PART NO. WDD750-EN-00

HITACHI

Reliable solutions

# Workshop Manual

# ZX 350LC-7 350LCN-7

## Hydraulic Excavator

Service Manual consists of the following separate Part No.

| | |
|---|---|
| Technical Manual (Operational Principle) | : Vol. No.TODD750-EN |
| Technical Manual (Troubleshooting) | : Vol. No.TTDD750-EN |
| Workshop Manual | : Vol. No.WDD750-EN |
| Engine Manual | : Vol. No.ETDD750-EN, EWDD750-EN |

Hitachi Construction Machinery Co., Ltd.

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ZX350LC-7 • 350LCN-7 HYDRAULIC EXCAVATOR WORKSHOP MANUAL

WDD750-EN-00

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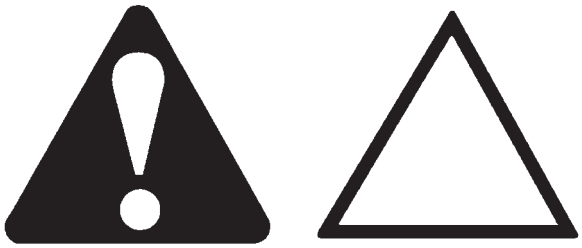



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## Recognize Safety Information

- These are the **SAFETY ALERT SYMBOLS**.
  - When you see these symbols on your machine or in this manual, be alert to the potential for injury to persons.
  - Follow recommended precautions and safe operating practices.



SA-2644 ja

## Understand Signal Words

- On machine safety signs, signal words designating the degree or level of hazard - DANGER, WARNING, or CAUTION - are used with the safety alert symbol.
  - **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
  - **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
  - **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
  - **DANGER or WARNING safety signs** are located near specific hazards. General precautions are listed on **CAUTION safety signs**.
  - Some safety signs are occasionally used on this machine that do not use any of the designated signal words mentioned above after the safety alert symbol.
- **CAUTION** also calls attention to safety message in this manual.
- To avoid confusing machine protection with personal safety messages, a signal word IMPORTANT indicates a situation which, if not avoided, could result in damage to the machine.
- NOTE: Indicates an additional explanation for a piece of information.

## Install OPG Guard

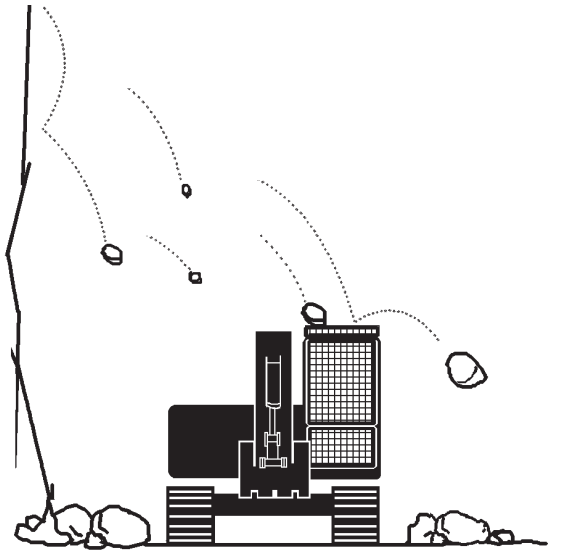
In case the machine is operated in areas where the possibility of falling stones or debris exist, equip the cabin with Hitachi OPG guards.

Consult your authorized dealer for installing the OPG guards.

In order not to impair operator protection:

Replace damaged OPG guards. Never attempt to repair or modify a guard.

OPG : Operator Protective Guard



SA-490 ja

## Restriction of Attachment Installation

Do not install an attachment which exceeds the permissible weight for the concerning machine configuration. Take into account the additional weight of any payload.

## Provide Signals for Jobs Involving Multiple Machines

- For jobs involving multiple machines, provide signals known and understood by all personnel involved. Also, appoint a signal person to coordinate the work. Make sure that all personnel obey the signal person's directions.



SA-481 ja

## Precautions for Lightning

- Lightning may strike the machine.
  If lightning comes close, immediately stop the operation, and take the following action:
  - When you are around the machine or operating cabless machine, evacuate to a safe place far away from the machine.
  - When you are in the cab, stay in the cab until lightning has passed and safety is assured. Close the cab doors and windows. Lower the bucket to the ground and stop the engine. Put your hands on your lap to avoid contact with any metal surfaces. Never go out of the cab.

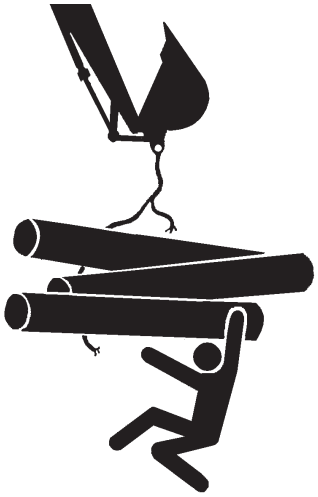
If lightning strikes the machine or near the machine, check all of the machine safety devices for any failure after lightning has passed and safety is assured. If any trouble is found, operate the machine only after repairing it.



SA-2715 ja

## Object Handling

- If a lifted load should fall, any person nearby may be struck by the falling load or may be crushed underneath it, resulting in serious injury or death.
  - When using the machine for lifting operations, be sure to comply with all local regulations.
  - Do not use damaged chains or frayed cables, slings, or ropes.
  - Before lifting, position the upperstructure with the travel motors at the rear.
  - Move the load slowly and carefully. Never move it suddenly.
  - Keep all persons well away from the load.
  - Never move a load over a person's head.
  - Do not allow anyone to approach the load until it is safely and securely situated on supporting blocks or on the ground.
  - Never attach a sling or chain to the bucket teeth. They may come off, causing the load to fall.



SA-014 ja

## Replace Rubber Hoses Periodically

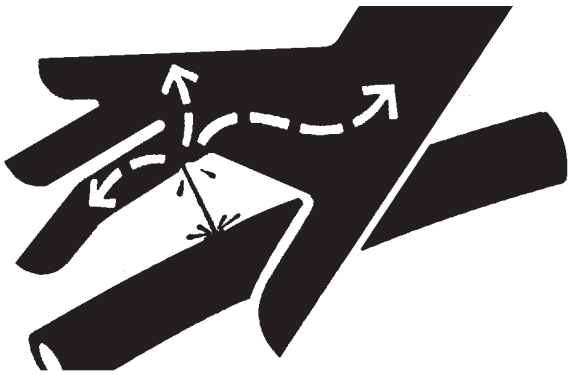
- Rubber hoses under pressure may break due to aging, fatigue, and abrasion. It is very difficult to gauge the extent of deterioration of rubber hoses by inspection alone. Therefore:
  - Periodically replace the rubber hoses. (See the page of "Periodic replacement of parts" in the operator's manual.)
- Failure to periodically replace rubber hoses may cause a fire, fluid injection into skin, or the front attachment to fall, which may result in serious injury or death.



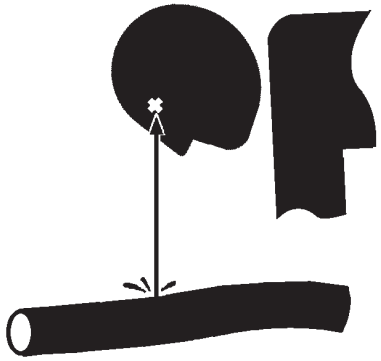
SA-019 ja

## Avoid High-Pressure Fluids

- Fluids such as diesel fuel or hydraulic oil under pressure can penetrate the skin or eyes causing serious injury, blindness or death.
  - Avoid this hazard by relieving pressure before disconnecting hydraulic or other lines.
  - Tighten all connections before applying pressure.
  - Search for leaks with a piece of cardboard; take care to protect hands and body from high-pressure fluids. Wear a face shield or goggles for eye protection.
  - If an accident occurs, see medical assistance immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.



SA-031 ja

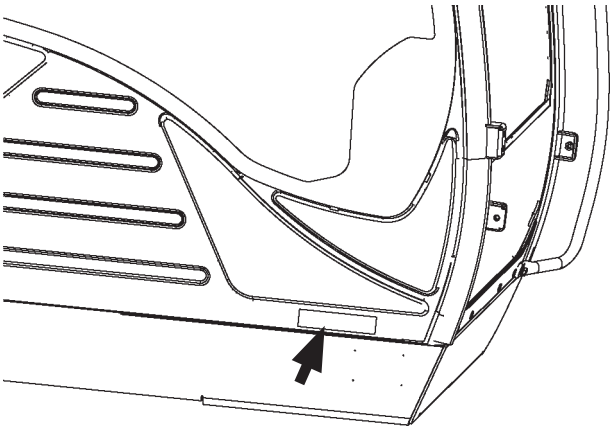


SA-292 ja



SA-044 ja

## Notes on Protection by Operator's Station when the Machine Rolls Over



SS-3636-1 ja

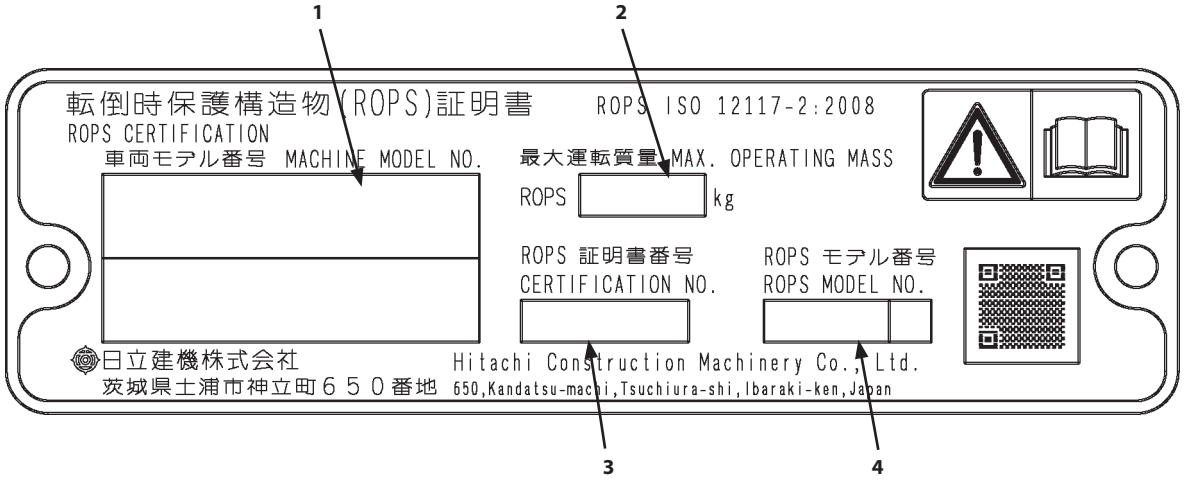
The cab incorporates a structure to protect the operator by absorbing impact energy when the machine rolls over (Roll-Over Protective Structure (ROPS)). However, when modifying the machine or installing a special attachment causing the machine mass to exceed the maximum operating mass indicated on the ROPS certification label, the cab cannot fulfill its protective function, possibly causing serious injury or death.

In order to safeguard the protective structure, follow the instructions below.

- Consult your authorized dealer before welding parts or drilling a hole on the cab. Modifications to the structure which possibly reduce the cab strength are not allowed.
- Be sure to always fasten the seat belt when operating the machine. If the machine rolls over without operator having fastening the seat belt, the operator may be thrown out of the cab and/or may become crushed under the machine.

The ROPS certification is valid under the following conditions.

- The actual machine mass is lower than the maximum operating mass described in the ROPS certification.
- The ROPS is properly installed.
- No modification is made to the ROPS.
- The ROPS is free from damage.




SS-3671-2 ja

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | Applicable Machine Model Number | 2 | Maximum operating mass assuring the ROPS | 3 | Certificate number of the ROPS | 4 | ROPS Model Number |

## Before Returning the Machine to the Customer

- After maintenance or repair work is complete, confirm that:
  - The machine is functioning properly, especially the safety systems.
  - Worn or damaged parts have been repaired or replaced.

# 3

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## Precautions for Disassembling and Assembling

### Precautions for Disassembling

- Clean the Machine: Thoroughly wash the machine before bringing it into the shop. Bringing a dirty machine into the shop may cause machine components to be contaminated during disassembling / assembling, resulting in damage to machine components as well as decreased efficiency in service work.
- Inspect the Machine: Be sure to thoroughly understand all disassembling / assembling procedures beforehand to help avoid incorrect disassembling of components as well as personal injury. Check and record the items listed below to prevent problems from occurring in the future.
  The machine model, machine serial number, and hour meter reading. prevent problems from occurring in the future.
  - The machine model, machine serial number, and hour meter reading.
  - Reason for disassembly (symptoms, failed parts, and causes).
  - Clogging of filters and oil, water, or air leaks, if any. Capacities and condition of lubricants.
  - Loose or damaged parts.
- Prepare and Clean Tools and Disassembly Area: Prepare the necessary tools to be used and the area for disassembling work. Clean the tools and the area thoroughly.

### Precautions for Disassembling and Assembling

- Precautions for Disassembling:
  - Cap the open ends in case the hoses and pipes have been disconnected. In addition, attach identification tags onto the connectors, hoses, and pipes for assembling.
  - Before disassembling, clean the exterior of the components and place on a workbench.
  - Drain hydraulic oil and gear oil from the hydraulic components and reduction gear.
  - Be sure to provide appropriate containers for draining fluids.
  - Use matching marks for easier reassembling if necessary.
  - Be sure to use the specified special tools when instructed.
  - If a part or component cannot be removed after removing its securing nuts and bolts, do not attempt to remove it forcibly. Find the cause (s), and then take the appropriate measures to remove it.
  - Orderly arrange disassembled parts. Mark and tag them if necessary.
  - Store common parts, such as bolts and nuts with reference to where they are to be used and in a manner that will prevent loss.
  - Inspect the contact or sliding surfaces of disassembled parts for abnormal wear, sticking, or other damage.
  - Measure and record the degree of wear and clearances.
- Precautions for Assembling:
  - Be sure to clean all parts and inspect them for any damage. If any damage is found, repair or replace part.
  - Dirt or debris on the contact or sliding surfaces may shorten the service life of the machine. Take care not to contaminate any contact or sliding surfaces.
  - Apply appropriate lubricant oil to parts in order to prevent them from seizing.
  - Be sure to replace O-rings, backup rings, oil seals, and floating seals with new ones once they have been disassembled. Apply grease before installing.
  - Be sure that liquid-gasket-applied surfaces are clean and dry.
  - If an anti-corrosive agent has been used on a new part, be sure to thoroughly clean the part to remove the agent.
  - Fit the matching marks made when disassembling and assemble them.
  - Be sure to use the designated tools to assemble bearings, bushings, and oil seals.
  - Keep a record of the number of tools used for disassembly/assembly. After assembling is completed, count the number of tools so as to make sure that no forgotten tools remain in the assembled machine.

## Bolt Types

Tighten the nuts or bolts correctly to the torque specifications.
As the different types and grades of bolt are used, use and tighten the correct bolts correctly when assembling the machine or components.

## Tightening Piping Joint

### IMPORTANT

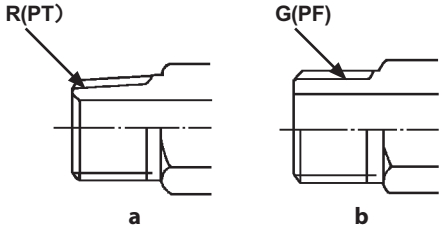
- **The torque given in the following table are for general use only, however, a different torque is given for a specific application. Use the specified torque.**
- **Apply lubricant, such as the Grease Spray to the bolts and nuts in order to reduce friction coefficient of them.**
- **Torque tolerance is ±10 %.**
- **Slightly apply lubricant onto the threads first by using the Grease Spray.**

## Screw-In Connection

Depending on types of screw and sealing, different types of screw-in connection are used.

### IMPORTANT

**Check that the thread pitch and thread type (tapered or straight) are the correct type before using any screw-in connection.**




W105-01-01-018-1 ja

a- Male Tapered Thread b- Male Straight Thread

2013/09

| Wrench Size (mm) | Tightening Torque (N·m (lbf·ft)) | |
|---|---|---|
| Joint Body | Cast iron | Structural rolled steel |
| 19 | 15 (11) | 35 (26) |
| 22 | 30 (22) | 50 (37) |
| 27 | 50 (37) | 95 (70) |
| 36 | 70 (52) | 160 (118) |
| 41 | 110 (81) | 200 (148) |
| 50 | 160 (118) | 330 (245) |
| 60 | 200 (148) | |

## Bleeding Air from Hydraulic System

Bleed air from the hydraulic system when hydraulic oil has been drawn, the suction filter and suction pipe have been replaced, or the pump device, swing motor, travel motor, cylinders have been removed/installed.

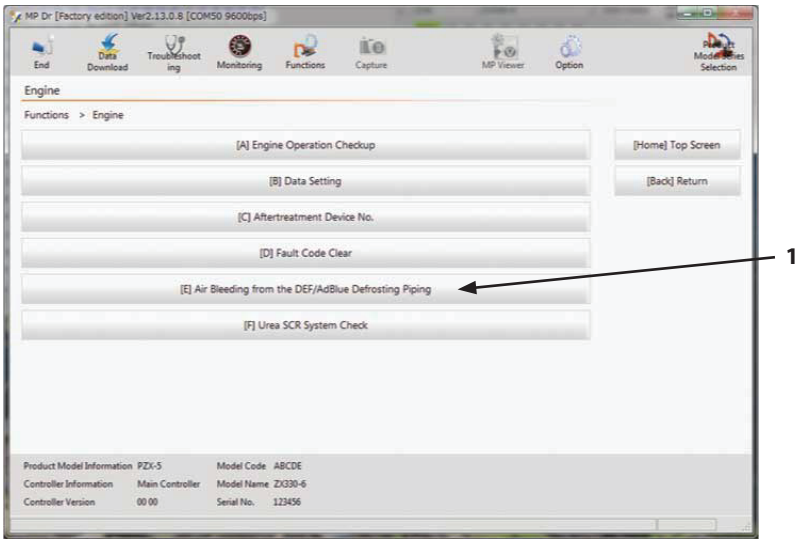
## Air Bleeding from the Diesel Exhaust Fluid Defrosting Piping

The DEF defrosting piping is equipped along with the DEF piping in order to prevent DEF from freezing. After performing the following procedures, bleed air from the DEF defrosting piping and fill the DEF defrosting piping with coolant.

- When the DEF supply module, DEF sensor unit, coolant control valve, or coolant hose has been replaced
- When coolant has been drained

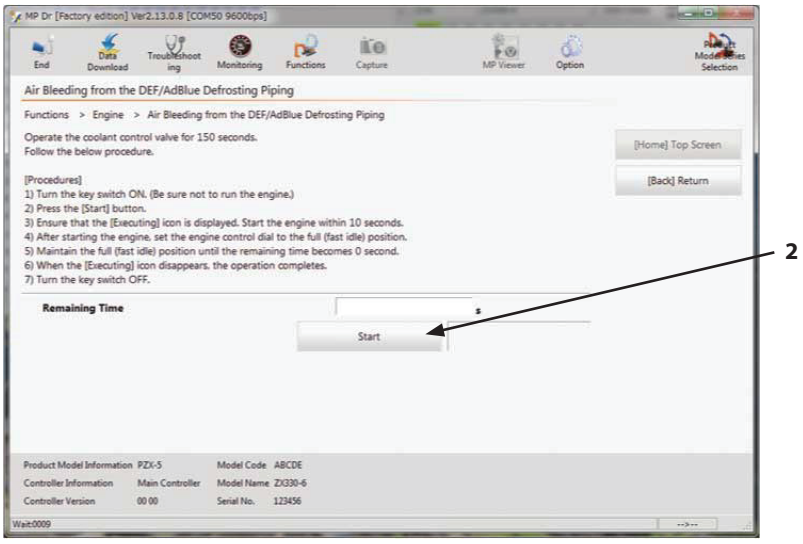
**Procedure**

1. Turn ON the key switch with stopping the engine.
2. Start MPDr. Select the [E] Air Bleeding from the DEF/AdBlue Defrosting Piping (1).




TDC1-04-06-005-1 en_GB

3. Push the START (2) button.




TDC1-04-06-006-1 en_GB

4. Ensure that the Executing icon (3) is displayed. Start the engine within 10 seconds.
5. After starting the engine, set the engine control dial to the fast idle position.
6. When the Executing icon (3) disappears after 150 seconds have passed, the operation is completed.
7. Turn OFF the key switch.

# 2

# MAINTENANCE STANDARD


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Maintenance Standard for Swing Motor .....W2-1-2-1

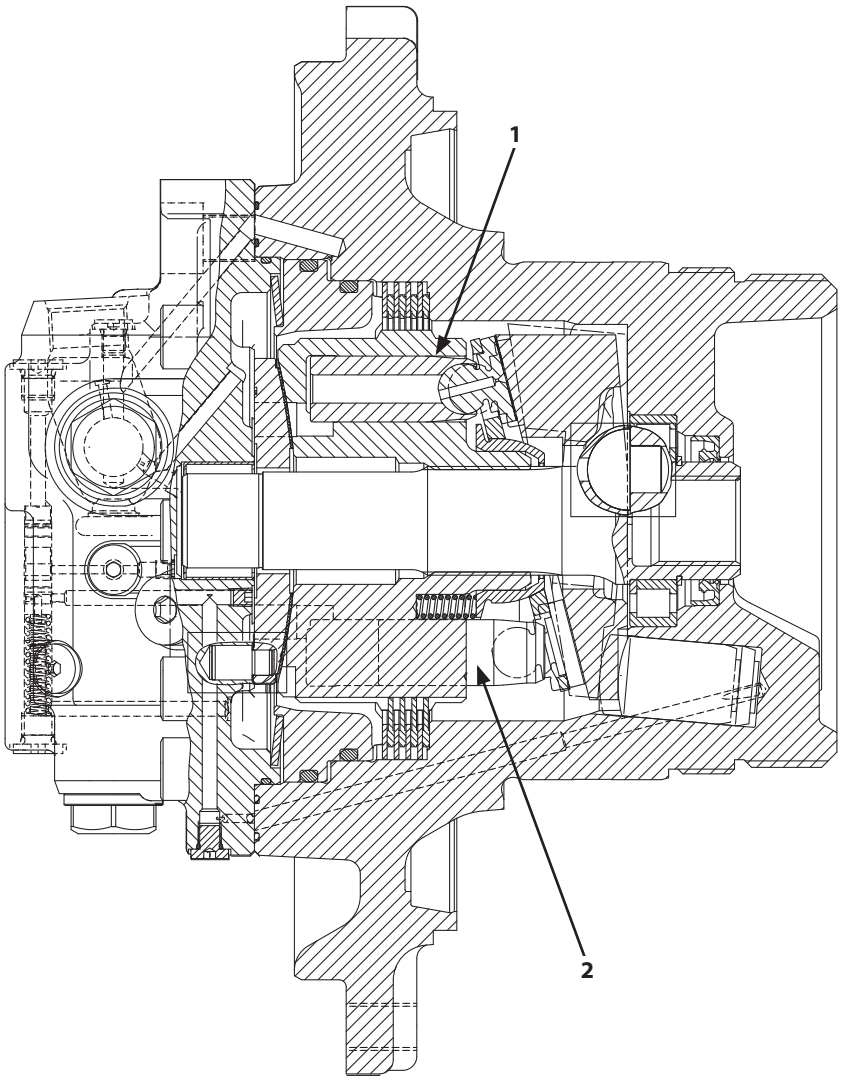
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Standard Dimensions for Arm and Bucket Connection .....W2-3-6-1
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Maintenance Standard for Cylinder .....W2-3-8-1

## Maintenance Standard for Travel Motor




TDD5-03-05-003-2 ja

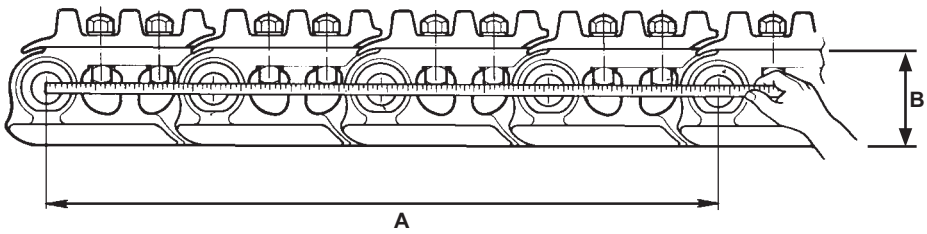
1- Rotor
2- Plunger (9 Used)

## Maintenance Standard of Track

### Link

Measure the length of four links.

- Do not measure the part included the master pin.
- Measure the length with tension on the track link.



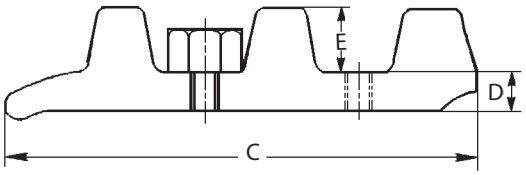

W155-03-07-001-1 ja

| | Standard Dimension (mm) | Allowable Limit (mm) | Remedy |
|---|---|---|---|
| A | 864 | 893 | Build up welding and hand finishing or replace |
| B | 116 | [109] | |

*NOTE*

*Values in [ ] are for reference.*

### Grouser shoe




W105-03-07-024-2 ja

| Shoe width | 600 mm grouser | | |
|---|---|---|---|
| | Standard Dimension (mm) | Allowable Limit (mm) | Remedy |
| C | 250 | - | Build up welding and hand finishing or replace |
| D | 11 | - | |
| E | 30 | [21] | |

*NOTE*

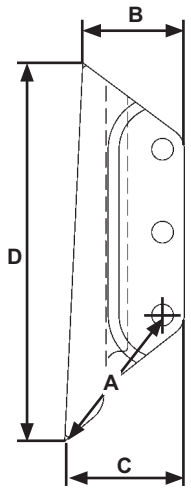
*Values in [ ] are for reference.*

| Shoe width | 600 mm reinforced grouser | | |
|---|---|---|---|
| | Standard Dimension (mm) | Allowable Limit (mm) | Remedy |
| C | 247 | - | Build up welding and hand finishing or replace |
| D | 11 | - | |
| E | 36 | [21] | |

*NOTE*

*Values in [ ] are for reference.*

## Maintenance Standard for Side Cutter (4435856, 4435857)




W1V7-04-01-002-1 ja

| | Standard Dimension (mm) | Allowable Limit (mm) | Remedy |
|---|---|---|---|
| A | 214 | [139] | Replace |
| B | 140 | - | |
| C | 165 | - | |
| D | 525 | - | |

# 3

# UPPERSTRUCTURE


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Installation of Radiator ..... W3-5-2-1
Removal of Intercooler ..... W3-5-3-1
Installation of Intercooler ..... W3-5-4-1
Removal of Oil Cooler ..... W3-5-5-1
Installation of Oil Cooler ..... W3-5-6-1

**Hydraulic Oil Tank ..... W3-6-1-1**

Removal of Hydraulic Oil Tank ..... W3-6-1-1
Installation of Hydraulic Oil Tank ..... W3-6-2-1

**Fuel Tank ..... W3-7-1-1**

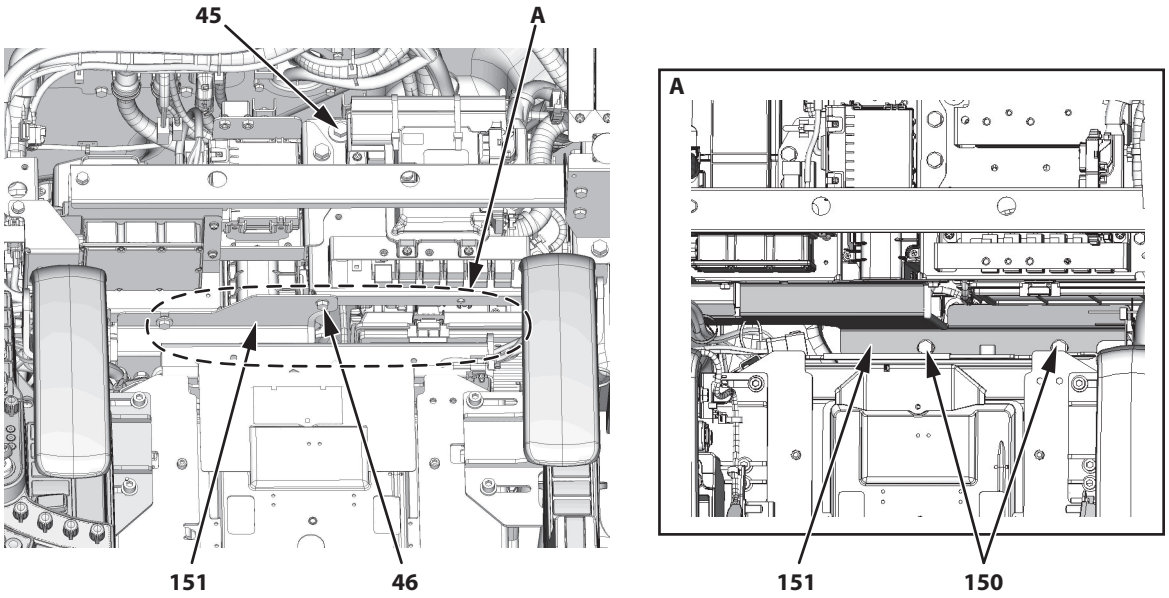
Removal of Fuel Tank ..... W3-7-1-1
Installation of Fuel Tank ..... W3-7-2-1

**Pump Device ..... W3-8-1-1**

Removal of Pump Device ..... W3-8-1-1
Installation of Pump Device ..... W3-8-2-1
Removal of Coupling ..... W3-8-3-1
Installation of Coupling ..... W3-8-4-1
Disassembly of Pump Device ..... W3-8-5-1
Assembly of Pump Device ..... W3-8-6-1
Disassembly of Regulator ..... W3-8-7-1
Assembly of Regulator ..... W3-8-8-1
Disassembly of Solenoid Valve ..... W3-8-9-1
Assembly of Solenoid Valve ..... W3-8-10-1
Structure of Pilot Pump ..... W3-8-11-1

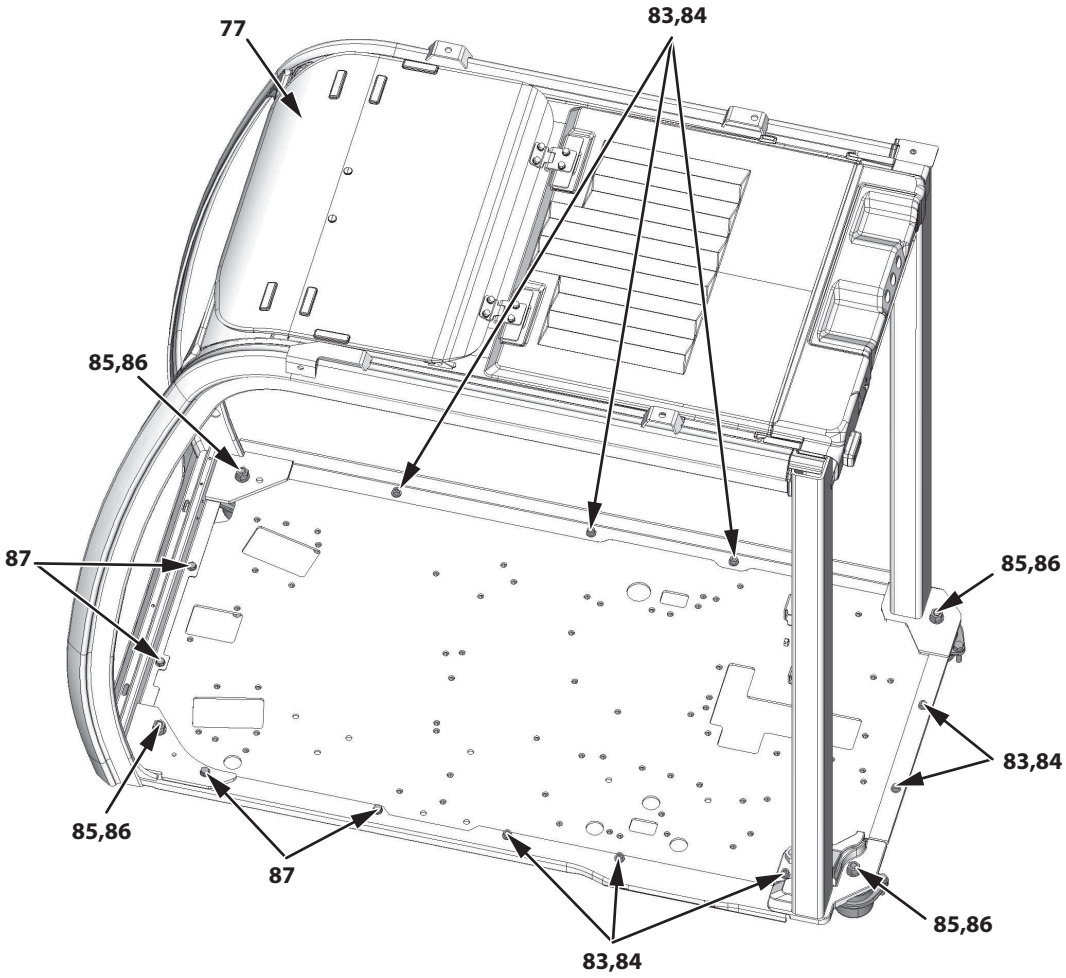
**Control Valve ..... W3-9-1-1**

Removal of Control Valve ..... W3-9-1-1
Installation of Control Valve ..... W3-9-2-1
Disassembly of Housing ..... W3-9-3-1
Assembly of Housing ..... W3-9-4-1
Disassembly of Spool (A-Side Control Valve) ..... W3-9-5-1
Assembly of Spool (A-Side Control Valve) ..... W3-9-6-1
Disassembly of Boom Anti-Drift Valve (Check Valve) (j) (A-Side Control Valve) ..... W3-9-7-1
Disassembly of Boom Anti-Drift Valve (Selector Valve) (k) (A-Side Control Valve) ..... W3-9-8-1
Assembly of Boom Anti-Drift Valve (j, k) (A-Side Control Valve) ..... W3-9-9-1
Disassembly of Overload Relief Valve (h, i, ac, ad) (A-Side Control Valve) ..... W3-9-10-1
Assembly of Overload Relief Valve (h, i, ac, ad) (A-Side Control Valve) ..... W3-9-11-1
Disassembly of Travel (Right) Spool (n) (A-Side Control Valve) ..... W3-9-12-1
Assembly of Travel Spool (n) (A-Side Control Valve) ..... W3-9-13-1
Disassembly of Bucket Spool (p) (A-Side Control Valve) ..... W3-9-14-1

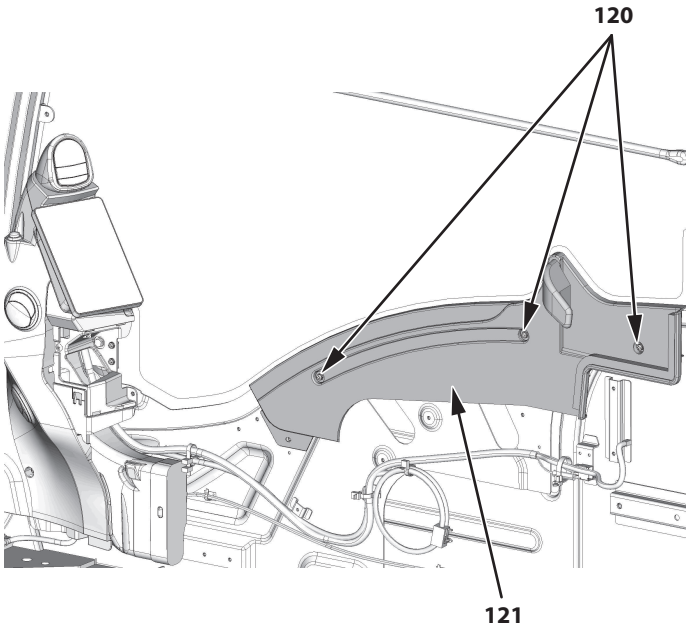



WDFY-03-01-020-1 ja

25. Remove clips (49) (4 used).
26. Disconnect connectors (50) (10 used).
27. Remove bolt, washer (160). Disconnect terminal (161).
    : 13 mm

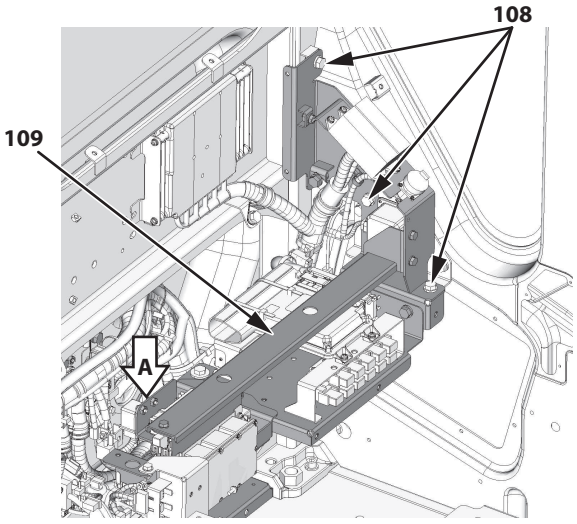


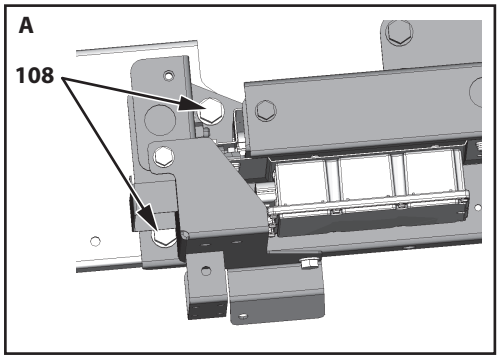

WDFY-03-01-017-1 ja

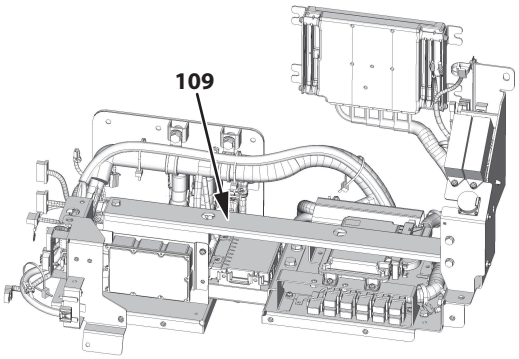



WDFY-03-01-040-1 ja

9. Install the bracket (109) assembly with bolts, washers (108) (5 used).
   : 17 mm
   : 50 N·m

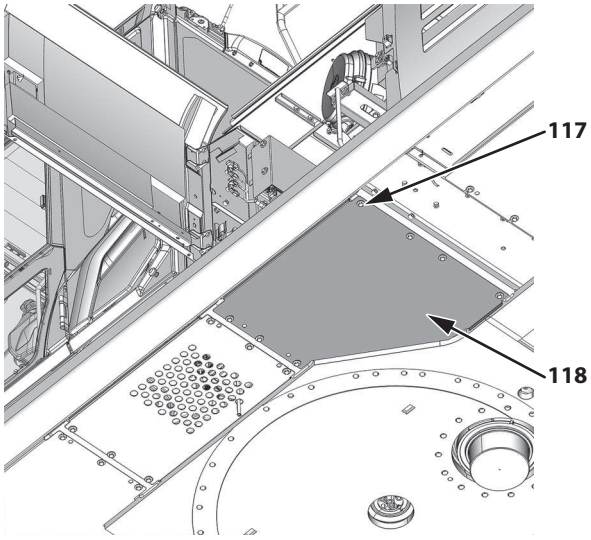


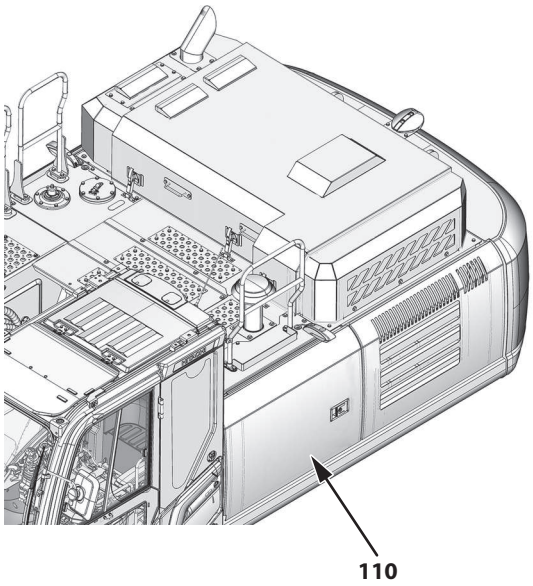

WDFY-03-01-024-1 ja

10. Install monitor controller (107) with bolts, washers (106) (4 used).
    : 10 mm
    : 3 to 4 N·m
11. Install MC (105) with bolts, washers (102) (4 used).
    : 13 mm



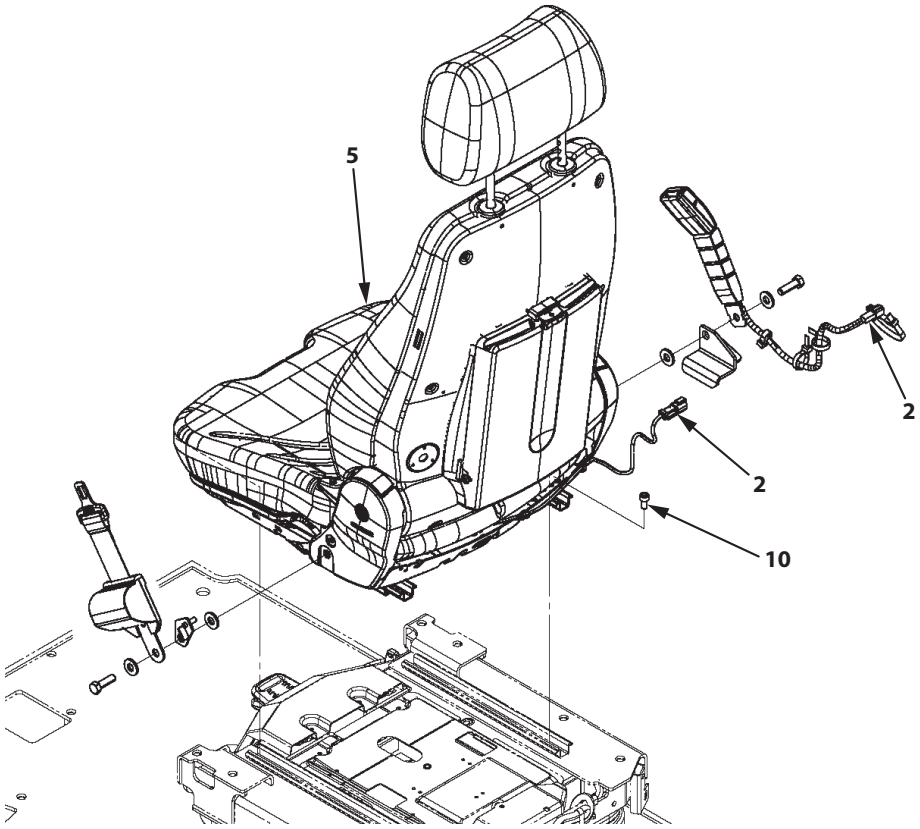

WDD7-03-01-201-1 ja

13. Close cover (110).



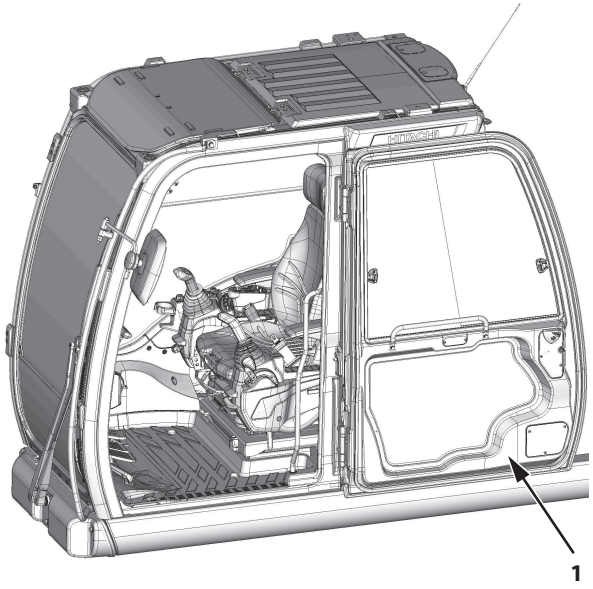

WDD7-03-01-200-1 ja

14. Install filter case (61) with screws (60) (6 used).
    : 3 N·m
15. Install filter (59).
16. Close cover (62).
17. Open door (1).




WDFY-03-01-002-3 ja

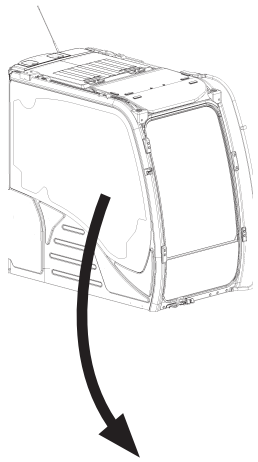
27. Close door (1).

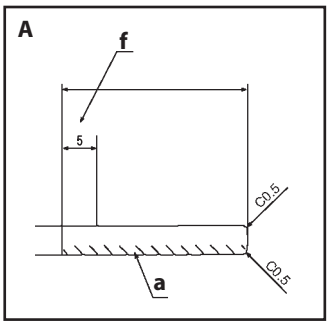


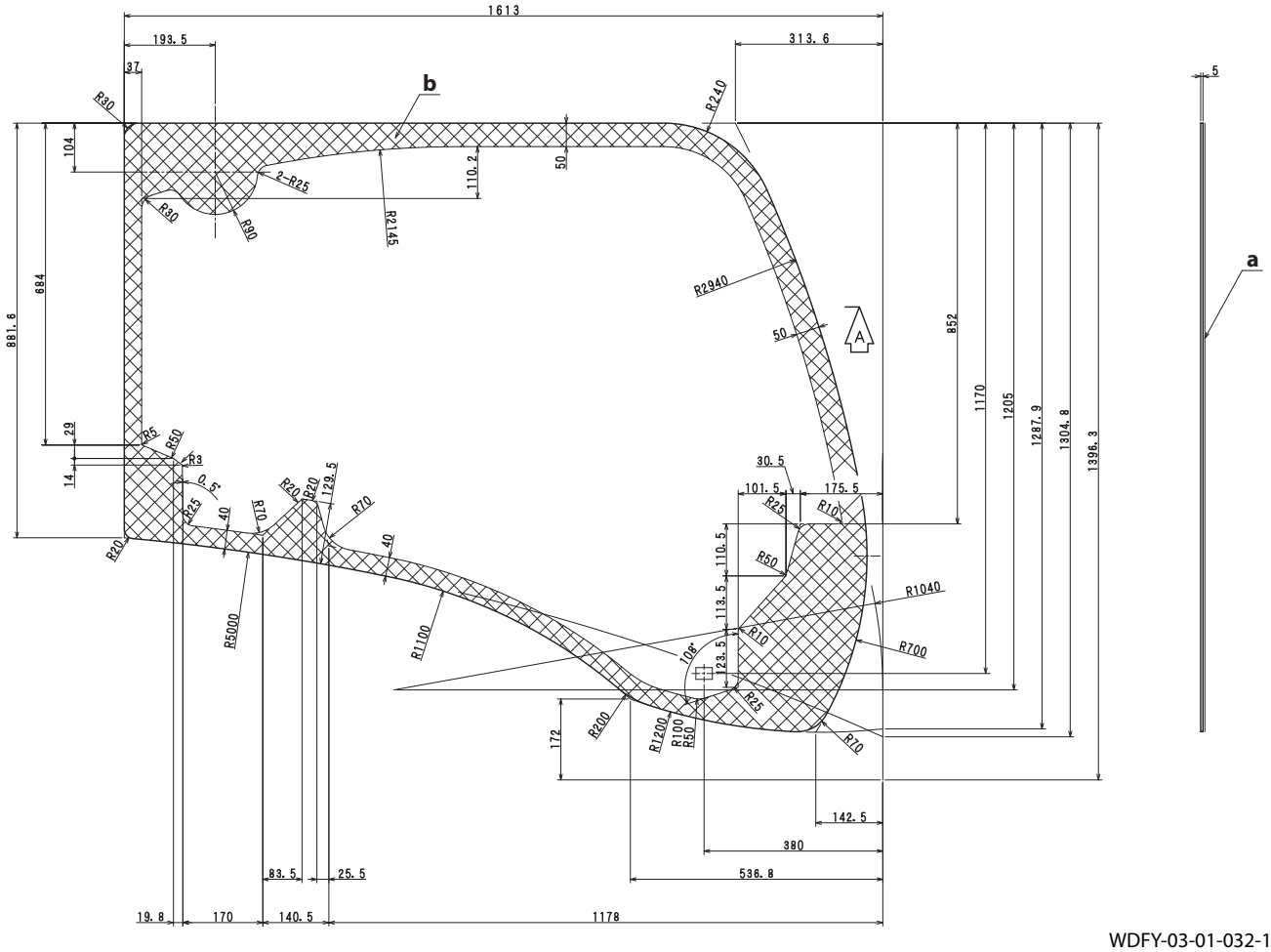

WDFY-03-09-001-3 ja

28. Open cover (3).
29. Set battery disconnect switch (4) to ON position (a).
30. Close cover (3).

Unit: mm





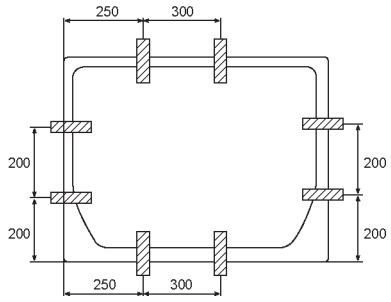

WDFY-03-01-032-1 ja

a- Black Ceramic Coated Surface

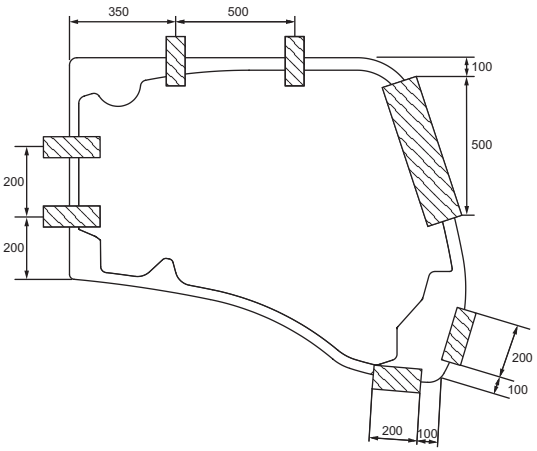
b- Black Ceramic Coated Range

f- Shaded Paint Along the Periphery Here

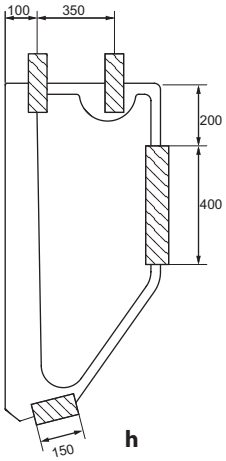
Unit: mm



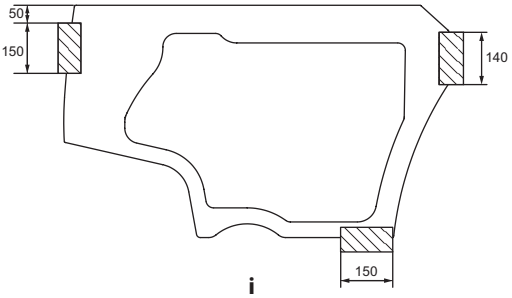

f



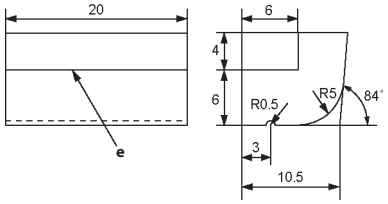

g



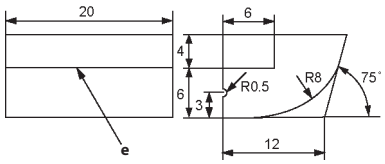

h



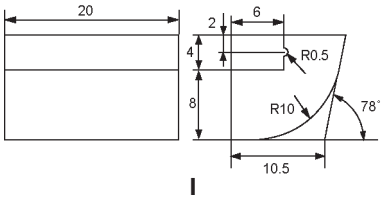

i



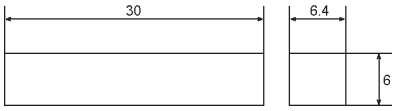

j




k




l




m

Position to Apply Duct Tape When Using Adhesive

WDFY-03-01-046-1 ja

e- Two-Side Adhesive Tape
f- Rear Glass
g- Right-Hand Glass
h- Rear Left-Hand Glass
i- Lower Door Glass
j- Spacer A
k- Spacer B
l- Spacer C
m- Dam Rubber

15. The required amount (just for reference) of adhesive and primer

## Removal of Main Frame

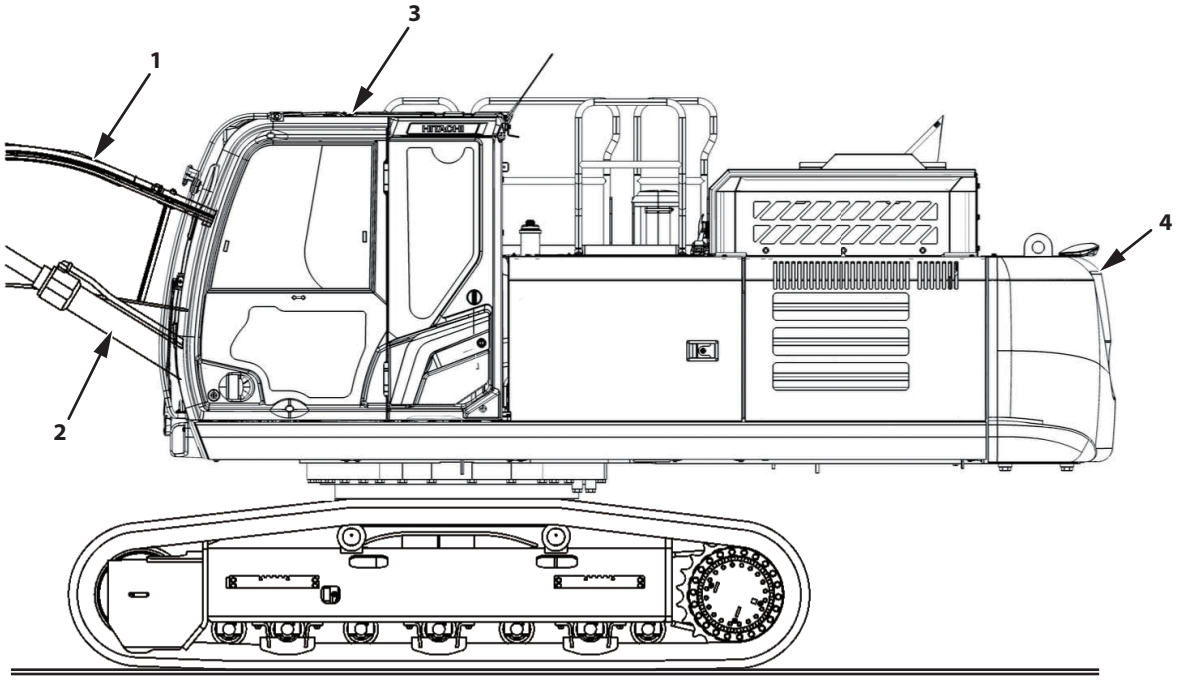
### IMPORTANT

**There is oil inside hoses and pipes. When removing them, collect oil with a container to avoid spillage of oil.**

### IMPORTANT

**When you remove hoses and pipes, put plugs into their openings. Also, put tags on connectors, hoses and pipes so that they can be put back into their original locations during reassembling. If fasteners or clips which tie hoses together are removed, put them back after all hoses are re-connected.**

1. Set the machine position for inspection and maintenance. (Refer to "Preparation before Inspection and Maintenance"W1-5-1-1.)
2. **CAUTION**
   **Release any pressure in the hydraulic oil tank. (Refer to "Pressure Release from Hydraulic Oil Tank"W1-5-3-1.)**
3. Remove counterweight (4). (Refer to "Removal of Counterweight"W3-2-1-1.)
4. Remove boom cylinder (2). (Refer to "Removal of Boom Cylinder"W5-2-1-1.)
5. Remove front attachment (1). (Refer to "Removal of Front Attachment"W5-1-1-1.)
6. Remove cab (3). (Refer to "Removal of Cab Interior Parts"W3-1-1-1, "Removal of Cab Exterior Parts"W3-1-2-1, "Removal of Cab Body"W3-1-3-1, and "Removal of Controller Assembly and Parts Around the Monitor"W3-1-4-1.)
7. Remove the swing device. (Refer to "Removal of Swing Device"W3-10-1-1.)




WDD7-03-03-101-1 ja

8. Disconnect hoses (5) (4 used) from the center joint.
   : 36 mm
9. Disconnect hose (7).
   : 27 mm
10. Disconnect hose (13).
    : 17 mm
11. Remove bolts (9) (2 used) and spring washers (10) (2 used). Remove stopper (8).
    : 22 mm

## Preparation before Removal of Engine

### CAUTION

**Escaping hydraulic oil under pressure may penetrate the skin and eyes and cause serious injury. Release the pressure before disconnecting the hydraulic pipe or removing other equipment. Hot hydraulic oil just after operation may spout out and cause severe burns. Allow oil to cool before starting any work.**

### IMPORTANT

**There is oil inside hoses and pipes. When removing them, collect oil with a container to avoid spillage of oil.**

### IMPORTANT

**When you remove hoses and pipes, put plugs into their openings. Also, put tags on connectors, hoses and pipes so that they can be put back into their original locations during reassembling. If fasteners or clips which tie hoses together are removed, put them back after all hoses are re-connected.**

### IMPORTANT

**Replace hydraulic oil according to the Operator's Manual, clean the suction filter, and replace the filter element.**

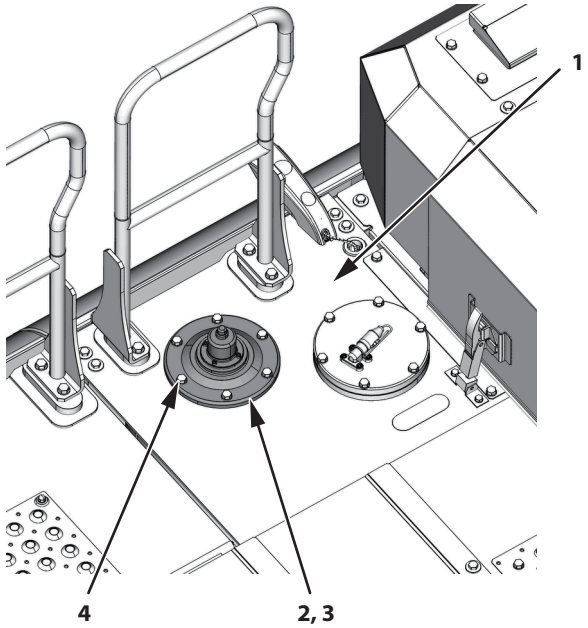
1. Set the machine position for inspection and maintenance. (Refer to "Preparation before Inspection and Maintenance"W1-5-1-1.)
2. **CAUTION**

   **Release any pressure in the hydraulic oil tank. (Refer to "Pressure Release from Hydraulic Oil Tank"W1-5-3-1.)**
3. Remove bolts, washers (4) (6 used). Remove the cover (2) assembly and O-ring (3) from the upper part of hydraulic oil tank (1).

   : 17 mm
4. Place a container. Drain any hydraulic oil by using a vacuum pump.

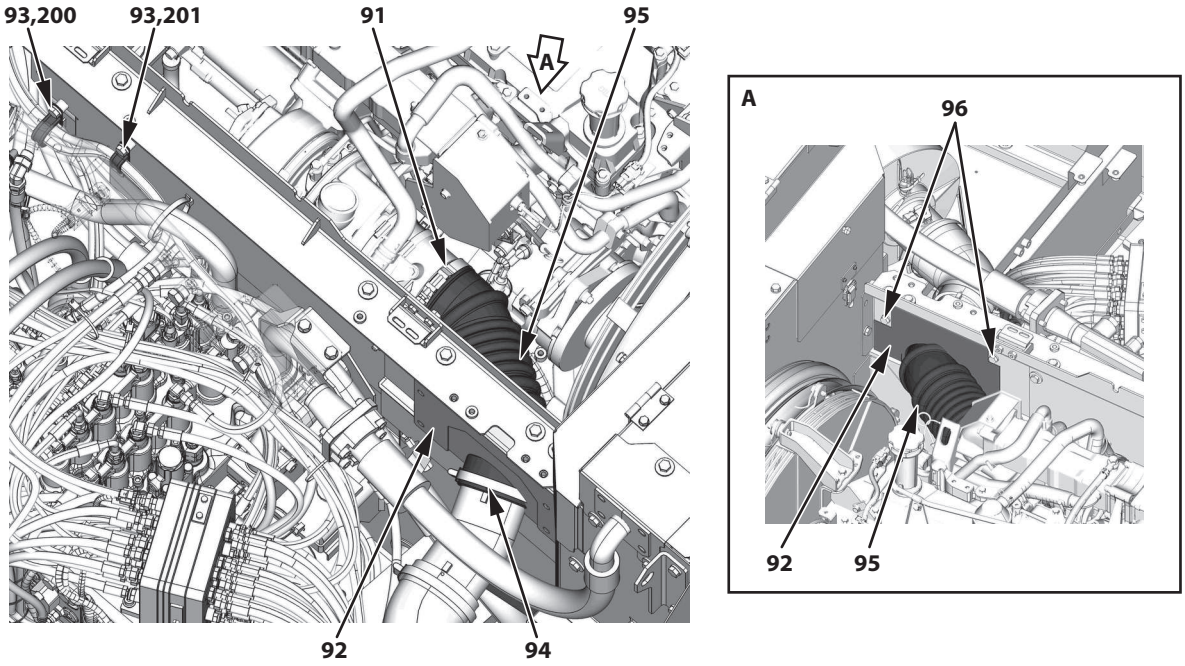
   *NOTE*

   *Total oil amount of hydraulic oil tank: 297 L*



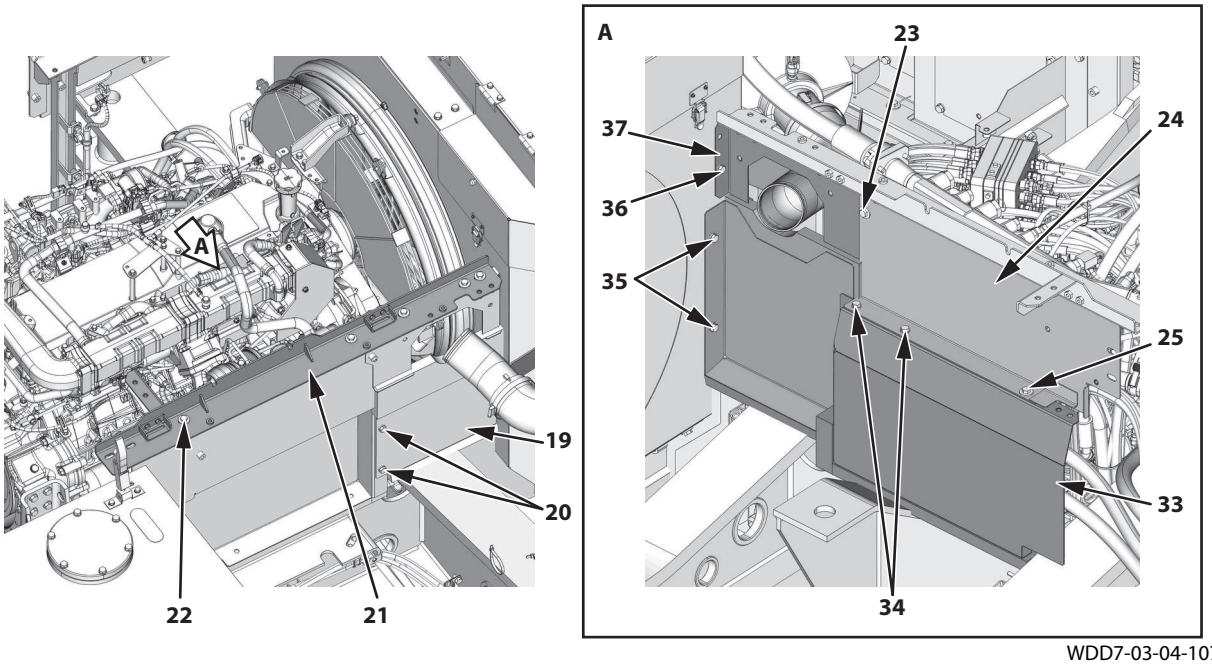

WDD7-03-04-101-1 ja

5. Open cover (5).




WDD7-03-04-120-1 ja

12. Remove bolts, washers (22) (5 used). Remove support (21).
    : 17 mm
13. Remove bolts, washers (23, 36). Remove cover (37).
    : 17 mm
14. Remove bolt, washer (25) and bolts, washers (34) (2 used). Remove cover (24).
    : 17 mm
15. Remove bolts, washers (20) (2 used). Remove cover (33).
    : 17 mm
16. Remove bolts, washers (35) (2 used). Remove cover (19).
    : 17 mm

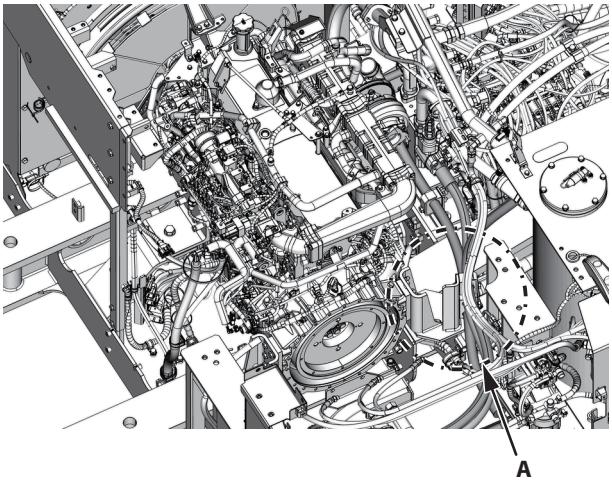


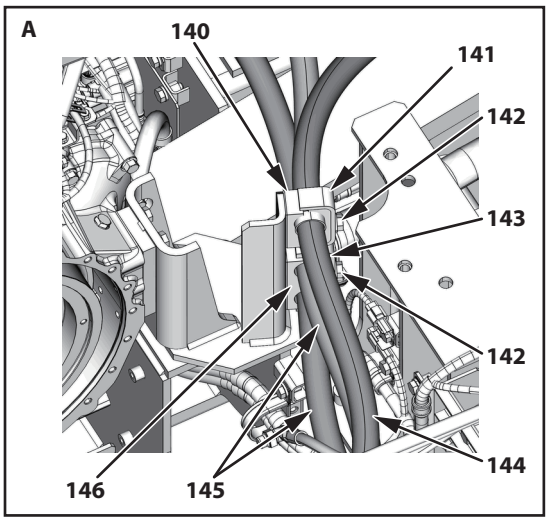

WDD7-03-04-107-1 ja

17. Remove clip band (125). Disconnect connector (126).

## Installation of Wire Harnesses and Hoses Around the Engine

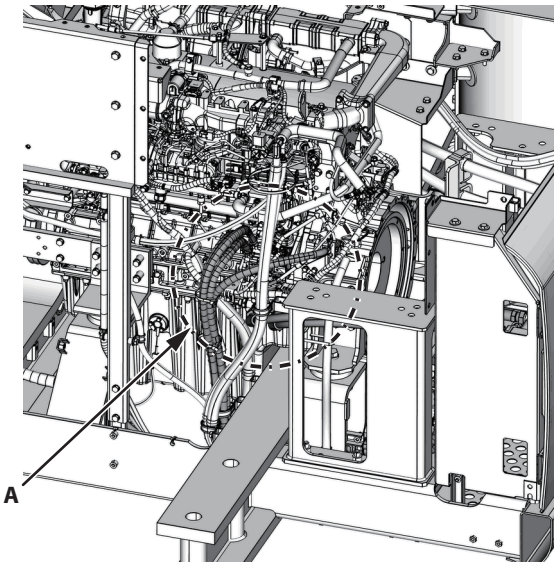
1. Install hose (144) and hoses (145) (2 used) with rubbers (140, 146), clamps (141, 143) and bolts, washers (142) (2 used).
   : 19 mm
   : 90 N·m

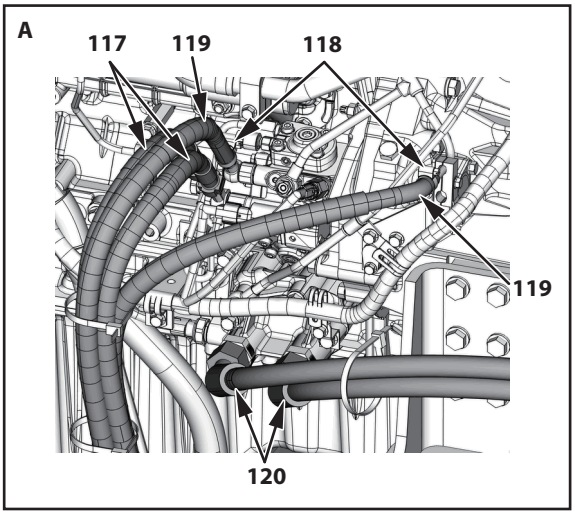



WDD7-03-04-130-1 ja

2. Connect hoses (120) (2 used).
   : 36 mm
   : 60 N·m
3. Connect hoses (117) (2 used).
4. Connect hoses (119) (2 used) with clamps (118) (2 used).
   : 7 mm
   : 6 N·m




WDD7-03-04-126-1 ja

5. Install the bracket (116) assembly with washers (115) (4 used) and bolts (114) (4 used).
   : 17 mm
   : 65 N·m

43. Temporarily install the pipe (75) assembly with bolts, washers (76) (2 used).
: 17 mm

44. **IMPORTANT**

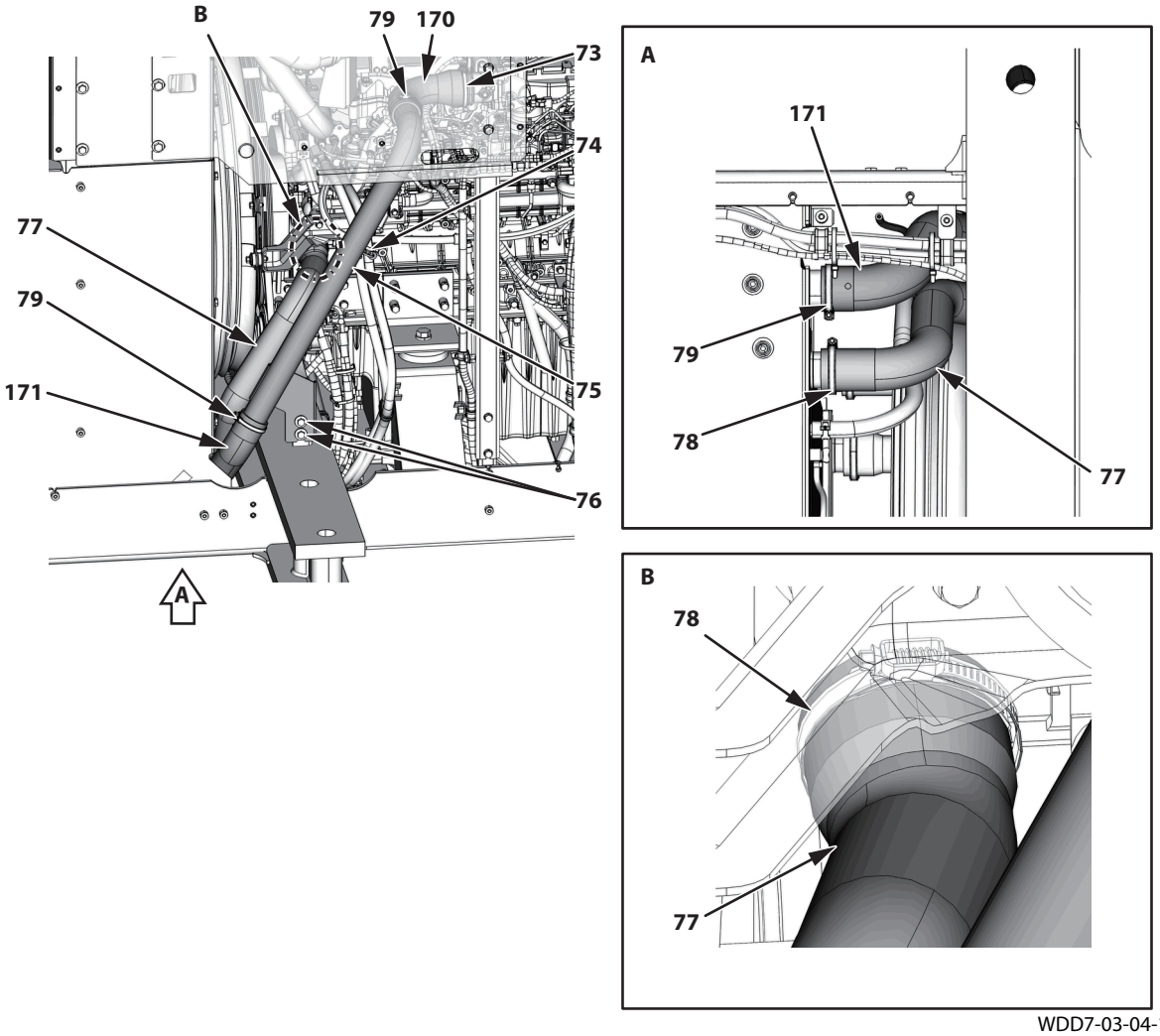
**Replace hoses (170, 171) with the new ones.**

Temporarily install hoses (170, 171) to pipe (75) with clamps (79) (2 used).
: 7 mm

45. Connect hoses (170, 171) with clamps (79) (3 used) and clamp (73).
: 7 mm
: 6 N·m

46. Tighten bolts, washers (76) (2 used).
: 17 mm
: 50 N·m

47. Install clip band (74).




WDD7-03-04-117-2 ja

## Removal of Radiator

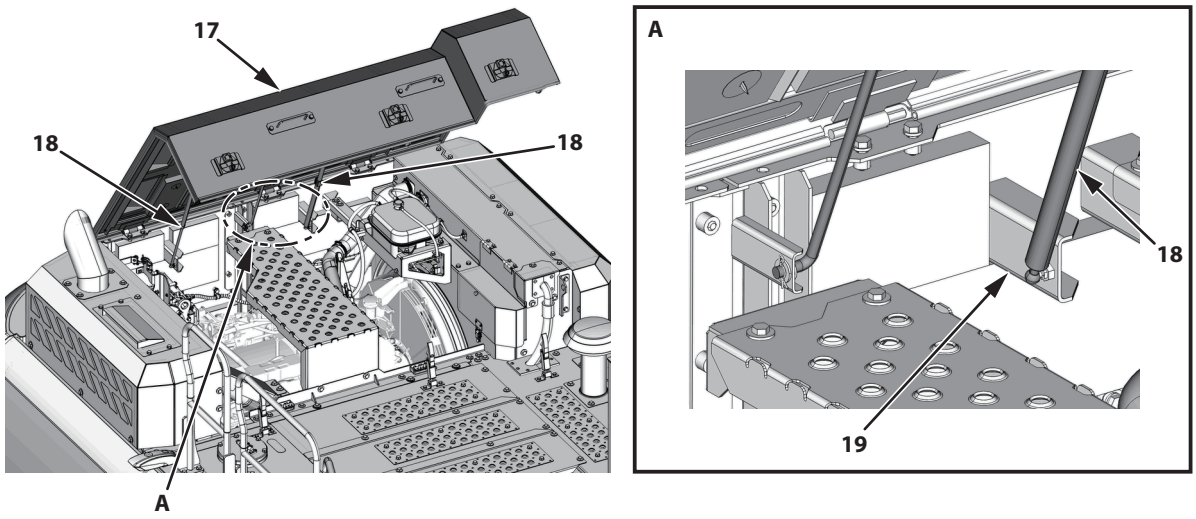
### IMPORTANT

**Cap the open parts in case the hoses and pipes have been disconnected. In addition, attach identification tags onto the connectors, hoses, and pipes for assembling. If the clips which secure the hoses have been removed, install the clips after connecting the hoses.**

1. Set the machine position for inspection and maintenance. (Refer to "Preparation before Inspection and Maintenance"W1-5-1-1.)
2. Open engine cover (17).
3. **CAUTION**

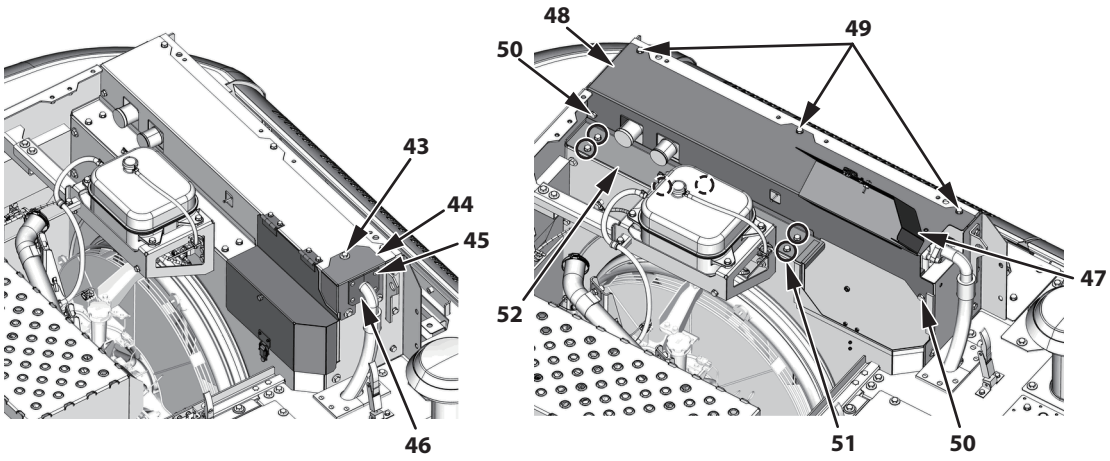
   **Engine cover (17) weight: 75 kg**

   Attach nylon slings onto engine cover (17), then hoist and hold it.
4. Remove the bracket (19) sides of cylinders (18) (2 used).
   : 12 mm



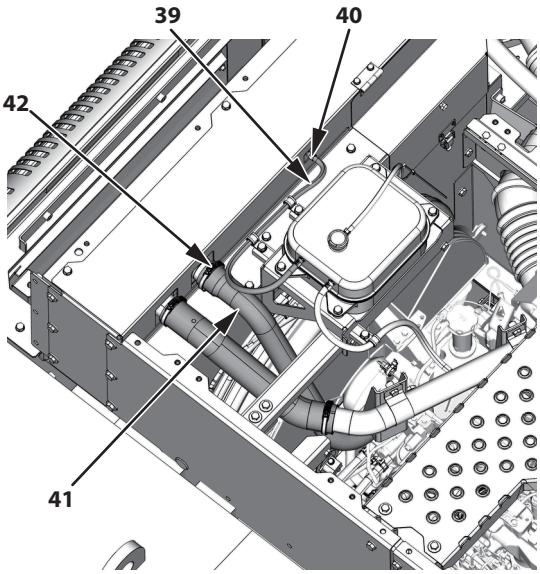

WDD7-03-05-119-1 ja

5. Move stay (22) to service position (a).
6. Remove bolt, washer (20).
   : 17 mm
7. Rotate bracket (21) 180 degrees and install with bolt, washer (20).
   : 17 mm
   : 50 N·m




WDD7-03-05-109-2 ja

12. Connect hose (41) with clamp (42).
    : 7 mm
    : 6 N·m
13. Connect hose (39) with clamp (40).




WDD7-03-05-108-1 ja

14. Install cover (36) with bolts, washers (35) (3 used).
    : 17 mm
    : 50 N·m
15. Connect hose (34) with clamp (37).
16. Connect hose (33) with clamp (38).
    : 7 mm
    : 6 N·m
17. Add coolant to the radiator.

    *NOTE*

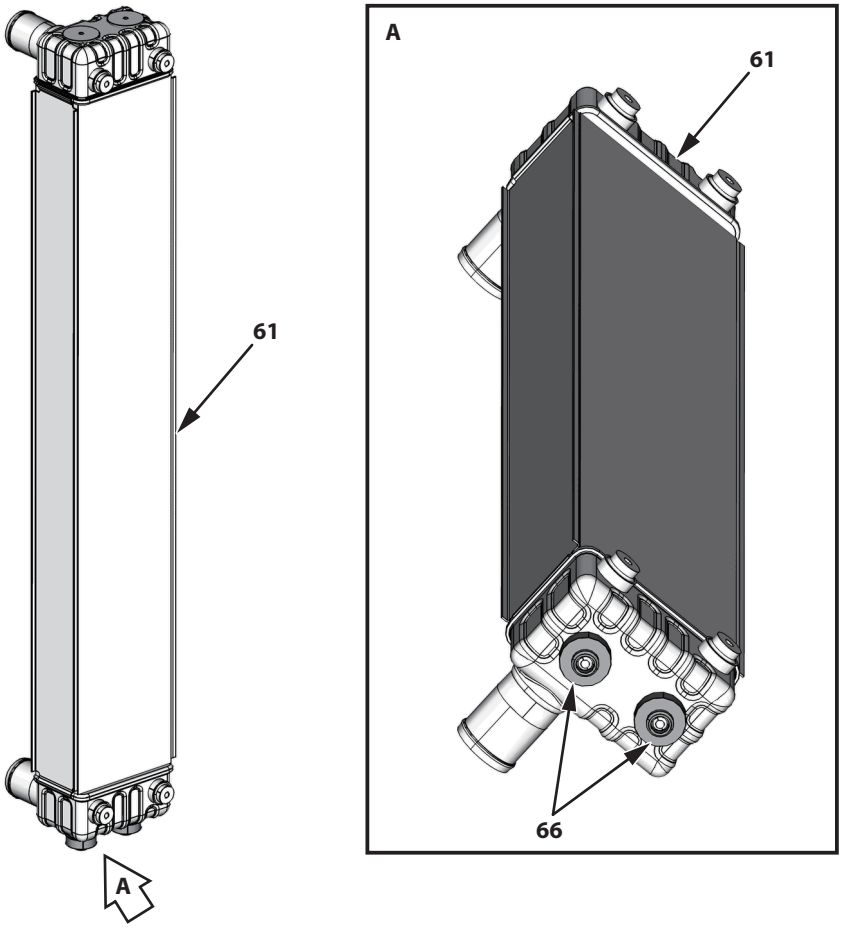
    *Amount of coolant: 48 L*

18. Bleed air from the cooling system. (Refer to the operator's manual.)
19. **IMPORTANT**

    **Check the coolant level. Start the engine and check each part for any water leakage.**

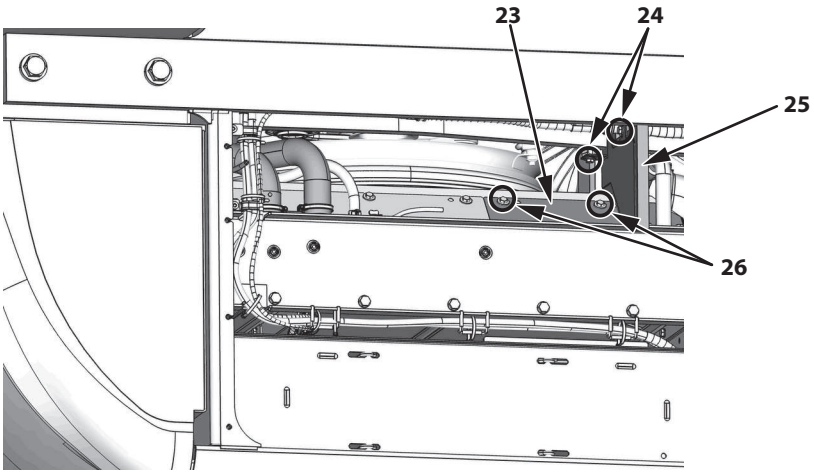
## Installation of Intercooler

1. Install rubbers (66) (2 used) to intercooler (61).



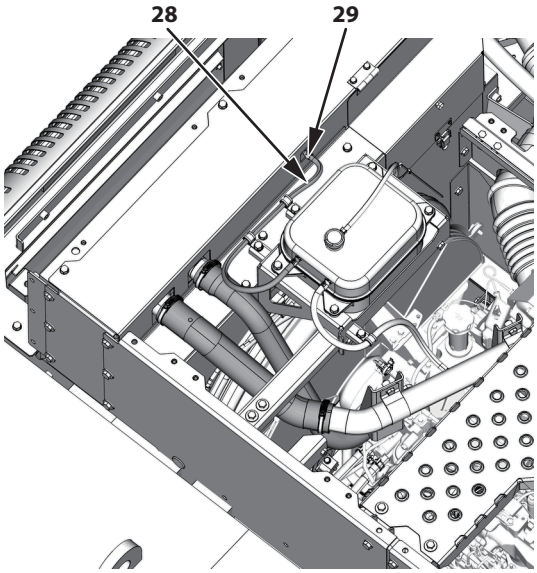

WDD7-03-05-122-1 ja

2. Install eyebolts (M10, pitch 1.5 mm) (2 used) to lifting holes (b) (2 places) on intercooler (61). Attach nylon slings onto eyebolts (2 used). Hoist intercooler (61).
3. Install intercooler (61) to frame (53) with collars (62) (4 used), rubber cushions (63) (4 used), washers (64) (4 used), and bolts (65) (4 used).
   : 19 mm
   : 70 N·m




WDD7-03-05-126-1 ja

19. Remove clamp (29). Disconnect hose (28).




WDD7-03-05-108-2 ja

20. Remove clips (34) (4 used). Remove rubber plate (35).
21. Remove bolts, washers (32) (3 used). Remove cover (33).
    : 17 mm
22. Open cover (36).
23. Remove bolts, washers (40) (6 used). Remove cover (41).
    : 17 mm
24. Remove bolts, washers (38) (3 used) and bolts, washers (39) (2 used). Remove the cover (37) assembly.
    : 17 mm

CLICK HERE TO DOWNLOAD THE COMPLETE MANUAL

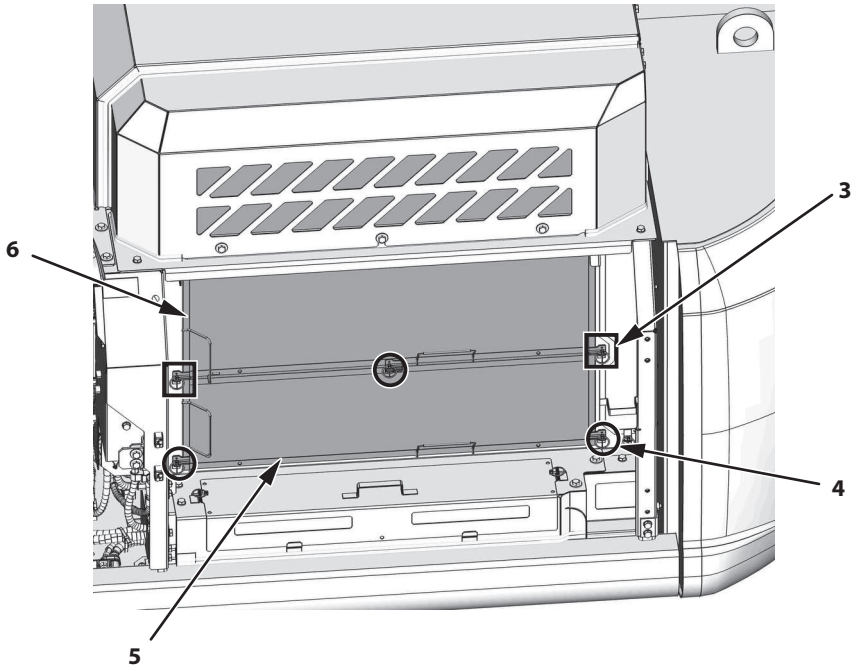
- Thank you very much for reading the preview of the manual.
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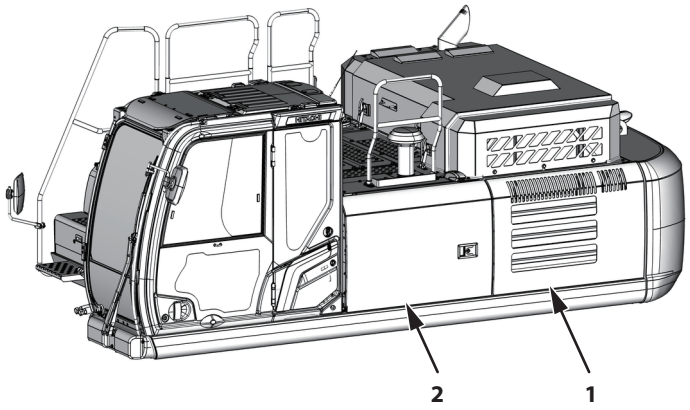
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27. Install net (6). Install ring pins (3) (2 used).
28. Install net (5). Install ring pins (4) (3 used).




WDD7-03-05-125-1 ja

29. Close covers (1, 2).




WDD7-03-05-101-1 ja

## Installation of Hydraulic Oil Tank

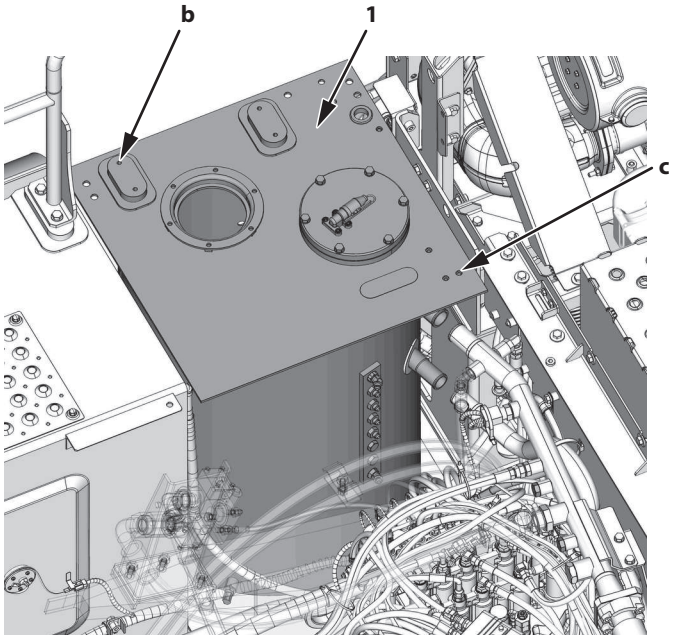
### IMPORTANT

**Replace hydraulic oil according to the Operator's Manual, clean the suction filter, and replace the filter element.**

1. Install all removed adapters to hydraulic oil tank (1).
2. **CAUTION**

   **Hydraulic oil tank (1) weight: 135 kg**

   Install eyebolt (M12, Pitch 1.75 mm) to eyebolt mounting hole (b). Install eyebolt (M10, Pitch 1.5 mm) to eyebolt mounting hole (c). Attach nylon slings onto the eyebolts. Hoist hydraulic oil tank (1).



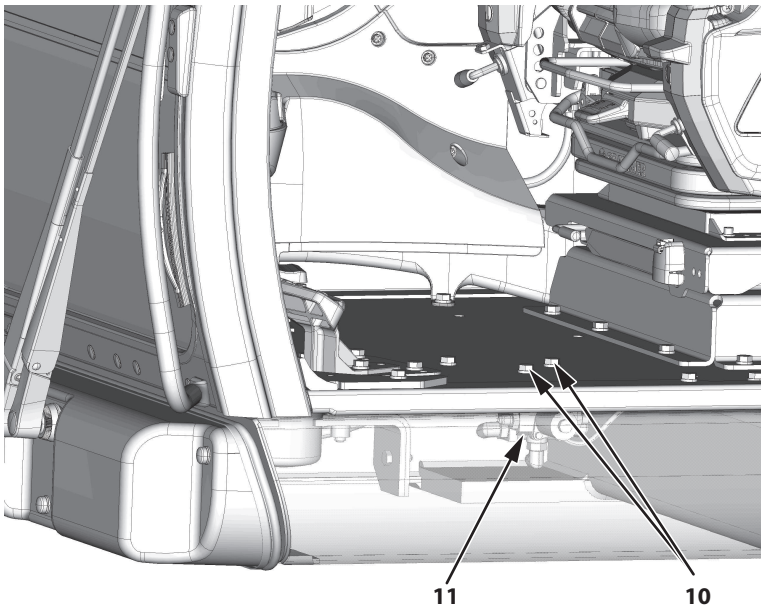

WDD7-03-06-110-1 ja

b- Eyebolt Mounting Hole (M12, Pitch 1.75 mm) c- Eyebolt Mounting Hole (M10, Pitch 1.5 mm)

3. Install hydraulic oil tank (1) to main frame (61) with spacers (64) (4 used), washers (63) (4 used), and bolts (62) (4 used).
   : 27 mm
   : 400 N·m

## Installation of Pilot Shut-Off Solenoid Valve

1. Install all removed adapters to the pilot shut-off solenoid valve (11).
2. Install the pilot shut-off solenoid valve (11) with bolts, washers (10) (2 used).
   : 17 mm
   : 50 N·m

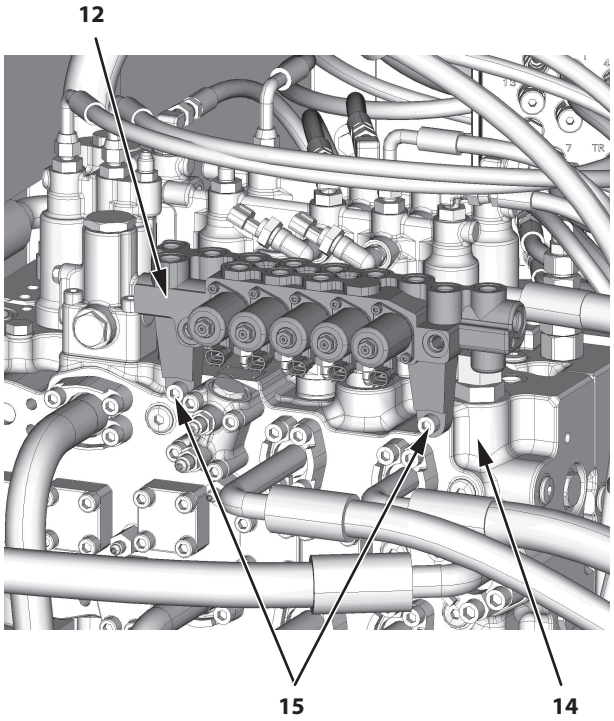



WDFY-03-09-003-1 ja

3. Connect hoses (9) (7 used).
   : 19 mm
   : 30 N·m
4. Connect the both ends of pipes (5, 8).
   : 17 mm
   : 25 N·m
5. Connect connector (7). Secure connector (7) to bracket (6).
6. Bleed air from the hydraulic system. (Refer to "Bleeding Air from Hydraulic System"W1-4-1-1)
7. **IMPORTANT**
   **Check the hydraulic oil level. Start the engine and check each part for any oil leakage.**
8. Install cover (3) with bolts, washers (4) (6 used).
   : 17 mm
   : 50 N·m

## Installation of 5-Spool Solenoid Valve Unit

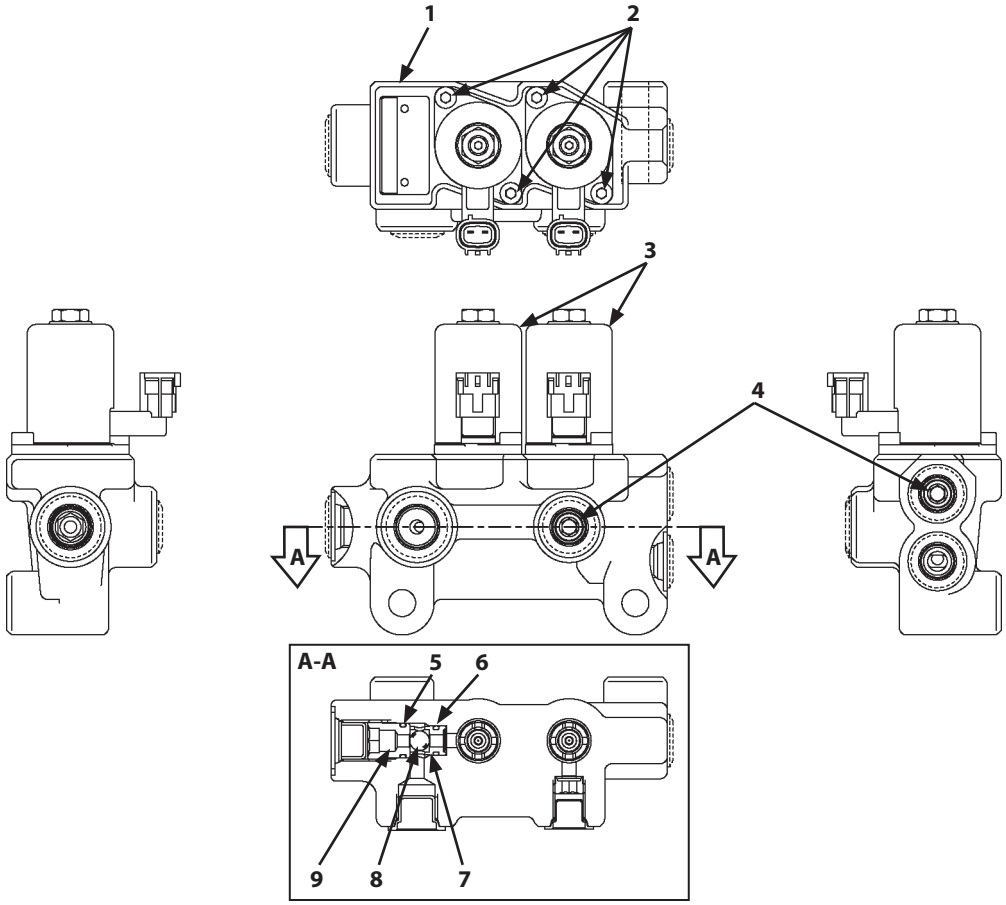
1. Install all removed adapters to the 5-spool solenoid valve unit (12).
2. Install the 5-spool solenoid valve unit (12) to control valve (14) with socket bolts (15) (2 used).
   : 8 mm
   : 50 N·m



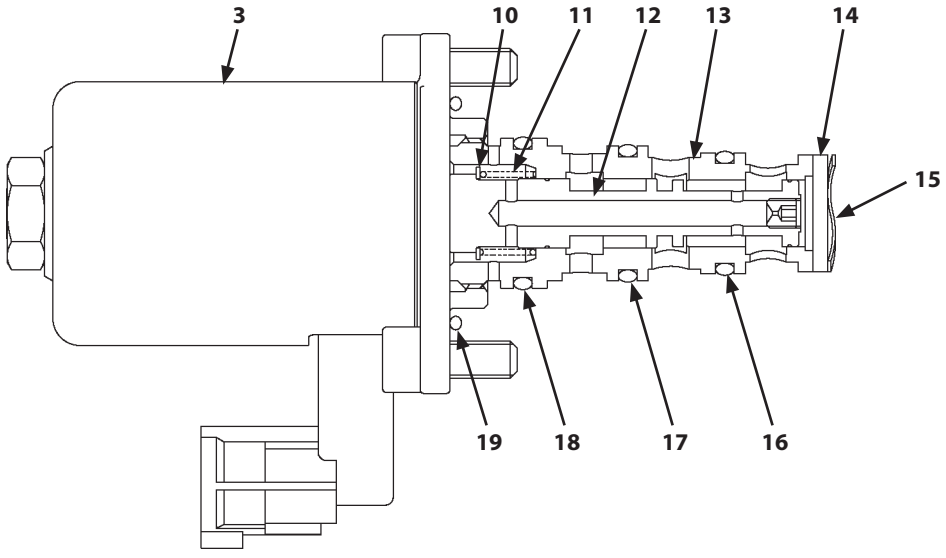

WDFY-03-09-015-1 ja

3. Connect the both ends of pipe (13).
   : 17 mm
   : 25 N·m
4. Connect hose (16).
   : 19 mm
   : 30 N·m

## Structure of 2-Spool Solenoid Valve Unit




WDFY-03-09-016-1 ja




WDAA-03-13-013-2 ja

| Symbol | Part Name | Q'ty | Wrench Size | Tightening Torque | Remark |
|---|---|---|---|---|---|
| | | | mm | N·m | |
| 1 | Body | 1 | | | |
| 2 | Socket Bolt | 4 | : 2.5 | 5 to 7 | |

## Removal of Signal Control Valve

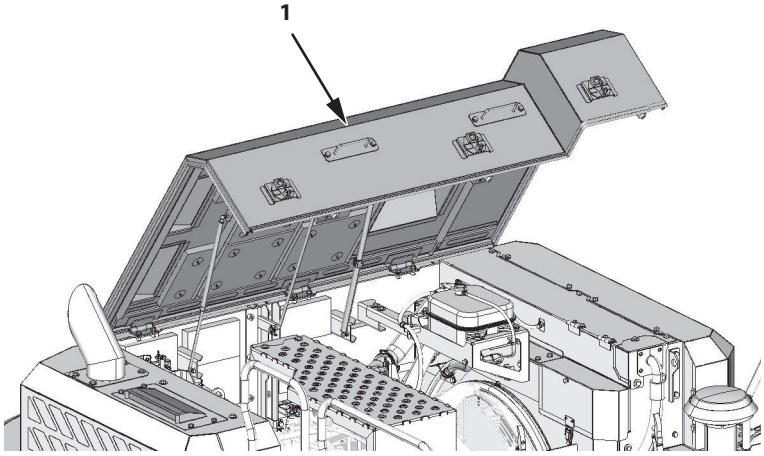
### IMPORTANT

**There is oil inside hoses and pipes. When removing them, collect oil with a container to avoid spillage of oil.**

### IMPORTANT

**When you remove hoses and pipes, put plugs into their openings. Also, put tags on connectors, hoses and pipes so that they can be put back into their original locations during reassembling. If fasteners or clips which tie hoses together are removed, put them back after all hoses are re-connected.**

1. Set the machine position for inspection and maintenance. (Refer to "Preparation before Inspection and Maintenance"W1-5-1-1.)
2. **CAUTION**
   **Release any pressure in the hydraulic oil tank. (Refer to "Pressure Release from Hydraulic Oil Tank"W1-5-3-1.)**
3. Open engine cover (1).




WDD7-03-12-250-1 ja

4. Remove bolts, washers (7) (4 used). Remove cover (8).
   : 17 mm
5. Remove bolts, washers (5) (4 used). Remove cover (6).
   : 17 mm
6. Remove bolts, washers (2) (5 used) and rubber plates (3) (3 used). Remove cover (4).
   : 17 mm

## Removal of Aftertreatment Device

### IMPORTANT

**When you remove hoses and pipes, put plugs into their openings. Also, put tags on connectors, hoses and pipes so that they can be put back into their original locations during reassembling. If fasteners or clips which tie hoses together are removed, put them back after all hoses are re-connected.**

1. Set the machine position for inspection and maintenance. (Refer to "Preparation before Inspection and Maintenance"W1-5-1-1.)
2. **IMPORTANT**

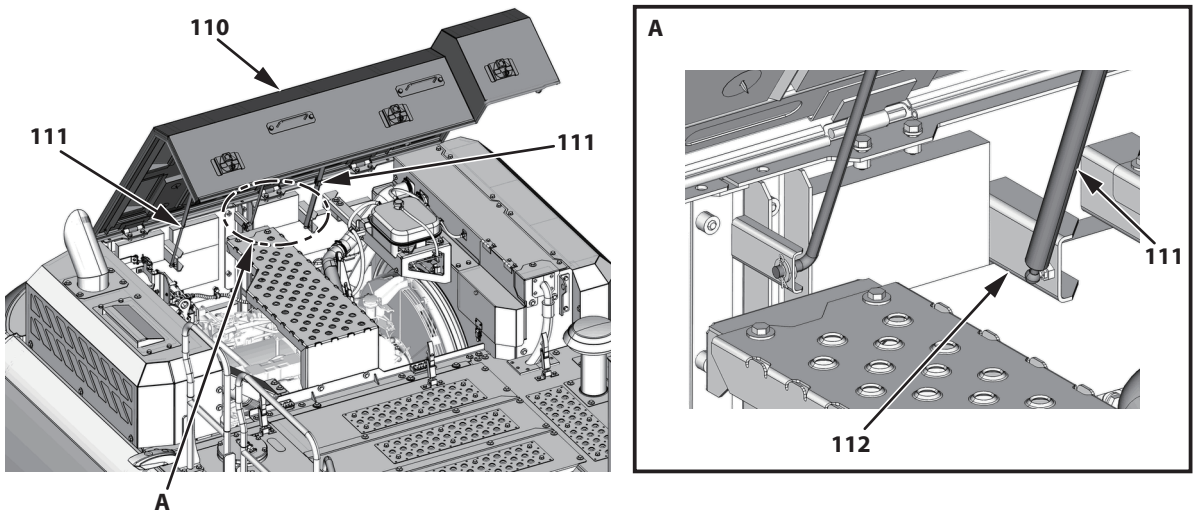
   **After stopping the engine, the DEF pump continues to be operated for a specified time in order to return DEF from the hose to the DEF tank. Start the work more than 5 minutes after the engine is stopped.**

3. Open engine cover (110).
4. **CAUTION**

   **Engine cover (110) weight: 75 kg**

   Attach nylon slings onto engine cover (110), then hoist and hold it.

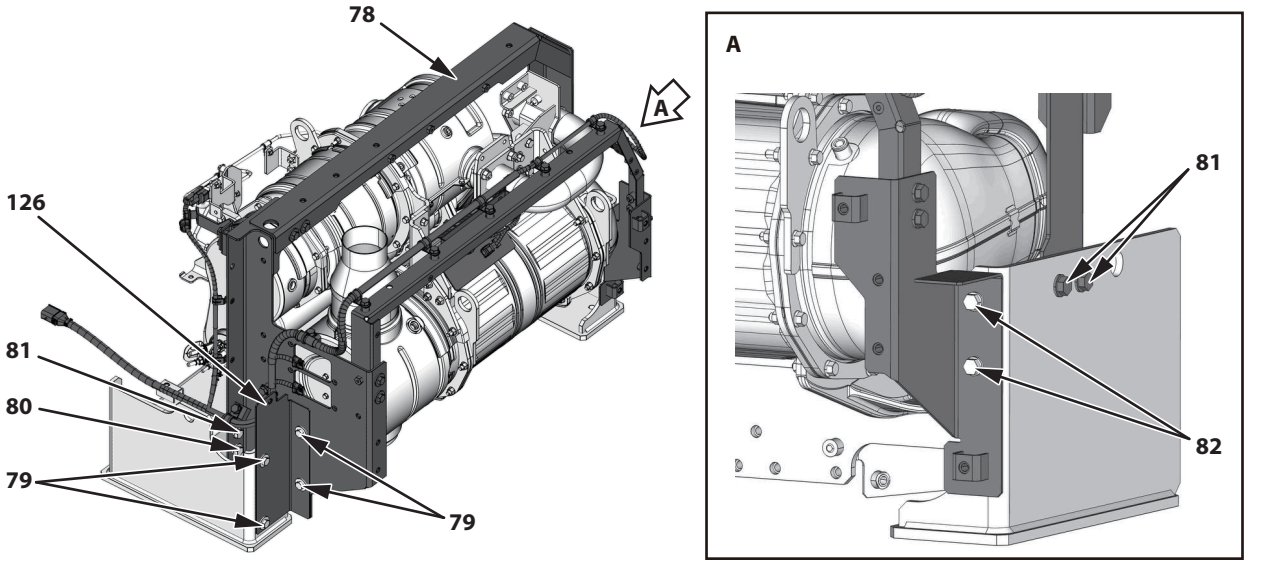
5. Remove the bracket (112) sides of cylinders (111) (2 used).
   : 12 mm




WDD7-03-05-119-5 ja

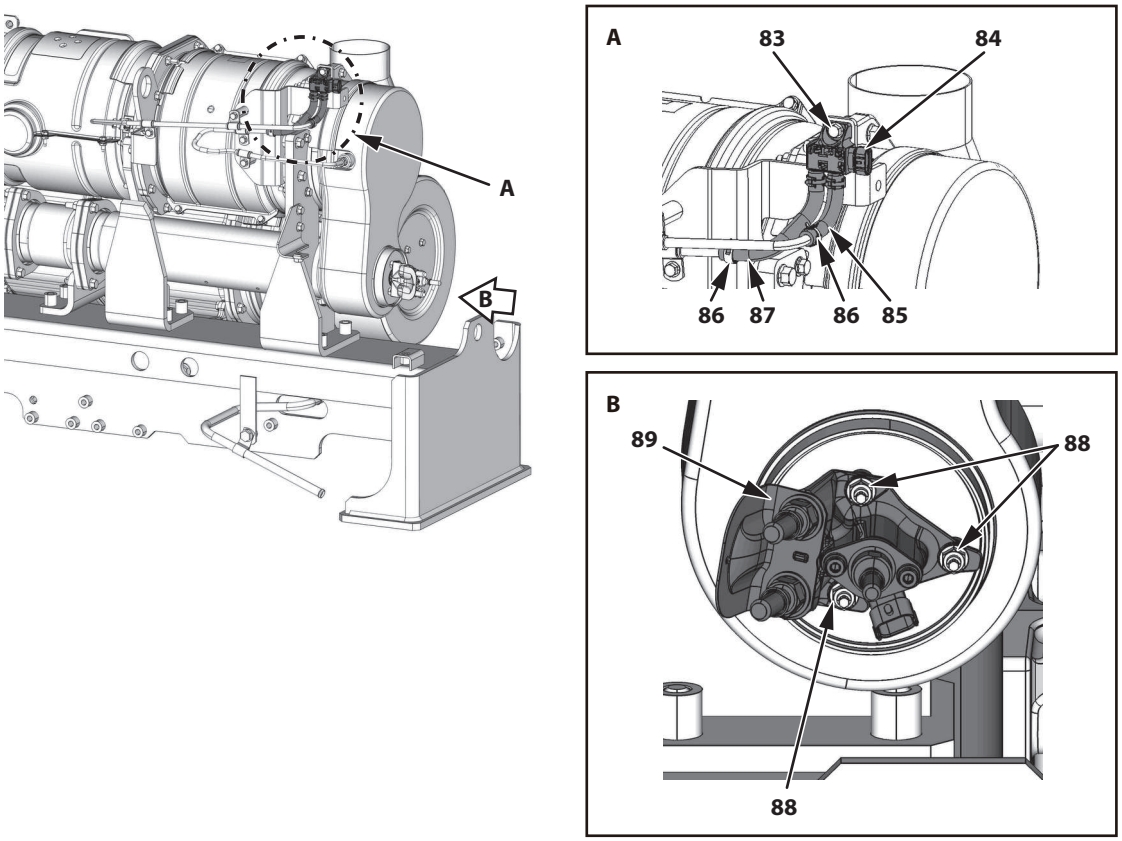
6. Move stay (115) to service position (a).
7. Remove bolt, washer (113).
   : 17 mm
8. Rotate bracket (114) 180 degrees and install with bolt, washer (113).
   : 17 mm
   : 50 N·m

: 17 mm, 19 mm



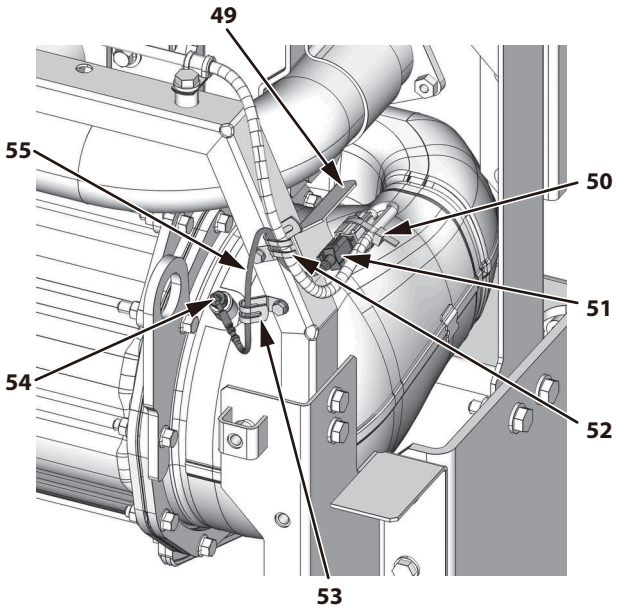

WDD7-03-14-120-1 ja

51. Remove clips (86) (2 used). Disconnect hoses (85, 87).
52. Remove bolt (83). Remove differential pressure sensor (84).
    : 10 mm
53. Remove nuts (88) (3 used). Remove dosing module (89).
    : 3/8 in




WDD7-03-14-121-1 ja

54. Remove bolts, washers (91) (2 used). Remove clamp (92).
    : 17 mm

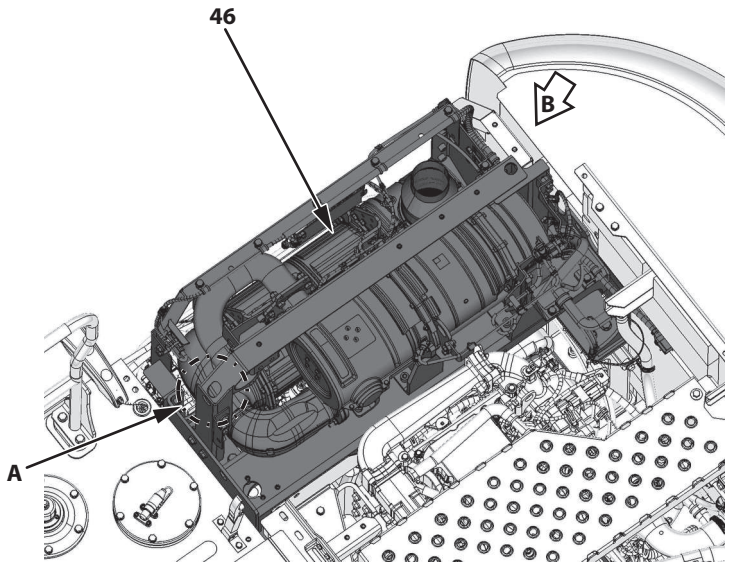


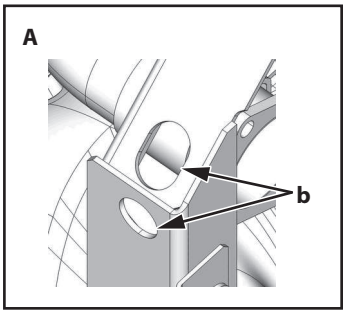

WDD7-03-14-115-1 ja

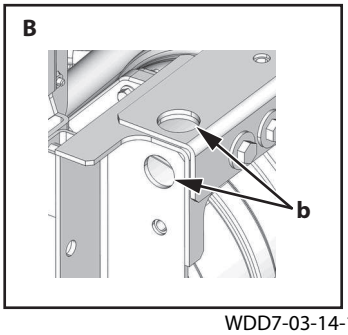
34. **CAUTION**

**The aftertreatment device (46) assembly weight: 230 kg**

Install shackles (2 used) to lifting holes (b) (4 places). Attach nylon slings to the shackle. Hoist the aftertreatment device (46) assembly.



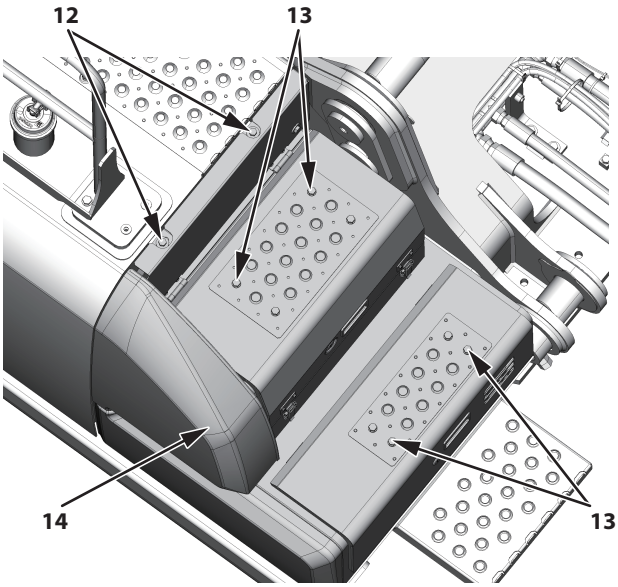

WDD7-03-14-113-1 ja

b- Lifting Hole

35. Install the aftertreatment device (46) assembly with washers (48) (7 used) and bolts (47) (7 used).

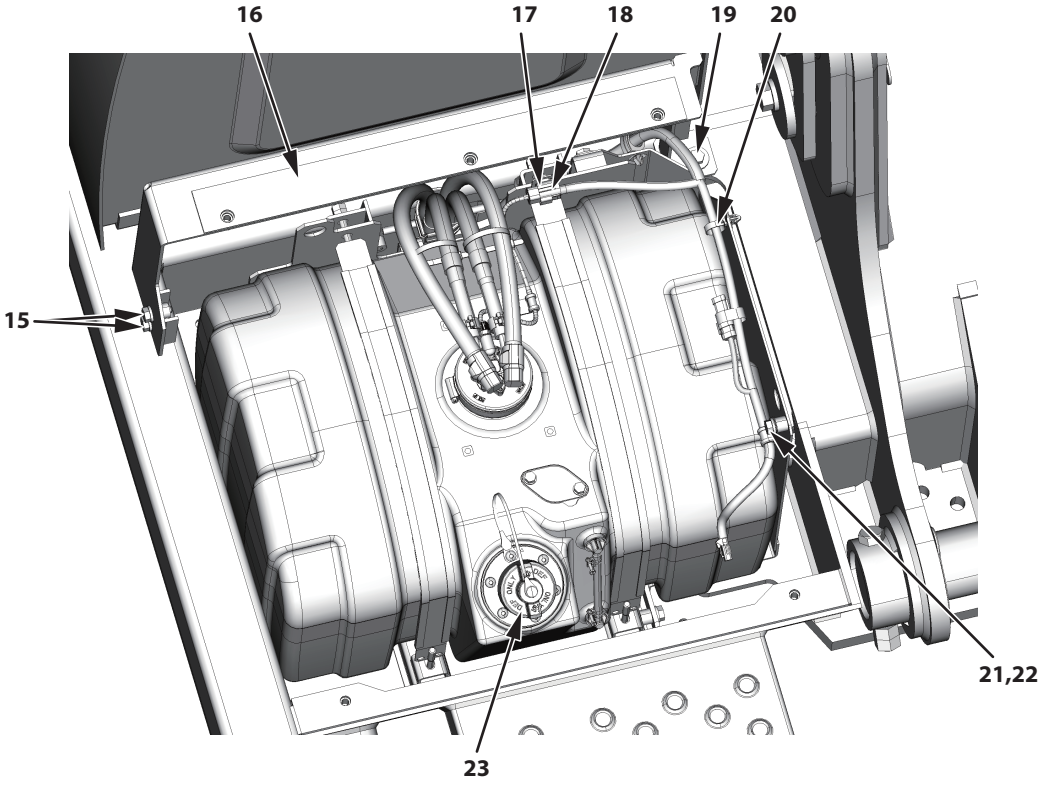
: 22 mm

: 180 N·m




WDFY-03-12-002-1 ja

11. Remove bolts, washers (15) (2 used) and bolt, washer (19). Remove support (16).
    : 17 mm
12. Remove bolt, washer (21) and clip (22). Remove clip band (20).
    : 17 mm
13. Remove connector (18) from clip (17). Disconnect connector (18).
14. Remove cap (23).




WDFY-03-12-003-1 ja

15. **CAUTION**
    **Remove cover (25) while holding cover (25). Do not drop cover (25).**

## Removal of DEF Tank Suction Filter

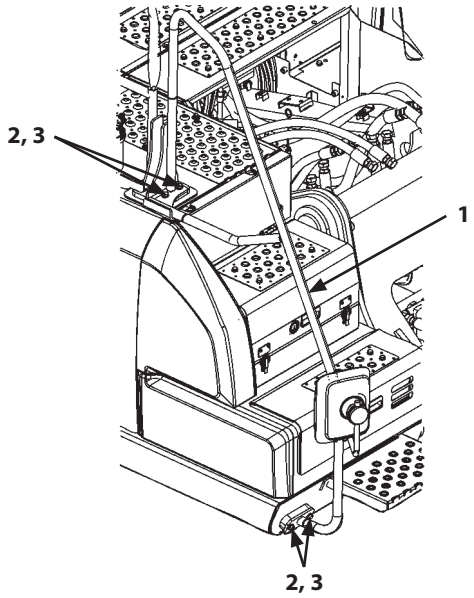
### IMPORTANT

**When you remove hoses and pipes, put plugs into their openings. Also, put tags on connectors, hoses and pipes so that they can be put back into their original locations during reassembling. If fasteners or clips which tie hoses together are removed, put them back after all hoses are re-connected.**

1. Set the machine position for inspection and maintenance. (Refer to "Preparation before Inspection and Maintenance"W1-5-1-1.)
2. **IMPORTANT**

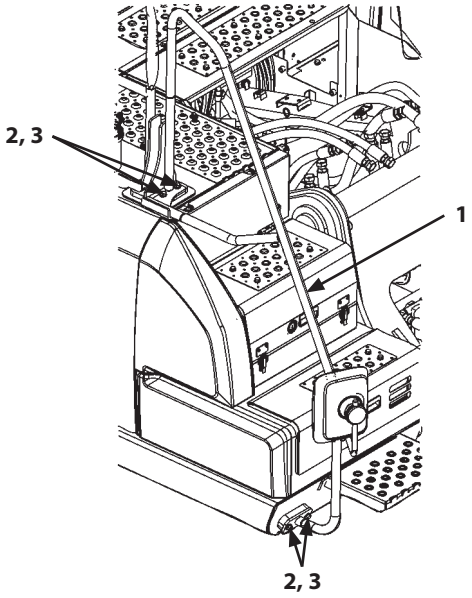
   **After stopping the engine, the DEF pump continues to be operated for a specified time in order to return DEF from the hose to the DEF tank. Start the work more than 5 minutes after the engine is stopped.**

3. Remove bolts (2) (4 used) and washers (3) (4 used). Remove the handrail (1) assembly.
   : 19 mm




WDC150-03-15-001-1 ja

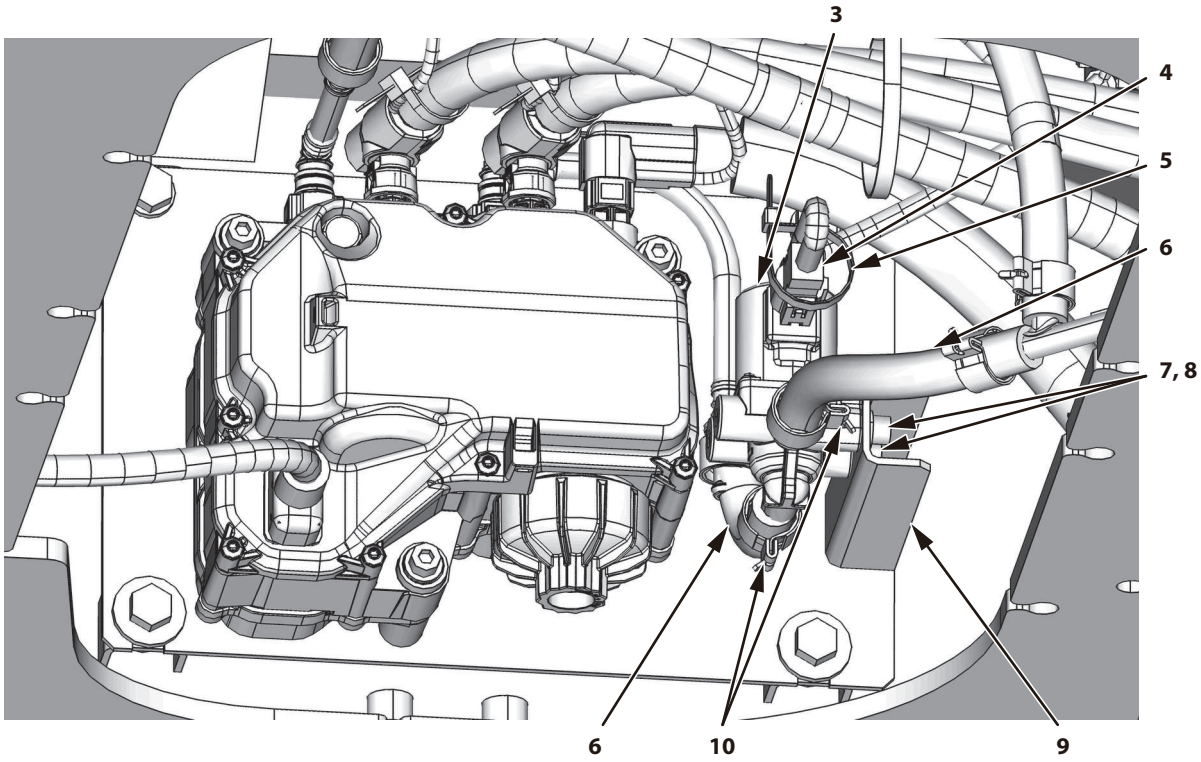
4. Open covers (4, 5).
5. Disconnect connector (7).
6. Remove bolts, washers (6) (3 used) and bolts, washers (8) (2 used).
   : 17 mm




WDC150-03-15-001-1 ja

## Installation of Coolant Control Valve

1. Install coolant control valve (3) to bracket (9) with washers (8) (2 used) and socket bolts (7) (2 used).
   : 6 mm
   : 22 N·m
2. Connect hoses (6) (2 used). Install clips (10) (2 used).
3. Connect connector (4). Install clip band (5).

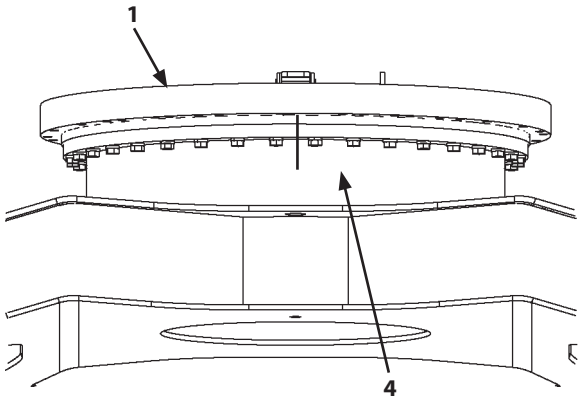


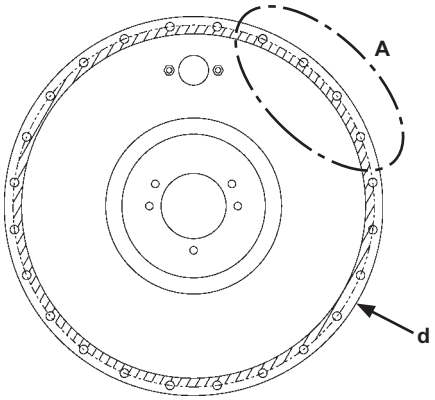
WDD7-03-16-002-1 ja

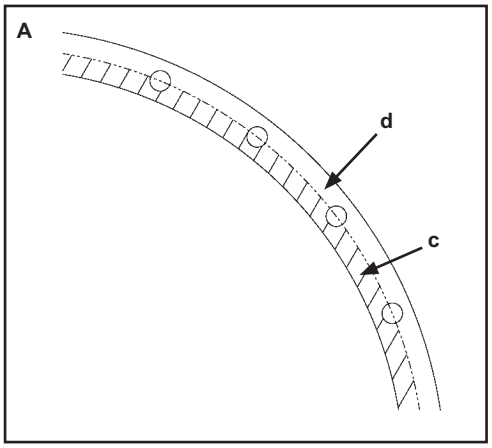
4. Bleed air from the DEF defrosting piping. (Refer to "Air Bleeding from the Diesel Exhaust Fluid Defrosting Piping"W1-4-6-1.)
5. **IMPORTANT**
   **Check the coolant level. Start the engine and check each part for any water leakage.**
6. Install cover (1) with bolts, washers (2) (10 used).
   : 17 mm
   : 50 N·m

## Installation of Swing Bearing

1. Clean the mounting surfaces of track frame (4) and swing bearing (1).
2. Apply THREEBOND #1102 onto swing bearing (1) mounting surface (d) of track frame (4).




WDDQ-04-01-001-3 ja

c- THREEBOND Applying Surface

d- Swing Bearing (1) Mounting Surface

3. **CAUTION**

**Swing bearing (1) weight: 505 kg**

Install special tools (ST 0050) (3 used) to swing bearing (1) with the swing bearing (1) outer race mounting bolts (b) (3 used) and nuts (3 used). Attach wire ropes onto special tools (ST 0050) (3 used). Hoist swing bearing (1).

: 41 mm

## Removal of Travel Device

### IMPORTANT

**There is oil inside hoses and pipes. When removing them, collect oil with a container to avoid spillage of oil.**

### IMPORTANT

**When you remove hoses and pipes, put plugs into their openings. Also, put tags on connectors, hoses and pipes so that they can be put back into their original locations during reassembling. If fasteners or clips which tie hoses together are removed, put them back after all hoses are re-connected.**

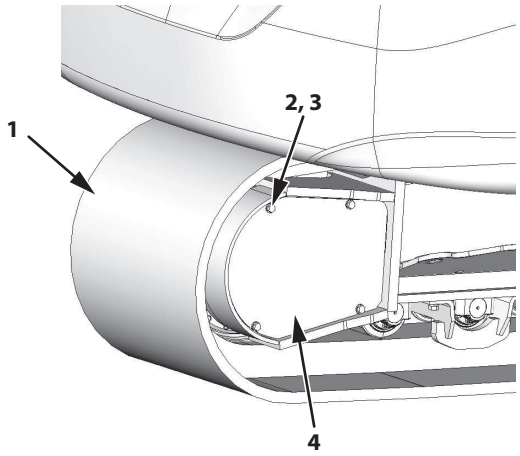
1. Start work under the condition where track link (1) is removed. (Refer to "Removal of Track"W4-6-1-1.)
2. Set the machine position for inspection and maintenance. (Refer to "Preparation before Inspection and Maintenance"W1-5-1-1.)
3. **CAUTION**

   **Release any pressure in the hydraulic oil tank. (Refer to "Pressure Release from Hydraulic Oil Tank"W1-5-3-1.)**
4. Remove bolts (2) (4 used) and washers (3) (4 used). Remove cover (4).

   : 22 mm

   *NOTE*

   *LOCTITE #263 has been applied onto bolt (2).*




WDFY-04-02-005-1 ja

5. Disconnect hoses (6) (2 used).

   : 41 mm
6. Disconnect hose (7).

   : 27 mm
7. Disconnect hose (8).

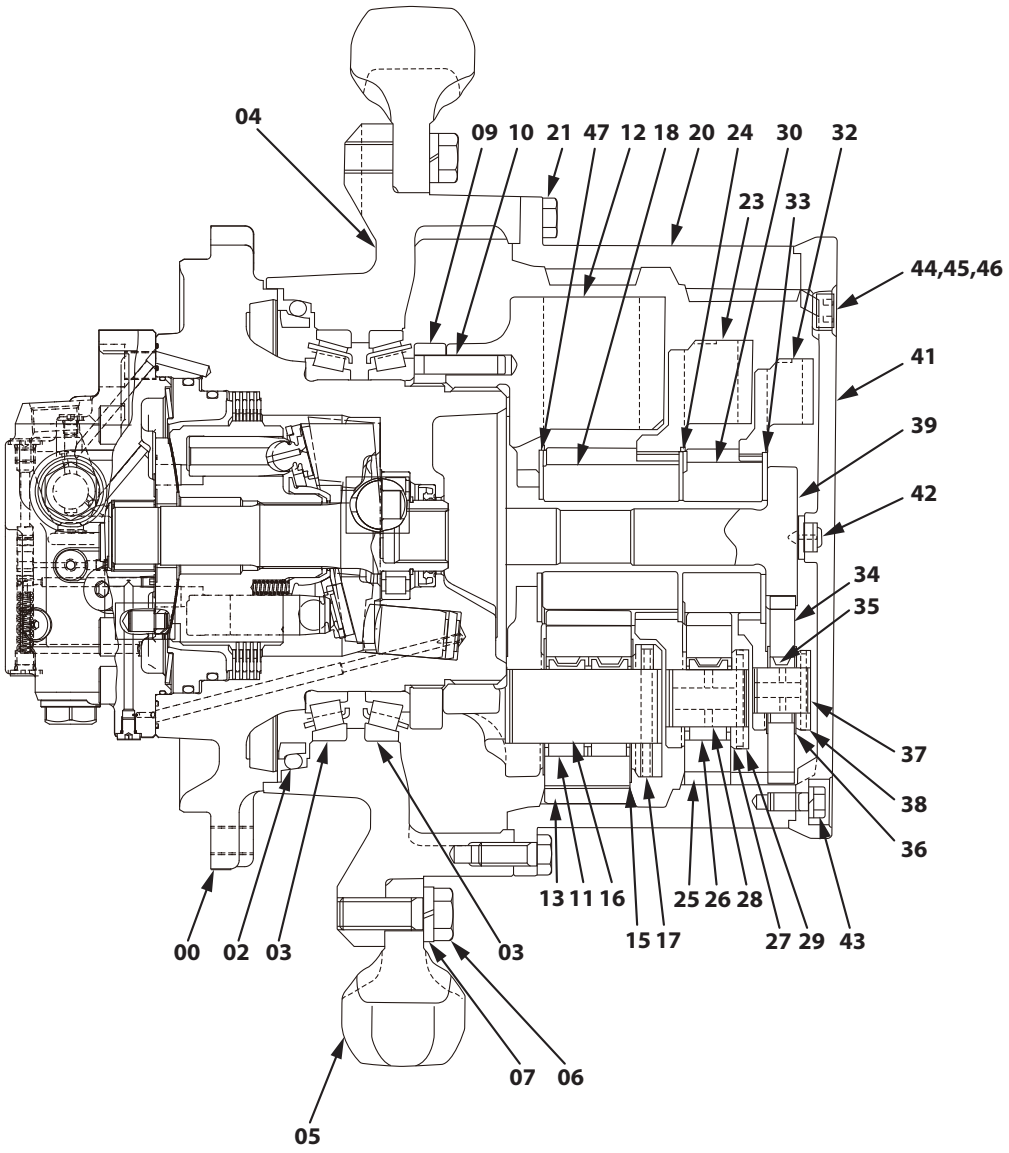
   : 17 mm
8. **CAUTION**

   **Travel device (5) weight: 470 kg**

   Attach nylon slings onto travel device (5), then hoist and hold it. Remove bolts (9) (16 used) and washers (10) (16 used). Remove travel device (5) from track frame (11).

   : 30 mm
9. Remove the adapters attached to travel device (5) if necessary.

## Assembly of Travel Device




WDD7-04-02-002-1 ja

00- Travel Motor
02- Floating Seal
03- Roller Bearing (2 Used)
04- Drum
05- Sprocket
06- Bolt (22 Used)
07- Spring Washer (22 Used)
09- Bearing Nut
10- Knock Pin
11- Needle Bearing (8 Used)
12- Third Stage Carrier
13- Planetary Gear (4 Used)
15- Thrust Plate (8 Used)
16- Pin (4 Used)
17- Spring Pin (4 Used)
18- Second Stage Sun Gear
20- Ring Gear
21- Bolt (34 Used)
23- Second Stage Carrier
24- Spacer
25- Planetary Gear (3 Used)
26- Needle Bearing (3 Used)
27- Thrust Plate (6 Used)
28- Pin (3 Used)
29- Spring Pin (3 Used)
30- First Stage Sun Gear
32- First Stage Carrier
33- Spacer
34- Planetary Gear (3 Used)
35- Needle Bearing (3 Used)
36- Thrust Plate (6 Used)
37- Pin (3 Used)
38- Spring Pin (3 Used)
39- Shaft
41- Cover
42- Stopper
43- Bolt, Washer (20 Used)
44- Plug
45- Plug
46- Plug
47- Spacer

### IMPORTANT

**Before assembling, apply gear oil to the parts in order to prevent them from seizing.**

1. **CAUTION**

   **Since you may get injured by flying metallic shards if you hammer on metallic parts, wear personal protective equipment such as safety glasses, a hard hat, etc.**

*NOTE*

*When the brake release oil passage (c) side is faced up, the thick part of swash plate (18) comes to the upper side. Under such a condition, if the housing (00) assembly is moved sideways, swash plate (18) suddenly comes off in some cases.*

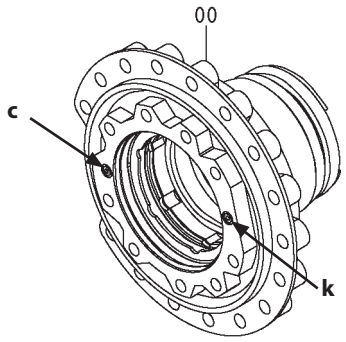
13. **CAUTION**

**When removing swash plate (18) by applying air, hold piston (03) with a cloth in order to prevent it from popping out.**

**IMPORTANT**

**When swash plate (18) cannot be removed, apply air 100 to 300 kPa through piston oil passage (k). Swash plate (18) and piston (03) are removed.**

Remove swash plate (18) from housing (00).




WDAA-04-02-008-3 ja

c- Brake Release Oil Passage k- Piston Oil Passage

14. Remove balls (09) (2 used) and piston (03) from housing (00) by using a magnet.
15. Tap the bottom of the inner diameter spline hole of shaft (07) by using a bar and a plastic hammer. Remove shaft (07) together with roller bearing (10) from housing (00).
16. **IMPORTANT**

**Oil seal (01) cannot be reused.**

Remove oil seal (01) from housing (00) by using a screw driver.

*NOTE*

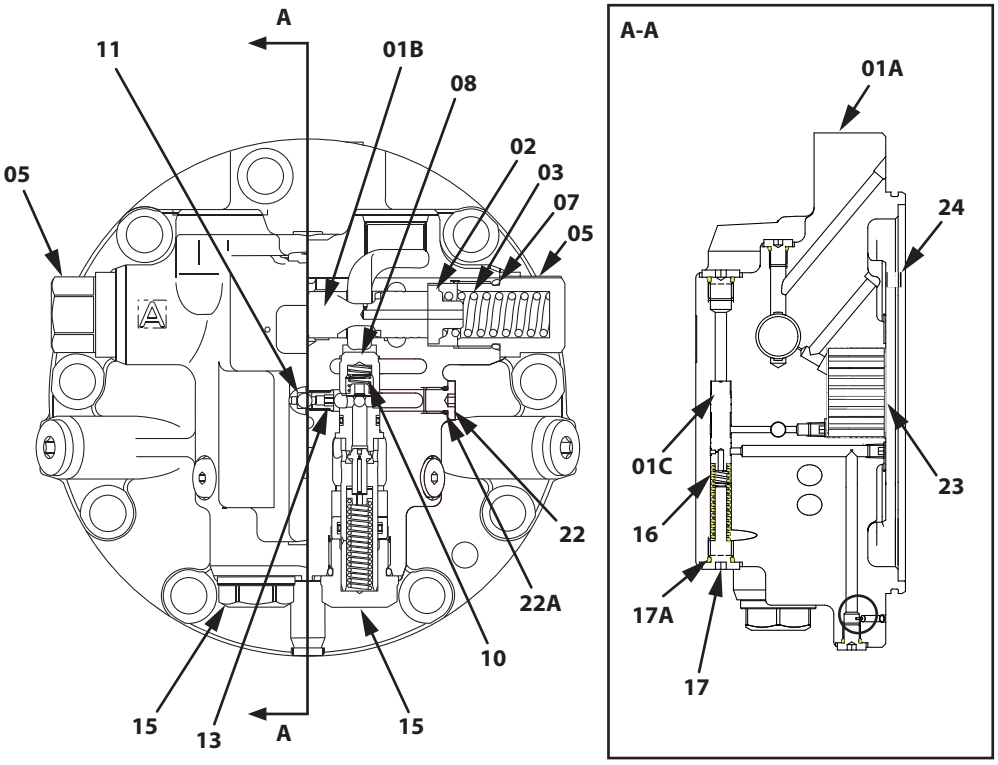
*THREEBOND #1104 or #1215 has been applied to the outer circumference of oil seal (01).*

17. Remove retaining ring (08) from shaft (07).
18. **IMPORTANT**

**When removing shaft (07) from roller bearing (10), do not drop shaft (07).**

Secure the inner race part of roller bearing (10) on shaft (07) in a vise opening. Remove shaft (07) from roller bearing (10) by using a bar and a plastic hammer.

## Assembly of Brake Valve




WDD7-04-02-006-1 ja

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01A- | Casing | 05- | Plug (2 Used) | 13- | Seat | 22- | Plug |
| 01B- | Spool | 07- | O-Ring (2 Used) | 15- | Relief Valve (2 Used) | 22A- | O-Ring |
| 01C- | Spool | 08- | Poppet (2 Used) | 16- | Spring | 23- | Needle Bearing |
| 02- | Stopper (2 Used) | 10- | Spring (2 Used) | 17- | Plug | 24- | Knock Pin (2 Used) |
| 03- | Spring (2 Used) | 11- | Ball | 17A- | O-Ring | | |

### IMPORTANT

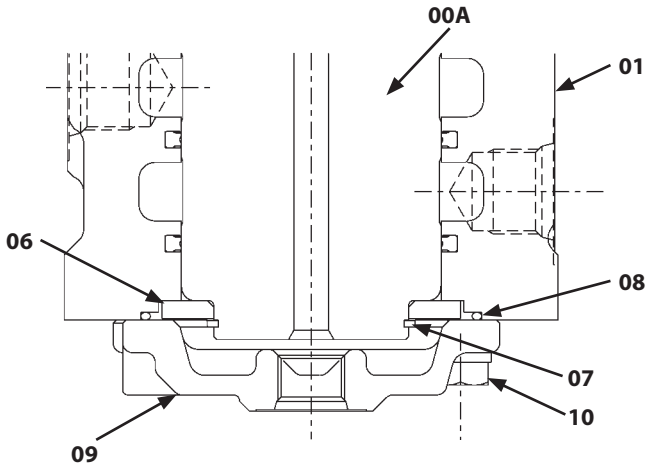
**Before assembly, apply hydraulic oil to the parts in order to prevent them from seizing.**

1. Install spool (01B) to near the center of casing (01A).
2. Install O-ring (07), spring (03), and stopper (02) to plug (05). Install the plug (05) assembly to casing (01A) with one thread tighten.

   *NOTE*

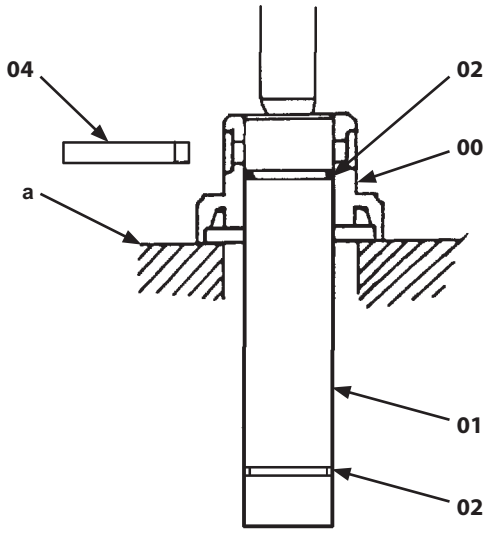
   *If plug (05) is fully tightened, it is difficult to install other plug (05) as spool (01B) is pushed.*

3. Install O-ring (07), spring (03), and stopper (02) to other plug (05). Install the plug (05) assembly to casing (01A) and tighten by hand.
4. Tighten plugs (05) (2 used).
   : 36 mm
   : 540 N·m
5. Install ball (11) to casing (01A).
6. Degrease the thread surface and seat (13) of casing (01A). Apply LOCTITE #263 onto the thread part of seat (13).
7. Install seat (13) to casing (01A).
   : 5 mm
   : 15 N·m
8. Install O-ring (22A) to plug (22). Install plug (22) to casing (01A).
   : 6 mm




WDAA-04-03-004-1 ja

5. Install retaining ring (07) to spindle (00A).
6. Install cover (09) to body (01) with bolts, washers (10) (4 used).
   : 17 mm
   : 50 N·m




W105-03-05-010-1 ja

a- Wooden Block

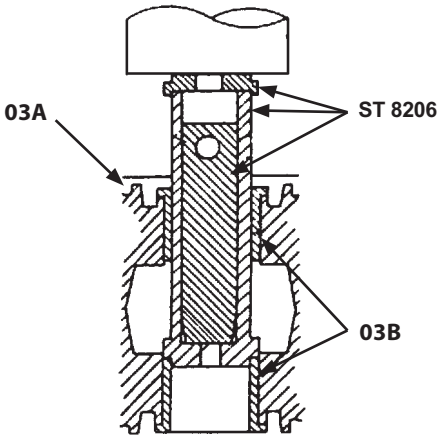
9. **CAUTION**

**Idler (03A) weight: 120 kg**

**IMPORTANT**

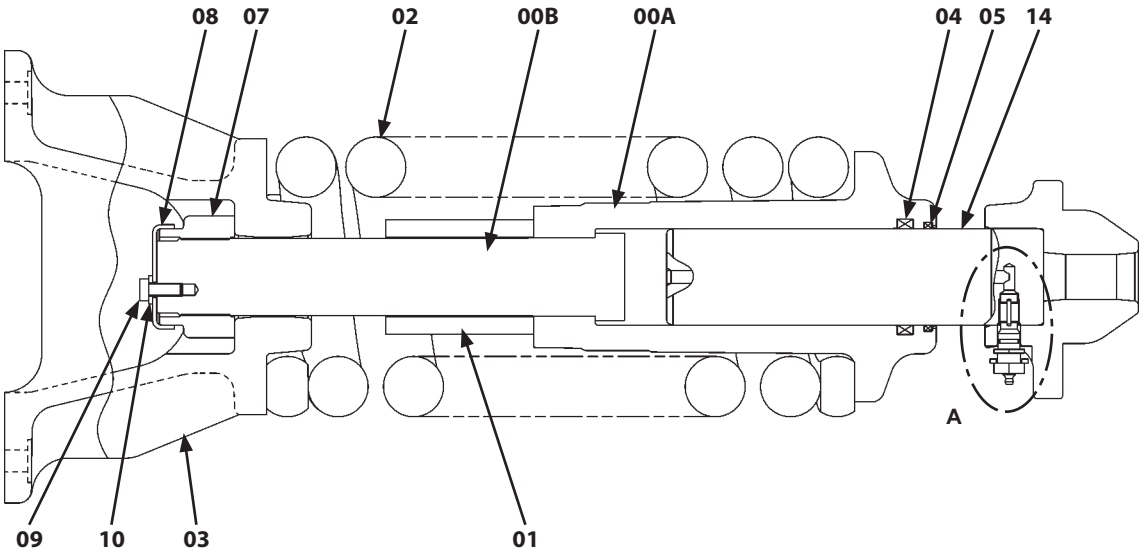
**Do not remove bushings (03B) unless necessary.**

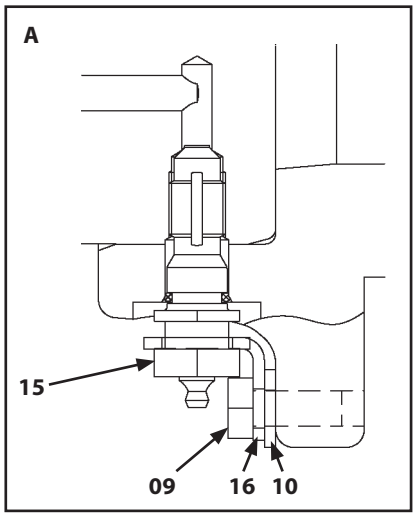
When replacing bushing (03B), remove bushing (03B) by using special tool (ST 8206) and a pressing machine.




W105-03-05-011-1 ja

## Assembly of Track Adjuster




WDDQ-04-04-003-1 ja

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 00A- | Cylinder | 03- | Yoke | 08- | Bracket | 15- | Valve |
| 00B- | Rod | 04- | Seal | 09- | Bolt (2 Used) | 16- | Bracket |
| 01- | Spacer | 05- | Dust Seal | 10- | Washer (2 Used) | | |
| 02- | Spring | 07- | Nut | 14- | Piston | | |

**CAUTION**

**The spring force is extremely large. Carry out the disassembly and assembly work carefully. In addition, inspect the special tool for any damage thoroughly in order to perform the work safely.**

1. **CAUTION**

   **Cylinder (00A) weight: 31 kg**

   Apply grease to the inner surface of cylinder (00A). Install rod (00B) to cylinder (00A) by using a pressing machine.

   *NOTE*

   *Pushing force: 93 to 191 kN*

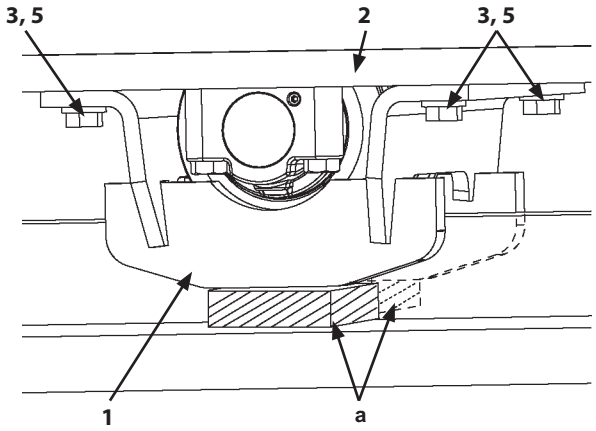
2. Apply grease to seal (04) and dust seal (05). Install seal (04) and dust seal (05) to cylinder (00A).
3. Install spacer (01) to rod (00B).

## Removal of Lower Roller

1. Set the machine position for inspection and maintenance. (Refer to "Preparation before Inspection and Maintenance"W1-5-1-1.)
2. Put the matching marks on track guard (1) and track frame (2).
3. **CAUTION**

   **If removing bolts (3) without holding track guard (1), track guard (1) will fall down.**

   Place wooden blocks (a) under track guard (1).
4. Remove bolts (3) (4 used), spring washers (4) (4 used), and washers (5) (4 used) from track guard (1).
   : 32 mm



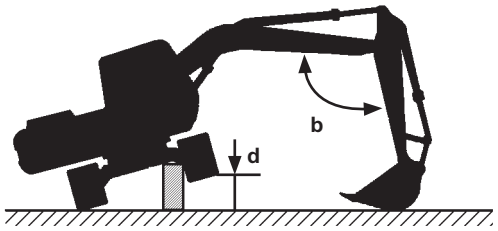

WDAA-04-05-001-1 ja

a- Wooden Block

5. **CAUTION**

   **Securely support the raised machine by using blocks.**

   Raise the machine. The jacking up position is as shown in illustration A.




A

M104-07-067-9 ja

b- 90 to 110˚ d- 300 mm

6. **CAUTION**

   **Be aware that the pressure inside the track adjuster cylinder is high. If valve (6) is loosened too much or too quickly, valve (6) or grease may fly out posing a risk of injury. Gradually loosen valve (6) while keeping your face and body away from it. Do not loosen grease fitting (7).**

   **IMPORTANT**

   **Loosen valve (6) by 1 to 1.5 turns. Do not loosen it any further.**

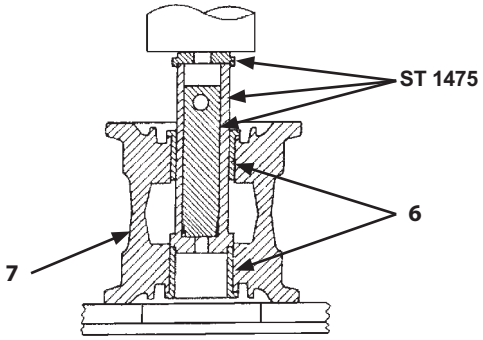
8. **CAUTION**

**Roller (7) weight: 33 kg**

**IMPORTANT**

**Do not remove bushing (6) unless necessary.**

Remove bushing (6) by using special tool (ST 1475) and a pressing machine.




W178-02-11-269-1 ja

## Installation of Track

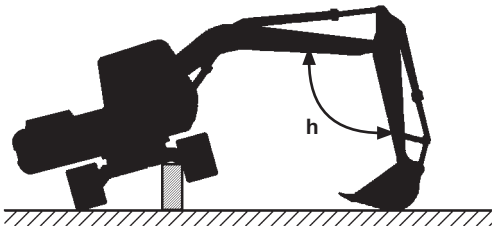
### IMPORTANT

**Perform step 12 to step 16 when link (10) has been disassembled.**

1. **CAUTION**

   **Securely support the raised machine by using blocks.**

   Raise the machine. The jacking up position is as shown in illustration A.

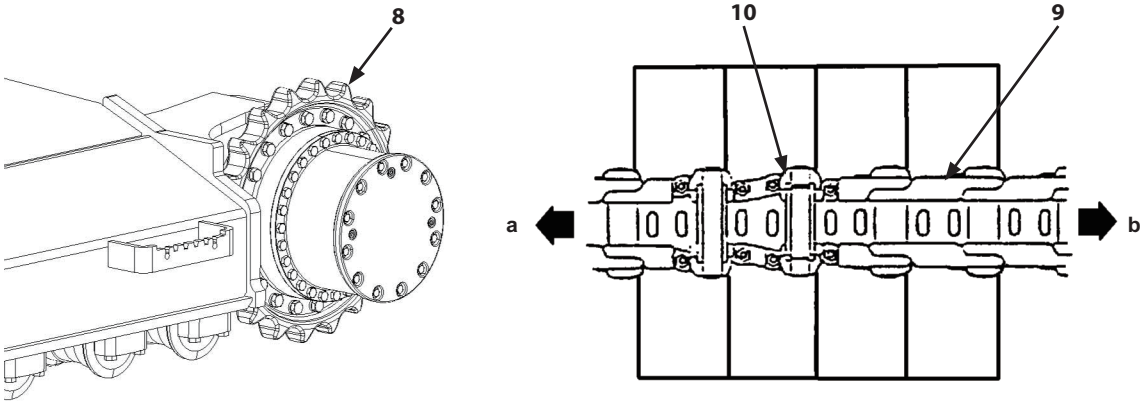



A

M104-07-067-8 ja

h- 90 to 110°

2. Set the track link under the machine so that sprocket (8) meshes with the track link end. At this time, check the direction of the track links.
3. Lower the machine. Mesh the tips of sprocket (8), the lower roller, and the front idler with track link (9).
4. Set the track link straight.




WDDQ-04-06-009-1 ja

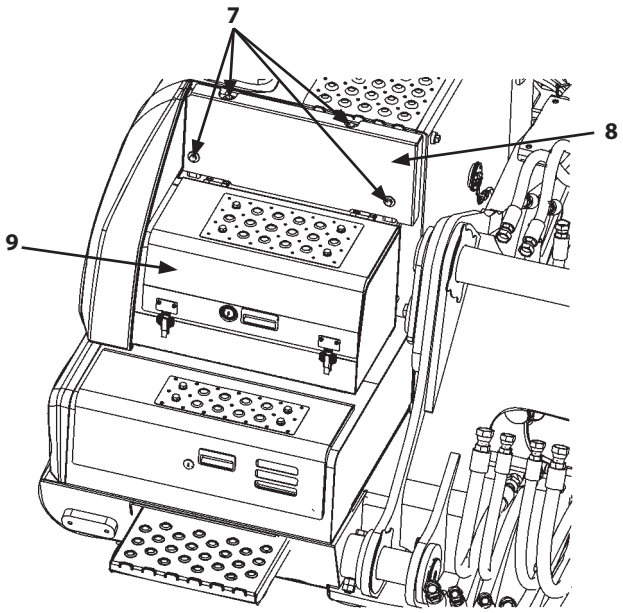
a- Front Idler Side

b- Sprocket (8) Side

5. **CAUTION**

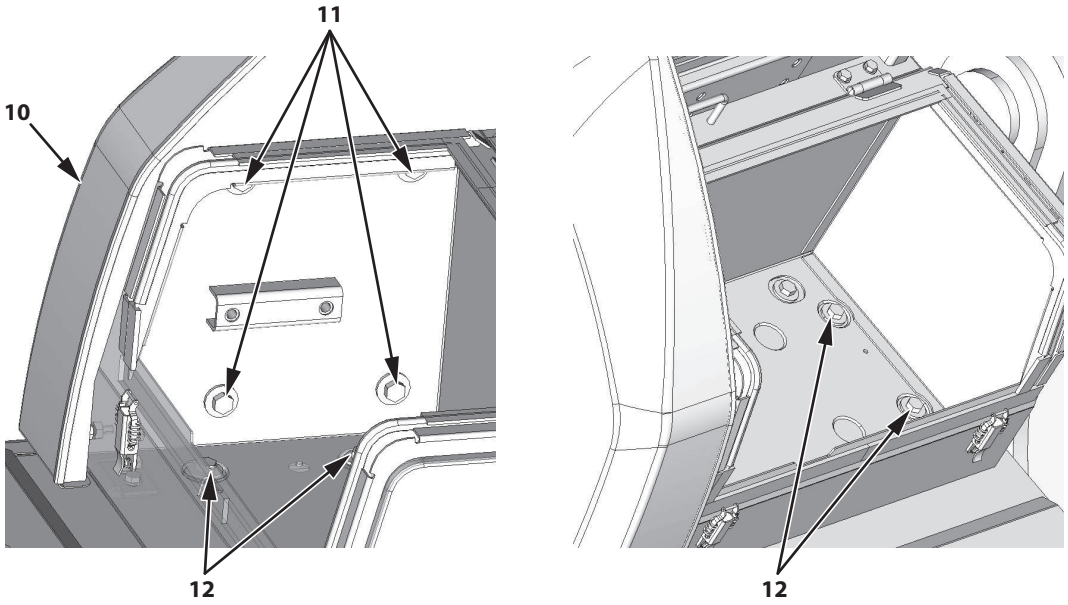
   **The track link assembly weight: 1980 kg**

   Hoist the connecting part of track link (9). Place it onto sprocket (8).




WDDQ-05-01-006-1 ja

10. Remove bolts, washers (11) (4 used). Remove cover (10).
    : 17 mm
11. Remove bolts, washers (12) (4 used).
    : 17 mm




WDFY-05-01-001-1 ja

12. Remove bolts, washers (24) (4 used). Close cover (9). Lock locks (25) (2 used) and the key.
    : 13 mm
13. Remove bolt, washer (26).
    : 17 mm

## Removal of Bucket

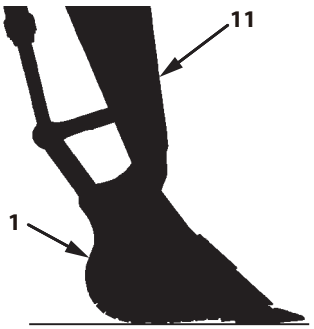
### IMPORTANT

**There is oil inside hoses and pipes. When removing them, collect oil with a container to avoid spillage of oil.**

### IMPORTANT

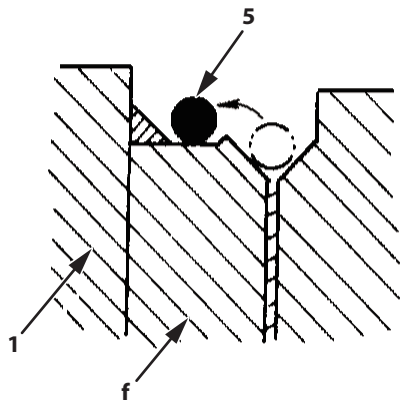
**When you remove hoses and pipes, put plugs into their openings. Also, put tags on connectors, hoses and pipes so that they can be put back into their original locations during reassembling. If fasteners or clips which tie hoses together are removed, put them back after all hoses are re-connected.**

1. Place the bottom of bucket (1) in contact with the ground, and set the machine position so that arm (11) is perpendicular to the ground.




WJBR-05-01-014-1 ja

2. Move O-rings (5) (4 used) to boss part (f) of bucket (1).




WDD7-05-01-009-1 ja

f- Boss Part

3. Remove nuts (7) (2 used) and bolt (6).
: 30 mm

4. **CAUTION**

**Since you may get injured by flying metallic shards if you hammer on metallic parts, wear personal protective equipment such as safety glasses, a hard hat, etc.**

Use a bar and hammer, and slowly pull out pin (8) to a position where link A (9) can be removed from bucket (1).

5. **CAUTION**

**Pin (8) weight: 39 kg**

Attach nylon slings onto pin (8) and hoist it. Remove pin (8).

11. Remove bolt (18), washer (19), plate (20), and block (21) from pin (15).
: 32 mm

12. **CAUTION**

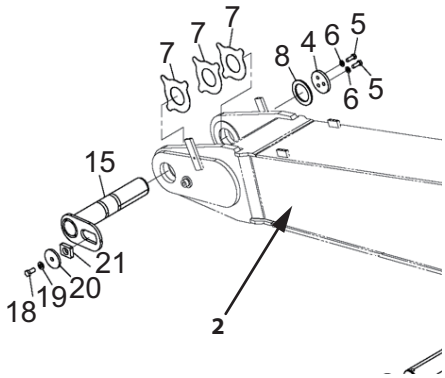
**Since you may get injured by flying metallic shards if you hammer on metallic parts, wear personal protective equipment such as safety glasses, a hard hat, etc.**

Slowly pull out pin (15) to a position where the arm (3) assembly can be removed from boom (2) using a bar and a hammer. Remove thrust plate (7) from arm (3).

13. **CAUTION**

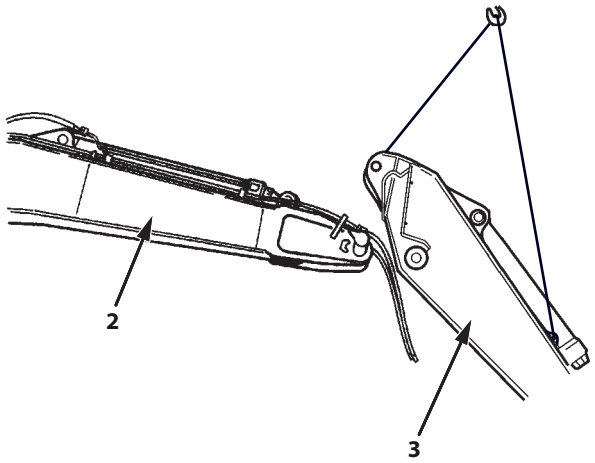
**Pin (15) weight: 50 kg**

Attach nylon slings onto pin (15). Remove pin (15).




WDD7-05-01-008-1 ja

14. Hoist and remove the arm (3) assembly from boom (2).



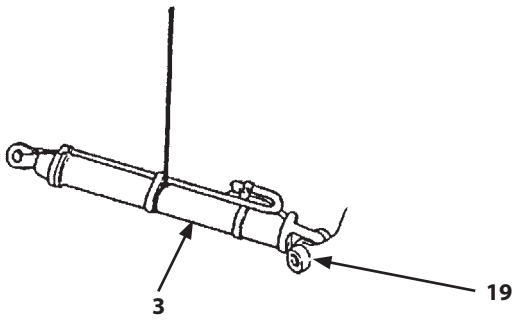

WJBR-05-01-011-1 ja

## Installation of Boom Cylinder

1. **CAUTION**

**Boom cylinder (3) weight: 300 kg**

Attach nylon slings onto boom cylinder (3) and hoist it. Fit the hole at the cylinder bottom side to the mounting hole on main frame (19).




WDDQ-05-02-013-1 ja

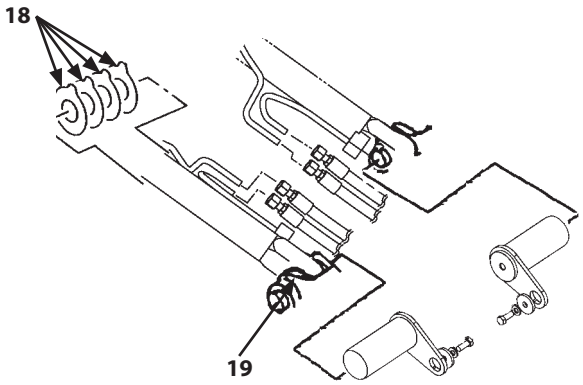
2. **IMPORTANT**

**Use one or more thrust plates (18) respectively at the right and left sides.**

Fit thrust plate (18) to the holes of the right and left sides at cylinder bottom side. Adjust the clearance between the cylinder bottom side and main frame (19) within 1 mm. At this time, fit thrust plate (18) (thickness: 1 mm) to the opposite side of the cab and adjust the clearance at the cab side.

*NOTE*

*Thrust plate (18) thickness: 1 mm, 2 mm*




WDDQ-05-02-012-3 ja

3. **CAUTION**

**Pin (14) weight: 22 kg**

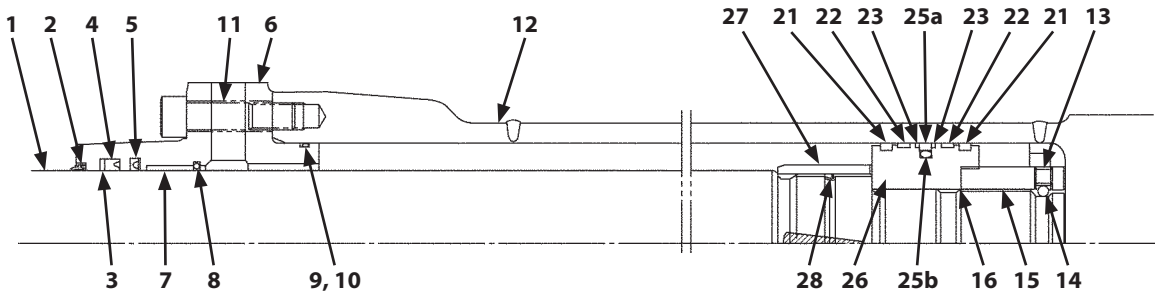
**CAUTION**

**Since you may get injured by flying metallic shards if you hammer on metallic parts, wear personal protective equipment such as safety glasses, a hard hat, etc.**

Attach nylon slings onto pin (14) and hoist it. Install pin (14) by using a bar and a hammer. Install plate (17), washer (16), and bolt (15) to pin (14).

: 27 mm

## Assembly of Boom Cylinder




W1V7-04-02-004-2 ja

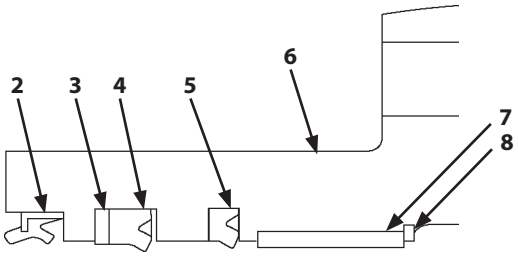
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1- | Cylinder Rod | 7- | Bushing | 13- | Set Screw | 23- | Backup Ring (2 Used) |
| 2- | Wiper Ring | 8- | Retaining Ring | 14- | Steel Ball | 25a- | Seal Ring |
| 3- | Backup Ring | 9- | Backup Ring | 15- | Nut | 25b- | O-Ring |
| 4- | U-Ring | 10- | O-Ring | 16- | Shim | 26- | Piston |
| 5- | Buffer Ring | 11- | Socket Bolt (12 Used) | 21- | Slide Ring (2 Used) | 27- | Cushion Bearing |
| 6- | Cylinder Head | 12- | Cylinder Tube | 22- | Slide Ring (2 Used) | 28- | Cushion Seal |

1. Install bushing (7) to cylinder head (6) by using special tool (ST 1197). Install retaining ring (8).
   Special Tool: ST 1197 (Rod Outer Diameter: 100 mm)
2. **IMPORTANT**

   **Check the direction to install.**

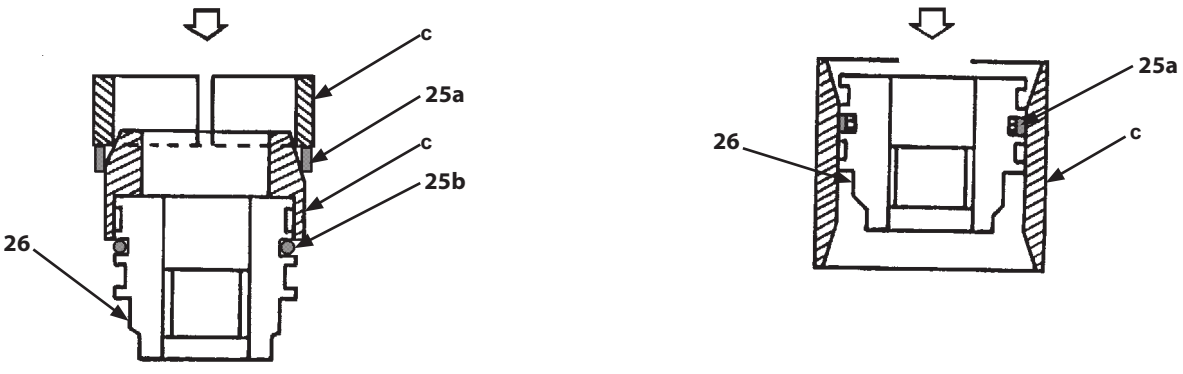
   Install U-ring (4), backup ring (3), and buffer ring (5) to cylinder head (6).

3. Install wiper ring (2) to cylinder head (6) by using special tool (ST 8027) and a plastic hammer.
   Special Tool: ST 8027 (Rod Outer Diameter: 100 mm)




WDDQ50-05-02-009-2 ja

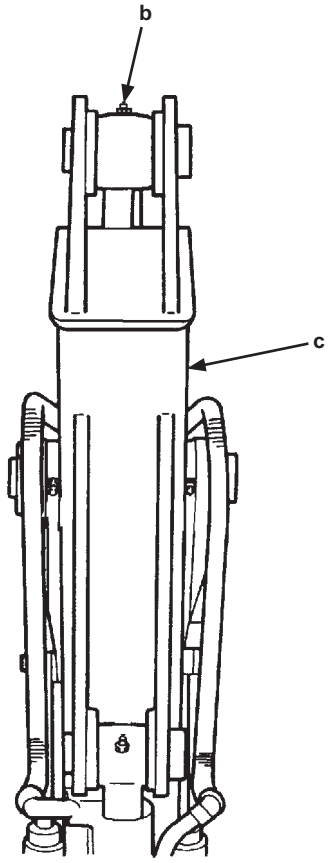
4. Install O-ring (10) and backup ring (9) to cylinder head (6).
5. Install O-ring (25b) and seal ring (25a) to piston (26) by using special tool (ST 2979). After installing seal ring (25a), adjust seal ring (25a) by using special tool (ST 2979).
   Special Tool: ST 2979 (Tube Inner Diameter: 145 mm)




WDDQ-05-02-010-1 ja

c- Special Tool (ST 2979)

17. Supply grease to grease fitting (b) of the cylinder rod side.




WDDQ-05-02-018-1 ja

b- Grease Fitting c- Arm

18. **IMPORTANT**

**After completing all the work, operate the arm cylinder to the stroke end several times and bleed air from the circuit.**

## Removal of Bucket Cylinder

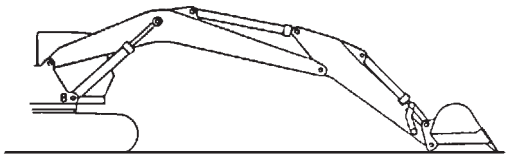
### IMPORTANT

**There is oil inside hoses and pipes. When removing them, collect oil with a container to avoid spillage of oil.**

### IMPORTANT

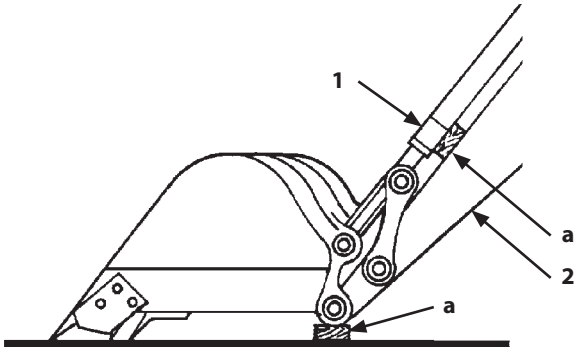
**When you remove hoses and pipes, put plugs into their openings. Also, put tags on connectors, hoses and pipes so that they can be put back into their original locations during reassembling. If fasteners or clips which tie hoses together are removed, put them back after all hoses are re-connected.**

1. Park the machine on a solid and level ground. Lower the boom with the arm cylinder and the bucket cylinder retracted. Lower the arm top and bucket teeth claw to the ground.



W105-04-02-001-1 ja

2. Place wooden blocks (a) (2 used) under the arm (2) end and between bucket cylinder (1) and arm (2). Stop the engine.




W178-02-11-287-1 ja

a- Wooden Block

3. **CAUTION**

**Pin (7) weight: 34 kg**

**CAUTION**

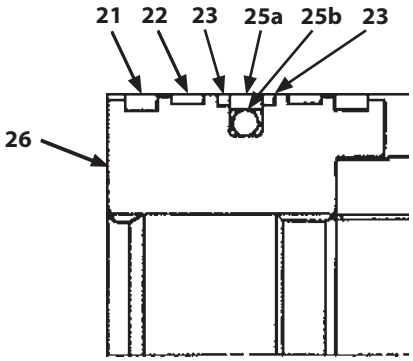
**Before removing pin (7), secure the links by using wires to prevent them from falling off.**

**CAUTION**

**Metal fragments may fly off when a hammer is used. Wear safety equipment, such as safety glasses, hard hat, etc. in order to prevent personal injury.**

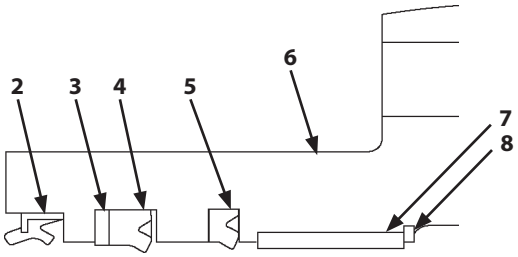
Remove nuts (6) (2 used) and bolt (4). Remove pin (7) by using a bar and a hammer. Remove thrust plates (5) (4 used).

: 32 mm




WDDQ50-05-02-015-3 ja

8. Install a protective tape onto the thread of cylinder rod (1) in order to protect the seal of cylinder head (6). Remove the cylinder head (6) assembly from cylinder rod (1).
9. Remove O-ring (10) and backup rings (9, 3) from cylinder head (6). Remove wiper ring (2), U-ring (4), buffer ring (5), and retaining ring (8).




WDDQ50-05-02-009-2 ja

10. **IMPORTANT**

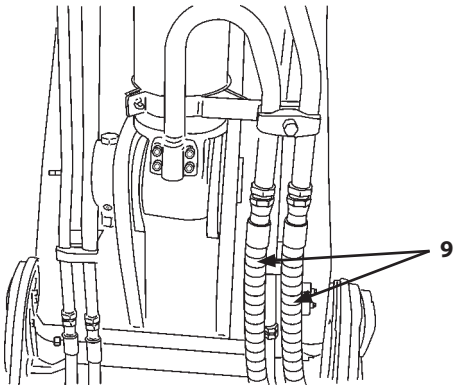
**Do not remove bushing (7) unless necessary.**

**IMPORTANT**

**Bushing (7) cannot be reused. If bushing (7) has been removed, replace it with the new one when assembling.**

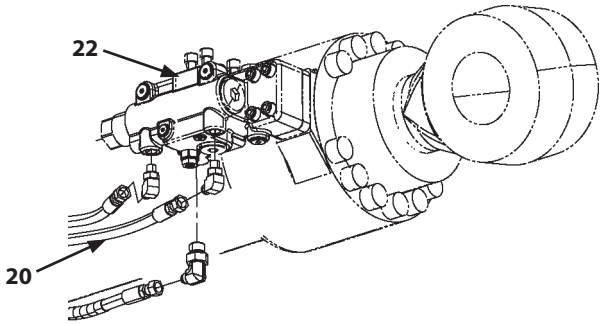
Remove bushing (7) from cylinder head (6) by using special tool (ST 8021).
Special Tool: ST 8021 (Rod Outer Diameter: 95 mm)

: 210 N·m




W1V1-04-01-004-3 ja

9. Loosen the hose rupture valve (2) side of hose (20) by one to two turns.
10. Start the engine. Slowly lower the boom, drain hydraulic oil, and bleed air from hose rupture valve (22).
11. Stop the engine. Tighten hose (20).
    : 19 mm
    : 30 N·m

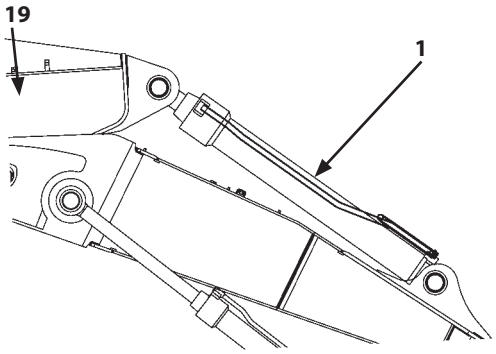



WDDQ-05-02-022-3 ja

12. **IMPORTANT**

    **Check the hydraulic oil level. Start the engine and check each part for any oil leakage.**

13. Remove the wires from the positioning cylinder (1) rod. Start the engine. Operate the positioning pedal and fit the hole at cylinder rod side to the mounting hole on second boom (19).




WDDQ-05-02-021-1 ja

14. **IMPORTANT**

    **Use one or more thrust plates (4) respectively at the right and left sides.**

    Fit thrust plate (4) to the holes of the right and left sides at the cylinder rod side. Adjust the total clearance of right and left between the cylinder and second boom (19) within 1 mm.

## Removal of Hose Rupture Valve for Boom Cylinder

### IMPORTANT

**The hoses and pipes contain hydraulic oil. When removing the hoses and pipes, receive oil with a container in order to avoid spilling oil.**

### IMPORTANT

**Cap the open parts in case the hoses and pipes have been disconnected. In addition, attach identification tags onto the connectors, hoses, and pipes for assembling. If the clips which secure the hoses have been removed, install the clips after connecting the hoses.**

1. Set the machine position for inspection and maintenance. (Refer to "Preparation before Inspection and Maintenance"W1-5-1-1.)



M104-07-021 ja

2. **CAUTION**

   **Release any pressure in the hydraulic oil tank. (Refer to "Pressure Release from Hydraulic Oil Tank"W1-5-3-1.)**

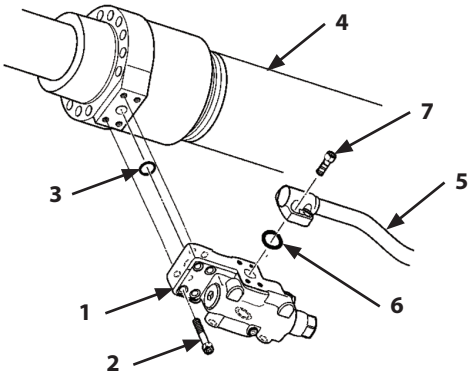
   **CAUTION**

   **Release any pressure in hydraulic circuit. (Refer to "Hydraulic Circuit Pressure Release Procedure"W1-5-2-1.)**

3. Disconnect hoses (8) (3 used) and hose (10) from hose rupture valve (1).
   : 19 mm
4. Loosen bolt (13) of clamp (12).
   : 22 mm
5. Remove socket bolts (7) (4 used). Disconnect pipe (5). Remove O-ring (6).
   : 10 mm
6. Remove socket bolts (2) (4 used). Remove O-ring (3). Remove hose rupture valve (1) from boom cylinder (4).
   : 10 mm
7. Remove the adapters from hose rupture valve (1) if necessary.
8. Remove the other hose rupture valve (1) in the same way as step 3 to step 7.

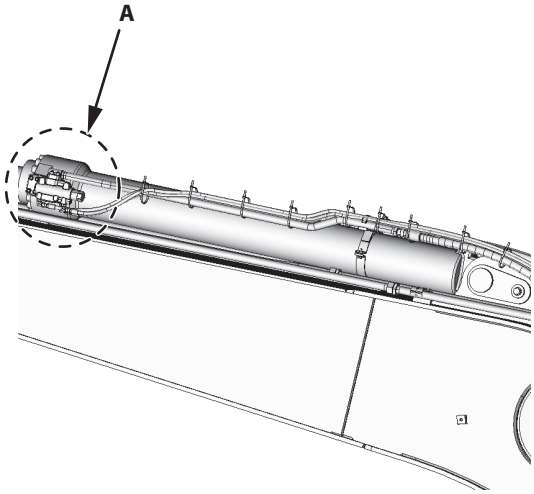
## Installation of Hose Rupture Valve for Arm Cylinder

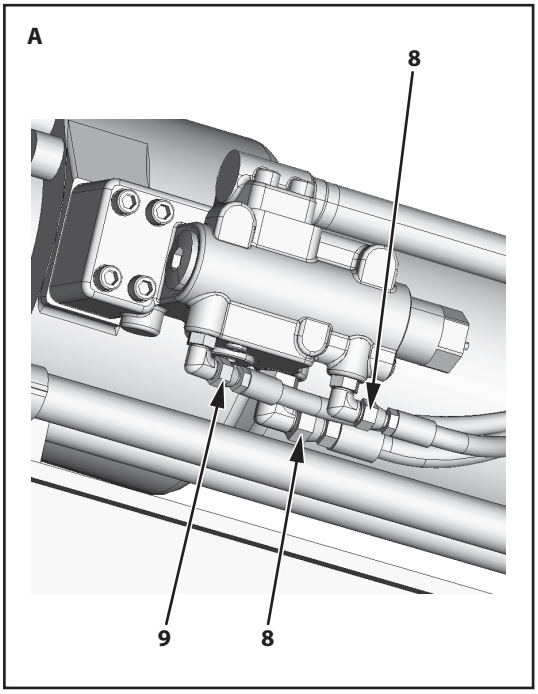
1. Install all removed adapters to hose rupture valve (1).
2. Install O-ring (3) onto hose rupture valve (1). Temporarily install hose rupture valve (1) to arm cylinder (4) with socket bolts (2) (4 used).
   : 10 mm
3. Install O-ring (6). Connect pipe (5) with socket bolts (7) (4 used).
   : 10 mm
   : 93±17 N·m
4. Tighten socket bolts (2) (4 used).
   : 10 mm
   : 93±17 N·m




WDD7-05-01-001-1 ja

5. Connect hoses (8) (2 used) and hose (9).
   : 19 mm
   : 30 N·m
   : 27 mm
   : 80 N·m




WDD7-05-02-002-3 ja

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