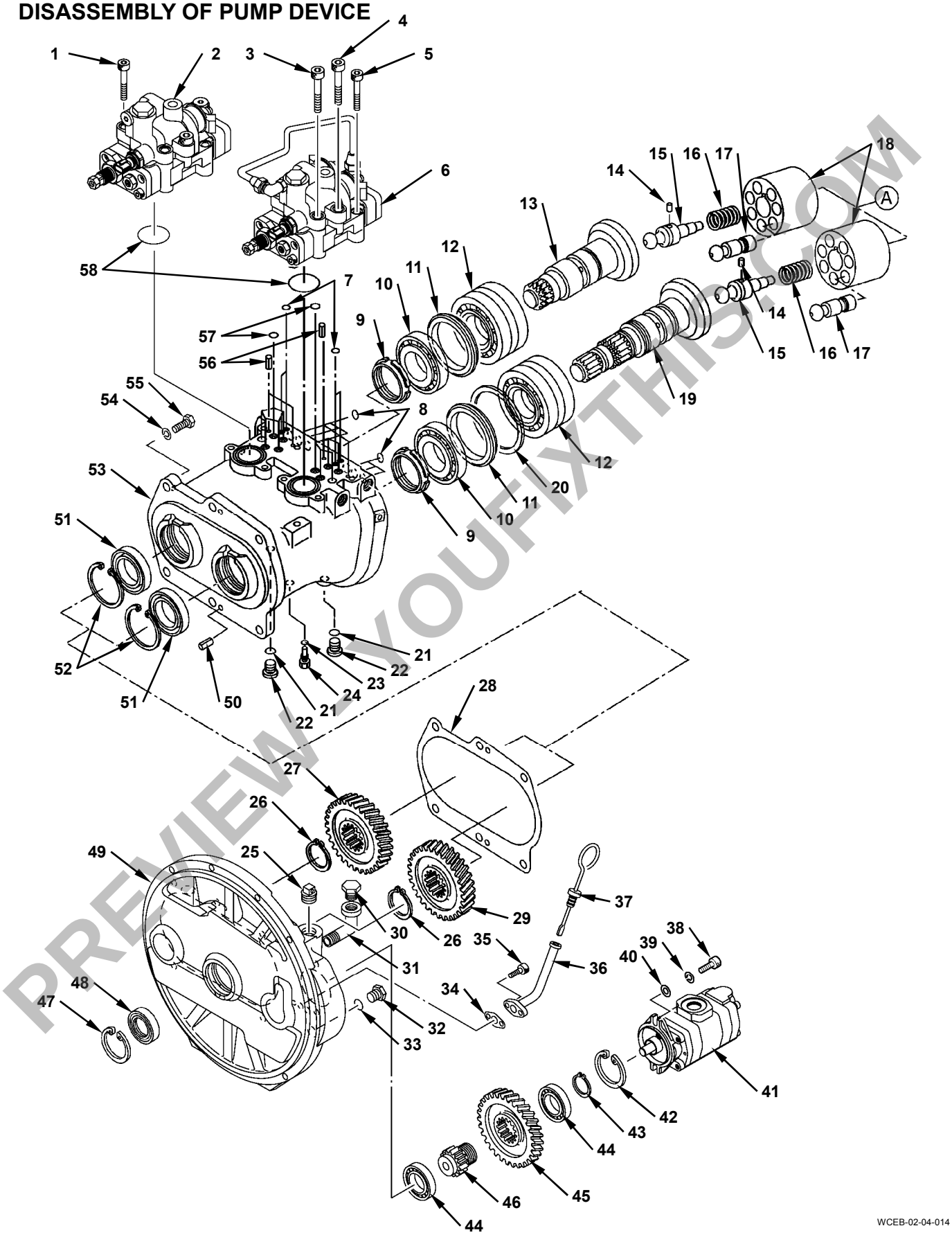
DISASSEMBLY OF PUMP DEVICE



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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 personal injury.
  - Follow recommended precautions and safe operating practices.



001-E01A-0001

SA-688

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 don't use any of the designated signal words above after the safety alert symbol are occasionally used on this machine.
- 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 an element of information.



SA-1223

002-E01A-1223

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HANDLE CHEMICAL PRODUCTS SAFELY

- Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with your machine include such items as lubricants, coolants, paints, and adhesives.
  - A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.
  - Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and use recommended equipment.
  - See your authorized dealer for MSDS's (available only in English) on chemical products used with your machine.

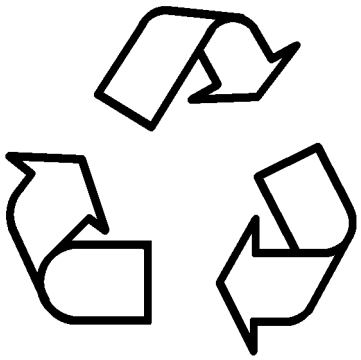


SA-309

515-E01A-0309

DISPOSE OF WASTE PROPERLY

- Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with HITACHI equipment includes such items as oil, fuel, coolant, brake fluid, filters, and batteries.
  - Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.
  - Do not pour waste onto the ground, down a drain, or into any water source.
  - Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.
  - Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your authorized dealer.



SA-226

516-E01A-0226

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BLEEDING AIR FROM HYDRAULIC OIL TANK

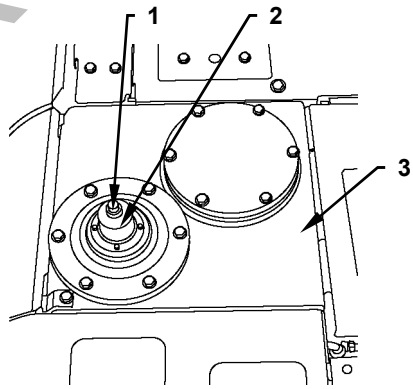
CAUTION: Escaping fluid under pressure can penetrate the skin, causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines.
Hydraulic oil may be hot just after operation, and may spurt, possibly causing severe burns. Be sure to wait for oil to cool before starting work.
The hydraulic oil tank cap may fly off if removed without releasing internal pressure first. Push the air release valve on top of the hydraulic oil tank to release any remaining pressure.



WCJB-01-04-001

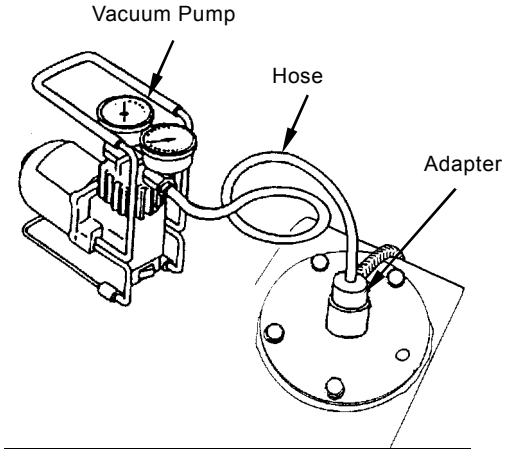
Preparation

1. Place the machine on a firm, level surface and lower the bucket to the ground.



WCGB -04-01-010

2. Stop the engine. Push the air bleed valve (1) on the air breather to release any remaining pressure from hydraulic oil tank (3).
3. Remove cap (2) of hydraulic oil tank (3).



W562-02-03-008

4. Connect a vacuum pump with the hole removed cap (2) to maintain negative pressure in the hydraulic oil tank (3).

NOTE: Be sure to run the vacuum pump continuously while working.

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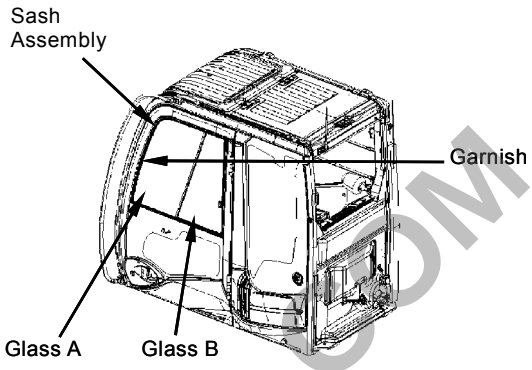
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Installation of Upper Door Glass

1. Before installing the glass, remove the garnish around sash assembly from the cab inside for easy removal. Push the sash assembly by hands and remove the sash outside.

2. Install glass A and glass B into the sash grooves.

3. Install the sash assembly, which the glass is installed on, onto the door from the outside of cab. Secure the sash assembly at the inside of cab by using the garnish.



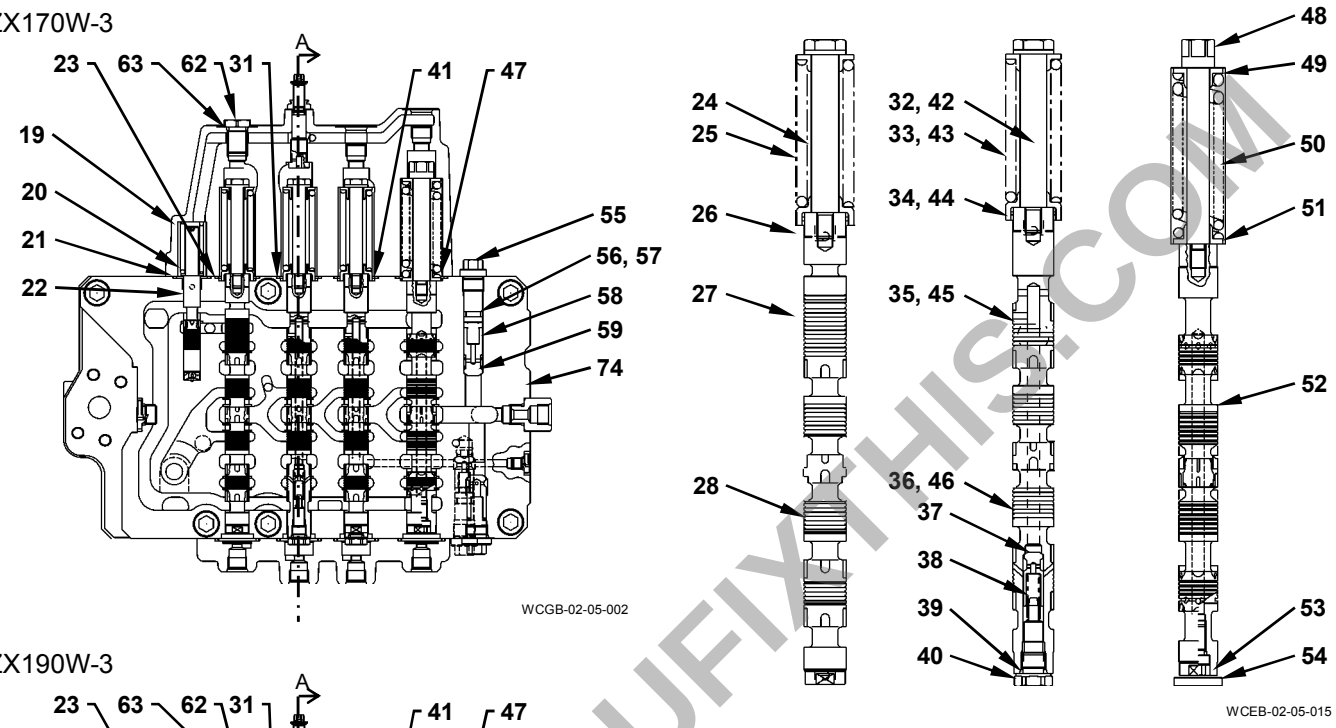
W1JB-02-01-010

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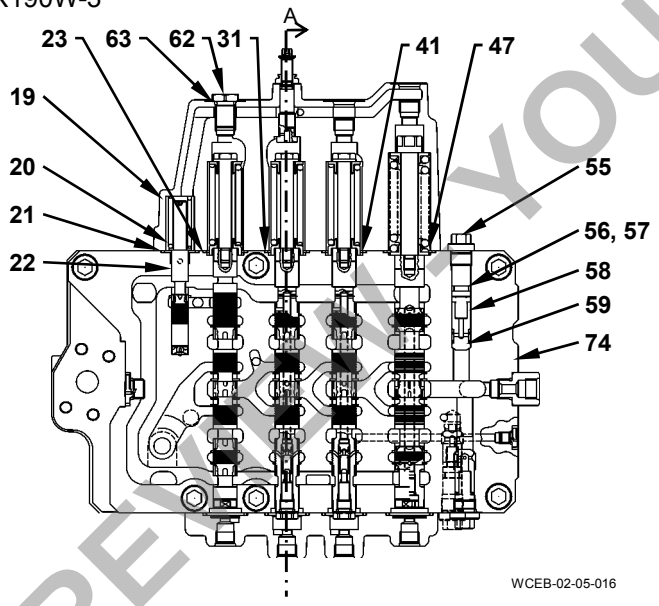
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ASSEMBLY OF CONTROL VALVE 4-SPOOL SIDE

ZX170W-3



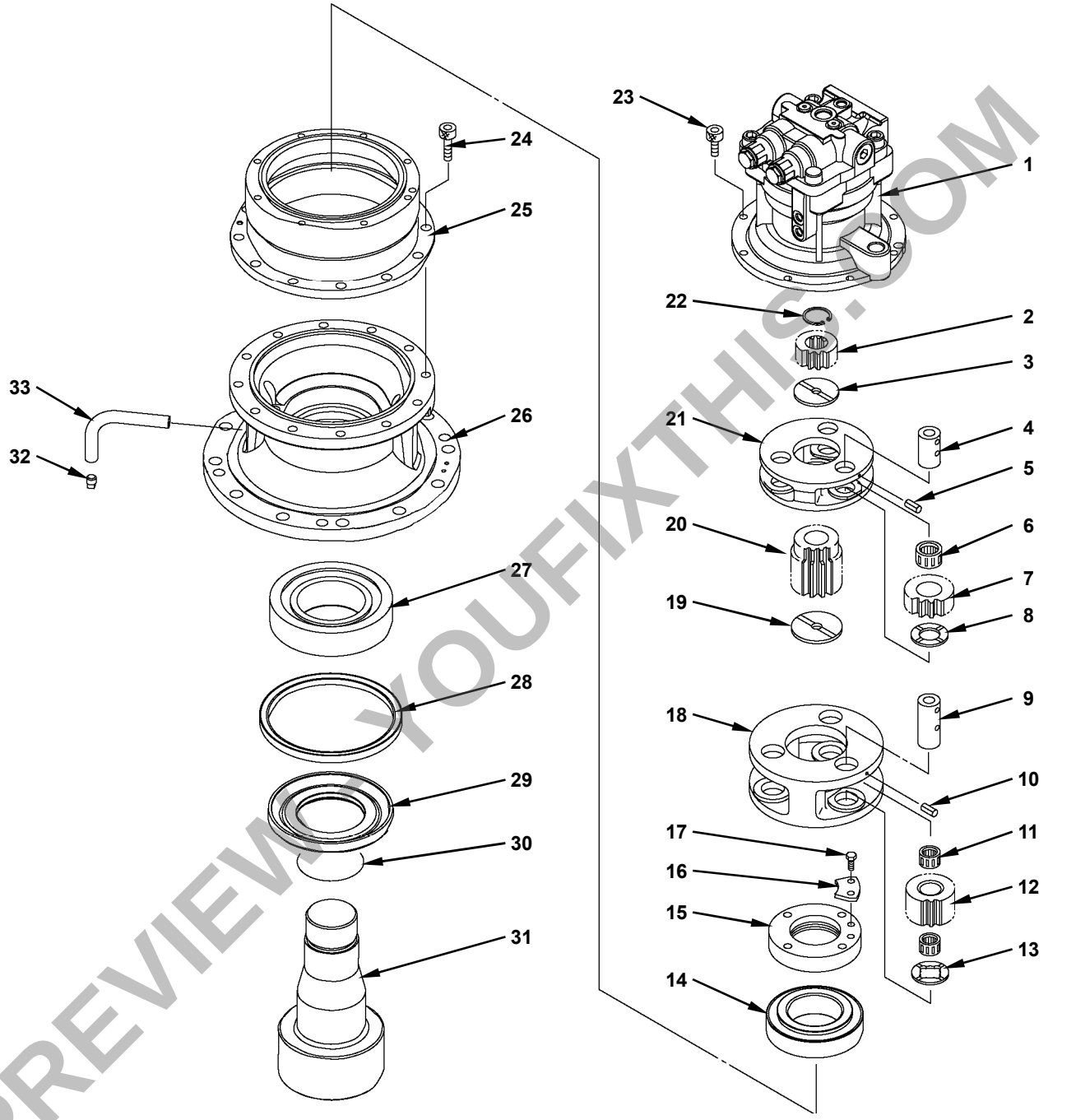
ZX190W-3



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DISASSEMBLY OF SWING DEVICE

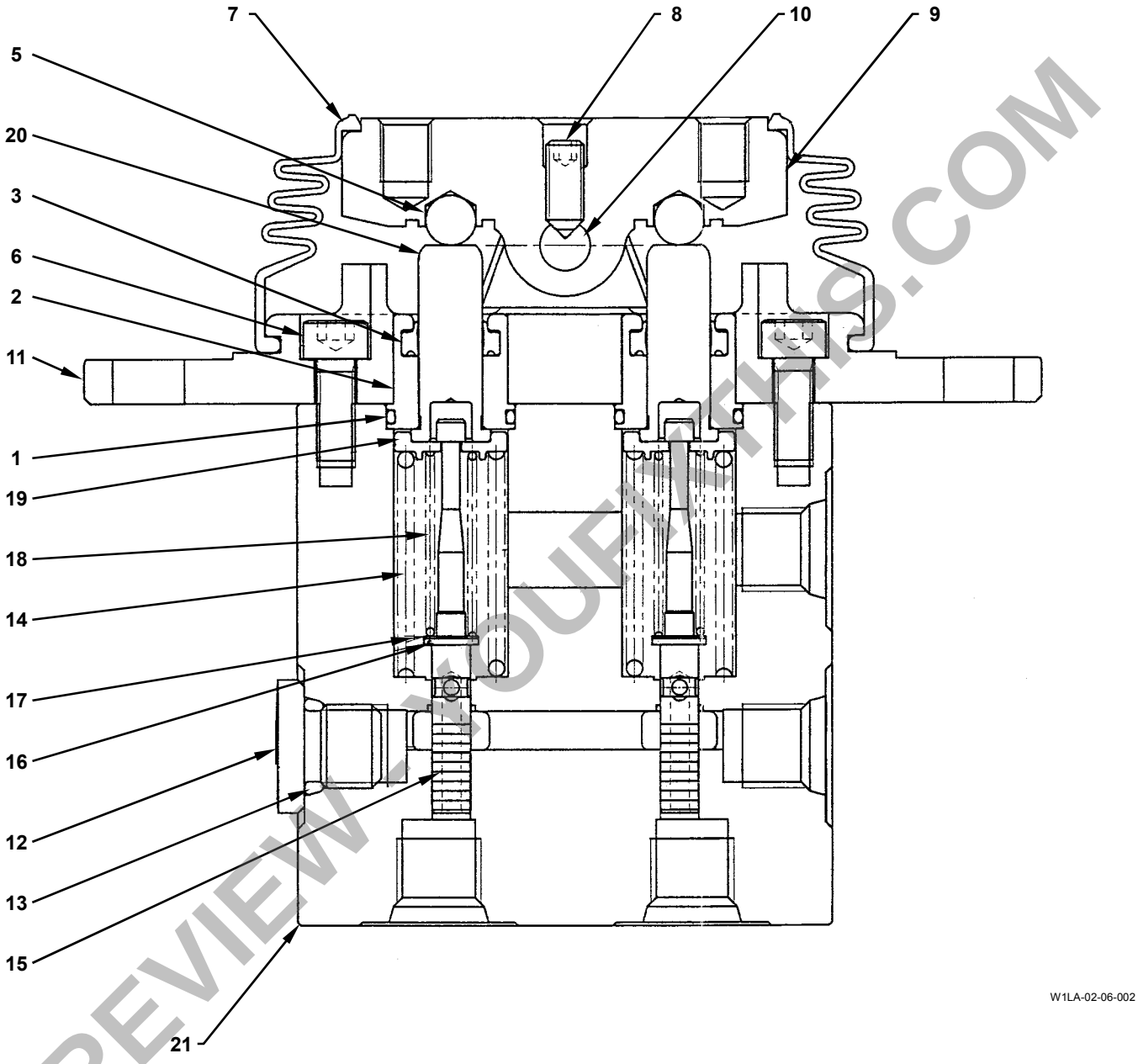


W1V1-02-06-003

1 - Motor
2 - First Stage Sun Gear
3 - Thrust Plate
4 - Pin (3 Used)
5 - Spring Pin (3 Used)
6 - Needle Bearing (3 Used)
7 - Planetary Gear (3 Used)
8 - Thrust Plate (3 Used)
9 - Pin (3 Used)
10 - Spring Pin (3 Used)
11 - Needle Bearing (6 Used)
12 - Planetary Gear (3 Used)
13 - Thrust Plate (3 Used)
14 - Roller Bearing
15 - Bearing Nut
16 - Lock Plate
17 - Bolt (2 Used)
18 - Second Stage Carrier
19 - Thrust Plate
20 - Second Stage Sun Gear
21 - First Stage Carrier
22 - Retaining Ring
23 - Socket Bolt (8 Used)
24 - Socket Bolt (12 Used)
25 - Ring Gear
26 - Housing
27 - Roller Bearing
28 - Oil Seal
29 - Sleeve
30 - O-Ring
31 - Shaft
32 - Drain Plug
33 - Pipe

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ASSEMBLY OF TRAVEL AND AUXILIARY/POSITIONING PILOT VALVES

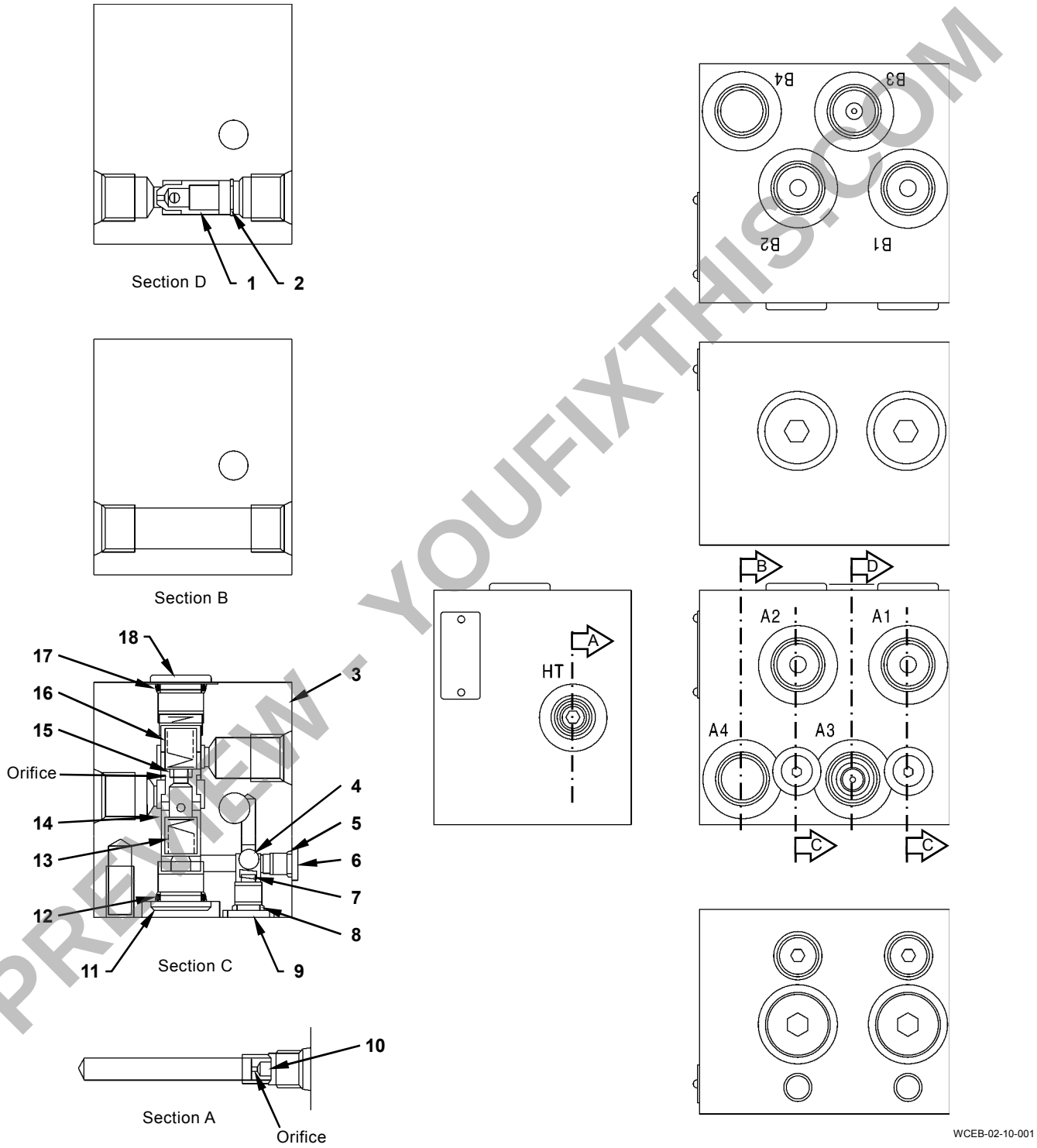


1 - O-Ring (2 Used)
2 - Bushing (2 Used)
3 - Packin (2 Used)
4 - *Bushing (2 Used)
5 - Steel Ball (2 Used)
6 - Socket Bolt (2 Used)
7 - Boot
8 - Set Screw
9 - Cam
10 - Pin
11 - Cover
12 - Plug
13 - O-Ring
14 - Spring (2 Used)
15 - Spool (2 Used)
16 - Washer (2 Used)
17 - Shim (2 Used)
18 - Spring (2 Used)
19 - Spring Guide (2 Used)
20 - Pusher (2 Used)
21 - Casing

*NOTE: *Refer to W2-7-24.*

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STRUCTURE OF SWING SHOCKLESS VALVE



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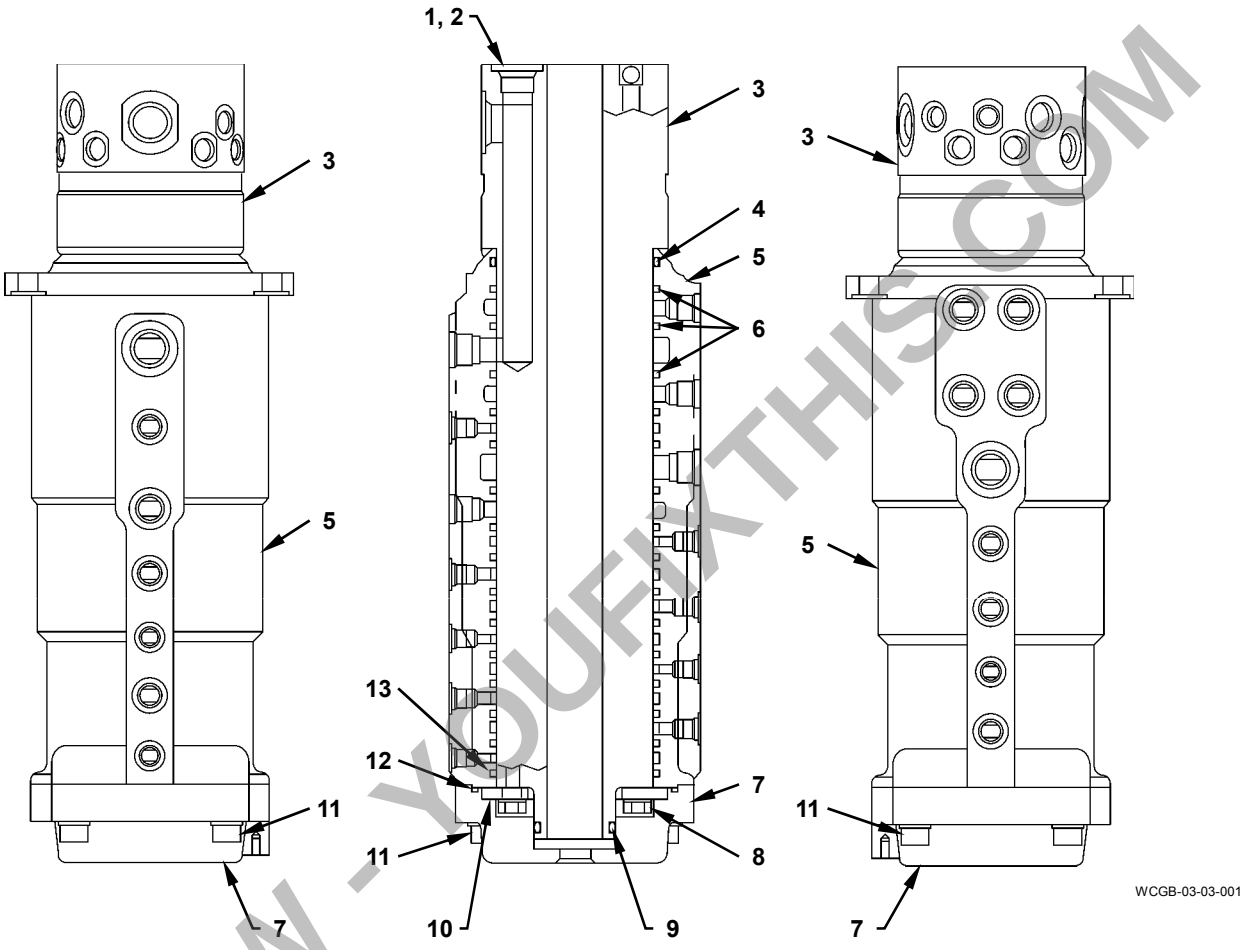
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1 - Rubber
2 - Brake Pedal
3 - Split Pin (4 Used)
4 - Stopper Bolt
5 - Bushing
6 - Lock Nut
7 - Bushing (2 Used)
8 - Pin
9 - Bushing (2 Used)
10 - Pin
11 - Boot
12 - Pin
13 - Spring Pin
14 - Bushing
15 - Yoke
16 - Pin (2 Used)
17 - Link
18 - Roller Assembly
19 - Bracket
20 - Brake Switch
21 - Socket Bolt (2 Used)
22 - Seat
23 - Stopper
24 - Boot
25 - Socket Bolt (4 Used)
26 - Bracket
27 - Oil Seal
28 - Flange
29 - O-Ring (2 Used) (1B, G45)
30 - Rod
31 - Return Spring
32 - Holder
33 - Spring
34 - Balance Spring
35 - Retainer
36 - Retainer
37 - Pilot Piston
38 - Push Rod
39 - Cylinder
40 - Cylinder
41 - O-Ring (1B, P32)
42 - Plug
43 - Socket Bolt (4 Used)
44 - Spring (2 Used)
45 - Retaining Ring (2 Used)
46 - Retainer (2 Used)
47 - Plunger (2 Used)
48 - Spool (2 Used)
49 - Spring

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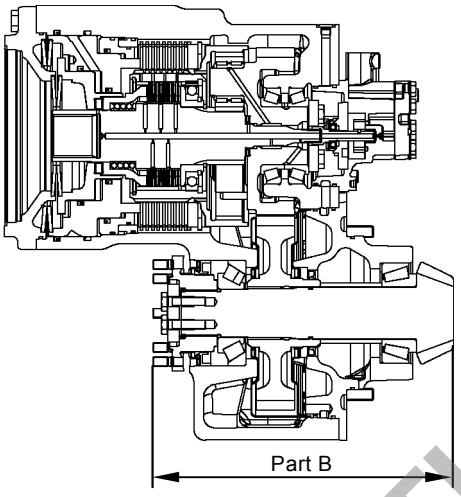
DISASSEMBLY OF CENTER JOINT



1 - Plug (2 Used)
2 - O-Ring (2 Used)
3 - Spindle
4 - O-Ring
5 - Body
6 - Oil Seal (15 Used)
7 - Cover
8 - Bolt (4 Used)
9 - O-Ring
10 - Plate
11 - Socket Bolt (4 Used)
12 - O-Ring
13 - O-Ring

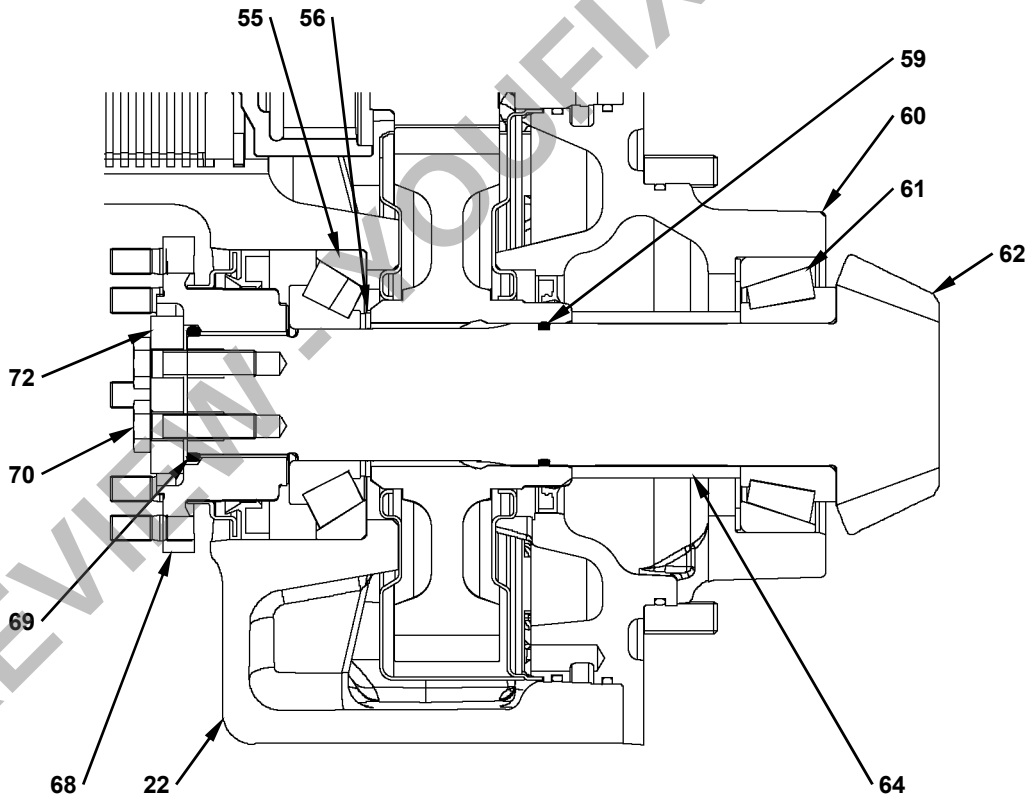
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WCGB-03-04-001

Part B



WCGB-03-04-003

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SECTION 1
GENERAL



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Group 1 Precautions for Disassembling and Assembling

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Maintenance Standard Terminology W1-1-7

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Torque Chart W1-2-3

Piping Joint W1-2-6

Periodic Replacement of Parts W1-2-10

Group 3 Painting

Painting W1-3-1

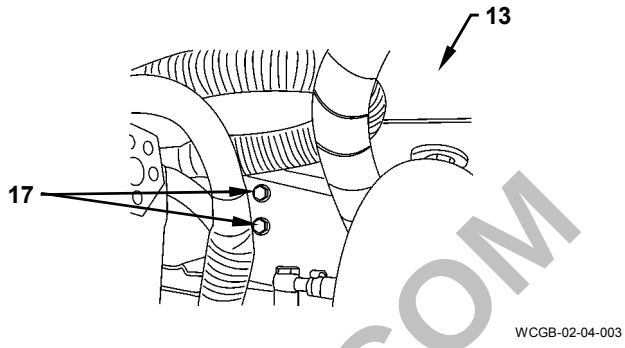
Group 4 Bleeding Air from Hydraulic Oil Tank

Bleeding Air from Hydraulic Oil tank W1-4-1

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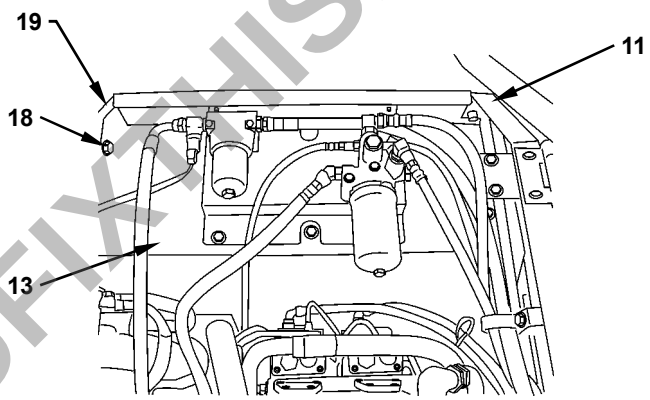
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9. Remove bolts (17) (4 used) from bracket (13) on the left side of the pump device.
   [redacted] : 17 mm



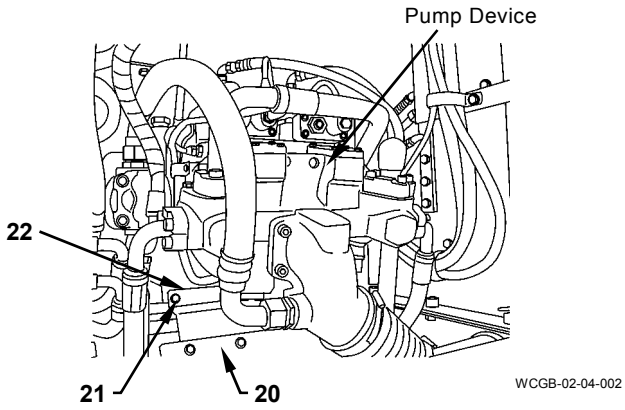
WCGB-02-04-003

10. Remove sems bolt (18) from cover (13). Remove the cover (13) assembly from cover (19) and support (11).
    [redacted] : 17 mm



WCGB-02-04-001

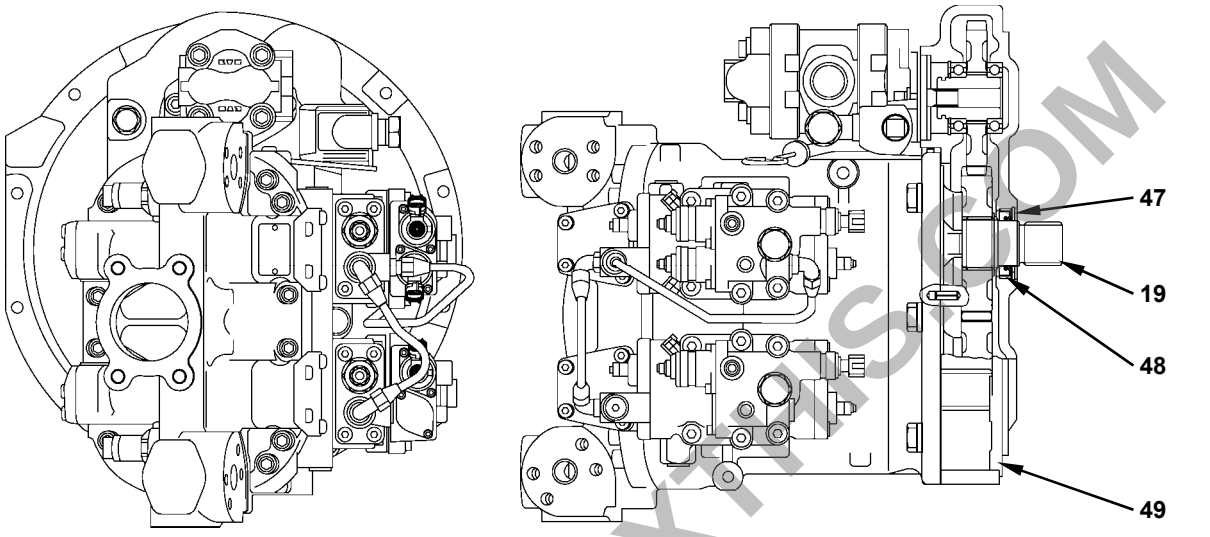
11. Remove sems bolts (21) (2 used) from plate (22). Remove plate (22) and the bracket (20) assembly from the pump device.
    [redacted] : 17 mm



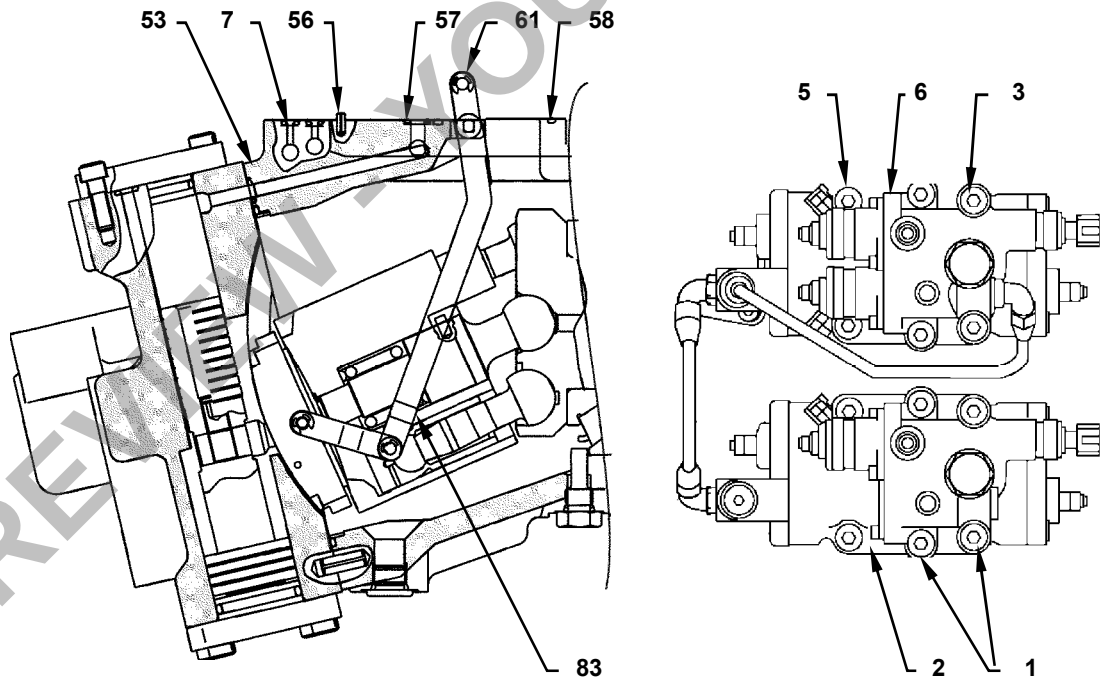
WCGB-02-04-002

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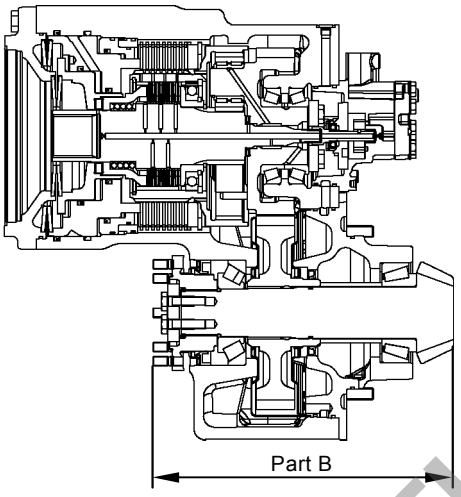
WCEB-02-04-004



WCEB-02-04-015

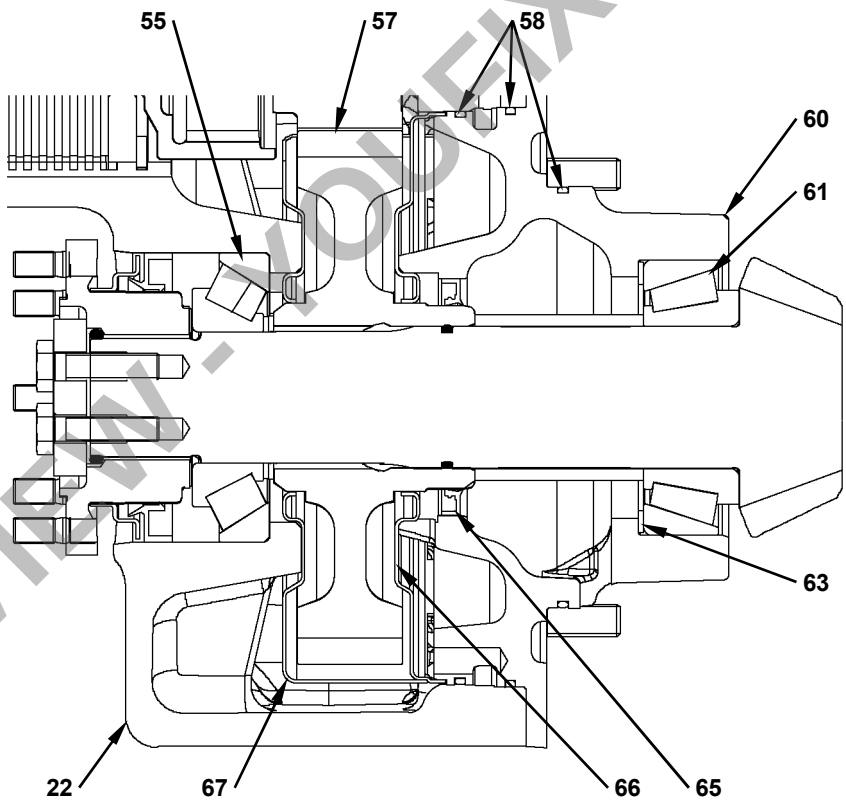
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Part B



WCGB-03-04-003

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Assembly of Positioning Cylinder

1. Install bushing (9) to cylinder head (3) by using the special tool. Install retaining ring (10).
   Special tool:
   ZX170W-3: (ST 2686)
   ZX190W-3: (ST 2687)

2. Tap and install dust seal (5) to cylinder head (3) by using the special tool and a plastic hammer.
   Special tool:
   ZX170W-3: (ST 2690)
   ZX190W-3: (ST 2691)

IMPORTANT: Check the installing direction.

3. Install U-ring (7), backup ring (2), buffer ring (8) and retaining ring (4) to cylinder head (3).

4. Install O-rings (11, 12) and backup ring (13) to cylinder head (3).

5. Install O-ring (18), backup rings (19) (2 used), seal ring (17), slide rings (15) (2 used) and wear ring (16) to piston (14) by using special tools (ST 2677, 2680).

6. Install the cylinder head (3) assembly to piston rod (1) by using the special tool.
   Special tool:
   ZX170W-3: (ST 2694)
   ZX190W-3: (ST 2695)

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