YANMAR
EXCAVATOR

OPERATION & MAINTENANCE MANUAL

⚠ WARNING

- Never attempt to operate or service this Excavator until you have first read and understood all of the applicable Safety Instructions that are set forth in this Manual.

  The failure to comply with all relevant Safety Instructions could result in bodily injury.

- To assure that this Manual will be conveniently available to future users, always return it to its storage compartment, when it is not being used.

LGBB7SIGMA.0(EP)

MODEL B7-SIGMA (EP)

S/N 50501 & Above

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

31/07/03

6. Contents

1. Introduction 0-1
2. Safety Information 0-2
3. Product Overview 0-3
  3-1. Intended uses 0-3
  3-2. Break in period 0-3
  3-3. Conditions to be met to assure compliance with EPA emission standards 0-4
4. Operation License 0-5
5. Ordering Replacement Parts and Service Calls 0-6
  5-1. Location of machine serial number plate 0-6
  5-2. Location of engine serial number plate 0-6
  5-3. Location of EPA emission control plates 0-6
  5-4. Warranty term for the exhaust emission control system and parts 0-7
  5-5. Ordering replacement parts and service calls 0-7
6. Contents 0-8

SAFETY

7. Basic Precautions 1-2
8. Operating Precautions 1-6
  8-1. Precautions before starting the engine 1-6
  8-2. Precautions for starting the engine, working and parking 1-8
  8-3. Precautions for transportation 1-13
  8-4. Precautions for the battery 1-14
  8-5. Precautions for towing 1-15
  8-6. Precautions for hooked bucket 1-16
9. Precautions for Servicing 1-19
  9-1. Precautions before servicing 1-19
  9-2. Precautions during servicing 1-21
10. Safety Messages (Warning Labels) 1-25
  10-1. Location of warning labels 1-25

OPERATION

11. Identification of Important Parts 2-2
  11-1. Overview of the machine 2-2
  11-2. Controls and switches 2-3
12. Description of Control Devices 2-4
  12-1. Monitors 2-4
  12-2. Switches 2-7
  12-3. Control levers and pedals 2-10
  12-4. Engine hood 2-14
  12-5. Storage compartment for the operation & maintenance manual 2-15

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

SAFETY

⚠ WARNING

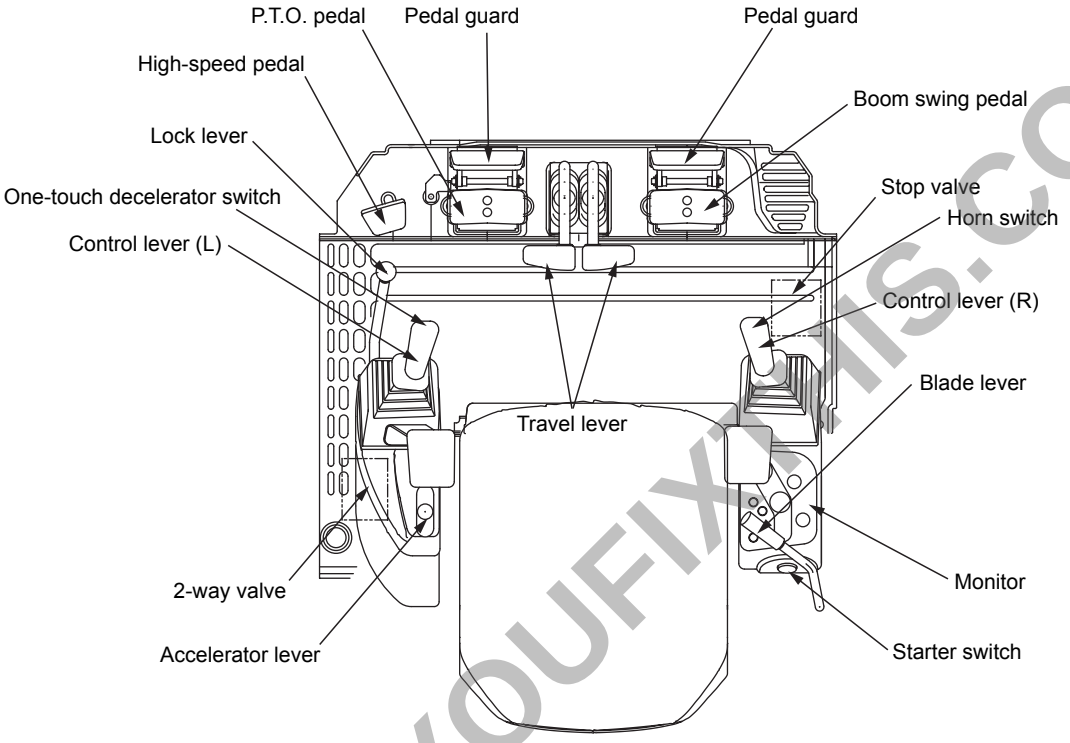
Never attempt to operate or service this Excavator until you have first read and understood all of the applicable Safety Instructions that are set forth in this Manual.

The failure to comply with all relevant Safety Instructions could result in bodily injury.

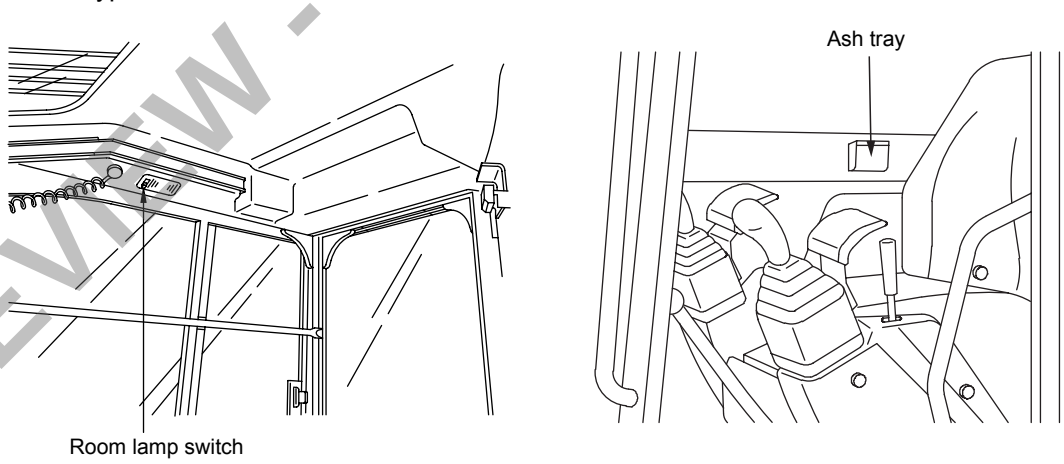
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

11-2. Controls and switches



For cabin type



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

13. Operating Instructions

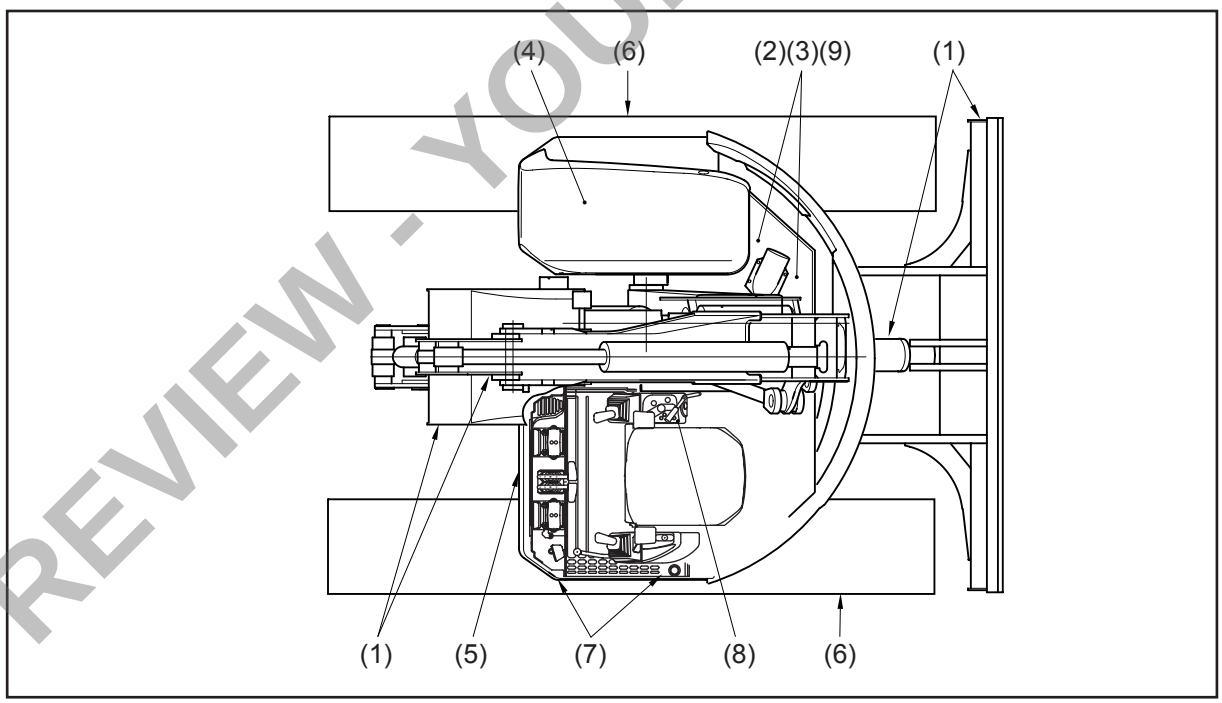
13-1. Checking before starting the engine

13-1-1. Walking check (visual inspection) around the machine

⚠ WARNING

- **If there are any combustibles in any heat build-up areas, or if there are any fuel and/or oil leaks, a fire can result.**
- **Check for possible fire causes carefully. If there is anything abnormal, be sure to take corrective action or contact your dealer.**

Before starting the engine, visually check the outside and underside of the machine as follows:
Check bolts and nuts for loose connections; check the fuel, oil, and water for leaks; and also check the implement and the hydraulic system to see that they are operating properly. In addition, check the electrical wiring for loose connections and for dust deposits in the heat build-up areas.
Check the following points before initial start-up for the day.



(1) Checking the implement, hydraulic cylinders, linkages, and hoses for damage, wear and loose connections

Check the implement, hydraulic cylinders, linkages, and hoses for damage, wear and loose connections. If any abnormality is found, take corrective action.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

13-14. Replacing the bucket

⚠ WARNING

- **When driving pins into the bucket with a hammer, metal chips may fly. If metal chips should get into your eyes, they can cause serious injury. Use goggles, a hard hat, and gloves for safety when replacing the bucket.**
- **After removing the bucket, place it on solid ground in a stable position.**
- **When aligning the holes for pin A and pin B, be careful not to insert your fingers into those holes to prevent serious injury to your fingers. Visually check the alignment of the holes.**

Work on level ground with good footing. If two or more persons work together, communicate with signals selected beforehand for safety.

■ **Replacement procedure**

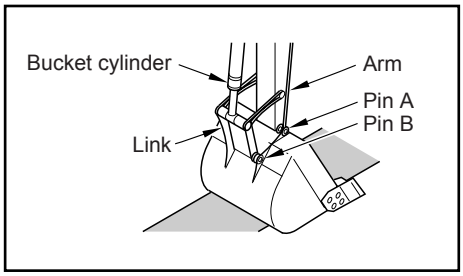
Replace the bucket according to the following procedure:

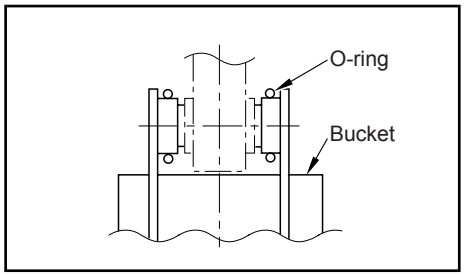
1) Park the machine on level, flat ground, and lower the bucket onto the ground.

2) Stop the engine.

3) Clean around the bucket pin to prevent foreign material from entering the pin holes.

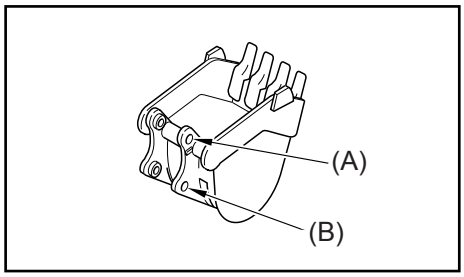
4) Remove pins A and B.





IMPORTANT

- **Keep the pins away from dirt or mud.**
- **The machines have dust seals on either end of the bush. Be careful not to damage them.**



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

14. Transportation

14-1. Loading and unloading the machine

For safety in transporting the machine, comply with all applicable regulations and laws.

⚠ WARNING

- **Be careful when loading and unloading the machine, because it is a job of high hazard potential.**
- **Load or unload the machine on level, solid ground far away from the shoulder of the road.**
- **Load or unload the machine at a low engine speed.**
- **Use ramp plates of adequate strength having hooks. Check to see that the ramp plates are wide, long, and thick enough to safely sustain the machine so that you can load or unload safely. To prevent the ramp plates from bending too much, support them with blocks.**
- **Securely hook the ramp plates to the deck of the truck so that they will not come off.**
- **Remove mud, grease, and other slippery deposits from the track shoes, and grease, oil, and ice deposits from the ramp plates to prevent the machine from skidding.**
- **Never change the travel direction on the ramp plates. If you need to change the travel direction, go back down the ramp plates, then do this.**
- **Swing slowly when on the truck bed, if it becomes necessary to do so, since the machine's position will be unstable.**
- **Make sure that the side door of the cabin is locked, whether in the open or closed position. Never open or close the side door on the ramp plates, to prevent it from swinging violently.**

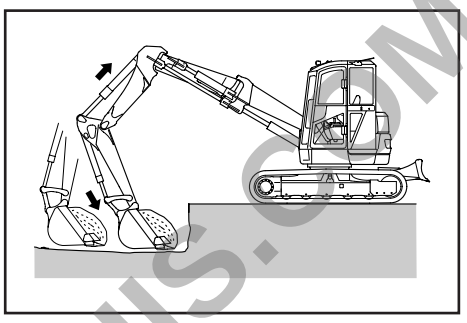
To load or unload the machine, be sure to use the ramp plates and follow the procedures outlined below.

PREVIEW - YOUFIXTHIS.COM

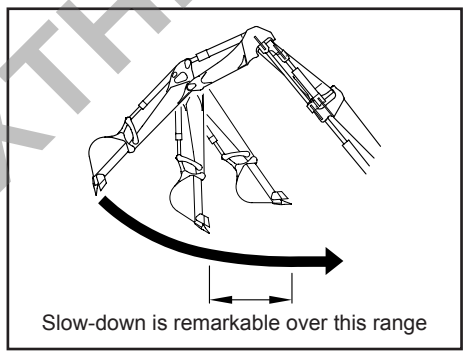
17. Troubleshooting

17-1. Phenomena that do not constitute faults

The following phenomena do not constitute faults:



- Shaking of the bucket
  When the boom is raised immediately after extending the arm while curling the bucket, the bucket may shake. This phenomenon is not a fault.



- Discontinuous arm movement
  When digging the ground with the arm, the arm may slow down momentarily at the almost vertical position especially when the engine speed is low.
  This phenomenon is not a fault.

- Shift in upperstructure position
  When turning the machine sharply as when spin-turning or pivot-turning, the upperstructure may slightly shift out of position.
  This phenomenon is not a fault.

- Thermal shock of the travel motor
  If, in cold weather, the temperature of the hydraulic oil elevates after start-up and becomes 140°F (60°C) higher than the outside temperature by relief operation without traveling, sometimes the machine cannot pivot-turn because of thermal shock. This phenomenon is not a fault.

- The boom swing cylinder is extended when digging
  The swing cylinder may become extended in some digging situations or postures. This phenomenon is not a fault.

- Time lag in travel speed change response
  At low engine speed, a time lag in response may occur when the travel speed is changed from high speed to low speed. This phenomenon is not a fault.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

24. Maintenance Table

Daily and periodic inspection are important to keep the machine in its best condition. The following is a summary of inspection and servicing requirements by inspection interval. Periodic inspection intervals vary depending on the use, loads, fuels and lube oils used and handling conditions, and are hard to establish definitively. The following should be treated only as a general standard.
When the time for an inspection approaches, study the relevant pages in the Operation & Maintenance Manual. Keep a record of daily operation and the results of maintenance work.

24-1. Table of service time intervals

Check and service points	Page
■ **At first 50 hours (only once after the new machine has started to be used)**	
Replacing the engine oil and the engine oil filter element	3-22
■ **At first 100 hours (only once after the new machine has started to be used)**	
Replacing the lube oil for the travel reduction gearbox	3-22
Replacing the lube oil for the swing reduction gearbox	3-22
■ **At first 250 hours (only once after the new machine has started to be used)**	
Replacing hydraulic return filter element	3-22
Cleaning the suction filter element in the hydraulic oil tank	3-22
■ **Nonperiodic servicing**	
Checking the rubber crawler (for rubber crawler types)	3-23
Checking and adjusting the rubber crawler tension (for rubber crawler types)	3-25
Replacing the rubber crawler (for rubber crawler type)	3-28
Checking and adjusting the steel crawler tension (for steel crawler types)	3-31
Replacing the bucket teeth	3-34
Cleaning the inside of the cooling system	3-36
■ **Checking before start-up**	
Checking and replenishing the cooling water	3-40
Checking and replenishing the engine oil	3-41
Checking and replenishing the fuel in the fuel tank	3-42
Checking and replenishing the hydraulic oil in the hydraulic oil tank	3-43
Checking and adjusting the fan belt tension	3-44
Checking and replenishing the battery electrolyte	3-45
Greasing	3-46
Checking the electrical equipment	3-47

PREVIEW - YOUFIXTHIS.COM

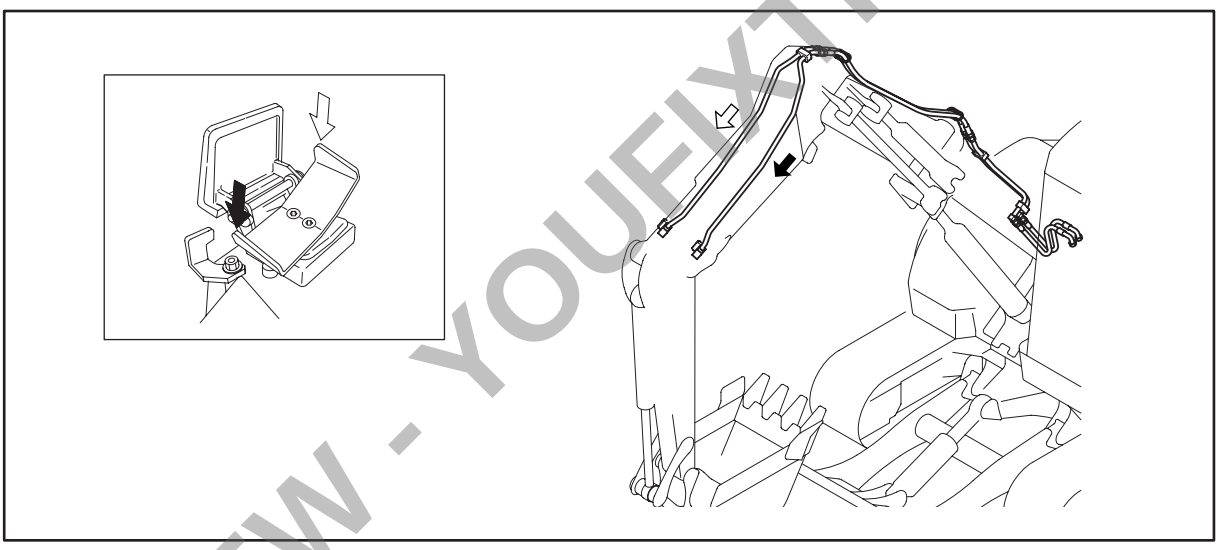
Download full manual at youfixthis.com

13-22-2. Hydraulic circuit

1) When mounting any attachment, follow the procedure to connect the circuit.

■ **Oil flow system**

The directions of pedal operation and of the oil flow system are indicated in the figure below.

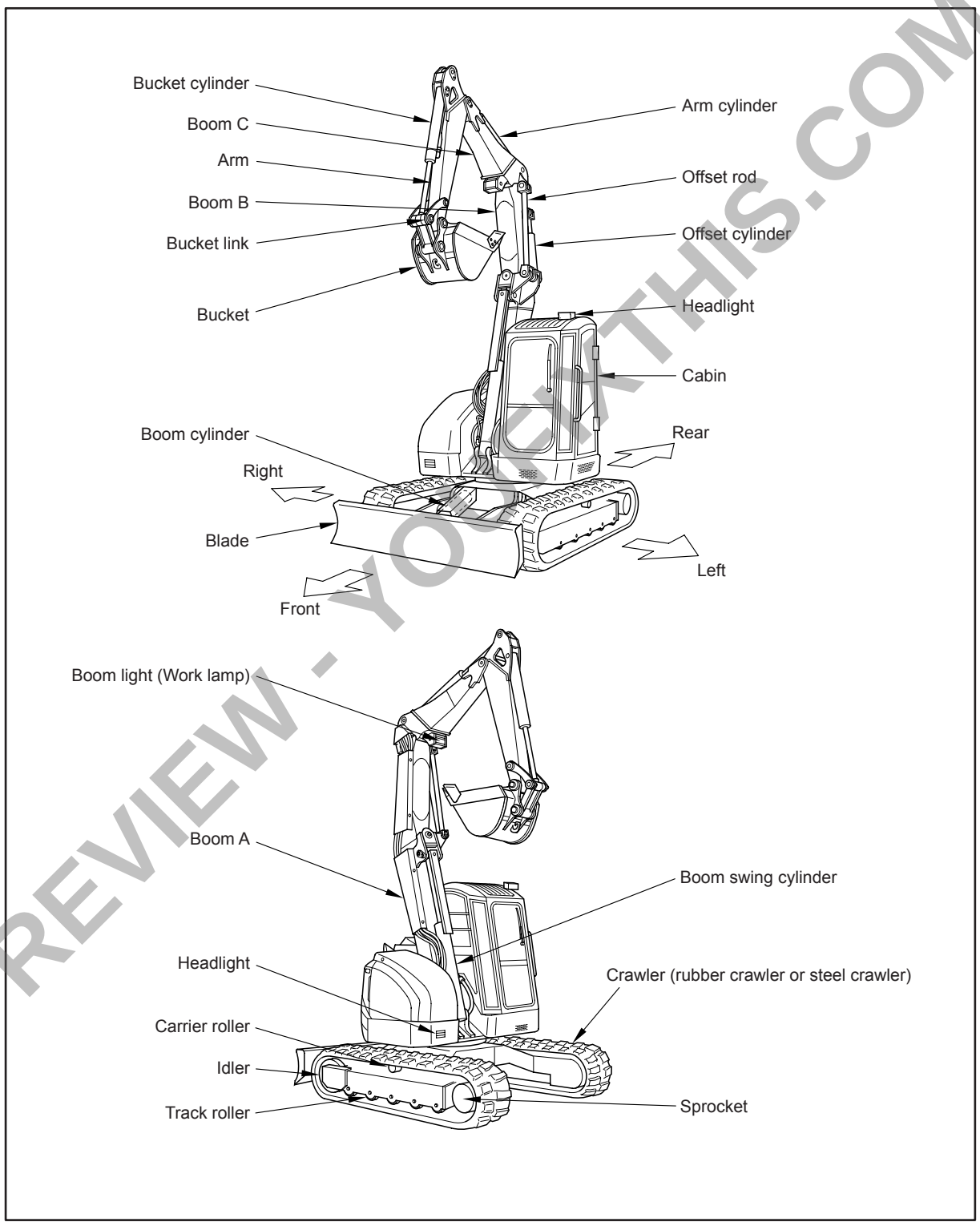


PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

11. Identification of Important Parts

11-1. Overview of the machine



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

22-2. Torque table

Bolts or nuts in the metric system should be tightened at the torque described below unless specified otherwise.

Item		Thread size × pitch	Tightening torque ft•lbf (N•m)	Remarks
Hexagon bolt (7T) Nut	Coarse threads	M6 × 1	7.2 to 8.7 (9.8 to 11.8)	1) Apply 80% tightening torque when tightened to aluminum. 2) Apply 60% tightening torque for 4T bolt and lock nut. 3) Use fine threads for engine only.
		M8 × 1.25	16.7 to 20.9 (22.6 to 28.4)	
		M10 × 1.5	32.5 to 43.4 (44.1 to 58.8)	
		M12 × 1.75	58 to 72.4 (78.5 to 98.1)	
		M14 × 2	86.8 to 108.5 (117.7 to 147.1)	
		M16 × 2	123 to 151.9 (166.7 to 206.0)	
		M18 × 2.5	173.6 to 209.8 (235.4 to 284.4)	
		M20 × 2.5	238.7 to 296.6 (323.6 to 402.1)	
	Fine threads	M14 × 1.5	94 to 108.5 (127.5 to 147.1)	
		M16 × 1.5	155.5 to 177.2 (210.8 to 240.3)	
PT plug		1/8	7.2 (9.8)	
		1/4	14.5 (19.6)	
		3/8	21.7 (29.4)	
		1/2	43.4 (58.8)	
Pipe joint bolt		M8	9.4 to 12.3 (12.7 to 16.7)	
		M12	18.1 to 25.3 (24.5 to 34.3)	
		M14	28.9 to 36.1 (39.2 to 49)	
		M16	36.1 to 43.4 (49.0 to 58.8)	

IMPORTANT

If a part to be tightened is made of resin like a panel board, excessive tightening torque may damage the tightened part. Be careful when tightening.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 12 of 222 pages

The full manual includes:

- All 222 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Yanmar B7-SIGMA (EP) Operator Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual