SERVICE MANUAL

E55Bx Tier 3

Compact Hydraulic Excavator

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Part number S5HS0014E01
English
April 2014

NEW HOLLAND CONSTRUCTION

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11. TOOLS

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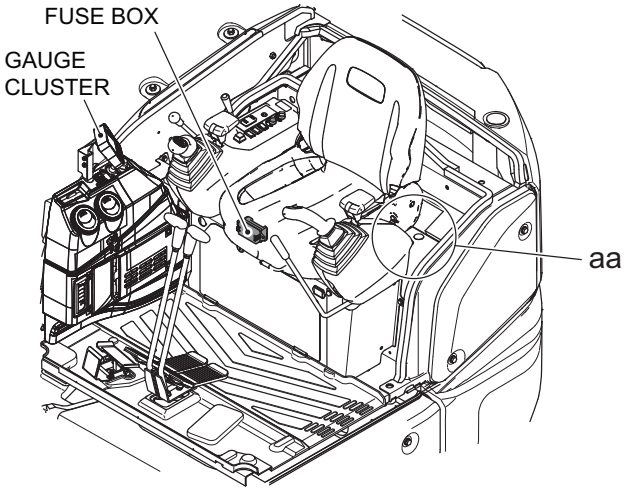
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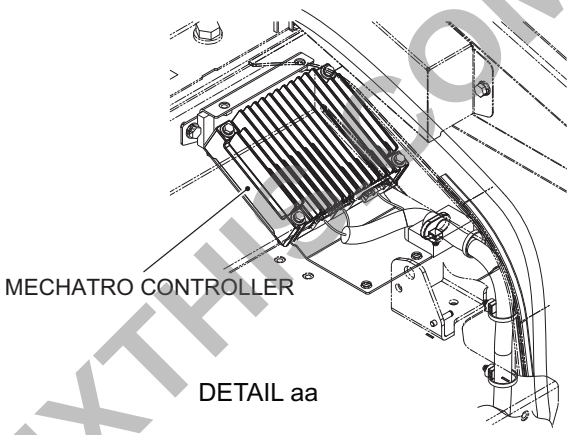
21.1 MECHATRO CONTROLLER

21.1.1 OUTLINE OF MULTI-DISPLAY

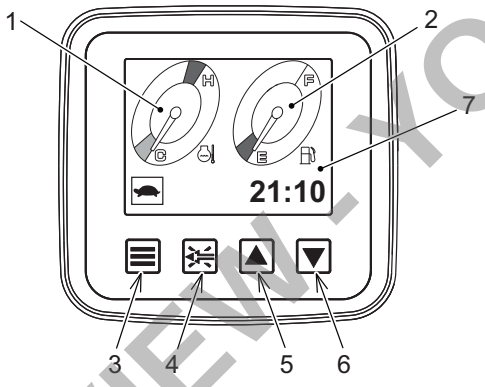
Displays hydraulic pressure information converted to electric signals on the multi-display of the gauge cluster.

(1) Devices in Operator Cab





(2) Gauge Cluster

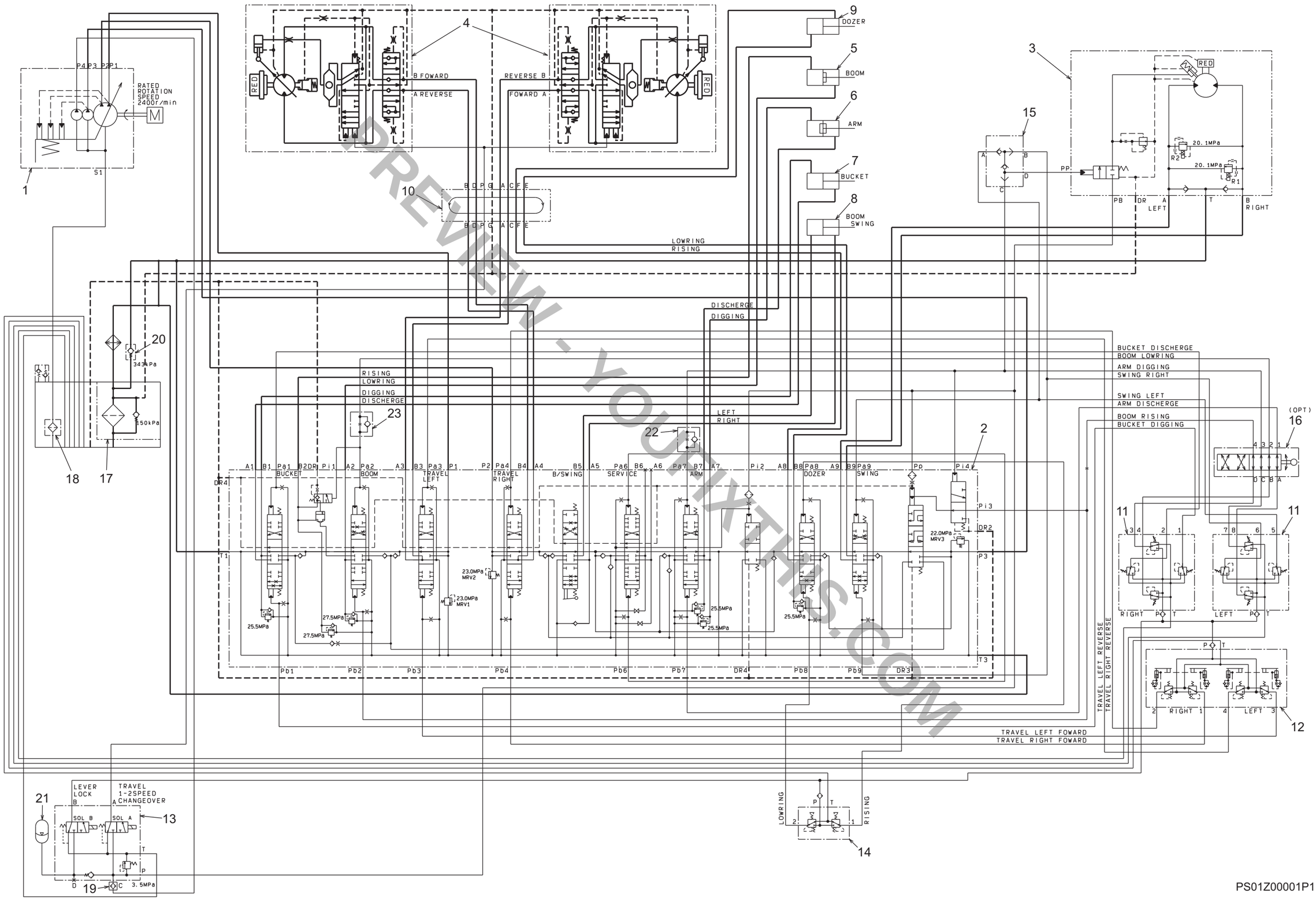


No.	Name
1	Engine coolant temperature
2	Fuel level gauge
3	Menu switch
4	Buzzer stop switch
5	Up arrow switch
6	Down arrow switch
7	Multi display (LCD)

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22.2.1 STANDARD SPECIFICATIONS

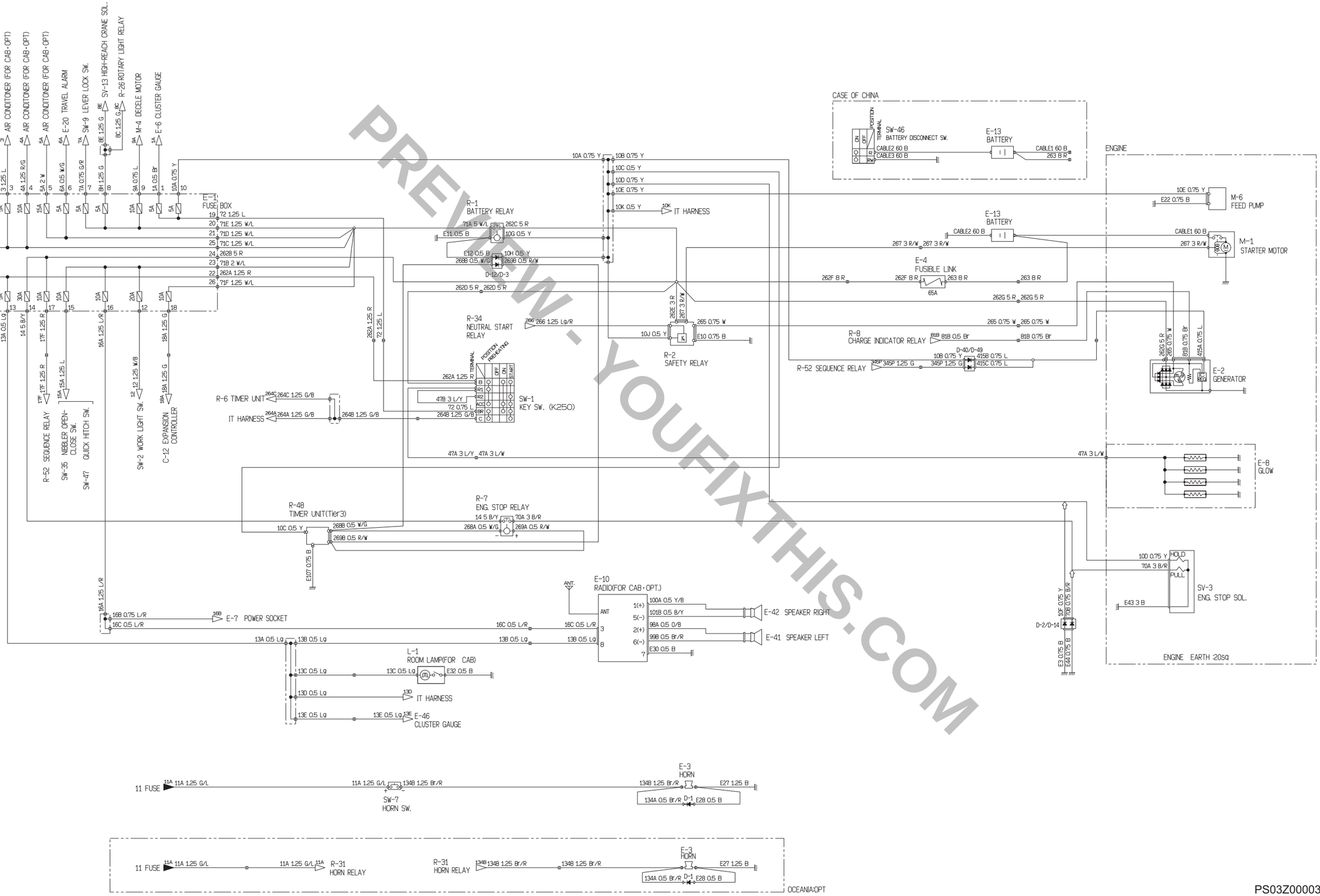


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PS01Z00001P1 03

23.1 ELECTRIC CIRCUIT DIAGRAM



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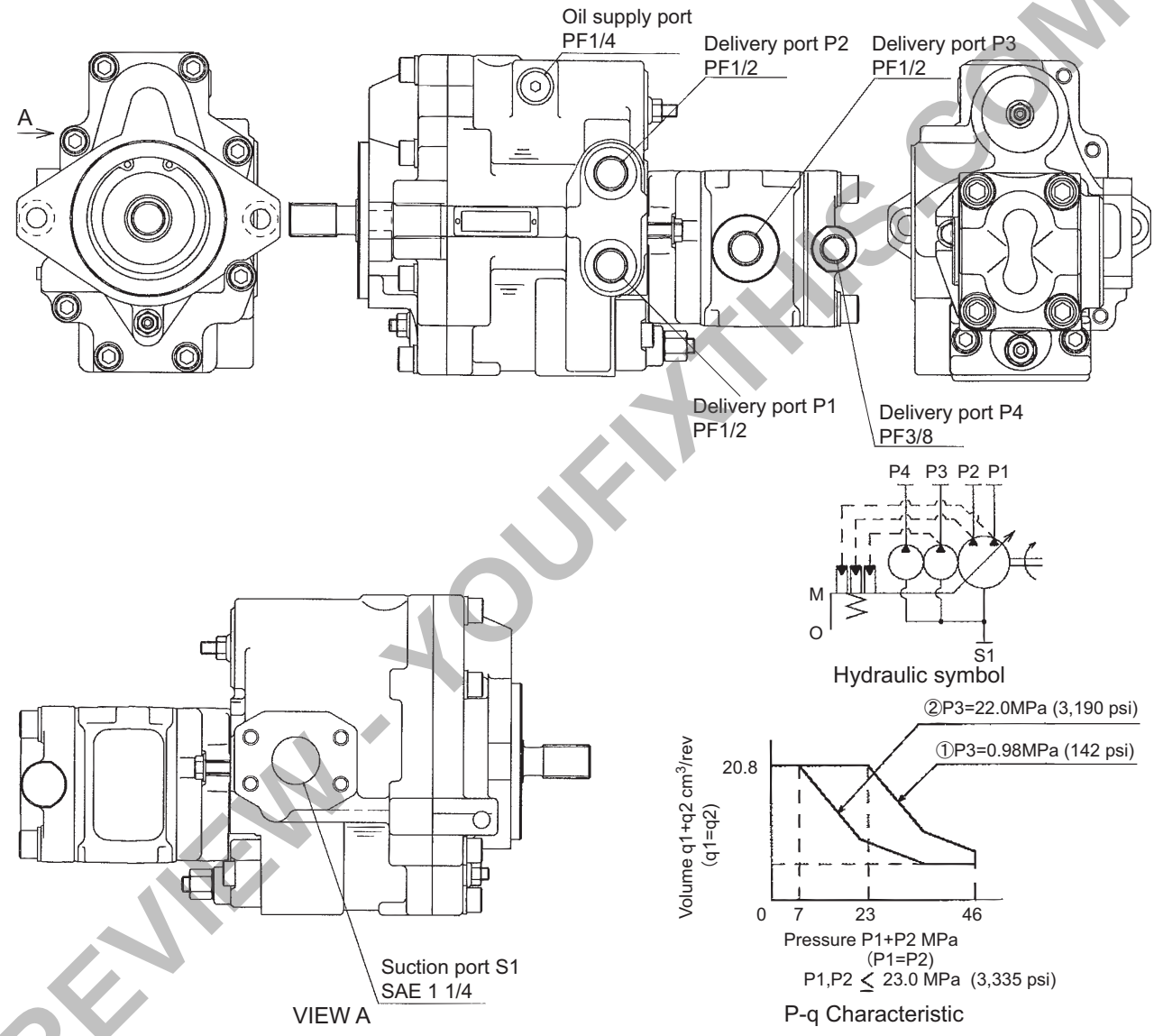
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24.1 HYDRAULIC EQUIPMENT

24.1.1 HYDRAULIC PUMP

24.1.1.1 GENERAL

(1) General View



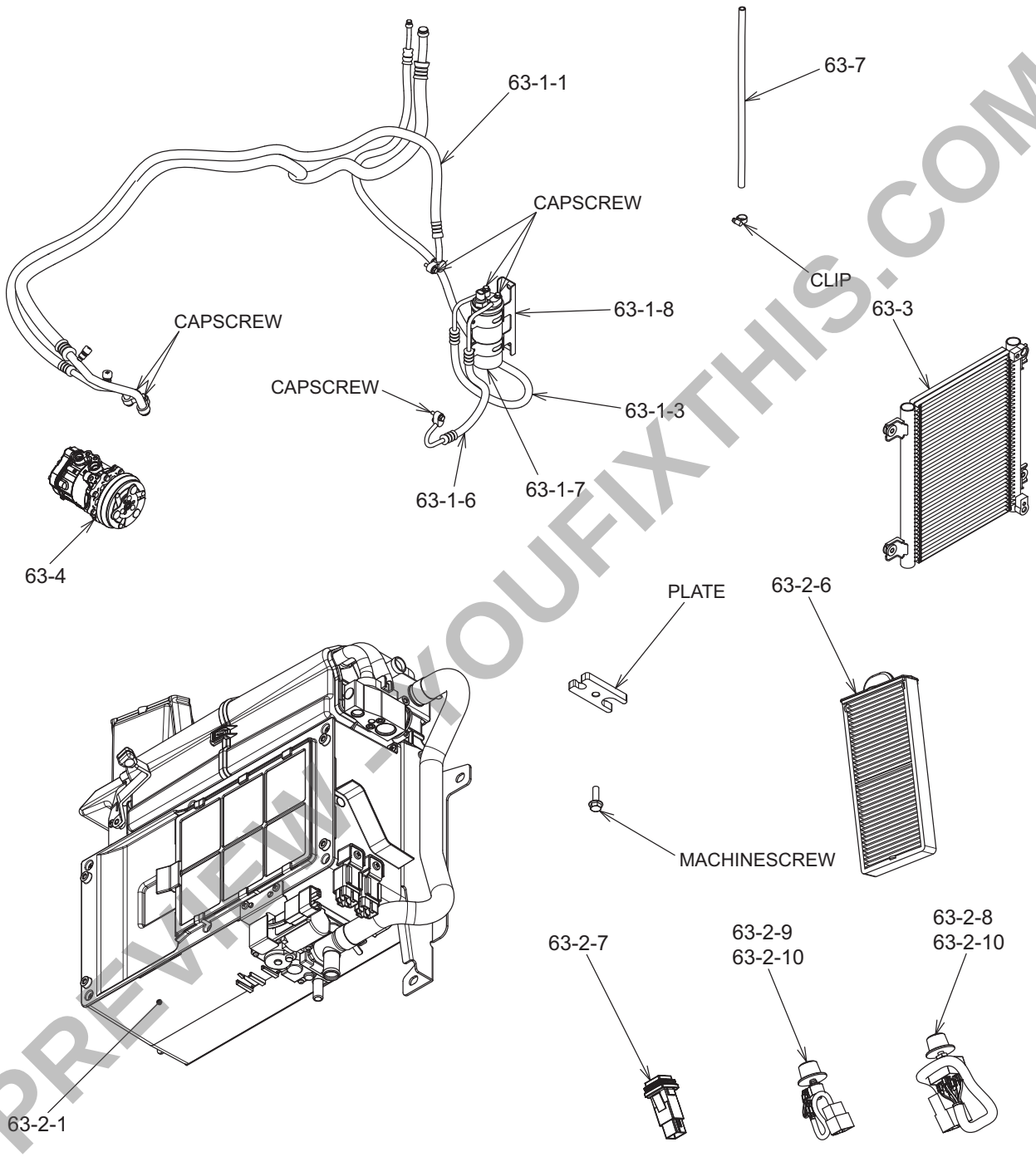
Hydraulic pump general view (Standard specification)

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25.2 COMPONENT PARTS AND STRUCTURE

25.2.1 COMPONENT PARTS

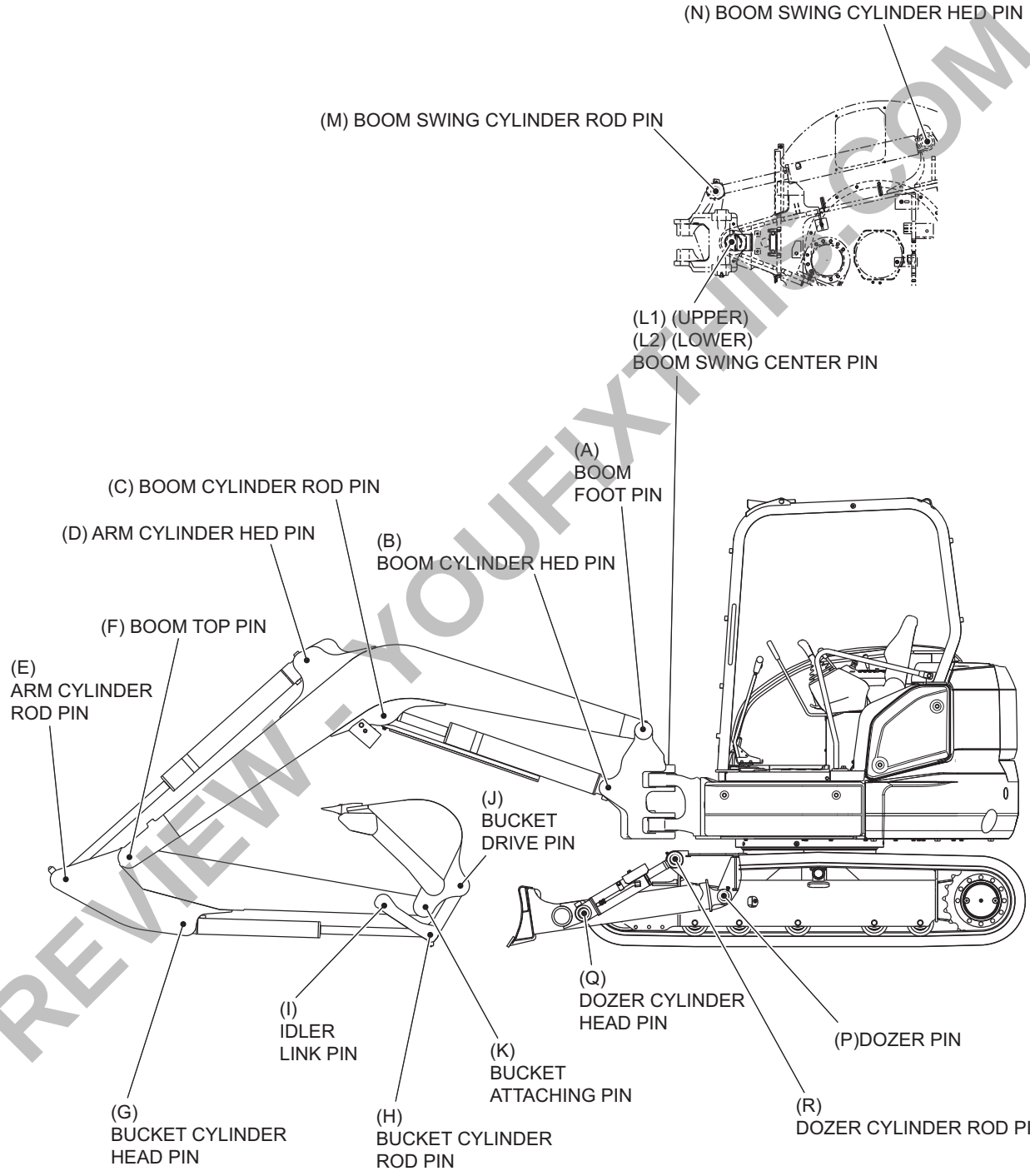


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32.1 REMOVAL/INSTALLATION OF ASSY

32.1.1 ATTACHMENT ASSY AND NAMES



Names and locations of attachments

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(4) Removing cover assy (B1)

1.

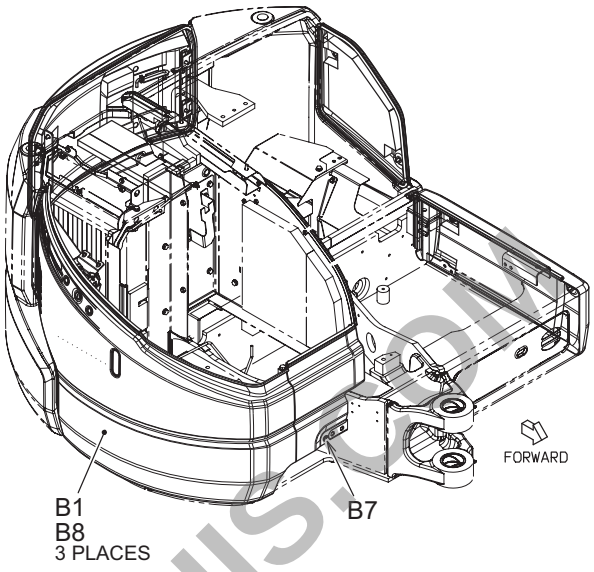
Loosen one sems bolt (B7) M10 x 20.

2.

Loosen three sems bolts (B8) M10 x 30 and remove cover assy (B1).

Tools: Socket: 17mm

Mass: 15kg (33 lbs)



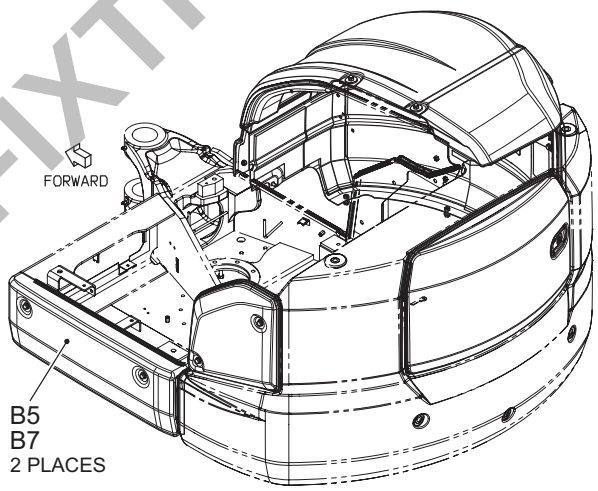
Removing cover assy (B1)

(5) Removing cover assy (B5)

Loosen two sems bolts (B7) M10 x 20 and remove cover assy (B5).

Tools: Socket: 17mm

Mass: 5kg (11 lbs)

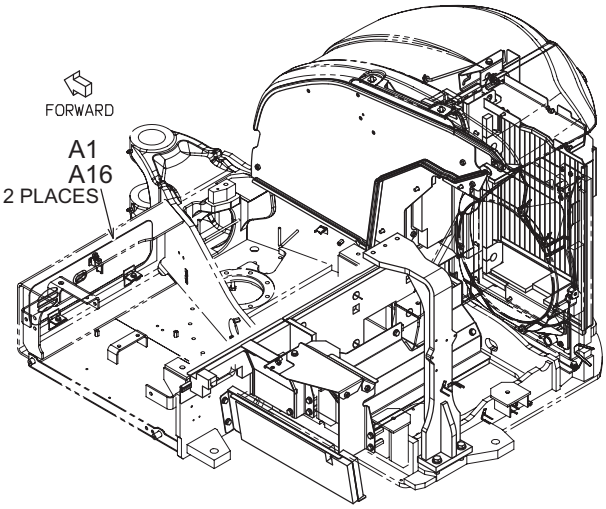


Removing cover assy (B5)

(6) Removing cover assy (A1)

Loosen two sems bolts (A16) M8 x 16 and remove cover assy (A1).

Tools: Socket: 13mm



Removing cover assy (A1)

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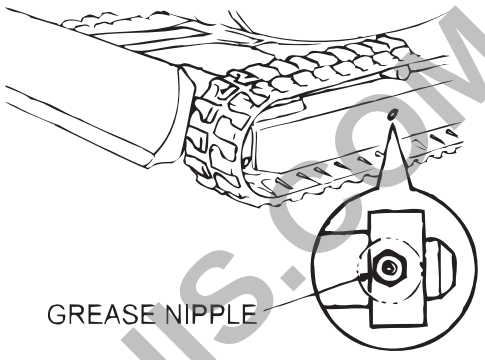
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34.1.3 UPPER ROLLER

34.1.3.1 PROCEDURE OF REMOVAL AND INSTALLATION

34.1.3.1.1 REMOVAL

(1) Loosen the grease nipple for the crawler adjuster within one turn to drain the grease to loosen the tension of the crawler.
Tools: Socket: 17mm

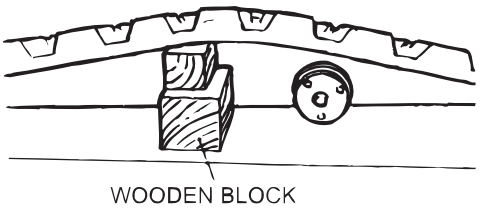


Loosening tension of crawler

CAUTION

Rotate the grease nipple slowly within one turn, paying attention to grease splash.

(2) Use a hydraulic jack to lift up the crawler and put in wood blocks to keep a clearance with the crawler.
(3) Remove the mounting capscrew and nut and remove the upper roller assy from the lower frame.
Tools: Socket: 19mm
Upper roller assy mass: 3kg (6.6 lbs)



Supporting with wood blocks

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42.1 GENERAL PRECAUTIONS

Troubleshooting provides the process to investigate the cause of trouble in order when a trouble occurred. This manual describes the way how to solve the specific phenomenon systematically as quick as possible. For the troubleshooting concerning the inside of equipment, refer to the troubleshooting for each manual of the equipment.

42.1.1 CONFIRM ACTUAL TROUBLED CONDITIONS AT SITE

(1) Get to the site as quickly as possible.
Verify the machine model, serial number, situation of trouble and field, and notify possible arrival time to the user.



Make field investigation

(2) Verify background of trouble occurred.
1. Model name and serial number.
2. Kind of attachment.
   Check that the combination of attachments was proper and that the operating manner was not unreasonable.
3. Operating time on the hour-meter.
4. Record of troubles.
   First trouble or repeated trouble.
5. History of the trouble and additional modifications.
   Reoccurrence of the same trouble in the past or trouble due to additional modification.



Verifying background of trouble occurred.

(3) How to diagnose trouble
1. Verify defective part.
2. Reproduce the troubled conditions.
3. Where the defective part can not be verified, surmise the possible causes systematically.
4. Verify the surmised cause.
5. Report estimated repairing method, procedures and term to the user.



Diagnosing trouble by means troubleshooting.

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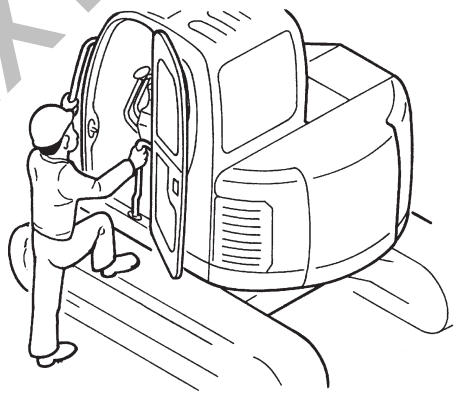
46.1 CHECKING THE SITE AND ACTUAL THING

(1) Immediately get to the site where the failure occurred
Ask the model name, failure symptom and site,
and tell your arrival time.
(2) Checking the background of the failure (situation)
1. Model name and serial number
2. Type of attachment
Check if the combination of attachments is proper and they are operated properly.
3. Operating time
4. Status of the failure symptom
First or reoccurrence
5. Histories of failure and additional work on the machine
Reoccurrence of a past failure or failure due to an additional work on the machine



Checking the background of the failure

(3) Procedures of failure diagnosis
1. Verify the failure part.
2. Reproduce the failure symptom.
3. Classify the failure and verify the troubleshooting procedures.
(refer to Section 46.2)
4. If the failure part cannot be verified, surmise causes systematically.
5. Verify reasons for a surmise.
6. Advise the repair (action) methods and procedures and the calculated period to the user.



Checking the failure symptom

(4) Precautions in repairing
1. Provide an explanation of the cause to the user in advice.
For example, if oil leakage from the piston occurs and you find a damage on the piston rod, explain that the leakage is caused by the damage before removing the rod from the machine. Explain the proper usage to avoid repeating the same failure.
2. Handling a failed part
When returning a failed part to the manufacturer, handle it carefully because it is an evidence.
For example, keep the port of a hydraulic component away from water or soil or protect the part from being damaged.



Failure diagnosis by troubleshooting

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INDUSTRIAL ENGINES

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3TNV82A
3TNV82A-B
3TNV84
3TNV84T
3TNV84T-B
3TNV88
3TNV88-B
3TNV88-U

4TNV84
4TNV84T
4TNV84T-Z
4TNV88
4TNV88-B
4TNV88-U
4TNV94L
4TNV98
4TNV98-Z
4TNV98-E
4TNV98T
4TNV98T-Z
4TNV106
4TNV106T

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SAFETY PRECAUTIONS

⚠ WARNING

The proper and safe lubrication and maintenance for this machine, recommended by Manufacturer, are outlined in the OPERATOR'S MANUAL for the machine.
Improper performance of lubrication or maintenance procedures are dangerous and could result in injury or death. Read and understand the MANUAL before performing any lubrication or maintenance.

The serviceman or mechanic may be unfamiliar with many of the systems on this machine. This makes it important to use caution when performing service work. A knowledge of the system and or components is important before the removal or disassembly of any component.

Because of the size of some of the machine components, the serviceman or mechanic should check the weights noted in this manual. Use proper lifting procedures when removing any components. Weight of components table is shown in the section ; SPECIFICATIONS.

The following is a list of basic precautions that must always be observed.

(1) Read and understand all Warning plates and decal on the machine before Operating, Maintaining or Repairing this machine.

(2) Always wear protective glasses and protective shoes when working around machines. In particular, wear protective glasses when using hammers, punches or drifts on any part of the machine or attachments. Use welders gloves, hood/goggles, apron and the protective clothing appropriate to the welding job being performed. Do not wear loose fitting or torn clothing. Remove all rings from fingers, loose jewelry, confine long hair and loose clothing before working on this machinery.

(3) Disconnect the battery and hang a "Do Not Operate" tag in the Operators Compartment. Remove ignition keys.

(4) If possible, make all repairs with the machine parked on a firm level surface. Block the machine so it does not roll while working on or under the machine. Hang a "Do Not Operate" tag in the Operators Compartment.

(5) Do not work on any machine that is supported only by lift, jacks or a hoist. Always use blocks or jack stands, capable of supporting the machine, before performing any disassembly.

⚠ WARNING

Do not operate this machine unless you have read and understand the instructions in the OPERATOR'S MANUAL. Improper machine operation is dangerous and could result in injury or death.

(6) Relieve all pressure in air, oil or water systems before any lines, fittings or related items are disconnected or removed. Always make sure all raised components are blocked correctly and be alert for possible pressure when disconnecting any device from a system that utilizes pressure.

(7) Lower the bucket, dozer, or other attachments to the ground before performing any work on the machine. If this cannot be done, make sure the bucket, dozer, ripper or other attachment is blocked correctly to prevent it from dropping unexpectedly.

(8) Use steps and grab handles when mounting or dismounting a machine. Clean any mud or debris from steps, walkways or work platforms before using. Always face to the machine when using steps, ladders and walkways. When it is not possible to use the designed access system, provide ladders, scaffolds, or work platforms to perform safe repair operations.

(9) To avoid back injury, use a hoist when lifting components which weigh 20kg (45lbs) or more. Make sure all chains, hooks, slings, etc., are in good condition and are the correct capacity. Be sure hooks are positioned correctly. Lifting eyes are not to be side loaded during a lifting operation.

(10) To avoid burns, be alert for hot parts on machines which have just been stopped and hot fluids in lines, tubes and compartments.

(11) Be careful when removing cover plates. Gradually back off the last two capscrews or nuts located at opposite ends of the cover or device and carefully pry cover loose to relieve any spring or other pressure, before removing the last two capscrews or nuts completely.

(12) Be careful when removing filler caps, breathers and plugs on the machine. Hold a rag over the cap or plug to prevent being sprayed or splashed by liquids under pressure. The danger is even greater if the machine has just been stopped because fluids can be hot.

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22.3.6 BOOM OPERATION CIRCUIT

Pilot hydraulic system using the control lever
Provided with the third pump oil conflux function (only at the boom up)

22.3.6.1 BOOM UP OPERATION CIRCUIT

(1) Pilot Circuit

1. Switching boom spool
   When the control lever is moved to the boom up side, the pilot secondary pressure is output from pilot valve (11). The boom-up pilot secondary pressure is supplied to the Pb2 and Pi3 ports of control valve (2). The pressure oil which enters the Pb2 port switches the boom spool. The pressure oil which enters the Pi3 port at the same time switches the independent travel/conflux valve (bypass valve) spool.

(2) Main Circuit

1. Supply circuit to cylinder (5)
   The oil delivered from the variable pump P1 port of pump assy (1) enters the P1 port of control valve (2). The pressure oil from the P3 port goes through the independent travel/conflux valve (bypass valve) to join the P2 port oil. The pressure oil which goes through the boom and block valves and leaves the B2 port to be supplied to the H side of boom cylinder (5) to actuate the boom up operation.

22.3.6.2 BOOM DOWN OPERATION CIRCUIT

(1) Pilot Circuit

1. Switching boom spool
   When the control lever is moved to the boom down side, the pilot secondary pressure is output from pilot valve (11) and enters the Pa2 port of control valve (2) to switch the boom spool. At the same time, the pilot secondary pressure flows to boom lock valve (206) and pushes up the check valve to open the closed oil passage.

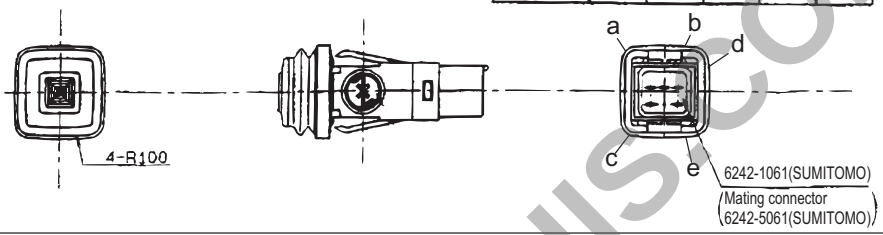
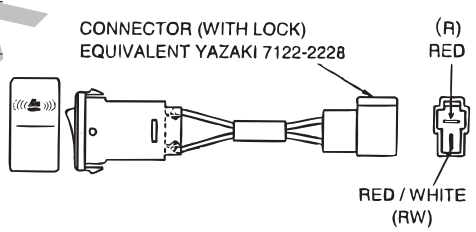
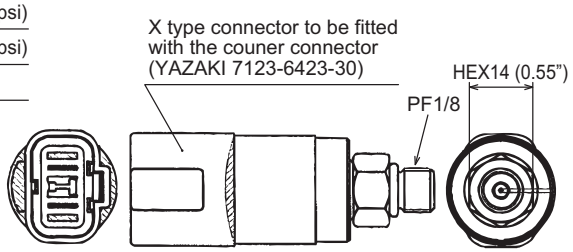
(2) Main Circuit

1. Supply circuit to cylinder (5) and return oil circuit
   The oil delivered from the P1 port of variable pump goes through the boom valve of control valve (2) and is supplied to the R side of boom cylinder (5) to actuate the boom down operation. The return oil from the H side of cylinder (5) enters the B2 port of control valve (2) and goes through boom lock valve (206) and boom valve to return to the tank. At this time, the boom is lowered at a stable speed, as the flow is controlled by the throttle effect in the boom valve.

a. Boom lock valve (206)
   This uses a check valve mechanism to prevent the boom from lowering naturally due to its own weight when the boom valve is in neutral state.

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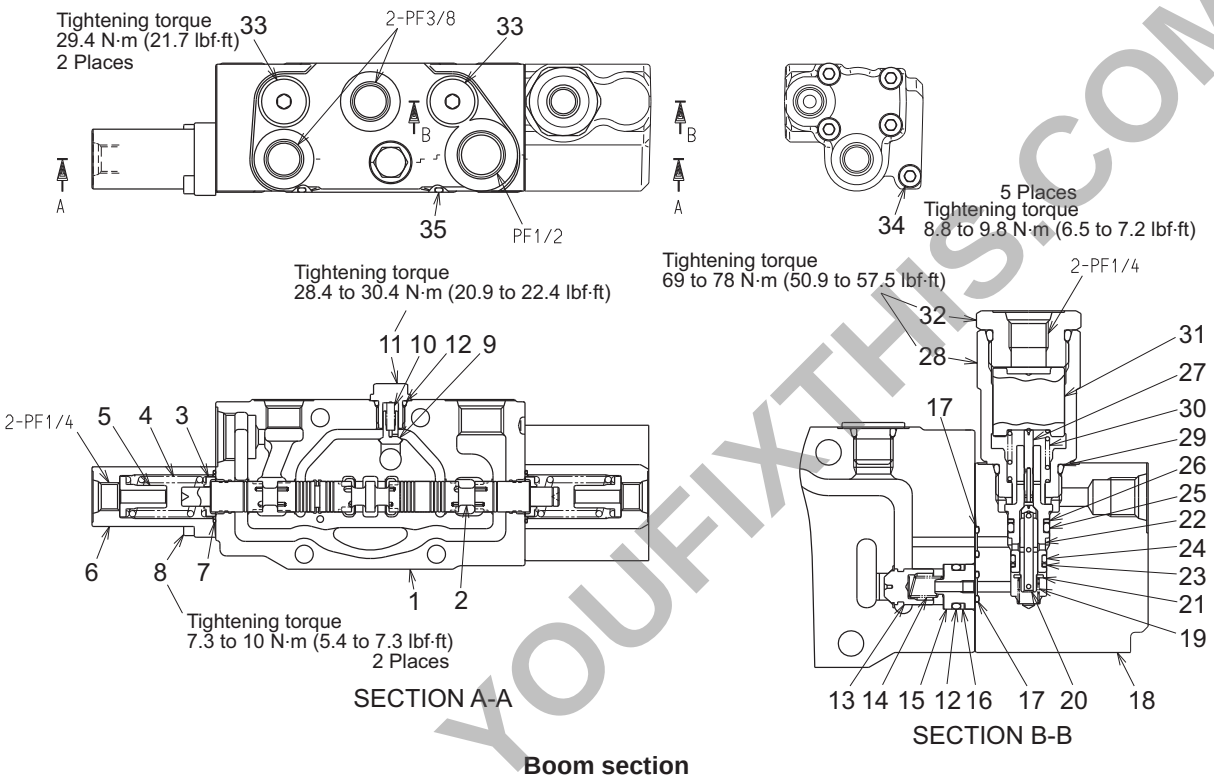
Code No. Parts Name Parts No. Use Applicable Machine	Specifications	Description
SW-11 Switch PM50S00005P1 Deceleration switch PJ05-06001~ PJ06-08001~ PJ06-08890~ PJ06-09807~ PS02-00101~ PS03-05001~ PS04-10001~	Rated voltage: DC12V (MAX:DC16V) Insulation resistance: 1MΩ or more(500VMegger)	Connection table a b c d e FREE ○—○ ○—○ PUSH ○—○ ○—○ 
SW-23 Switch 2479U1190F16 Travel alarm select switch PS03-05001~ PS02-00101~	Type: Single-pole single-throw (Alternate) Rated voltage: DC24V Insulation resistance: More than 1MΩ / 500V megger TERMINAL CONNECTION Terminal / Position: R, RW OFF ON ○—○	
SW-25, 27 Switch PS50S00001F1 Travel alarm PS03-05001~	Maker: SAGINOMIYA SEISAKUSHO INC. Maker's P/No.: HCB-KMA25 Working pressure: 539±49kPa (78.2±7.1psi) Release pressure: 343±49kPa (49.7±7.1psi) Point of contact from: Normally open	

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(6) Disassembling boom section

1. Loosen socket head bolt (8) (width across flats 5mm) to remove cap (6).
2. Remove spring seat (3), spring (4), spring seat (5) and O-ring (7). Pull out spool (2) from valve housing (1).
3. Remove plug assy (32), and remove piston (31), spring (30) and spool (27). Remove plug (28), and take out sleeve (22), spring seat (21), spring (19) and poppet (20).
4. Loosen socket head bolt (34), remove body (18), and pull out spacer (15), spring (14) and poppet (13) from the inside of valve housing (1).



Boom section

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DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is flammable and explosive under certain conditions.
- Only fill the fuel tank with diesel fuel. Filling the fuel tank with gasoline may result in a fire and will damage the engine.
- NEVER refuel with the engine running.
- Wipe up all spills immediately.
- Keep sparks, open flames or any other form of ignition (match, cigarette, static electric source) well away when refueling.
- NEVER overfill the fuel tank.
- Fill the fuel tank. Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.
- Failure to comply will result in death or serious injury.

0000005en

DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is flammable and explosive under certain conditions.
- Before you operate the engine, check for fuel leaks. Replace rubberized fuel hoses every two years or every 2000 hours of engine operation, whichever comes first, even if the engine has been out of service. Rubberized fuel lines tend to dry out and become brittle after two years or 2000 hours of engine operation, whichever comes first.
- Failure to comply will result in death or serious injury.

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DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is flammable and explosive under certain conditions.
- NEVER remove the fuel cap with the engine running.
- Failure to comply will result in death or serious injury.

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