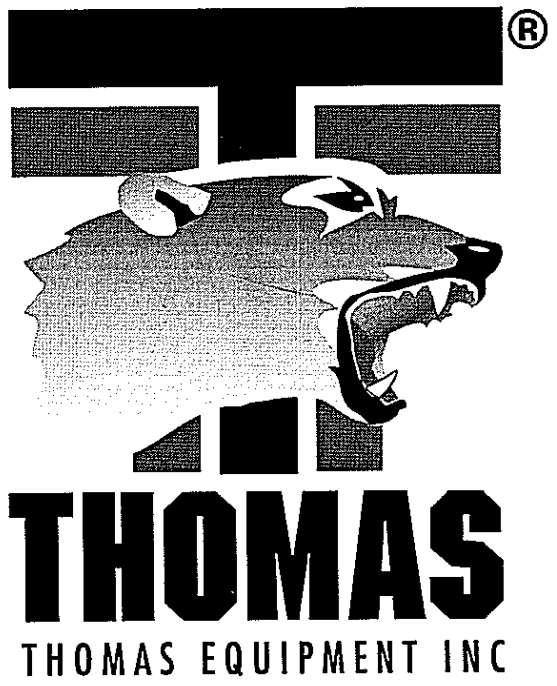
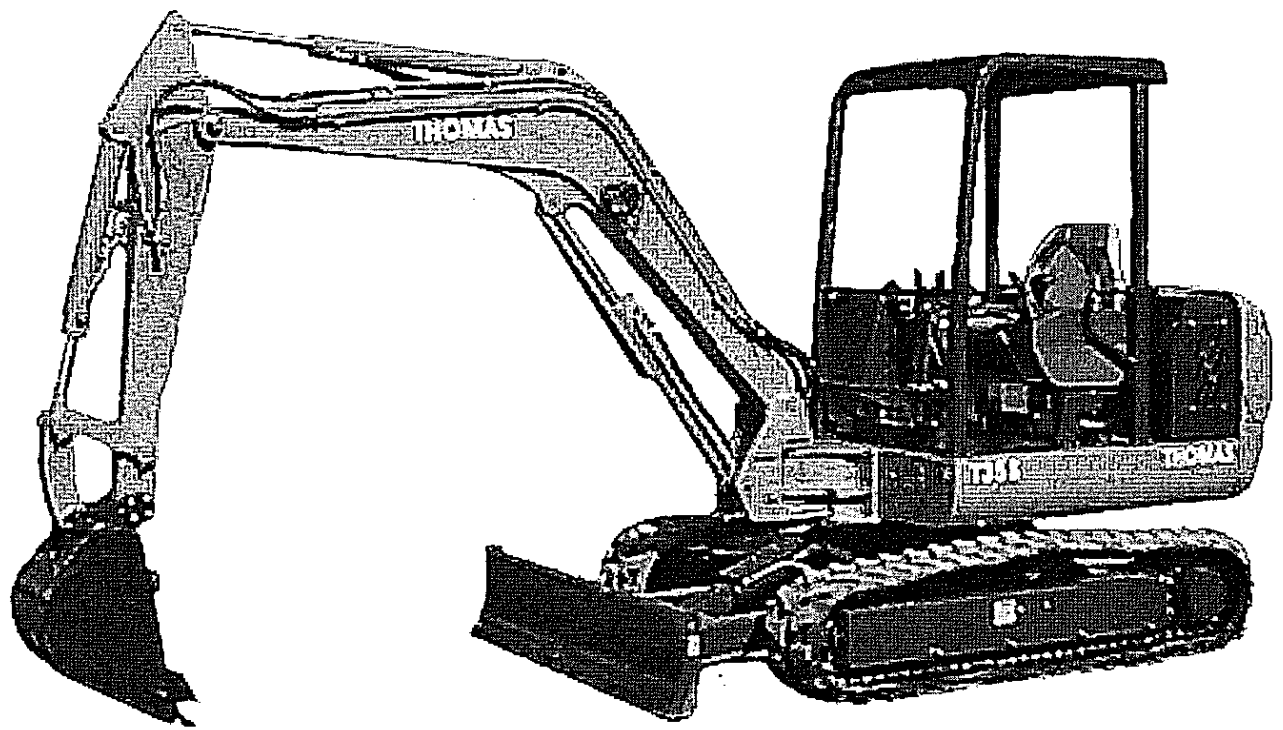


T35 S

MINI-EXCAVATOR



REPAIR

MANUAL

PUBLICATION No. 44223
DATE: August 1998

THOMAS EQUIPMENT LIABILITY WARRANTY

THE WARRANTY IS THE ONLY OBLIGATION OF THOMAS OR A THOMAS DEALER TO THE PURCHASER OR ANYONE ELSE CONCERNING A PRODUCT, ITS SERVICE, ITS USE OR PERFORMANCE OR ITS LOSS OF USE OR FAILURE TO PERFORM. NEITHER THOMAS NOR A THOMAS DEALER HAVE MADE AND NEITHER WILL MAKE ANY OTHER EXPRESSED OR IMPLIED REPRESENTATION, WARRANTY OR AGREEMENT CONCERNING A PRODUCT. NEITHER THOMAS NOR A THOMAS DEALER HAVE MADE OR WILL MAKE ANY REPRESENTATION, WARRANTY OR AGREEMENT CONCERNING A PRODUCTS MERCHANABILITY OR OTHER QUALITY, ITS SUITABILITY FOR PURCHASER'S PURPOSE (EVEN IF A PURCHASER HAS INFORMED THOMAS OR A THOMAS DEALER OF THAT PURPOSE), ITS DURABILITY, PERFORMANCE OR OTHER CONDITION.

EVEN IF THOMAS OR A THOMAS DEALER WAS ADVISED OF THE POSSIBLTY OF SUCH LOSS, NEITHER THOMAS NOR A THOMAS DEALER WILL BE LIABLE TO PURCHASER OR ANYONE ELSE FOR ANY INDIRECT, INCIDENTAL CONSEQUENTIAL, PUNITIVE, ECONOMIC, COMMERCIAL, OR SPECIAL LOSS WHICH IS IN ANY WAY ASSOCIATED WITH A PRODUCT. THIS INCLUDES ANY LOSS OF USE OR NON-PERFORMANCE OF A PRODUCT, ANY REPLACEMENT RENTAL OR ACQUISITION COST, ANY LOSS OF REVENUE OR PROFITS, ANY FAILURE TO REALIZE EXPECTED SAVINGS, ANY INTEREST COSTS, ANY IMPAIRMENT OF OTHER GOODS, ANY INCONVENIENCE OR ANY LIABILITY OF PURCHASER TO ANY OTHER PERSON.

PURCHASER MAY NOT ATTEMPT TO ENLARGE ITS RIGHTS UNDER THE WARRANTY BY MAKING A CLAIM FOR INDEMNITY, FOR BRACH OF CONTRACT, FOR BREACH OF COLLATERAL WARRANTY, FOR A TORT (INCLUDING NEGLIGENCE, MISREPRESENTATION OR STRICT LIABILITY) OR BY CLAIMING ANY OTHER CAUSE OF ACTION.

THE WARRANTY IS A CONDITION OF SALE OF THE PRODUCT TO PURCHASER AND WILL THEREFORE APPLY EVEN IF PURCHASER ALLEGES THAT THERE IS A TOTAL FAILURE OF THE PRODUCT.

N.B. Read and practice your Thomas operating and servicing instructions. Failure to do this may void your warranty.

PUBLICATION NO. 44223 August 1998

INTRODUCTION

To insure a long life for the machine and the engine and to prevent failure and problems, proper operation, maintenance and repairs are indispensable.

This service manual includes an "outline," "structure and operation," "inspection and adjustment," "disassembly and assembly," "standard maintenance," and "repair and replacement of parts" of the machine which are necessary to carry out the inspections and repairs in the repair shop.

We hope that this manual helps you to efficiently and effectively carry out repairs by providing and accurate description of the product and the correct repair techniques.

CONTENTS

1. Precautions on Maintenance
2. Outline
3. Attachment
4. Engine
5. Main Pump
6. Hydraulic Oil Filter
7. Control Valve
8. Joystick
9. Slew Motor
10. Travelling Motor
11. Hydraulic Cylinder
12. Swivel Joint
13. Crawler
14. Spring Case and Grease Cylinder
15. Idler
16. Sprocket
17. Track Roller
18. Carrier Roller
19. Electrical Equipment
20. Troubleshooting

1 PRECAUTIONS ON MAINTENANCE

1. Correct operation

Correct operation means to follow the correct "procedure" and "method."

Procedure focuses on speed and accuracy of each job.

In the method, are addressed what type of facility, tools, instruments, materials, oil should be used, how and which part should be checked, adjusted or disassembled, and what matters to attend to.

2. Precautions on operation

1. Safety check

Check that stoppers and sleepers are correctly installed for the vehicle jack-up operation.

2. Preparation

Prepare all of the tools and inspect and adjust the instruments.

3. For efficiency

1) Understand the state before disassembly.

What is the problem? Is disassembly absolutely necessary?

2) Before disassembly

Determine whether match marks are necessary. For the electrical system, disconnect the cable from the battery terminal.

3) Precautions for disassembly

In stead of checking all of the disassembled parts at once, check each part individually as it is disassembled. When removing the hydraulic unit or the hoses, mount a dust cap on the connection.

4) Repair of disassembled parts

Keep the disassembled parts in order. Clearly distinguish the parts to be replaced with new parts from those to be reused. Packings, seals, rings, split pins must be replaced.

NOTE:

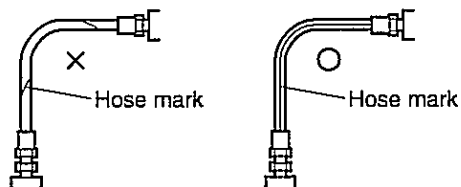
Electrical equipment, rubbers and V belts (which are easily affected by water and oil) must be handled carefully in order to prevent soiling them.

5) Clean disassembled parts

Thoroughly clean the disassembled parts.

6) Assembly

Perform the assembly correctly (tightening torque, application of Three Bond, screw lock, grease, use of seal tape, etc.). Also install the hose correctly.

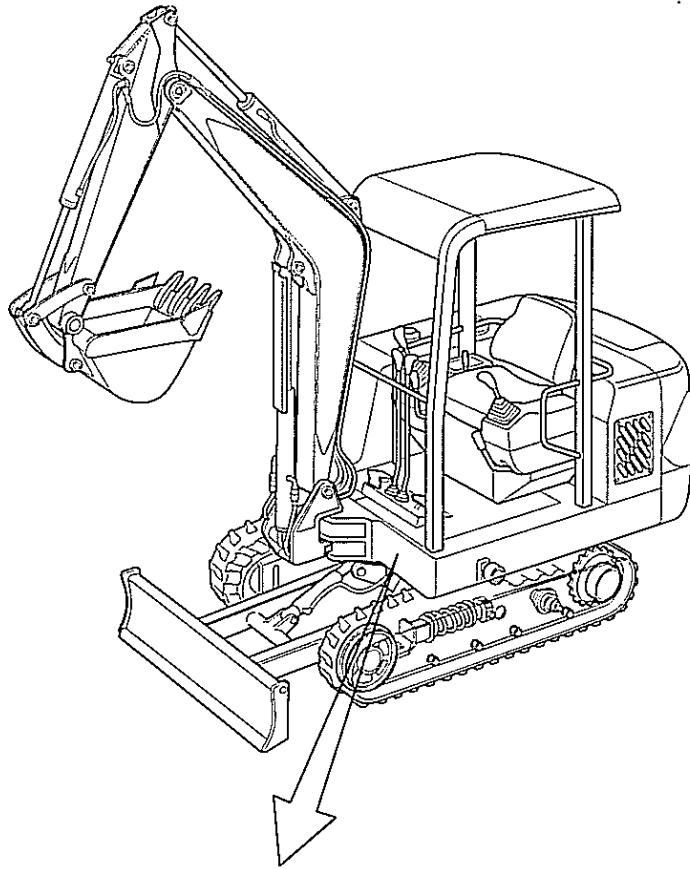


2 OUTLINE

CONTENTS

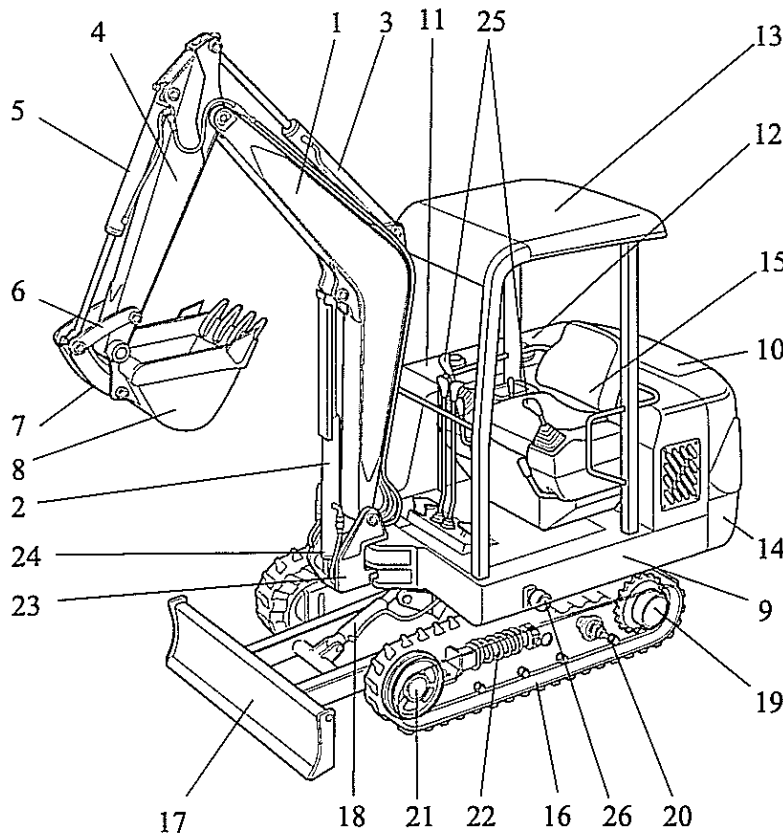
- 2-1 Location of serial No.
- 2-2 Name of each part
- 2-3 Dimensions and specification
- 2-4 Weight list
- 2-5 Oil and grease supply points
- 2-6 List of supply oil and grease
- 2-7 When to repair
- 2-8 Hydraulic circuit diagram

2-1 Location of Serial Number

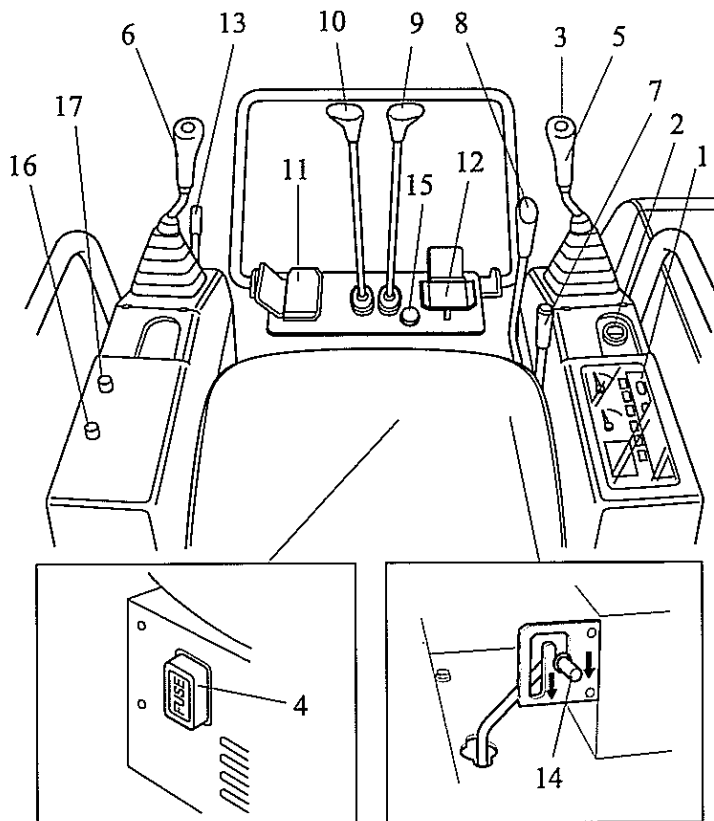


| | | |
|-------------------------------|-------------------------------------|------------|
| <i>NKK</i> | | |
| MODEL NUMBER | <input type="text"/> | Model name |
| PRODUCT IDENTIFICATION NUMBER | <input type="text"/> | Serial No. |
| MACHINE WEIGHT | <input type="text"/> Kgf | |
| BUCKET CAPACITY | <input type="text"/> m ³ | |
| NAGANO INDUSTRY CO. LTD. | | |

2-2 Name of each part

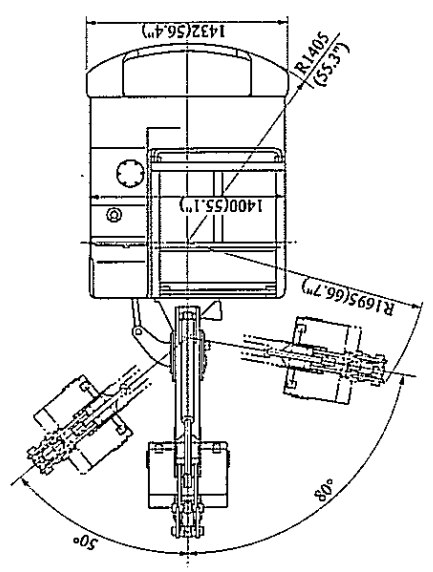
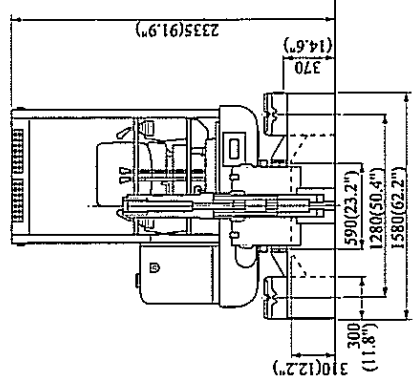
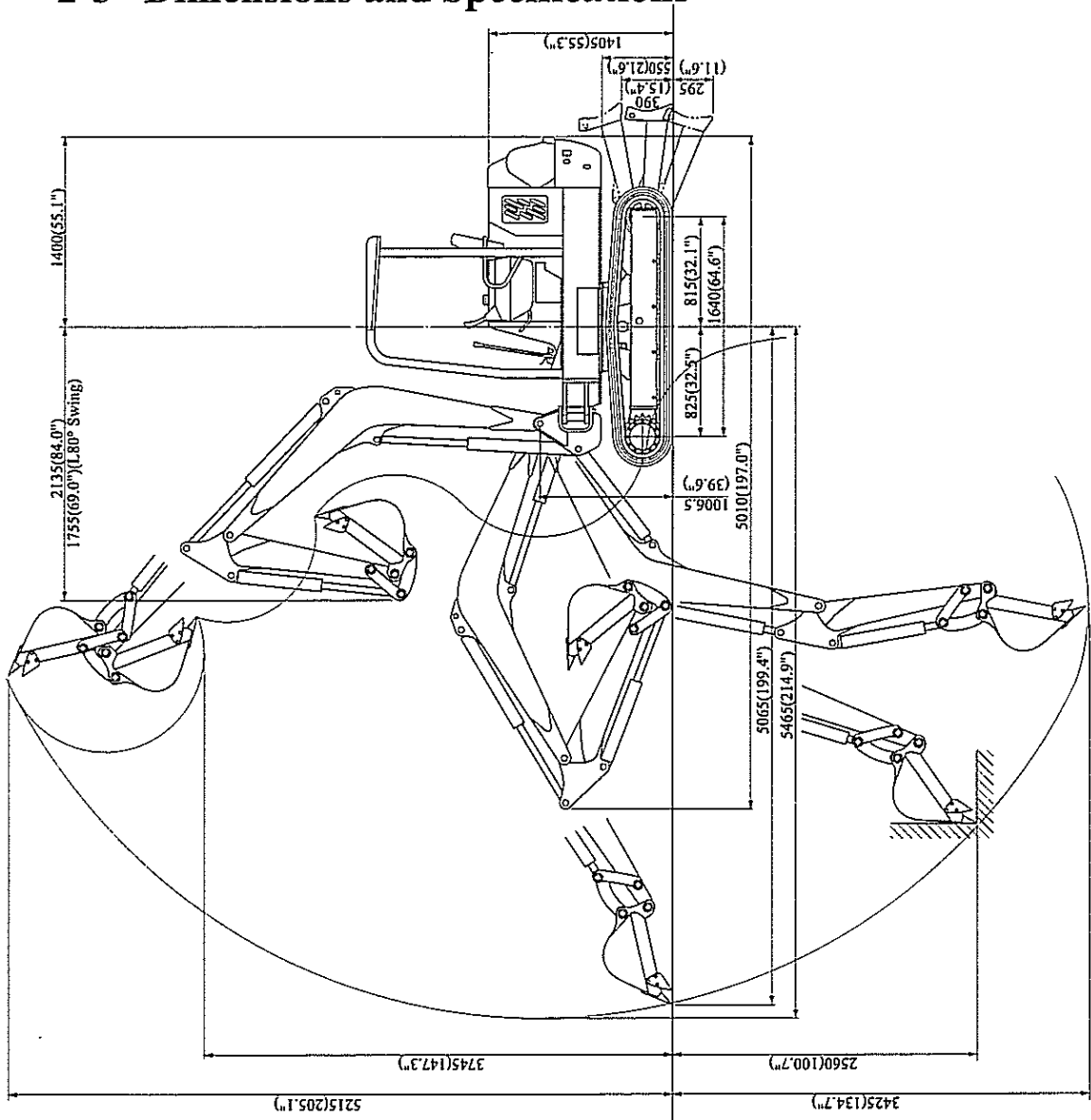


1. Boom
2. Boom cylinder
3. Arm cylinder
4. Arm
5. Bucket cylinder
6. Bucket links
7. Dump link
8. Bucket
9. Swing frame
10. Engine cover
11. Fuel tank
12. Hydraulic tank
13. Roof
14. Counter weight
15. Operator's seat
16. Crawler
17. Dozer blade
18. Dozer cylinder
19. Drive/Track motor
20. Track roller
21. Front idler
22. Grease cylinder
23. Swing post
24. Swing cylinder
25. Operation levers
26. Carrier roller



1. Meter unit
2. Starter switch
3. Horn switch
4. Fuse box
5. Right operation lever
6. Left operation lever
7. Accelerator lever
8. Dozer operation lever
9. Right travelling lever
10. Left travelling lever
11. Swing pedal
12. P.T.O. pedal
13. Operation lock lever
14. Swing lock pin
15. Overdrive pedal
16. Heater switch (for Cabin)
17. Wiper switch (for Cabin)

2-3 Dimensions and Specifications



| Model | | T35 S | | |
|--------------------------|--------------------------------------|-----------------------------------|--|---------------|
| Machine weight | Roof rubber | Kgf(lbf) | 3,230 (7,122) | |
| | Roof steel | | 3,280 (7,234) | |
| | Cabin rubber | | 3,320 (7,320) | |
| | Cabin steel | | 3,370 (7,430) | |
| Standard bucket capacity | | m ³ (ft ³) | 0.11 (3.88ft ³) | |
| Standard bucket width | | mm(in) | 590 (23.2") | |
| Engine | Type | ISUZU 3LD1-PA20 | | |
| | Displacement | cc(in ³) | 1,496 (91.2") | |
| | Rated output | ps(kw)/rpm | 29 (21.3)/2,400 | |
| Working range | Max.digging depth | mm(in) | 3,425 (134.7") | |
| | Max.vertical digging depth | mm(in) | 2,560 (100.7") | |
| | Max.digging height | mm(in) | 5,215 (205.1") | |
| | Max.dumping height | mm(in) | 3,745 (147.3") | |
| | Max.digging radius | mm(in) | 5,465 (214.9") | |
| | Min.turning radius | front | mm(in) | 2,135 (84.0") |
| | | swing | mm(in) | 1,695 (66.7") |
| Rear end radius | mm(in) | 1,405 (55.3") | | |
| Boom swing angle | Angle | Left80°/Right50° | | |
| Dimensions | Overall length | mm(in) | 5,010 (197.0") | |
| | Overall width | mm(in) | 1,580 (62.2") | |
| | Overall height | mm(in) | 2,335 (91.9") | |
| | Dozer(width~height) | mm(in) | 1,580~370(62.2"~14.6") | |
| Performance | Travelling speeds | Kph(mph) | 3.1(1.9), 4.6(2.8) | |
| | Slew speed | rpm | 9.0 | |
| | Gradeability | Angle | 30° | |
| | Max.digging force | Kgf(lbf) | 3070 (6,769) | |
| Undercarriage | Ground pressure | Roof rubber | 0.33(4.7) | |
| | | Cabin rubber | 0.34(4.8) | |
| | Shoe width~tumbler center | mm(in) | 300~1,640(11.8"~64.6") | |
| | Type of travelling motor | Piston shoe-in type | | |
| Crawler tension system | Grease cylinder | | | |
| Hydraulic pressure | Type of hydraulic pump | Piston~2, Gear~1 | | |
| | Main pump oil flow Qty. (P1)(P2)(P3) | l,in ³ ,gal/min | (42, 2,562, 11.1) (42.2, 2,562, 11.1) (25.2, 1,537, 6.7) | |
| | P.T.O oil flow Qty. | l,in ³ ,gal/min | 65.9, 4,020, 17.4 | |
| | Pressure P1,P2,P3 | Kgf/cm ² (psi) | 210(2,987), 210(2,987), 175(2,489) | |
| Capacity | Hyd.oil capacity | l,in ³ ,gal | 50, 3,050, 13.2 | |
| | Engine oil capacity | l,in ³ ,gal | 6.3, 384, 1.70 | |
| | Fuel capacity | l,in ³ ,gal | 40, 2,440, 10.6 | |
| | Cooling water capacity | l,in ³ ,gal | 6.4, 391, 1.7 | |
| Noise level LwA/LpA | | dB | 95/80 | |