speed sensor. Examples:

i. Charge (boost) pressure sensor in the air intake manifold: PIM (125/170/12V140 series)

ii. Oil pressure sensor: POIL (125/170/12v140 series)

iii. Oil pressure switch (95/107/114 series)

iv. Ne speed sensor on flywheel housing: Ne (95/107/114/125/140/170/12v140 series)

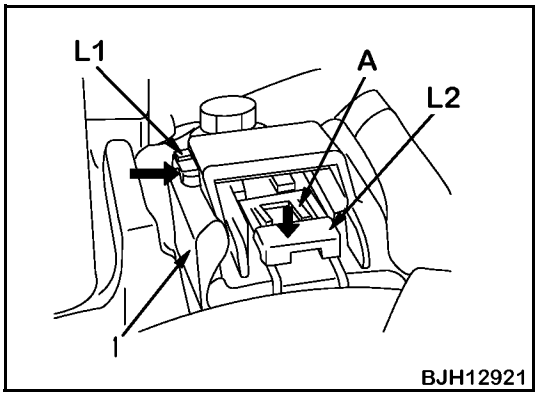
v. Ambient pressure sensor: PAMB (125/170/12V140 series)

A. Disconnection

i. Slide lock (L1) to the right.

ii. While pressing lock (L2), pull out connector (1) toward you.

★ Even if lock (L2) is pressed, connector (1) cannot be pulled out toward you, if part A does not float. In this case, float part A with a small flat-head screwdriver while press lock (L2), and then pull out connector (1) toward you.



B. Connection

i. Insert the connector straight until it “clicks.”

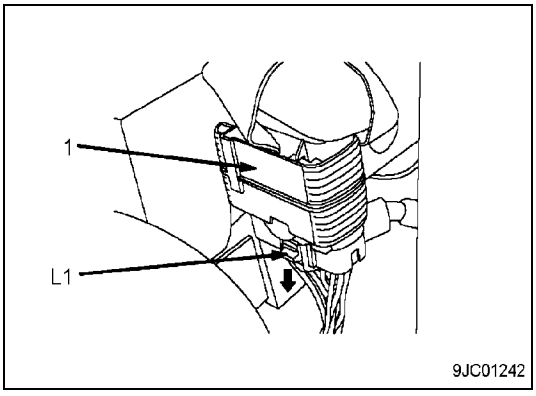
7. Slide, lock type (Type 2) (FRAMATOME-24)
   - 107/114/125 Series

   - Intermediate connector between machine wiring harness and engine wiring harness. Examples:

     i. Intermediate connector (engine wiring harness): OEM CONNECTION (107/114/125 series)

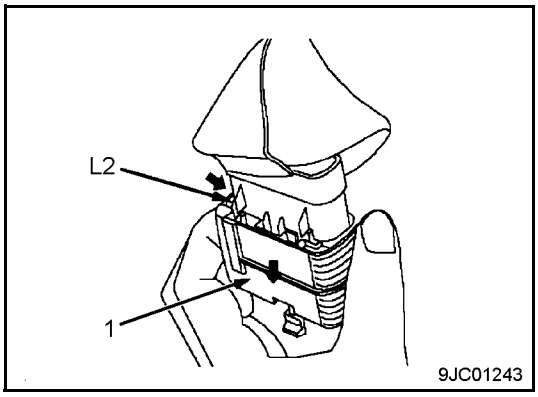
   A. Disconnection

   i. Slide down lock (red) (L1).



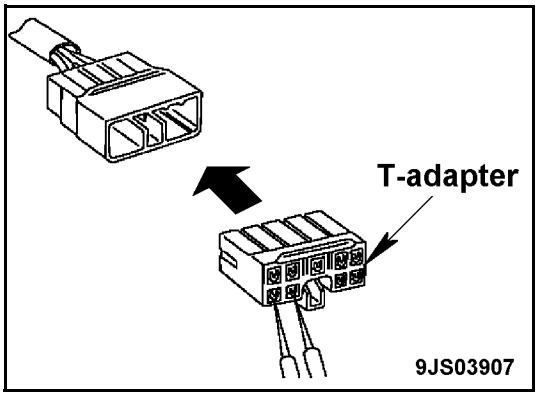
ii. While pressing lock (L2), pull out connector (1).

★ Lock (L2) is located in the back of connector (1).



B. Connection

i. Insert the connector straight until it “clicks.”



8. Pull lock type (PACKARD-2)
   - 95/107/114/125/140/170/12V140 Series

   - Various temperature sensors. Examples:
     i. Charge (boost) temperature sensor in the air intake manifold: TIM

     ii. Fuel temperature sensor: TFUEL

     iii. Oil temperature sensor: TOIL

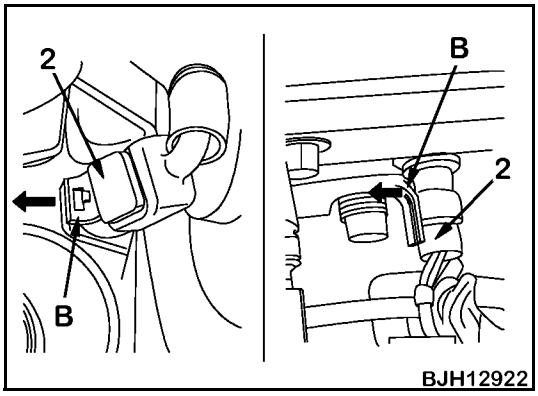
     iv. Coolant temperature sensor: TWTR and other.

   A. Disconnection

   i. Disconnect the connector by pulling lock (B) (on the wiring harness side) of connector (2) outward.

   B. Connection

   i. Insert the connector straight in until it “clicks.”



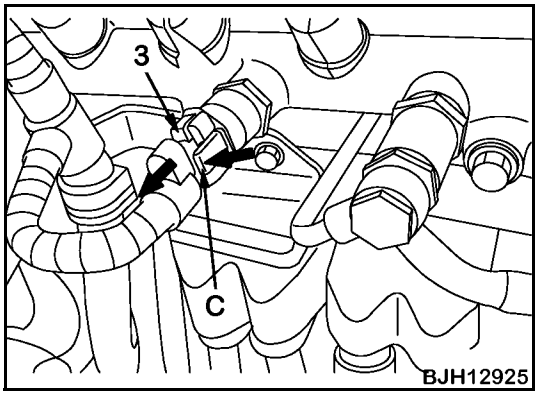
9. Push lock type (1)
   - 95/107/114 series.

   - Examples: Fuel pressure sensor in common rail (BOSCH-3)

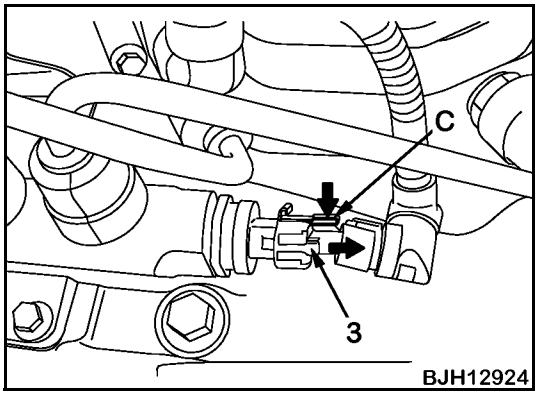
   A. Disconnection

      i. While pressing lock (C), pull out connector (3) in the direction of the arrow.

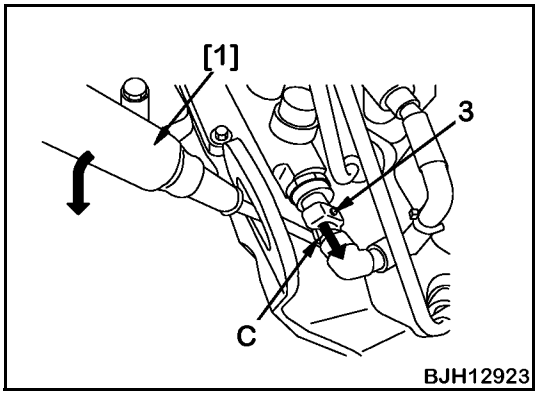
      - 114 series



      - 107 series



      ★ If the lock is located on the underside, use a flat-head screwdriver [1] since you cannot insert your fingers. While pressing up lock (C) of the connector with the flat-head screwdriver [1], pull out connector (3) in the direction of the arrow.



   B. Connection

      i. Insert the connector straight until it “clicks.”

10. Push lock type (2)
    - 107/114 series

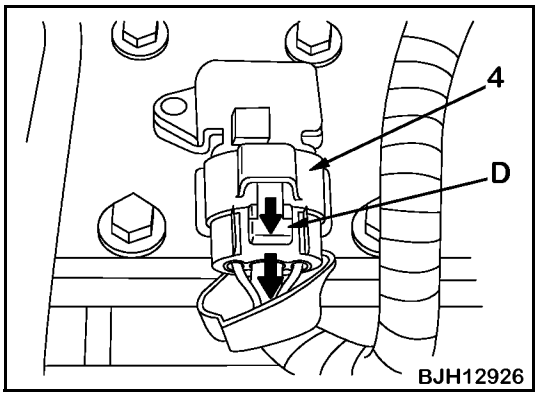
    - Examples: Charge (boost) pressure sensor in the air intake manifold (SUMITOMO-4)

    A. Disconnection

        i. While pressing lock (D), pull out connector (4) in the direction of the arrow.

    B. Connection

        i. Insert the connector straight in until it “clicks.”

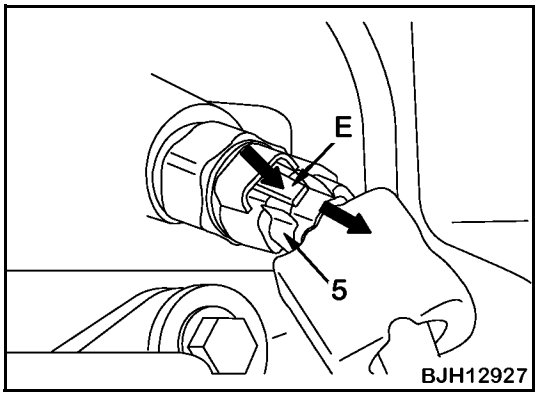


11. Push lock type (3)
    - 95/125/140/170/12v140 series

    A. Disconnection

        i. While pressing lock (E) of the connector, pull out connector (5) in the direction of the arrow.

    - Example: Fuel pressure sensor in common rail PFUEL etc. (AMP-3)



    - Example: Injection pressure control valve of supply pump: PCV (SUMITOMO-2))