

WORKSHOP MANUAL

TB68 COMPACT EXCAVATOR

TAKEUCHI MFG. CO., LTD.

PUB. 1

FOREWORD

This manual is intended for persons who engage in maintenance operations, and explains procedures for disassembly and reassembly procedures for the machine, check and maintenance procedures, maintenance reference values, troubleshooting and outline specifications, etc. Please use this manual as a reference in service activities to improve maintenance techniques.

Further, please be advised that items contained in this manual are subject to change without notice due to design modifications, etc.

MACHINE FRONT AND REAR, LEFT AND RIGHT

The end where the dozer blade is mounted is the front and the end with the track gearboxes is the rear. Also the right and left sides of the operator when he is seated in the driver's seat are the right and left sides of the machine.

MACHINE SERIAL NUMBER

The machine serial number is stamped on the identification plate on the side of the frame opposite the driver's seat. When sending reports and inquiries, and when ordering parts, etc., be sure to include this number.

MANUAL CONTROL

Information on those to whom this manual is distributed is recorded in the lodger in the section in charge at this company, so please decide on a person to be in charge of it and control it. When there are updates or additions, etc., we will notify the person in charge.

Takeuchi MFG. Co., Ltd.

Design Business Dept.

MANUAL OVERVIEW

This manual is classified in the following series, and issued for each machine model.

- I. GENERAL
- II. SPECIFICATIONS
- III. DISASSEMBLY, REASSEMBLY
- IV. HYDRAULIC UNITS
- V. TROUBLESHOOTING

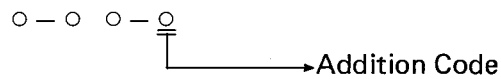
Sheet numbers

The following sheet numbers are assigned to each respective page. And if there are additional sheets, revisions, etc., an addition code or a revision code is supplied. Please file the sheets in the order of the sheet numbers.

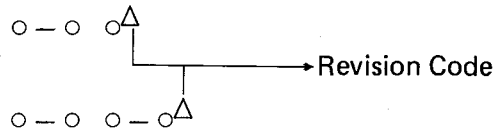
Sheet No.



Sheet Addition



Sheet Revision



Example: II-08

II-09

II-09-1 . . . A page is added between page 09 and page 10.

II-10

II-11[△] . . . Page 11 has been revised for the first time.

If a sheet has been revised, it is to be used in place of the sheet used before revision and it is not necessary to keep the old sheet.

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I. GENERAL

TAKEUCHI MFG. CO., LTD.

FOREWORD

This section "General", summarizes the basic items which persons servicing the machine should be cautious about, and includes only those items which are essential for safe and correct operation. Please read this section thoroughly and apply it in maintenance operations.

Further, since the contents of this Workshop Manual may change due to future revisions, if you have any opinions or observations concerning this manual, please notify the person responsible.

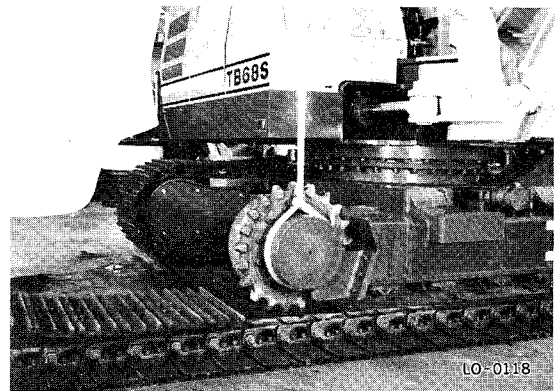
GENERAL

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GENERAL ITEMS OF CAUTION

1. Wear a helmet, safety shoes and work clothes.
2. Be sure to check equipment and tools, particularly equipment used for hoisting.
3. If more than one person is working together, decide the job and call sign and maintain good communications during operations.
4. Crane operation and hoisting should be done by persons with the proper qualifications.
5. Keep all persons from getting underneath a suspended load.
6. Before removing the installation bolts of heavy parts, support the parts by temporary hoisting using a crane.



7. If lifting a machine with a hoe attachment, etc. and going underneath it, be sure to support it with stands etc.



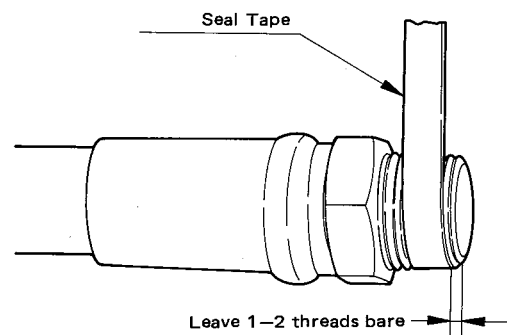
8. When repairing the electrical system, disconnect the cables from the battery before beginning the operation.
9. When welding the machine, disconnect the battery first.

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10. Maintain the standard tightening torques for piping and bolts, etc.
11. After completing repairs, run the engine at low speed, and conduct trial operation after filling it full with operating oil.

ITEMS OF CAUTION DURING DISASSEMBLY AND REASSEMBLY

1. Clean the machine before disassembly operations.
2. Before disassembly, check the machine conditions and record them.
 - Model, Machine Serial Number, Hourmeter
 - Reason for Repairs, Repair History
 - Dirtiness of Filters
 - Fuel and Oil Conditions
 - Damage to each part, etc.
3. To make reassembly operations easy, make matching marks at the necessary points.
4. Clean all disassembled parts and all new parts, then arrange them in the proper sequence.
5. Be sure to replace all seals and cotter pins, etc. with new parts.
6. Keep parts which should not come in contact with oil and water separate from parts with oil on them.
 - Electrical Parts, Rubber, V Belts, etc.
7. When installing bearings, bushings and oil seals, as a rule, use a press. When a hammer, etc. is used, it leaves bruises.
8. Wipe all joining surfaces clean so that there is no dirt or dust adhering to them.
9. Wrap seal tape from the front end, wrapping it tight and leaving 1 or 2 threads bare. Overlap the tape by about 10mm.

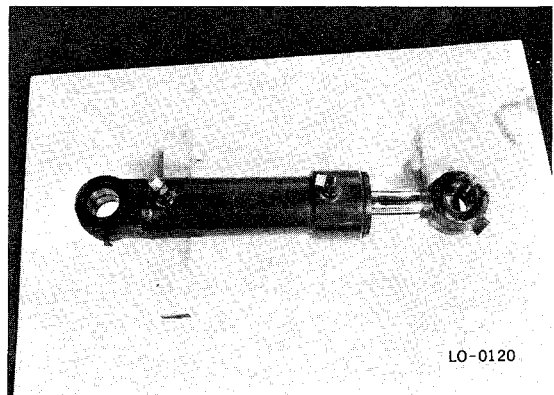


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ITEMS OF CAUTION DURING REMOVAL AND INSTALLATION OF THE HYDRAULIC UNITS

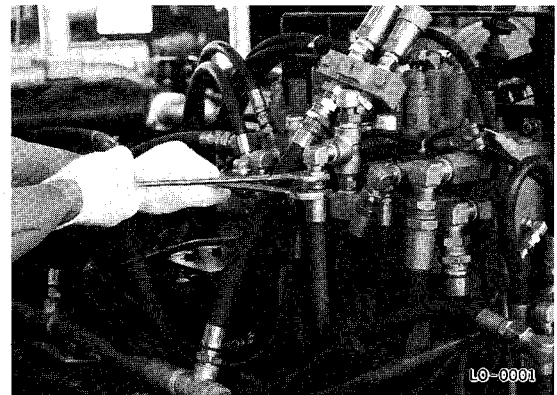
1. Make sure that the hydraulic oil's temperature has dropped.
2. To prevent hydraulic oil from flowing out, the air should be bled from the tank.
3. Be sure to install caps or plugs on all openings in the hydraulic unit to prevent dirt from getting into the unit through the openings.



4. It is easy to mistake hydraulic oil adhering to the hydraulic unit for an oil leak, so wipe the unit off thoroughly.
5. Be sure that no damage is done to the plating on the rod in the hydraulic cylinder.
6. As a rule, removal and installation of the hydraulic cylinder should be done with the rod fully contracted.
7. When removing and installing the hydraulic cylinder, be sure to bleed out the air.
 - Run the engine at low speed and operate the hydraulic cylinder 3 or more times slowly for the full stroke.
8. After installation of the hydraulic unit, be sure to pressurize the hydraulic oil tank. If this operation is forgotten, it could cause cavitation of the hydraulic pump. Also, it could have a drastic effect on the life of the hydraulic pump.
 - Hydraulic oil tank pressurization method:
With each cylinder in the fully extended state, tighten the air bleed plugs.

ITEMS OF CAUTION DURING REMOVAL AND INSTALLATION OF PIPING

1. When hydraulic hoses are installed, tighten them once to the prescribed torque, then loosen them slightly and retighten them to the prescribed torque.
 - Tighten the fittings after the installation surfaces fit snugly together.
 - Pieces wrapped with seal tape are excluded.
2. Use 2 spanners, each on an opposite side and remove and tighten fittings so that the hoses are not twisted.

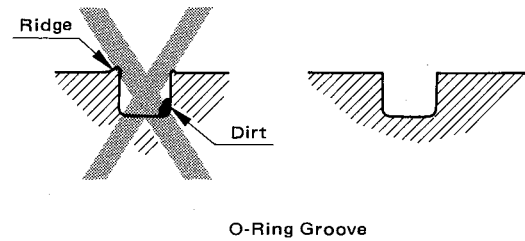


3. After installation of hydraulic hoses, confirm that there is no leakage ever when the maximum use pressure is applied 5 or 6 times.

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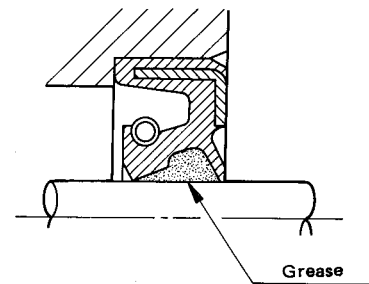
HANDLING OF SEALS

1. Clean the grooves in O-rings and if there is any ridge, etc., remove it.



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2. Be careful not to twist O-rings. If an O-ring is twisted, remove the twist with the fingertips.
3. During insertion, be careful not to damage the seal.
4. Handling of Floating Seals
 - Wipe all oil off the O-ring and housing of the floating seal.
 - When assembling, apply a thin coating of gear oil to the contact surface of the housing.
 - After assembly, turn the seal 2 or 3 times to get it to fit snugly.
5. Apply grease to the lip of the oil seal.
 - This is to prevent wear when it is first started up after assembly.



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TIGHTENING TORQUES

Hydraulic Hose Fittings

Thread Size	Union Nut (PF)		Taper Thread (PT)	
	kgf·m	ft·lb	kgf·m	ft·lb
1/8	0.8 ~ 1.2	5.8 ~ 8.6	1.0 ~ 1.3	7.2 ~ 9.4
1/4	2.5 ~ 3.0	18.1 ~ 21.7	2.7 ~ 3.0	19.5 ~ 21.7
3/8	5.0 ~ 6.0	36.2 ~ 43.4	5.0 ~ 6.0	36.2 ~ 43.4
3/4	10.0 ~ 12.0	72.3 ~ 86.7	13.5 ~ 16.5	97.6 ~ 119.3
1	14.0 ~ 15.0	101.2 ~ 108.4	18.0 ~ 22.0	130.2 ~ 159.1

Pipe Fittings (PT)

Thread Size	Steel		Case Steel	
	kgf·m	ft·lb	kgf·m	ft·lb
1/8	1.0 ~ 1.3	7.2 ~ 9.4	0.9 ~ 1.2	6.5 ~ 8.6
1/4	2.7 ~ 3.3	19.5 ~ 23.8	2.2 ~ 2.8	15.9 ~ 20.2
3/8	5.0 ~ 6.0	36.2 ~ 43.4	4.5 ~ 5.5	32.5 ~ 39.7
1/2	8.0 ~ 9.9	57.9 ~ 71.6	6.8 ~ 8.4	49.2 ~ 60.7
3/4	13.5 ~ 16.5	97.6 ~ 119.3	11.7 ~ 14.3	84.6 ~ 103.4
1	18.0 ~ 22.0	130.2 ~ 159.1	15.7 ~ 19.3	113.6 ~ 139.5

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Bolts and Nuts For ISO Strength Category 10.9

Thread Size	Coarse Thread		Fine Thread	
	kgf·m	ft·lb	kgf·m	ft·lb
M6	1.0 ~ 1.3	7.2 ~ 9.4		
M8	2.2 ~ 2.9	15.9 ~ 20.9	2.4 ~ 3.5	17.4 ~ 25.3
M10	4.6 ~ 5.9	33.3 ~ 42.6	4.9 ~ 6.3	35.4 ~ 45.5
M12	*8.5 ~ 11.0	*61.5 ~ 79.5		
M12	‡8.0 ~ 10.4	‡59.7 ~ 75.2	8.9 ~ 11.4	64.4 ~ 82.4
M14	13.0 ~ 16.7	94.0 ~ 120.8	13.1 ~ 16.9	94.8 ~ 122.2
M16	20.1 ~ 26.0	145.4 ~ 188.0	21.4 ~ 27.4	154.8 ~ 198.1
M20	40.0 ~ 51.0	289.3 ~ 368.8	43.8 ~ 56.0	316.8 ~ 405.0

*: Thread pitch = 1.5

‡: Thread pitch = 1.75

Thread Size		M6	M8	M10	M12	M14	M16	M20
Pitch	Coarse Thread	1.0	1.25	1.5	1.75	2.0	2.0	2.5
	Fine Thread	—	1.0	1.25	1.25	1.5	1.5	1.5

- So that the bolts and nuts are installed uniformly, tighten the top and bottom, left and right ones together.

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II. SPECIFICATIONS

TAKEUCHI MFG. CO., LTD.

FOREWORD

These specifications summarize data necessary for maintenance operations such as machine outline specifications and maintenance standards. Utilize these specifications when conducting checks before maintenance, checks after maintenance, replacing parts, etc. Also, for measures to take when there are abnormalities revealed in performance checks judgment standards and general check judgment standards, refer to "V. Troubleshooting" section.

Further, this workshop manual may be changed due to revisions in the future, so in order to make its contents more complete, if there are any opinions or considerations, please notify the person responsible.

SPECIFICATIONS

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