

Shop Manual

PC3000-6

HYDRAULIC MINING SHOVEL SERIAL NUMBERS PC3000-6 6219

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I.I CONTENTS OF THE BINDER

Assembled in this file are the Service Manual with explanation and adjustment of the major components and circuits for your KOMATSU Hydraulic Mining Shovel.

I.II FOREWORD

Observe the instructions in these manuals for:

- your Personal SAFETY
- Operating SAFETY, and
- READY and EFFICIENT PERFORMANCE of your KOMATSU Hydraulic Mining Shovel.

With this SERVICE MANUAL KOMATSU provides you with the description of the construction and the function of the major systems of the Hydraulic Excavator PC 3000-6 D.

We describe for you all functions and how to carry out the inspections and adjustments.

How do you find "your" desired information?

In the TABLE OF CONTENT all the functions and components are shown in their sequence of the description.

CAUTION

Periodic preventive inspections and maintenance are the surest means of keeping the machine in proper working order. Prompt detection and correction of minor irregularities, and immediate replacement of worn out or broken parts will prevent failures and avoid expenses.

Replace damaged graphics and symbols.

Observe safety precautions to prevent injury and damage.

If after reading this SERVICE MANUAL you can give us suggestions and comments for improvements - please do not hesitate to contact us.

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FROM THE PRACTICE - FOR THE PRACTICE -



WARNING

Personnel entrusted with work on the machine must have read the Assembly Manual, the Operation,- Lubrication- and Maintenance Manual and in particular the section on safety before beginning work. Reading the instructions after work has begun is too late.

Damages and defects caused by incorrect operation and maintenance are not covered by the manufacturers guarantee.

NOTICE

If the Shovel is equipped with a fire suppression system, make sure that the system is ready for operation.

In order to keep your Shovel in first-class operating condition use only genuine spare and wear parts.

The use of any part other than the genuine part releases the KOMATSU MINING GERMANY GmbH from any guarantee.

SERVICE

For all questions related to your Shovel please contact your local Service Center.

In all your written or phoned inquiries please indicate the model and serial number of your Shovel.

I.III EXPLANATION OF ABBREVIATIONS

ABB.	Definition
A	Ampere
AC	Alternating Current
API	American Petroleum Institute
cSt	Centistoke
°C	Degree Celsius
CENSE	Engine Monitoring System
CLS	Central Lubrication System
DC	Direct Current
DIN	German Institute for Standardization
EBL	Electronic Bucket Levelling System
ECM	Electronic Control Module (Engine)
ECS	Electronic Control and Monitoring System
ETM	Electronic Text Monitoring
FGPS	Front Guard Protective Structure
FOPS	Falling-Object Protective Structure
GL	Gear Lubricant
h	hours of operation
HPF	High Pressure Filter (Hydraulic Oil)
HT	High Tension
LED	Light Emitting Diode
LT	Low Tension
N	Newton
Nm	Newton meter
QSK	Type of Engine Fuel System
PLC	Programmable Logic Controller
PM	Planned Maintenance
ppm	parts per million
PTO	Power Take-Off (Pump Distributor Gear)
SLS	Swing circle pinion Lubrication System
V	Volt
1/min	Revolutions Per Minute (RPM)

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II. SAFETY

II.I SAFETY INSTRUCTIONS

WARNINGS AND SYMBOLS

The following signs and designations are used in the manual to designate instructions of particular importance.

 **WARNING**

Refers to orders and prohibitions designed to prevent injury or extensive damage.

 **CAUTION**

Refers to special information and/or orders and prohibitions directed towards preventing damage.

NOTICE

Refers to special information on how to use the machine most efficiently.

 **CAUTION**

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

BASIC OPERATION AND DESIGNATED USE OF THE HYDRAULIC SHOVEL

Refer to DESIGNATED USE OF THE SHOVEL in Operation & Maintenance Manual for details.

II.II GENERAL PRECAUTIONS

WARNING

- Mistakes in operation and service are extremely dangerous. Read the OPERATION & MAINTENANCE MANUAL carefully BEFORE operating the machine.
 - Before carrying out any greasing or repairs, read all the precautions given on the decals which are fixed to the machine.
 - When carrying out any operation, always wear safety shoes and helmet. Do not wear loose work clothes, or clothes with buttons missing.
 - Always wear safety glasses when hitting parts with a hammer.
 - Always wear safety glasses when grinding parts with a grinder, etc. If welding repairs are needed, always have a trained, experienced welder carry out the work. When carrying out welding work, always wear welding gloves, apron, glasses, cap and other clothes suited for welding work.
 - When carrying out any operation with two or more workers, always agree on the operating procedure before starting. Always inform your fellow workers before starting any step of the operation. Before starting work, hang UNDER REPAIR signs on the controls in the operator's compartment.
 - Keep all tools in good condition and learn the correct way to use them.
 - Decide a place in the repair workshop to keep tools and removed parts. Always keep the tools and parts in their correct places. Always keep the work area clean and make sure that there is no dirt or oil on the floor. Smoke only in the areas provided for smoking. Never smoke while working.
-

II.III PREPARATIONS FOR WORK

⚠ WARNING

- Before adding oil or making repairs, park the machine on hard, level ground, and block the tracks to prevent the machine from moving.
 - Before starting work, lower bucket, hammer or any other work equipment to the ground. If this is not possible, insert the safety pin or use blocks to prevent the work equipment from falling. In addition, be sure to lock all the control levers and hang warning signs on them.
 - When disassembling or assembling, support the machine with blocks, jacks or stands before starting work.
 - Remove all mud and oil from the steps or other places used to get on and off the machine. Always use the handrails, ladders or steps when getting on or off the machine. Never jump on or off the machine. If it is impossible to use the handrails, ladders or steps, use a stand to provide safe footing.
-

II.IV PRECAUTIONS DURING WORK

- When removing the oil filler cap, drain plug or hydraulic pressure measuring plugs, loosen them slowly to prevent the oil from spurting out. The water and oil in the circuits are hot when the engine is stopped, so be careful not to get burned. Wait for the oil and water to cool before carrying out work on the oil or water circuits.
- Before starting work, remove the leads from the battery. ALWAYS remove the lead from the negative (-) terminal first.
- When raising heavy components, use a hoist or crane.
- Check that the wire rope, chains and hooks are free from damage.
- Always use lifting equipment which has ample capacity.
- Install the lifting equipment at the correct places. Use a hoist or crane and operate slowly to prevent the component from hitting any other part. Do not work with any part still raised by the hoist or crane.
- When removing covers which are under internal pressure or under pressure from a spring, always leave two bolts in position on opposite sides. Slowly release the pressure, then slowly loosen the bolts to remove.
- When removing components, be careful not to break or damage the wiring, Damaged wiring may cause electrical fires.
- When removing piping, stop the fuel or oil from spilling out. If any fuel or oil drips on to the floor, wipe it up immediately. Fuel or oil on the floor can cause you to slip, or can even start fires.
- As a general rule, do not use gasoline to wash parts.
- Be sure to assemble all parts again in their original places. Replace any damaged part with new parts.
- When installing hoses and wires, be sure that they will not be damaged by contact with other parts when the machine is being operated.
- When installing high pressure hoses, make sure that they are not twisted. Damaged tubes are dangerous, so be extremely careful when installing tubes for high pressure circuits. Also check that connecting parts are correctly installed.
- When assembling or installing parts, always use the specified tightening torques. When installing protective parts such as guards, or parts which vibrate violently or rotate at high speed, be particularly careful to check that they are installed correctly.
- When aligning two holes, never insert your fingers or hand. Be careful not to get your fingers caught in a hole.

III. SPECIFICATIONS

III.I LIFTING GEARS

CAUTION

Heavy parts (25 kg or more) must be lifted with a hoist etc.

CAUTION

If a part cannot be smoothly removed from the machine by hoisting, the following checks should be made:

Check for removal of all bolts fastening the part to the relative parts.

Check for existence of another part causing interface with the part to be removed.

WIRE ROPES

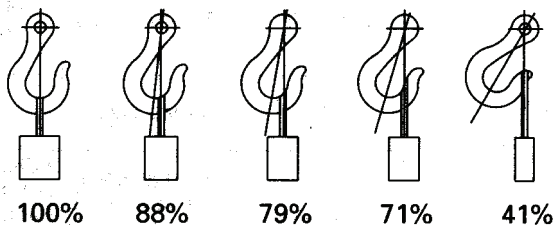
- Use adequate ropes depending on the weight of parts to be hoisted, referring to the table below:

	Wire ropes (Standard "Z" or "S" twist ropes without galvanizing)											
Rope diameter [mm]	10,0	11,2	12,5	14,0	16,0	18,0	20,0	22,4	30,0	40,0	50,0	60,0
Allowable load [tons]	1,0	1,4	1,6	2,2	2,8	3,6	4,4	5,6	10,0	18,0	28,0	40,0

CAUTION

The allowable load value is estimated to be 1/6 or 1/7 of the breaking strength of the rope used.

- Sling wire ropes from the middle portion of the hook. Slings near the edge of the hook may cause the rope to slip off the hook during hoisting, and a serious accident can result. Hooks have maximum strength at the middle portion.

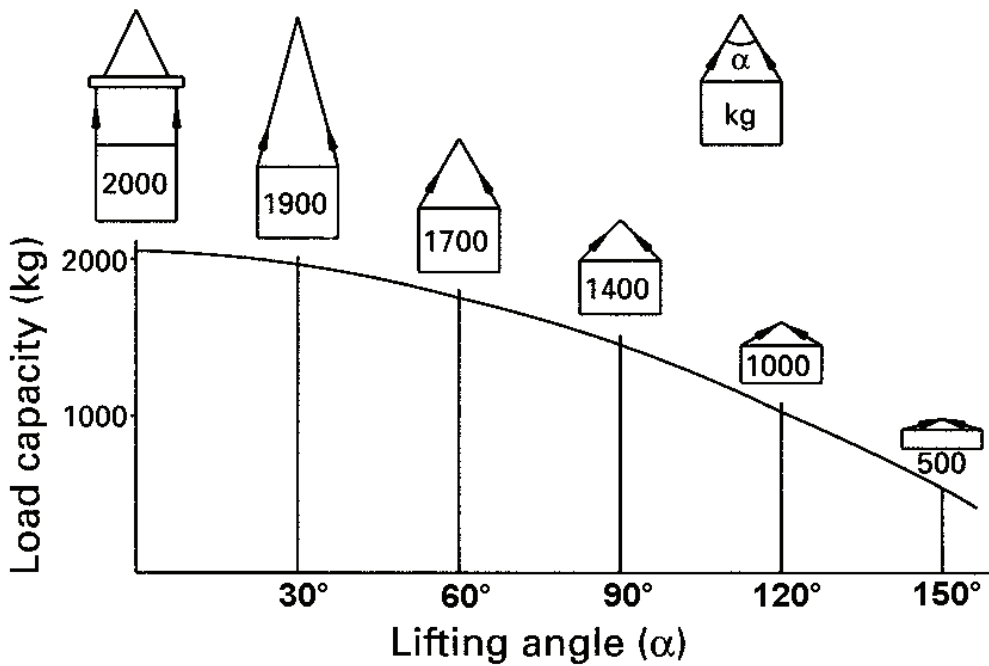


- Do not sling a heavy load with one rope alone, but sling with two or more ropes symmetrically wound on to the load.

⚠ WARNING



Slinging with one rope may cause turning of the load during hoisting, untwisting of the rope, or slipping of the rope from its original winding position on the load, which can result in a dangerous accident.

- Do not sling a heavy load with ropes forming a wide hanging angle from the hook. When hoisting a load with two or more ropes, the force subjected to each rope will increase with the hanging angles. The table below shows the variation of allowable load (kg) where hoisting is made with two ropes, each of which is allowed to sling up to 1000kg vertically, at various hanging angles. When two ropes sling a load vertically, up to 2000kg of total weight can be suspended. This weight becomes 1000kg when two ropes make a 120° hanging angle. On the other hand two ropes are subject to an excessive force as large as 4000kg if they sling a 2000kg load at a lifting angle of 150°.



III.II STANDARD TIGHTENING TORQUE CHART

Table 1:

Bolt diameter	Wrench size [mm]		Tightening torque [Nm]		
			Bolt quality grades		
			8.8	10.9	12.9
metric regular					
M 8	13	6	21	31	36
M 10	17	8	43	63	73
M 12	19	10	74	108	127
M 14	22	12	118	173	202
M 16	24	14	179	265	310
M 18	27	14	255	360	425
M 20	30	17	360	510	600
M 22	32	17	485	690	810
M 24	36	19	620	880	1030
M 27	41	19	920	1310	1530
M 30	46	22	1250	1770	2080
M 33	50	24	1690	2400	2800
M 36	55	27	2170	3100	3600
M 39	60		2800	4000	4700
M 42	65	32	3500	4950	5800
M 45	70		4350	6200	7200
M 48	75	35	5200	7500	8700
M 52	80		6700	9600	11200
M 56	85	41	8400	12000	14000
M 60	90		10400	14800	17400
M 64	95	46	12600	17900	20900
M 68	100		15200	21600	25500

- (1 kgm = 9,806 Nm)
- Insert all bolts lubricated with MPG (same grease as used in the central lubrication system)



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