

# SHOP MANUAL

**KOMATSU**

**HD200-2**

MACHINE MODEL	SERIAL No.
<b>HD200-2</b>	<b>1002 and up</b>

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.

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## 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 available 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.






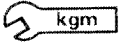







# FOREWORD

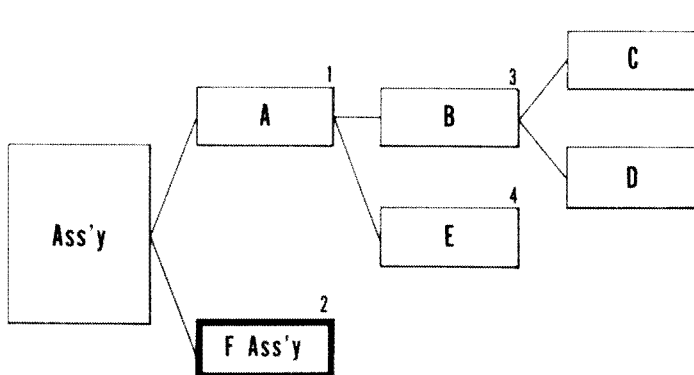
## Symbols

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
	Security	This indicates work that requires special precautions for the security of the machine when assembling.
	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 "Cause" 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/cm <sup>2</sup> )	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transmission oil pressure gauge shows lower than normal pressure. (normal 20 ~ 23 kg/cm <sup>2</sup> )	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## DEFINITION

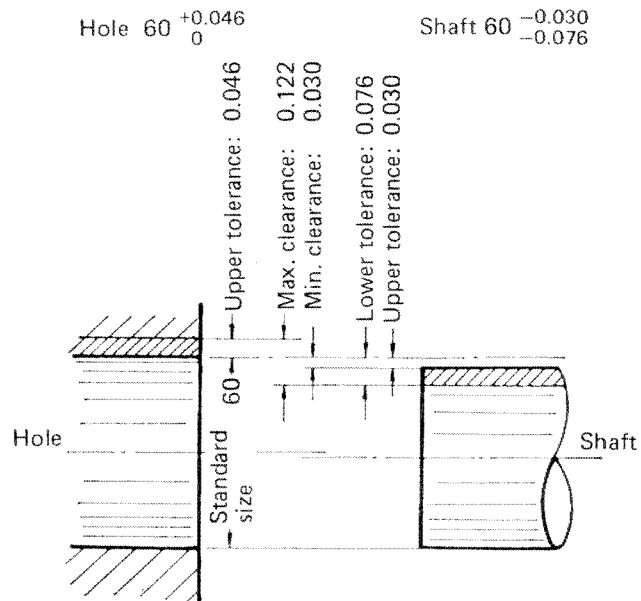
### Standard Size, Tolerance

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 of the standard size.

**Example:**  $120 \begin{smallmatrix} -0.022 \\ -0.126 \end{smallmatrix}$  (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								

## KOMATSU SEALANT

Komatsu Sealant	Komatsu code	Working temperature	Purpose and Application	How to Use	Precautions
GASKET SEALANT (Liquid gasket)	LG-1		Prevents leakage of gas from valves, plugs, threads, gaskets, joint seats and oil seats of the cylinder head and oil pan housing.	<ol style="list-style-type: none"> <li>Before applying sealant, thoroughly remove water, oil and grease. The sealing effect will increase considerably when sealant is applied to both the mating surfaces.</li> <li>Dry the applied sealant for 4 to 6 minutes before joining the mating surfaces.</li> </ol>	<ol style="list-style-type: none"> <li>Keep sealant away from flames.</li> <li>Keep sealant in a closed vessel and store in a cool and dark place.</li> </ol>
METAL SEALANT	LG-4		Use when installing the final drive case and transmission case, etc. Surface coated with this sealant will not require a gasket.	<ol style="list-style-type: none"> <li>Before applying sealant, thoroughly remove water, oil and grease from the surface to be coated.</li> <li>The sealing effect will increase considerably when sealant is applied to both the mating surfaces.</li> <li>Dry the applied sealant for 4 to 6 minutes before joining the mating surfaces.</li> </ol>	<ol style="list-style-type: none"> <li>Keep sealant away from flames.</li> <li>Keep sealant in a closed vessel and store in a cool and dark place.</li> </ol>
THREAD TIGHTENER (Adhesives)	LT-2	-50° to +120° C	Used for fixing bolts, plugs and screws.	<ol style="list-style-type: none"> <li>Before applying tighter, thoroughly remove water, oil and grease from surfaces to be coated.</li> <li>Apply 2 to 3 drops of tightener to the threads.</li> <li>Immediately tighten the bolt, and its threads will soon stick.</li> </ol>	<ol style="list-style-type: none"> <li>Some persons may be allergic to this agent. Be sure to wash your hands immediately after using the agent.</li> </ol>
MOLY LUBRICANT (Molybdenum) disphide	LMP (MoS <sub>2</sub> )	-20° to +400° C	<ol style="list-style-type: none"> <li>Prevents sticking and seizing during assembly and break-in.</li> <li>Facilitates disassembly.</li> </ol> Typical application: Press-fitted bearings, key and pins.	<ol style="list-style-type: none"> <li>Wipe clean the surface to be coated with lubricant.</li> <li>On repairing the machine, apply a thin, even coat of lubricant to the fitting parts using a brush or spatula.</li> </ol>	<ol style="list-style-type: none"> <li>Keep lubricant in a closed vessel.</li> </ol>
RUST PROOF SPRAY			Usable for wide application such as rustproofing, lubrication, and moisture proofing, as well as for loosening rusted screws.	<ol style="list-style-type: none"> <li>Spray the part:</li> </ol>	<ol style="list-style-type: none"> <li>Do not aim the spray at the human body.</li> <li>This spray is HIGHLY INFLAMMABLE. Never bring it in the vicinity of an open fire.</li> <li>Do not use a large quantity of spray in a room with marking fire.</li> <li>Do not store at 40° C or above.</li> <li>Never put an empty spary can into a fire.</li> </ol>
SEALING TAPE			Prevents oil leakage from plugs and flanges in hydraulic circuits.	<ol style="list-style-type: none"> <li>Wind sealing tape on the threaded part of a plug or flange.</li> <li>Screw in the plug or flange with the sealing tape left wound.</li> </ol>	<ol style="list-style-type: none"> <li>Be careful not to confuse the proper winding direction of sealing tape. Sealing, tape should not slacken when tightening the screw.</li> </ol>

# ELECTRIC WIRE CODE

In the wiring diagrams, various colors and symbols are employed to indicate thickness of wires with black sprite.

Example: 05WB indicates a cable having a nominal number 05 and white coating

## Classification by thickness

Nominal number	Copper wire			Cable O.D. (mm)	Current rating (A)	Circuits applied
	Number strands	Dia. of strand (mm)	Cross section (mm <sup>2</sup> )			
01	11	0.32	0.88	2.4	12	Starting, lighting, signal and instrument
02	26	0.32	2.09	3.1	20	Lighting, signal and instrument
05	65	0.32	5.23	4.6	37	Charging and signal
15	84	0.45	13.36	7.0	59	Starting (Glow plug)
40	85	0.80	42.73	11.4	135	Starting
60	127	0.80	63.84	13.6	178	Starting
100	217	0.80	109.1	17.6	230	Starting

## Classification by color and code

Pri- ority	Classi- fication	Circuits	Starting	Charging	Lighting	Signal	Instrument	Other
			1	Primary	Code	B	W	R
		Color	Black	White	Red	Green	Yellow	Blue
2	Auxiliary	Code	BW	WR	RW	GW	YR	LW
		Color	Black & White	White & Red	Red & White	Green & White	Yellow & Red	Blue & White
3		Code	BY	WB	RB	GR	YB	LR
		Color	Black & Yellow	White & Black	Red & Black	Green & Red	Yellow & Black	Blue & Red
4		Code	BR	WL	RY	GY	YG	LY
		Color	Black & Red	White & Blue	Red & Yellow	Green & Yellow	Yellow & Green	Blue & Yellow
5		Code	—	WY	RG	GB	YL	LB
		Color	—	White & Yellow	Red & Green	Green & Black	Yellow & Blue	Blue
6		Code	—	WG	RL	GL	YW	
		Color	—	White & Green	Red & Blue	Green & Blue	Yellow & White	

# SHOP MANUAL

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## HD200-2

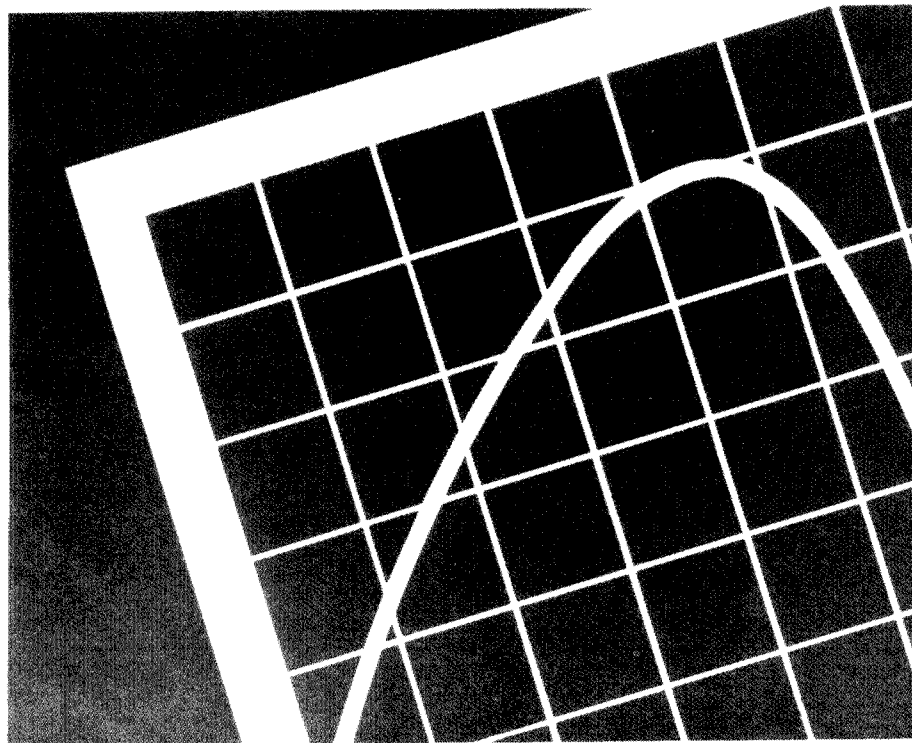
Serial Number: 1002 and up

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### 01 GENERAL

GENERAL INSTRUCTION

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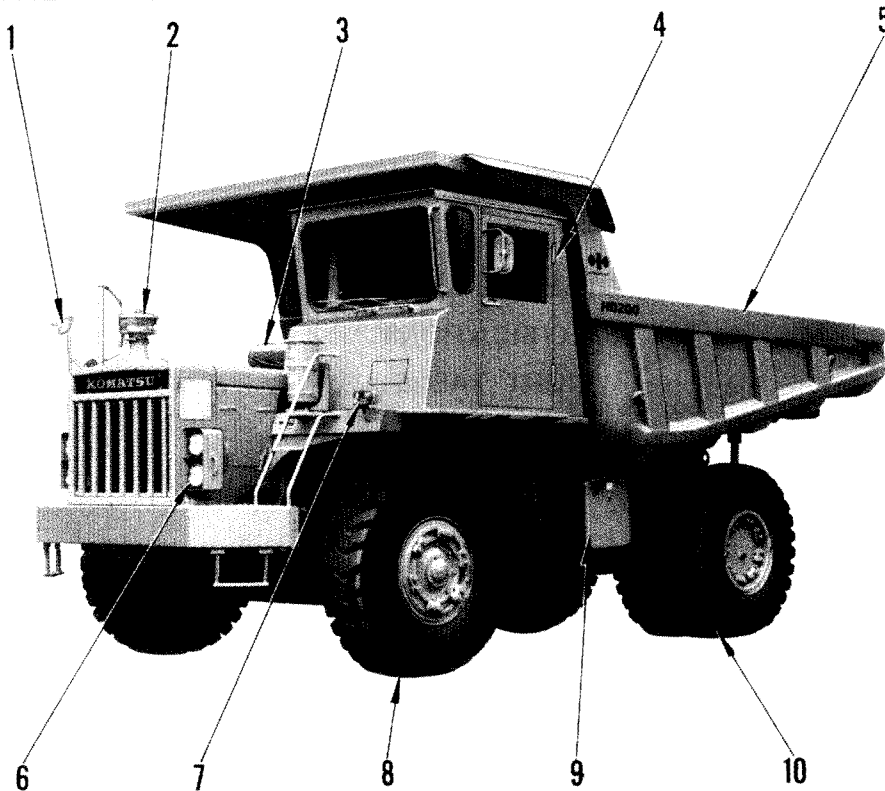


# GENERAL INSTRUCTION

GENERAL VIEW..... 01 - 4  
DIMENSION..... 01 - 6  
SPECIFICATIONS ..... 01 - 8  
WEIGHT TABLE..... 01-10

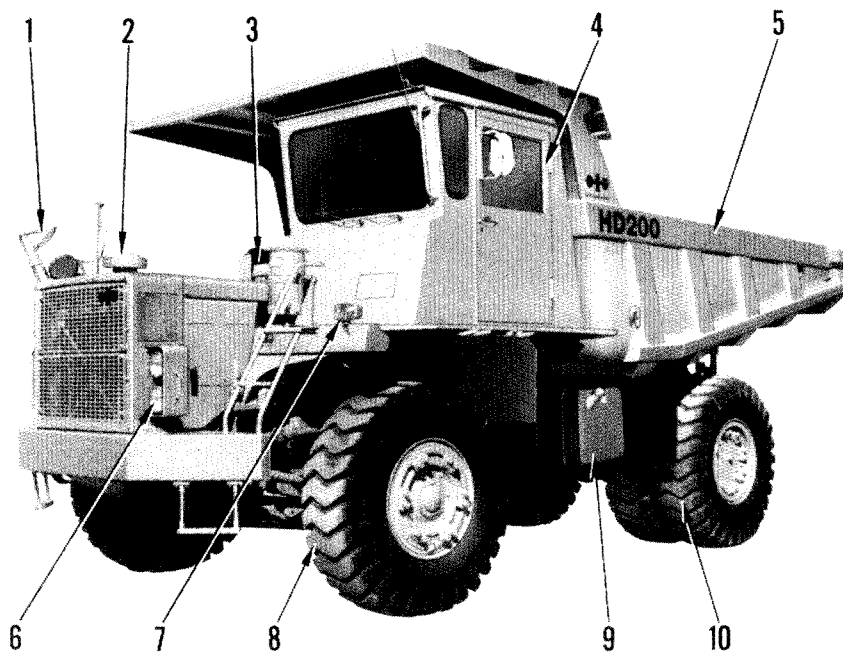
# GENERAL VIEW

1002 ~ 1100

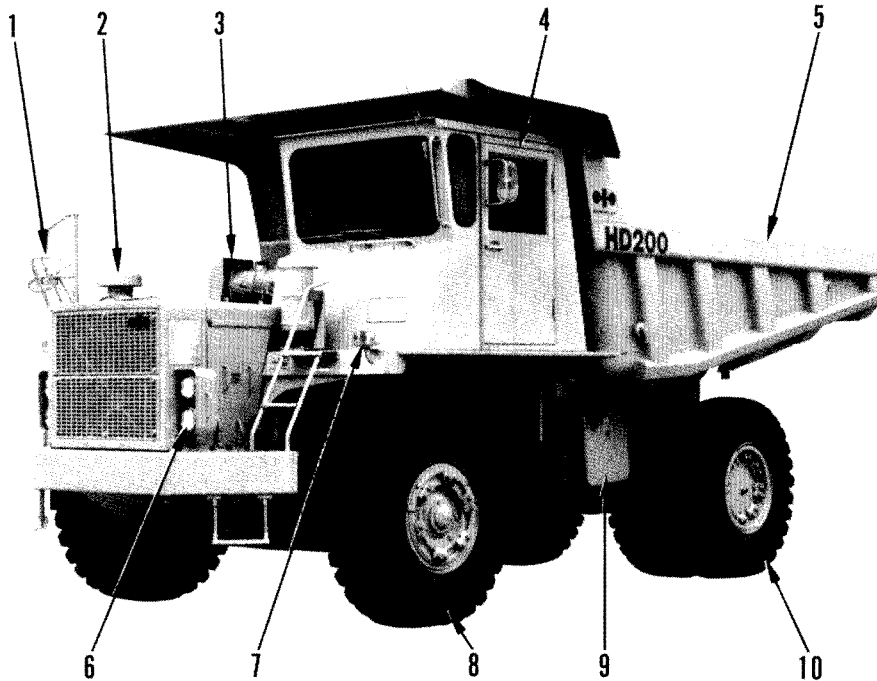


- 1. Under-mirror
- 2. Precleaner
- 3. Air reservoir
- 4. Operator's compartment
- 5. Dump body
- 6. Head lamp
- 7. Side lamp, Turn signal lamp
- 8. Front wheel
- 9. Hydraulic tank
- 10. Rear wheel

1101 ~ 1214



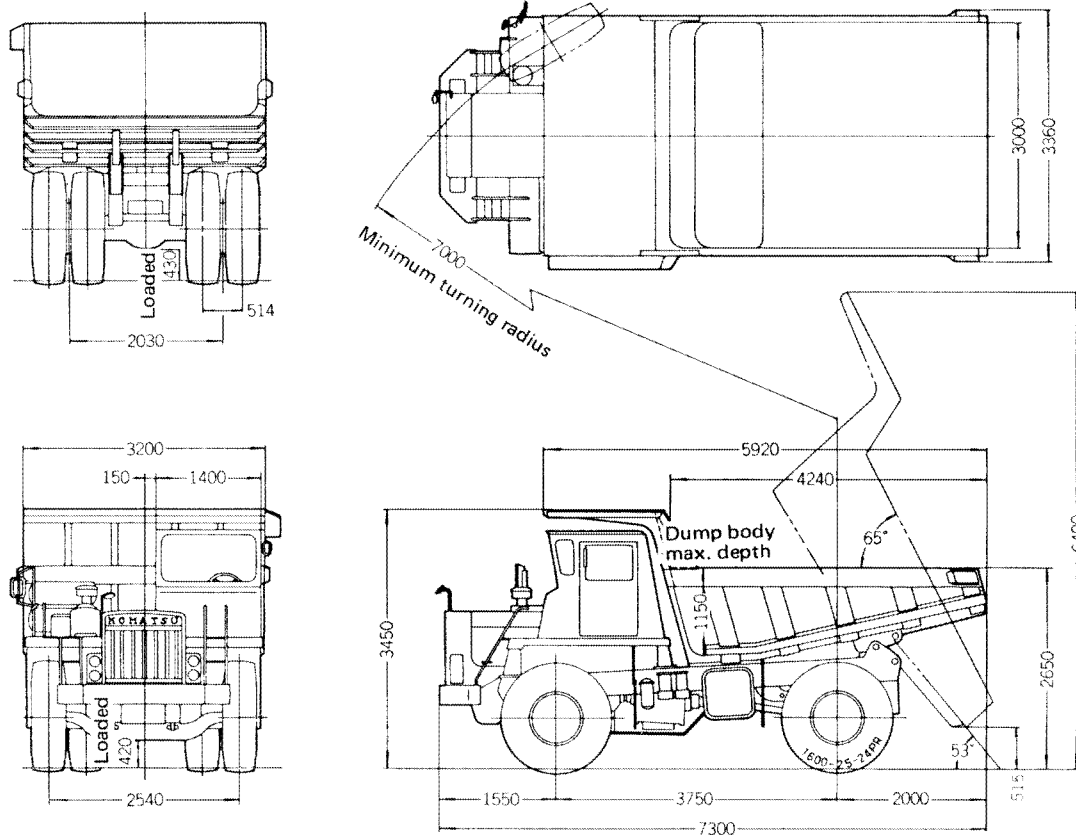
1215 and up



1. Under-mirror
2. Precleaner
3. Air reservoir
4. Operator's compartment
5. Dump body
6. Head lamp
7. Side lamp, Turn signal lamp
8. Front wheel
9. Hydraulic tank
10. Rear wheel

# DIMENSION

## 1002 ~ 1100



## 1101 ~ 1213

