SHOP MANUAL

KOMATSU

GD600-1 SERIES

MACHINE MODEL	SERIAL No.
GD600R-1	10002 and up
GD650R-1	20001 and up
GD605R-1	30002 and up
GD655R-1	40001 and up
GD605A-1	50002 and up
GD655A-1	60001 and up

The affected pages are indicated by the use of the following marks. It is requested that necessary actions be taken to these pages according to the table below.

Mark	Indication	Action required
○	Page to be newly added	Add
●	Page to be replaced	Replace
( )	Page to be deleted	Discard

Pages having no marks are those previously revised or made additions.

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CONTENTS

IMPORTANT SAFETY NOTICE

Proper service and repair is extremely important for the safe operation of machine. The service and repair techniques recommended by Komatsu and described in this manual are both effective and safe methods of operation. Some of these operations require the use of tools specially designed by Komatsu for the purpose.

To prevent injury to workers, the symbols  and  are used to mark safety precautions in this manual. The cautions accompanying these symbols should always be followed carefully. If any dangerous situation arises or may possibly arise, first consider safety, and take the necessary actions to deal with the situation.

FOREWORD

This shop manual has been prepared as an aid in improving the quality of repairs by giving the serviceman an accurate understanding of the product and by showing him the correct way to perform repairs and make judgements. Make sure you understand the contents of this manual and use it to full effect at every availably opportunity.

Organization

This shop manual mainly contains the necessary technical information for operations performed in a service workshop.
For ease of understanding, the manual is divided into chapters for each main group of components; these chapters are further divided into the following sections.

Structure and function

This section explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting.

Testing and adjusting

This section explains checks to be made before and after performing repairs, as well as adjustments to be made at completion of the checks and repairs. Troubleshooting charts correlating "Diagnoses" to "Causes" are also included in this section.

Disassembly and assembly

This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

Maintenance standards

This section gives the judgement standards when inspecting disassembled parts.

USING THE SHOP MANUAL

Volumes

Shop manuals are issued for carrying out repairs.

They are divided as follows:

Chassis volume: **issued for every machine model**

Engine volume: issued for each engine series

Electrical volume :
Fuel system volume : } each issued as one volume to cover all models
Attachments volume :

In addition, the following volumes are issued for high level rebuilding techniques to cover all models.

Engine volume

Undercarriage volume

The following volumes are issued for inspection and tests after repairs:

Guidance for reusable parts volume

Bench test methods volume

These various volumes are designed to avoid duplicating the same information. Therefore to deal with all repairs for any model, it is necessary to have the shop manual for that model as well as the relevant engine volume, the fuel system volume and the electrical volume.
This shop manual is **chassis volume.**

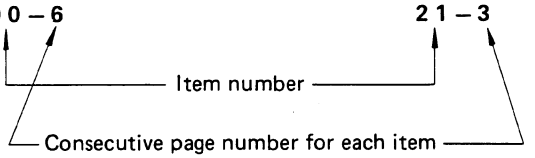
Distribution and Updating

Recipients of shop manuals are recorded at the Komatsu Head Office. Any additions, amendments or other changes will be sent to all recipients without fail, so someone should be appointed to be in charge of manuals. In this way, pages can be added or removed immediately and the manuals kept up to date and easy to use.

Filing Method

1) File under the manual title file printed on the bottom of the page.
2) Method of taking out the pages for filing is as follows: First order each item number starting with the lowest, and next order according to the consecutive page number for each item.

Example: **0 0 – 6** **2 1 – 3**



3) Additional pages: Additional pages are indicated by a dash (–) and number after the page number. File as in the example.

Example: **21 – 4**
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Pages added between **21 – 4** and **21 – 5**

Besides this, when necessary, information will be written in the filing ring hole's margin. Look when filing.

Revised Edition Mark

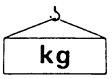
When a manual is revised, a revision number is placed within a circle and printed on the bottom inside corner of the pages to distinguish it from the old manual. Therefore, higher circled numbers supersede lower ones.

Revisions

A table listing revisions and revised pages to the present is printed on the back of the title page, so when there is a revision, revise the title page also, and use it to keep the file in order.

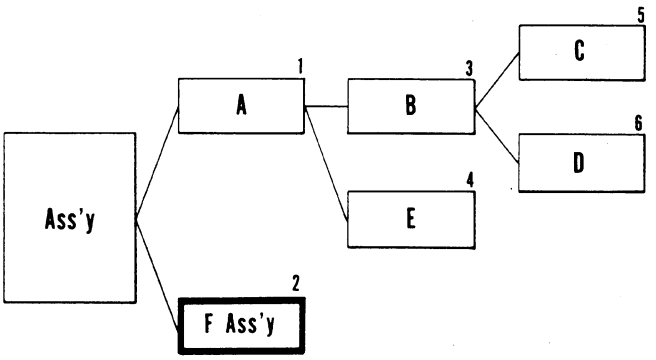
Symbols

So that the shop manual can be of sufficient practical use, we have marked important places for safety and quality with the following symbols.

SYMBOL	ITEM	REMARKS
	Safety	Special safety precautions are necessary when performing the work.
		Extra special safety precautions are necessary when performing the work because it is under internal pressure.
	Caution	Special technical precautions or other precautions for preserving standards are necessary when performing the work.
	Weight	Weight of parts or systems. Caution necessary when selecting hoisting wire, or when working posture is important, etc.
	Tightening torque	Places that require special care with the tightening torque when assembling.
	Coat	Places to be coated with adhesives, etc. when assembling.
	Oil, water	Places for filling with oil, etc. Oil capacity.
	Drain	Places for draining oil, etc. Quantity to be drained.

Network Diagrams

The standard procedures for disassembly and assembly are described and shown in photographs for each part of the machine.
The sequence or steps employed in disassembly and assembly are shown in network diagrams as depicted below.



The sequence of the procedural steps is given in arabic numbers on the top right of each block. For example, when it is necessary to remove part **D** from the assembly, the steps for removal should be **A** → **B** → **D**. Or, to remove part **E** the step is **A** → **E**. F Ass'y is an assembly for which the disassembling procedure is described separately. For assembly, the sequence is presented under each section, in the same manner as for disassembly.

Troubleshooting Chart

As shown below, the symptoms relating to a particular trouble are described in the line designated "Diagnoses". The cause of the trouble is then correlated under the "Causes" column and is shown marked.

Problem No. 1 Reduced tractive power or slow travel speed.

Diagnoses	Causes: Oil leaks in torque converter	Air suction in the hydraulic pump	
Torque converter oil pressure gauge shows lower than normal pressure. (normal 3 ~ 4.8 kg/cm²)	○	○	○
Transmission oil pressure gauge shows lower than normal pressure. (normal 20 ~ 23 kg/cm²)		○	
	○		

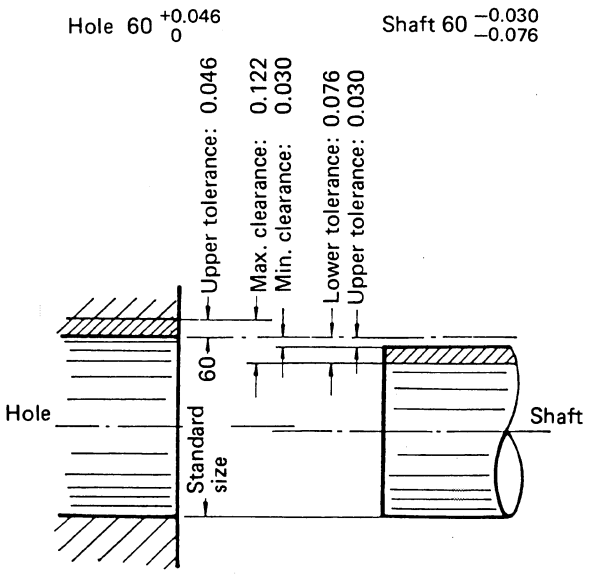
DEFINITION

Standard Size, Tolerance

The dimensions of finished parts each differ a little. Therefore, when determining the finished dimensions of parts, a dimension that will be standard is determined provisionally, and then the difference allowed from it is indicated. The former is called the **standard size**, and the latter the **tolerance**.
The way to show this is by a plus or a minus sign with the tolerance in smaller numerals to the right the standard size.

Example: $120^{-0.022}_{-0.126}$ (The same meaning as 119.874 – 119.978)

Moreover, when expressing the dimensions of a hole and the shaft that goes inside it, for the sake of convenience, the standard size for the hole and the shaft usually taken as the same, and the tolerances changed to indicate the tightness of the fit. For example, the fit of revolving shaft is indicated as follows, and is shown in the drawing.



Standard Size

This is the standard value at the time of design, the finished dimension of new parts.

Repair Limit

This is the limit in dimension up to which the part can be used. (The size of parts changes due to wear or distortion during use). When parts exceed the repair limit, they must be repaired or replaced as specified.

Standard Clearance

This is the clearance between two new parts after assembly, shown as a range between minimum clearance and maximum clearance. In general, parts are adjusted to this clearance after repair.

Clearance Limit

This is the maximum clearance allowed between parts. (The clearance increases due to wear, etc. during use.)
When the clearance exceeds the clearance limit, the parts must be repaired or replaced as specified.

Maintenance Standard

This is the number given to items in diagrams of individual components. The same number is given in the left-hand column for ease of identification.

Unit: mm

No.	Check item	Criteria			Remedy
		Serial No.	Standard size	Repair limit	
1					

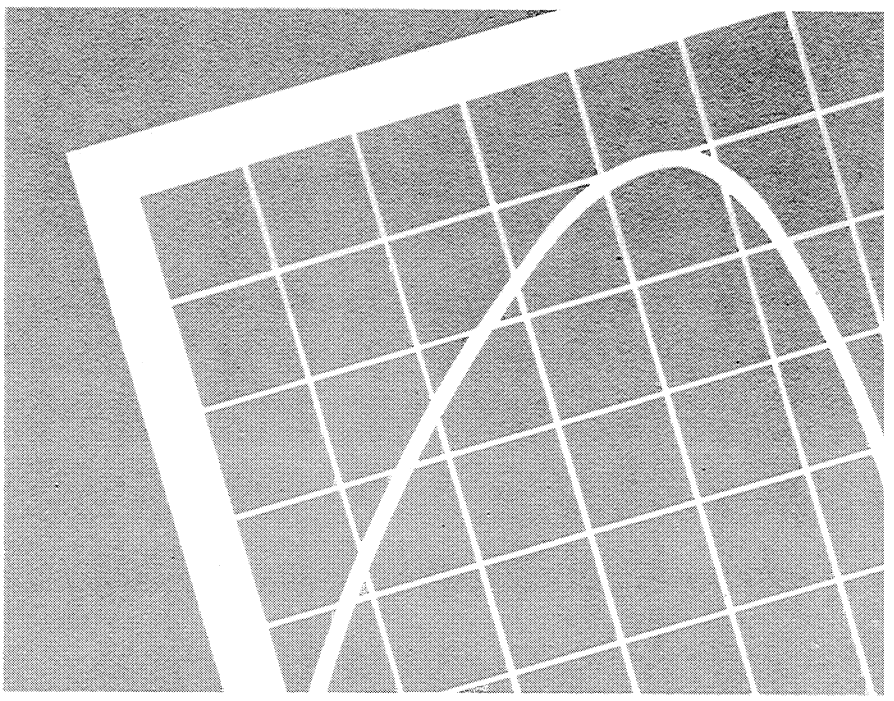
Unit: mm

No.	Check item	Criteria						Remedy
		Serial No.	Standard size	Tolerance		Standard clearance	Clearance limit	
				Shaft	Hole			
10								

SHOP MANUAL

GD600 SERIES

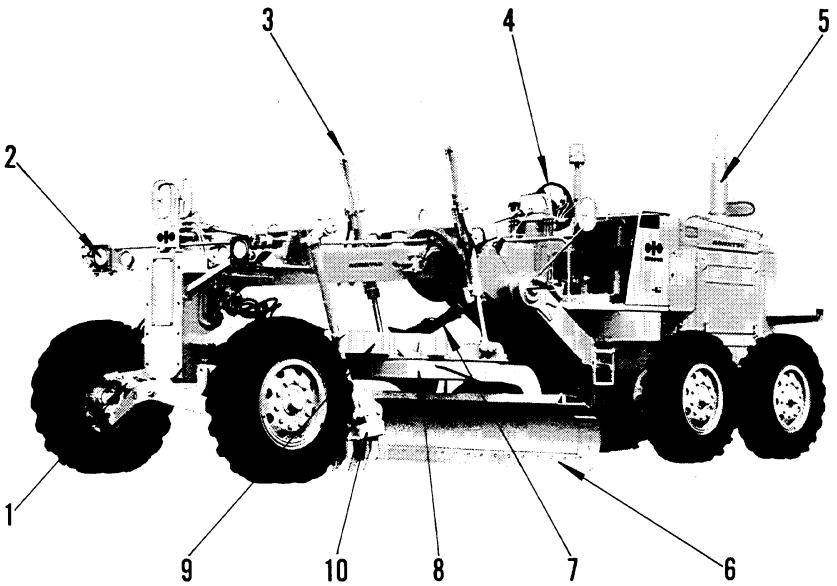
01 GENERAL



GENERAL

GENERAL LOCATIONS

GD600R-1, GD650R-1



1. Leaning cylinder
2. Head lamp
3. Blade lift cylinder
4. Steering wheel
5. Exhaust pipe
6. Blade
7. Drawbar side-shift cylinder
8. Circle
9. Drawbar
10. Scarifier (OP)

(OP): optional parts