WSM

WORKSHOP MANUAL
KUBOTA EXCAVATOR

KX36-3
KX41-3S, KX41-3V

Service Chapter

Kubota

Code No.97899-60860

Record of Revisions

Symbol	Date	Main Revised Points & Corrective Measures	Person-in-charge
△1			
△2			
△3			
△4			

EU - version machine models : KX36-3, KX41-3S, KX41-3V
KTC, KCL, KTA version machine model : KX41-3V
(PP - version, Pan-Pacific - version)

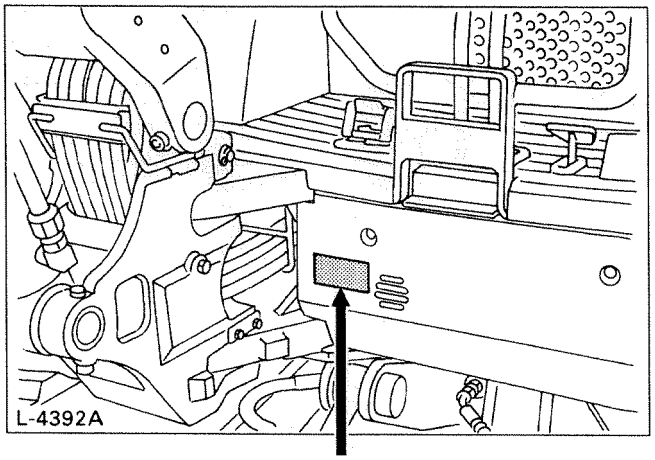
CONTENTS

I. General

Note : PP - version = Pan Pacific - version = KTC, KCL, KTA - version

A.Body and engine identification marks

If trouble should occur during use, or if servicing is necessary, contact the dealer who handles the machine. At that time please inform the machine model and engine type and serial numbers.



KTC, KCL, KTA version

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MODEL	①
SERIAL No.	②
ENGINE No.	③
PRODUCT IDENTIFICATION NUMBER	④

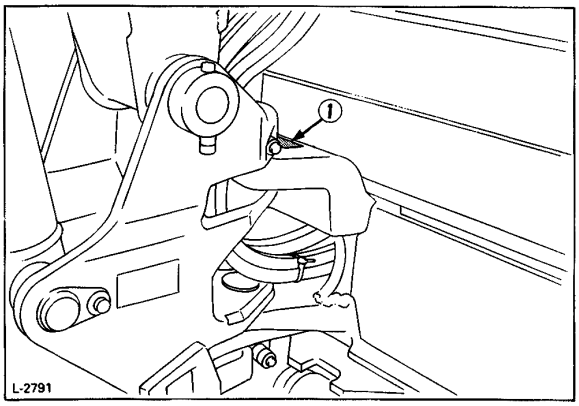
RA018-57721

Name plate : Code No. RA018-57721

No.	Items	Contents ; Example
①	Machine model	KX41-3V
②	Serial No.	20001
③	Engine No.	
④	PRODUCT IDENTIFICATION No.	>JKUK1613CO1H20001<

Example : S/N 20001

(1) Machine serial number



(2) Engine serial number
e.g. D1503-2L0025
"2" indicates year of 2002 and "L" indicates June.
So, 2L indicates that the engine was manufactured in June 2002.

B. Safety precautions for servicing, disassembly and reassembly

⚠ Safety precautions for servicing

Most accidents during servicing arise from carelessness. Please remember that Safety involves both the welfare of the employees and improved work efficiency.

⚠ Safety precautions for Disassembly and reassembly

Machines must be diassembled and assembled efficiently and safely.
It is very important to thoroughly understand the construction and function of the machine, to make all appropriate preparations, and start operations according to the specified working procedures.

a. Safety measures before starting work

(1) Work clothes

1. Wear specified work cap and clothed. (Under no circumstances may workers wear undershirts only.)
   Cuffs must be kept buttoned, and any tears must be mended.)
2. Wear safety shoes.
3. Do not wear cotton gloves when working on the internal section of engine, reduction gears or hydrauricunits for repair or others, or when using a hammer. Wear leather gloves, however, when hoisting wires.

(2) Inspecting equipment and tools

1. Prepare equipment (cranes, fork lifts, tool, etc.) required for servicing and inspect for any problems before starting work.
2. Hammer heads (metal parts) must be firmly secured to their handles.
3. Check hosting tools (wire ropes, hoisting chains, etc.) before use.

(3) Keep workshop in order

1. Secure appropriate space needed for disassembly to the job.
2. Secure a clean, safe place for arranging disassembled parts.
3. Store volatile substances (gasoline, light oil, thinner, oily articles, etc.) in appropriate containers at selected locations to prevent fire hazards.

b. Safety measures during work

(1) Protectors

1. Wear goggles when using chisels for chipping.
2. Use appropriate protectors during welding.
3. Wear a helmet when working with a crane or at elevated locations.

(2) Team work

1. When working with two or more people, divide the work and maintain close communication.
2. Clane work must be carried out using predetermined signals.

(3) Disassembly and assembly

1. Do not wear gloves when using hammers.
2. Use rods of the specified soft material for removing pins. Do not use a hammer as a pad.
3. Do not place fingers in holes when centering.
4. Heavy parts must be adequately supported before removingbolts.

(4) Cranes

1. In principle, use a crane for objects heavier than 44lb (20kg).
2. Crane operation and hoisting must be performed only by qualified personal.
3. Pay careful attention to the center of gravity when hoisting, and do not stand under the lifted objects.

(5) Others

1. To work under a jacked-up carrier, be sure to place wood pieces under it.
2. When charging batteris, make sure there are no open flames in the immediate vicinity.
3. All electric tools must be grounded.
4. Before welding the machine, remove the battery.
   - When removing the battery, be sure to disconnect negative (-) cord first.
   - When mounting the battery, be sure tp connect the positive (+) cord first.

c. Preparation for disassembly

(1) Cleaning

Remove mud and dirt from the body before disassembly.

(2) Acceptance inspection

The machine must be checked before it is disassembled to record existing conditions, such as those listed below.

Model, serial number, and hourmeter reading

- Reason for repair and repair history
- Element stains
- Fuel and oil condition
- Parts damage *(Take photographs if necessary.)

(3) Equipment and tools

prepare equipment, tools, cranes and parts storage racks as required.

d. Precautions for disassembly and reassembly

(1) Disassembly

1. Follow the specified disassembly procedures.
2. Make alignment marks to insure correct reassembly.
3. Arrange disassembled parts in an orderly way, and attach identification tags or put marks if needed.

(2) Reassembly

1. Clean all parts before assembly. Repair any scratches or dents. Take special precautions against dirt and dust.
2. Parts with rust-preventive coatings must be assembles only after removing the corting.
3. Separated parts must be correctly reassembled using alignment marks.
4. As a rule, use a press to reassembled bearings, bushing and oil seals. Use pads when using a hammer.

C.Important Safety process and critical functional process

The following instructions are related to essential adhesives, important safety process [S] and critical functional process [A] .Pay special attention in servicing these process. (Pay also close attention in reconnecting the electrical cables.)

a. Essential Adhesives

Type of screw adhesive
- Unless otherwise specified, use Three-Bond 1324 adhesive (medium-duty type). Keep the screw threads free of oil and water.

Type of instantaneous adhesive
- Use Three-Bond 1733 or Three-Bond 1741E adhesive. Keep the bond areas free of oil and water.

b. Important Safety Process [S] .

1. Reconnecting the fuel hose (clearance, hose routes, clamps, etc.)
2. Electrical cabling (engine, instrument panal, controls, etc.) (wiring routes, clamps and couplers)

c. Important Critical Functional Process [A] .

1. Setting up the travel wheel motor (tightening torque)
2. Reassembling the rotary joints (joint direction and shaft set-up)
3. Installing the swivel base bearing and the swivel motor (tightening torque)
4. Fitting the pump couplings (tightening torque)

D.Important inspection items after reassembling

a. Operate the Machine and check for Unusual Noise and Vibrations.

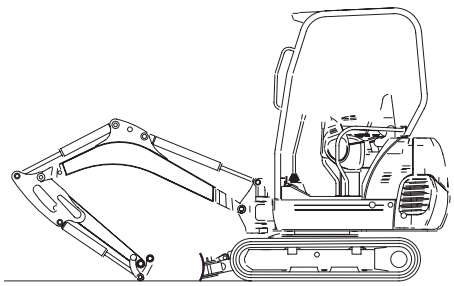
b. Make Sure the Safety decals and Wireharness Clamps are in their Specified Positions.

c. With the Machine Front in a Specified Posture, Check the Amount of Hydrauric Oil

Checking the oil level (For further datails, refer to the Operator's Manual of each model.)

1) Park the machine on a level ground.
2) Make sure the hydrauric oil temperature is in the range of 10-30°C (50-86°F) and see if the oil level is within the specified zone of the oil level gauge.
3) Keep the machine front as shown as following posture.

Posture: Extend the rods of the arm and bucket cylinders to max. Place the bucket link on the ground, the offset swing at the center, and the dozer also on the ground.



d. Piping

(1) General precautions

- Tightening the pipe socket to the specified torque. If too tight, the socket itself or a hydraulic component may get damaged. It too loose, an oil leak may result.
- In connecting a new hose or pipe, tighten its nut first to the specified torque and then turn it back (about 45°). Then tighten it again to the specified torque. (Do not this to the sealing tape-applied hose or pipe.)
- When disconnecting a vertical hose or pipe, separate its bottom connection first.
- In desconnecting and reconnecting the hose and pipe, be sure to use two wrenches. With one wrench, restrain the mating part to allow no twist.
- Check the mating connector's sleeve and the hose's taper for dust deposits and scratches.
- When the pipe socket has been tightened up, wipe the joint clean. Apply the maximum operating pressure 2 or 3 times to make sure there is no oil leak.

(2) Hydraulic hose

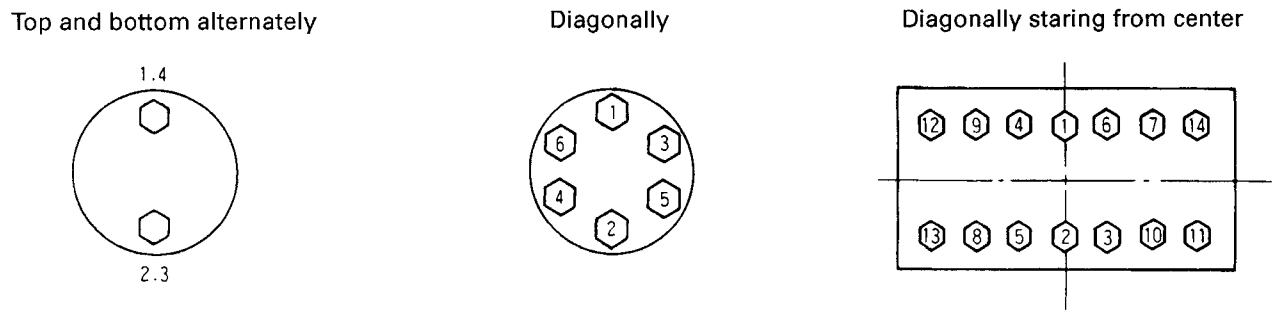
Check the hydraulic hose for too tight a connect or twist.

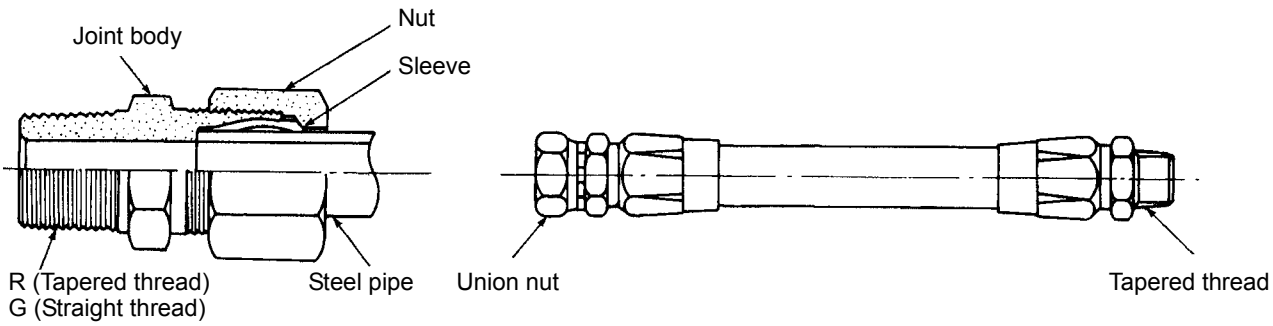
* Excessivly tight contact

Let's suppose that a hose is in contact with another hose or other part. If the hose is pulled away by a force of 2 kg but still in contact, it means the contact is too tight.

(3) Precautions in tightening the bolts and nuts

- Use bolts of specified length.
- Do not over tighten the bolts: Its threads may get deformed or the fixed part may get damaged. Do not undertighten the bolt either: It may get loose.
- In other words, tighten the bolt to the specified torqoe.
- Tighten the bolts and nuts diagonally for even tightness.





(4) Hose screw

Thread size (piping screw)	Tightening torque N·m kgf·m ft·lbf		Wrench size (reference)
	Union nut section	Taper thread section	
1/8”	7.8 ~ 11.8 N·m 0.8 ~ 1.2 kgf·m 5.8 ~ 8.7 ft·lbf	14.71 ~ 19.61 N·m 1.5 ~ 20 kgf·m 10.85 ~ 14.47 ft·lbf	17 mm 0.67 in
1/4”	24.5 ~ 29.4 2.5 ~ 3.0 18.1 ~ 21.7	36.3 ~ 44.1 3.7 ~ 4.5 26.8 ~ 32.5	19 mm 0.75 in
3/8”	49.0 ~ 53.9 5.0 ~ 5.5 36.2 ~ 39.8	49.0 ~ 68.6 5.0 ~ 7.0 36.2 ~ 50.6	22 mm 0.87 in
1/2”	58.8 ~ 63.7 6.0 ~ 6.5 43.4 ~ 47.0	83.4 ~ 88.3 8.5 ~ 9.0 61.5 ~ 65.1	27 mm 1.06 in
3/4”	117.7 ~ 127.5 12.0 ~ 13.0 86.8 ~ 94.0	127.5 ~ 147.1 13.0 ~ 15.0 94.0 ~ 108.5	36 mm 1.42 in
1”	137.3 ~ 147.1 14.0 ~ 15.0 101.3 ~ 108.5	147.1 ~ 166.7 15.0 ~ 17.0 108.5 ~ 123.0	41 mm 1.61 in

Metric Size Hose

Thread size (piping screw)	Torque N·m kgf·m ft·lbf
M12 × 1.5	20 ~ 30 2.0 ~ 3.1 14.75 ~ 22.13
M14 × 1.5	20 ~ 30 2.0 ~ 3.1 14.75 ~ 22.13
M16 × 1.5	30 ~ 50 3.1 ~ 5.1 22.13 ~ 36.9
M18 × 1.5	30 ~ 50 3.1 ~ 5.1 22.13 ~ 36.9
M22 × 1.5	40 ~ 60 4.1 ~ 6.1 29.5 ~ 44.25

(5) Joint bodies

Thread size (piping screw)	Tightening torque N·m kgf·m ft·lbf		Spanner size (reference)	Remarks Steel pipe (OD)	
	R (tapered thread)	G (straight thread)			
1/8”	19.6 ~ 29.4 N·m 2.0 ~ 3.0 kgf·m 14.5 ~ 21.7 ft·lbf	-	17 mm 0.67 in	When in steel pipe is in use.	8 mm 0.31 in
1/4”	36.3 ~ 44.1 3.7 ~ 4.5 26.8 ~ 32.5	W/O-ring *Joint Torque* 58.8 ~ 78.5 6 ~ 8 43.4 ~ 57.9	19 mm 0.75 in		12 mm 0.47 in
3/8”	39.2 ~ 49.0 4.0 ~ 5.0 28.9 ~ 36.2	W/O-ring *Joint Torque* 78.5 ~ 98.1 8 ~ 10 57.9 ~ 72.3	23 mm 0.91 in		15 mm 0.59 in
1/2”	49.0 ~ 68.6 5.0 ~ 7.0 36.2 ~ 50.6	W/O-ring *Joint Torque* 117.7 ~ 137.3 12 ~ 14 86.8 ~ 101.3	26 mm 1.02 in		16 mm 0.63 in

(6) Tightening torque table for hose clamp (Screw type)

No.	Dia. (mm)	Code No.	Tightening torque N·m kgf·m ft·lbf
1	Ø12 ~ 16	09318-89016	2.5 ~ 3.4 25 ~ 35 1.84 ~ 2.51
2	Ø19 ~ 25	09318-89024	
3	Ø31 ~ 40	09318-89039	
4	Ø36 ~ 46	09318-89045	
5	Ø15 ~ 25	RC101-64580	4.9 ~ 5.9 50 ~ 60 3.61 ~ 4.35
6	Ø26 ~ 38	68311-72820	
7	Ø13 ~ 20	RB101-63630	3.4 ~ 4.4 35 ~ 45 2.58 ~ 3.31
8	Ø40 ~ 55	RC411-63180	4.9 ~ 5.9 50 ~ 60 3.61 ~ 4.35
9	Ø77 ~ 95	69284-63170	
10	Ø50 ~ 60	RC401-63190	
11	Ø32 ~ 44	RD411-63820	

(7) Nuts for piping

Steel pipe size (O.D. × I.D. × Thickness)	Tightening torque N·m kgf·m ft·lbf	Spanner size (reference)	Remarks
8 × 6 × 1 mm 0.31 × 0.24 × 0.04 in	29.4 ~ 39.2 3.0 ~ 4.0 21.7 ~ 28.9	17 mm 0.67 in	When sleeve nut is in use.
10 × 7 × 1.5 mm 0.39 × 0.28 × 0.06 in	39.2 ~ 44.1 4.0 ~ 4.5 28.9 ~ 32.5	19 mm 0.75 in	
12 × 9 × 1.5 mm 0.47 × 0.35 × 0.06 in	53.9 ~ 63.7 5.5 ~ 6.5 39.7 ~ 47.0	21 mm 0.83 in	
16 × 12 × 2 mm 0.63 × 0.47 × 0.08 in	88.3 ~ 98.1 9.0 ~ 10.0 65.1 ~ 72.3	29 mm 1.14 in	
18 × 14 × 2 mm 0.71 × 0.55 × 0.08 in	127.5 ~ 137.3 13.0 ~ 14.0 94.0 ~ 101.3	32 mm 1.26 in	
27.2 × 21.6 × 2.8 mm 1.07 × 0.85 × 0.11 in	235.4 ~ 254.97 24.0 ~ 16.0 173.6 ~ 188.1	41 mm 1.61 in	

(8) Tightening torque of bolts and nuts

Refer to the tightness torque table below.

Bolts, Nuts / Nomial Dia.	4T 	7T 	9T 
	SS41	S40C, S45C	SCr4
M6	7.8 ~ 9.3 N·m 0.80 ~ 0.95 kgf·m 5.8 ~ 6.9 ft·lbf	9.8 ~ 11.3 N·m 1.00 ~ 1.15 kgf·m 7.2 ~ 8.3 ft·lbf	12.3 ~ 14.2 N·m 1.25 ~ 1.45 kgf·m 9.0 ~ 10.5 ft·lbf
M8	17.7 ~ 20.6 N·m 1.80 ~ 2.10 kgf·m 13.0 ~ 15.2 ft·lbf	23.5 ~ 27.5 N·m 2.40 ~ 2.80 kgf·m 17.4 ~ 20.3 ft·lbf	29.4 ~ 34.3 N·m 3.00 ~ 3.50 kgf·m 21.7 ~ 25.3 ft·lbf
M10	39.2 ~ 45.1 N·m 4.00 ~ 4.60 kgf·m 28.9 ~ 33.3 ft·lbf	48.0 ~ 55.9 N·m 4.90 ~ 5.70 kgf·m 35.4 ~ 41.2 ft·lbf	60.8 ~ 70.6 N·m 6.20 ~ 7.20 kgf·m 44.8 ~ 52.1 ft·lbf
M12	62.8 ~ 72.6 N·m 6.40 ~ 7.40 kgf·m 46.3 ~ 53.5 ft·lbf	77.5 ~ 90.2 N·m 7.90 ~ 9.20 kgf·m 57.1 ~ 66.5 ft·lbf	103.0 ~ 117.7 N·m 10.50 ~ 12.00 kgf·m 75.9~ 86.8 ft·lbf
M14	107.9 ~ 125.5 N·m 11.00 ~ 12.80 kgf·m 79.6 ~ 92.6 ft·lbf	123.6 ~ 147.1 N·m 12.60 ~ 15.0 kgf·m 91.1 ~ 108.5 ft·lbf	166.7 ~ 196.1 N·m 17.00 ~ 20.00 kgf·m 123.0 ~ 144.7 ft·lbf
M16	166.7 ~ 191.2 N·m 17.00 ~ 19.50 kgf·m 123.0 ~ 141.0 ft·lbf	196.1 ~ 225.6 N·m 20.00 ~ 23.00 kgf·m 144.7 ~ 166.4 ft·lbf	259.9 ~ 304.0 N·m 26.50 ~ 31.00 kgf·m 191.7 ~ 224.2 ft·lbf
M18	245.2 ~ 284.4 N·m 25.00 ~ 29.0 kgf·m 180.8 ~ 209.7 ft·lbf	274.6 ~ 318.7 N·m 28.00 ~ 32.50 kgf·m 202.5 ~ 235.1 ft·lbf	343.2~ 402.1 N·m 35.00 ~ 41.00 kgf·m 253.2 ~ 296.5 ft·lbf
M20	333.4~ 392.2 N·m 34.00 ~ 40.00 kgf·m 245.9 ~ 389.3 ft·lbf	367.7 ~ 431.5 N·m 37.50 ~ 44.0 kgf·m 271.2 ~ 318.2 ft·lbf	519.8 ~ 568.8 N·m 53.00 ~ 58.00 kgf·m 383.3 ~ 419.5 ft·lbf

(9) Types and materials of bolts and nuts

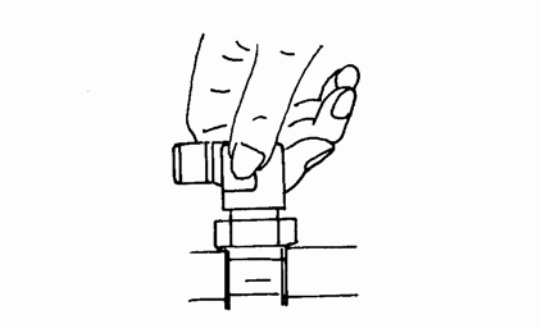
[ex. bolts]

Types	Material	Tensile strength	Hardness	Bolt head marking	
4T	SS41	Over 392 MPa 4000 kgf/cm^2 56892 lbf/in^2	H_RB 62 ~ 98		No mark or marked 4
7T	S40C S45C	Over 686 MPa 7000 kgf/cm^2 99561 lbf/in^2	H_RC 20 ~ 28		Marked 7
9T	SCr4	Over 882 MPa 9000 kgf/cm^2 128007 lbf/in^2	H_RC 28 ~ 34		Marked 9

(10)Washer-equipped elbow

Tightening torque

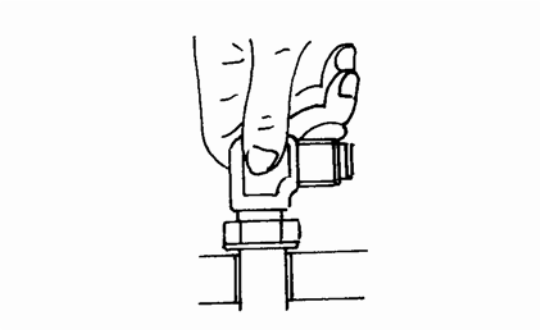
Size	N·m	kgf·m	ft·lbs
G1/4	25 ~ 30	2.5 ~ 3.0	18 ~ 22
G3/8	49 ~ 54	5.0 ~ 5.5	36 ~ 40
G1/2	59 ~ 64	6.0 ~ 6.5	43 ~ 47
G3/4 G1	118 ~ 127	12.0 ~ 13.0	87 ~ 94



Tightening procedure

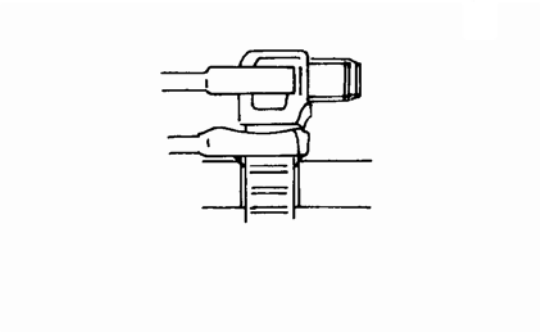
1) Connecting with the valve
   - Screw in the elbow by hand until the washer comes into contact.

Note: Clean up hte mating seal boforehand.



2) Positioning
   - Turn the elbow back to its set position.

Note: Do not make any more than one turn back.



3) Fixing
   - Tighten up the lock nut with a wrench.
   - Lock nut tightening torque
     G1/4:25 ~ 30 N·m (2.5 ~ 3.0 kgf·m, 18 ~ 22 ft·lbs)
     G3/8:50 ~ 55 N·m (5.0 ~ 5.5 kgf·m, 36 ~ 40 ft·lbs)
     G1/2:60 ~ 65 N·m (6.0 ~ 6.5 kgf·m, 43 ~ 47 ft·lbs)
     G3/4:118 ~ 127 N·m (12.0 ~ 13.0 kgf·m, 87 ~ 94 ft·lbs)
     G1:118 ~ 127 N·m (12.0 ~ 13.0 kgf·m, 87 ~ 94 ft·lbs)

E.Maintenance intervals

a. PP (KTC, KCL, KTA) - version

No.	Check points		Intervals	Hour meter indicator									Consequently		
				50	100	150	200	250	300	350	400	450			
1	Coolant		check	Daily check											
			change										every 2 years		
2	Fuel		check	Daily check											
3	Engine oil		check	Daily check											
			change	◉					○				every 250 hrs		
4	Hydraulic oil		check	Daily check											
			change										every 1000 hrs	*1	
5	Lubrication points		-	Daily check											
6	Radiator and oil cooler		check	Daily check											
7	Engine and electrical wiring		check	Daily check									every year		
8	Fuel tank, Fuel filter		drain	○	○	○	○	○	○	○	○	○	every 50 hrs		
9	Battery condition		check	○	○	○	○	○	○	○	○	○	every 50 hrs		
10	Greasing swing bearing teeth		-	○	○	○	○	○	○	○	○	○	every 50 hrs		
11	Fan belt tension		adjust				○				○		every 200 hrs		
12	Radiator hoses and clamps		check				○				○		every 200 hrs		
			replace										every 2 years		
13	Air filter element	Outer element	clean				○				○		every 200 hrs	*2	@
			replace										every 1000 hrs	*2	
		Inner element	replace										every 1000 hrs	*2	
14	Greasing swing ball bearings		-				○				○		every 200 hrs		
15	Fuel filter element		replace								○		every 400 hrs		@
16	Engine oil filter		replace	◉					○				every 250 hrs		
17	Drive unit oil		change		◉								every 500 hrs		
18	Hydraulic return filter element		replace					◉					every 500 hrs		
19	Hydraulic suction filter element		replace										every 1000 hrs		
20	Fuel injection nozzle injection pressure		check										every 1500 hrs	*4	@
21	Front idler and track roller oil		change										every 2000 hrs		
22	Alternator and starter motor		check										every 2000 hrs		
23	Injection pump		check										every 3000 hrs	*4	@
24	Radiator system		rinse										every 2 years		
25	Fuel line and Intake air line		check				○				○		every 200 hrs		@
			replace										every 2 years	*3	

* 500 thru 1000 continued to the following table.

No.	Check points		Intervals	Hour meter indicator								Consequently		
				500	550	600	650	700	750	800	1000			
1	Coolant		check	Daily check										
			change									every 2 years		
2	Fuel		check	Daily check										
3	Engine oil		check	Daily check										
			change		○				○			every 250 hrs		
4	Hydraulic oil		check	Daily check										
			change								○	every 1000 hrs	*1	
5	Lubrication points		-	Daily check										
6	Radiator and oil cooler		check	Daily check										
7	Engine and electrical wiring		check	Daily check								every year		
8	Fuel tank, Fuel filter		drain	○	○	○	○	○	○	○	○	every 50 hrs		
9	Battery condition		check	○	○	○	○	○	○	○	○	every 50 hrs		
10	Greasing swing bearing teeth		-	○	○	○	○	○	○	○	○	every 50 hrs		
11	Fan belt tension		adjust			○				○	○	every 200 hrs		
12	Radiator hoses and clamps		check			○				○	○	every 200 hrs		
			replace									every 2 years		
13	Air filter element	Outer element	clean			○				○	○	every 200 hrs	*2	@
			replace								○	every 1000 hrs	*2	
		Inner element	replace								○	every 1000 hrs	*2	
14	Greasing swing ball bearings		-			○				○	○	every 200 hrs		
15	Fuel filter element		replace							○		every 400 hrs		@
16	Engine oil filter		replace		○					○		every 250 hrs		
17	Drive unit oil		change									every 500 hrs		
18	Hydraulic return filter element		replace						○			every 500 hrs		
19	Hydraulic suction filter element		replace								○	every 1000 hrs		
20	Fuel injection nozzle injection pressure		check									every 1500 hrs	*4	@
21	Front idler and track roller oil		change									every 2000 hrs		
22	Alternator and starter motor		check									every 2000 hrs		
23	Injection pump		check									every 3000 hrs	*4	@
24	Radiator system		rinse									every 2 years		
25	Fuel line and Intake air line		check			○				○	○	every 200 hrs		@
			replace									every 2 years	*3	

◉ First operation

*1 When using a hydraulic breaker, change hydraulic oil and return filter according to the table on "Hydraulic Oil Change (Including Exchange of the Suction Filter in the Hydraulic Tank) under "EVERY 1000 SERVICE HOURS" in the chapter "REGULAR CHECKS AND MAINTENANCE WORK".

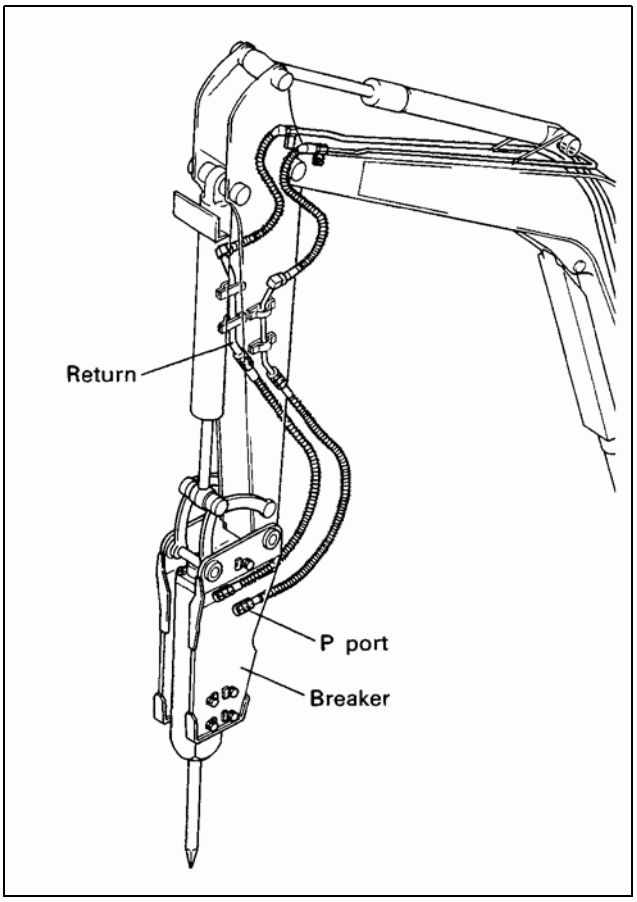
*2 Clean and replace the air filter more frequently if used under dusty conditions. By heavy soiling, replace the filter.

*3 Replace only if necessary.

*4 Consult your local KUBOTA Dealer for this service.

A The items listed above (@ marked) are registered as emission related critical parts by KUBOTA in the U.S.EPA non-road emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the above instruction. Please see the Warranty Statement in detail.

b. Hydraulic Oil Check for machines with Hydraulic Breakers



The Hydraulic oil change after 1000 operating hours in the operator's manual is based on the type of work done. Following inspection measure are valid when hydraulic breakers are used:

1. Changing and filling up of hydraulic oil
   1) The hydraulic oil must be changed more often when breakers are used because the machine is subject to harder conditions than at normal excavating work.
   2) Use only the recommended oils mentioned in the operator's manual when changing or fill oil.
   3) When filling up oil, never mix oils of different makes.
2. Changing the return filter and oil
   1) The filter must be changed more often because of contamination resulting from the frequent assembly and disassembly of the hoses.
   2) Use the correct replacement filter.
   3) Oil change according to operating hours.

		Hydraulic oil	Return Filter	Suction Filter
Normal excavator work		every 1000 Hrs.	500 Hrs.	1000 Hrs.
Breaker work portion	20%	every 800 Hrs.	300 Hrs.	
	40%	every 400 Hrs.		
	60%	every 300 Hrs.	100 Hrs.	
	More than 80%	every 200 Hrs.		

c. EU version

	General Maintenance	Elapsed Operating Hours *																				Interval	Section
		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000		
Operator Ser vices	Check engine oil level																					daily	6.3.1
	Check hydraulic oil level																					daily	6.3.1
	Check fuel level																					daily	6.3.1
	Check coolant level																					daily	6.3.1
	Grease front attachments																					daily	6.3.1
	Check V-belt																					daily	6.3.1
	Check water separator																					daily	6.3.1
	Tracks and chassis: clean, visual inspection and check tension	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	weekly (50 hrs)	8.5.17
	Grease swivel gear	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	50 hrs	8.5.15
	Check, clean air filter 1.)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	50 hrs	8.5.7
	Check nuts and bolts		❍		❍		❍		❍		❍		❍		❍		❍		❍		❍	100 hrs	8.5.22
	Grease swivel gear bearing				❍				❍				❍				❍				❍	200 hrs	8.5.16
	Check battery electrolyte level										❍										❍	500 hrs	8.5.14
	Drain water in fuel tank										❍										❍	500 hrs	8.5.9

* The services identified with ● must be carried out at the specified service hours after initial operation.

1.) Under dusty conditions the air filter must be cleaned more frequently or renewed.

2.) When using a hydraulic hammer over 20 % every 800 h. When using a hydraulic hammer over 60 % every 300 h.
When using a hydraulic hammer over 40 % every 400 h. When using a hydraulic hammer over 80 % every 200 h.

3.) When using a hydraulic hammer up to 50 % every 200 h. When using a hydraulic hammer over 50 % every 100 h.

4.) Earlier if necessary.

5.) At least annually.

	Service	Elapsed Operating Hours *																				Interval	Section
		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000		
Servicing by skilled personnel or KUBOTA dealer	Change engine oil and oil filter	●				❍					❍					❍					❍	250 h	8.5.6
	Inspect coolant hoses and clamps					❍					❍					❍					❍	250 h	8.5.4
	Check/adjust V-belt tension					❍					❍					❍					❍	250 h	8.5.3
	Grease pilot valve linkage					❍					❍					❍					❍	250 h	8.5.19
	Change fuel filter 4.)										❍										❍	500 h	8.5.8
	Change hydraulic return line filter element 3.)					●					❍										❍	500 h	8.5.10
	Change drive unit oil 5.)	●									❍										❍	500 h	8.5.18
	Change hydraulic oil and suction filter 2.)																				❍	1000 h	8.5.11 8.5.12
	Renewing/Cleaning the Hydraulic Oil Tank Breather Filter 1.)																				❍	1000 h	8.5.13
	Renewing the Pilot Circuit Filter																				❍	1000 h	8.5.21
	Change air filter elements 1.)																				❍	1000 h	8.5.7
	Change idler and track roller oil																					2000 h	--
	Check alternator and starter motor						Please contact your KUBOTA dealer.															2000 h	--
	Inspect electric cables and connections						Please contact your KUBOTA dealer.															annually	8.5.20
	Change coolant																					every 2 years	8.5.5
	Change hydraulic hoses						Please contact your KUBOTA dealer.															every 6 years	--
	Safety inspection																					annually	9

F. Specifications

a. Machine Weight

Iron crawler isn't available for these models.

(1) KE, KDG, KUK version

		unit	KX36-3	KX41-3S	KX41-3V
Canopy	Long arm	kg	1490	1520	1630
Cabin	Long arm	kg	1580	1610	1720

(2) PP (KTC, KCL, KTA) version

			KX41-3V
4 post Rops	Rubber crawler	kg lbs	1595 3516

Long arm is installed in standard version.

b. Machine specifications

(1) EU version

		Unit	KX36-3	KX41-3S	KX41-3V
Engine					
Type			Vertical, water-cooled 4 cycle, 3 cylinders diesel		
Model			D782-BH-3	D902-BH	D902-EBH
Output power (ISO3046)		kW PS	9.3/2300 12.6/2300	11.6/2300 15.8/2300	←
Displacement		cc	778	898	←
Dimensions					
Overall length		mm	3670	3665	←
Overall width		mm	990	←	1300/994
Overall crawler width		mm	990	←	1300/994
Overall height	Canopy/cab	mm	2283/2283	←	←
Min. ground clearance		mm	167	158	←
Max. digging depth	STD. Arm	mm	-	-	-
	Long Arm	mm	2227	2370	←
Max. digging height	STD. Arm	mm	-	-	-
	Long Arm	mm	3458	3540	←
Max. digging radius	STD. Arm	mm	-	-	-
	Long Arm	mm	3782	3910	←
Max. dumping height	STD. Arm	mm	-	-	-
	Long Arm	mm	2366	2455	←
Swing angle (left/right)		deg	73/50	←	←
Travel speed	Low speed	km/h	2.2	2.4	2.2
	High speed	km/h	-	4.3	4.0
Swivel speed		rpm	9.1	←	←
Max. traction force	Low speed	kN kgf			
	High speed	kN kgf			
Performance					
Tumbler distance		mm	1090	←	1230
Tread		mm	760	←	1000
Crawler width × No. of shoe × pitch (Rubber)		mm	230 × 32 × 96	230 × 35 × 96	←
Bucket					
Capacity CECE heaped		m3	0.035	0.04	←
Width		mm	402	450	←
Dozer					
Width × height		mm	990 × 230	←	1300 x 230
Lift above GL / below GL		mm	180/193	←	201/205

(2) PP version

		KX41-3V			
Engine					
Type		Vertical, water-cooled 4 cycle, 3 cylinders diesel			
Model		D902-EBH			
Gross engine output (SAE J1349)		11.6 kW / 2300 rpm 15.8 PS / 2300 rpm			
Displacement		898 cc	in^3		
Dimensions					
Overall length		3665 mm	144.3 in		
Overall width		1300/994 mm	51.2/39.1 in		
Overall crawler width		1300/994 mm	51.2/39.1 in		
Overall height	Canopy	2283 mm	89.9 in		
	Cabin	-	-		
Min. ground clearance		158 mm	6.2 in		
Max. digging depth	Long (STD). Arm	2370 mm	93.3 in		
Max. digging height	Long (STD). Arm	3540 mm	139.4 in		
Max. digging radius	Long (STD). Arm	3910 mm	153.9 in		
Max. dumping height	Long (STD). Arm	2455 mm	96.7 in		
Swing angle (left/right)		73 / 50	←		
Travel speed	Low speed	2.3 km/h	1.43 mph		
	High speed	4.1 km/h	2.55 mph		
Swing speed		9.1 rpm			
Max. traction force	Low speed	kN kgf	lbf		
	High speed	kN kgf	lbf		
Performance					
Tumbler distance		1230 mm	48.4 in		
Tread		1000 mm	39.4 in		
Crawler width × No. of shoe × pitch (Rubber crawler)		230 mm × 35 × 96 mm	9.01 in × 35 × 3.78 in		
Bucket					
Capacity heaped	SAE	0.04 m^3	0.052 yd^3		
Width		450 mm	17.7 in		
Dozer					
Width × height		1300 × 230 mm	51.2 × 9.1		
Lift above GL / below GL		201 / 205 mm	7.9 / 8.1 in		

Remarks : PP version is for KTC, KCL, and KTA

c. Lever stroke and operating force

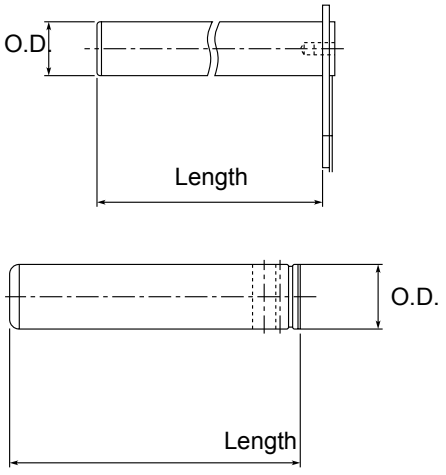
		Unit	KX36-3 (EU)	KX41-3S,V (EU)	KX41-3V (PP)	Remarks
Boom	Stroke	mm in.	75 ± 10 3.0 ± 0.4	←	72 ± 10 2.8 ± 0.4	Up, Down (1)
	Force	N kgf lbs	12.7 ± 4.9 1.3 ± 0.5 2.9 ± 1.1	←	13.7 ± 4.9 1.4 ± 0.5 3.1 ± 1.1	Up, Down (1)
Arm	Stroke	mm in.	75 ± 10 3.0 ± 0.4	←	72 ± 10 2.8 ± 0.4	Crowd, Dump (1)
	Force	N kgf lbs	12.7 ± 4.9 1.3 ± 0.5 2.9 ± 1.1	←	13.7 ± 4.9 1.4 ± 0.5 3.1 ± 1.1	Crowd, Dump (1)
Bucket	Stroke	mm in.	75 ± 10 3.0 ± 0.4	←	74 ± 10 2.9 ± 0.4	Crowd, Dump (1)
	Force	N kgf lbs	12.7 ± 4.9 1.3 ± 0.5 2.9 ± 1.1	←	13.7 ± 4.9 1.4 ± 0.5 3.1 ± 1.1	Crowd, Dump (1)
Swivel	Stroke	mm in.	75 ± 10 3.0 ± 0.4	←	74 ± 10 2.9 ± 0.4	Right, Left (1)
	Force	N kgf lbs	12.7 ± 4.9 1.3 ± 0.5 2.9 ± 1.1	←	13.7 ± 4.9 1.4 ± 0.5 3.1 ± 1.1	Right, Left (1)
Travel	Stroke	mm in.	90 ± 10 3.5 ± 0.4	←	80 ± 10 3.1 ± 0.4	F, R (1)
	Force	N kgf lbs	18.6 ± 4.9 1.9 ± 0.5 4.2 ± 1.1	←	114.7 ± 4.9 1.5 ± 0.5 3.3 ± 1.1	F, R (1)
Dozer	Stroke	mm in.	70 ± 10 2.8 ± 0.4	←	←	Up, Down (1)
	Force	N kgf lbs	20.6 ± 4.9 2.1 ± 0.5 4.6 ± 1.1	←	←	Up, Down (1)
Acceleration	Force	N kgf lbs	49 ± 9.8 / 39.2 ± 9.8 5.0 ± 1.0 / 4.0 ± 1.0 11.0 ± 2.2 / 8.8 ± 2.2	←	53.9 ± 14.7 / 44.1 ± 14.7 5.5 ± 1.5 / 4.5 ± 1.5 12.1 ± 3.3 / 9.9 ± 3.3	Up, Down (2)
Swing pedal	Stroke	mm in.	25 ± 10 1.0 ± 0.4	←	23 ± 10 0.91 ± 0.4	
	Force	N kgf lbs	47.0 ± 9.8 4.8 ± 1.0 10.6 ± 2.2	←	39.2 ± 9.8 4.0 ± 1.0 8.8 ± 2.2	R, L
Safety lock lever (Left)	Force	N kgf lbs	11.8 ± 9.8 / 33.3 ± 9.8 1.2 ± 1.0 / 3.4 ± 1.0 2.64 ± 2.2 / 7.48 ± 2.2	←	←	Up, Down
Safety lock lever (Right)	Force	N kgf lbs	4.9 ± 2.0 / 4.9 ± 2.0 0.5 ± 0.2 / 0.5 ± 0.2 1.1 ± 0.4 / 1.1 ± 0.4	←	←	Up, Down
Service port pedal	Stroke	mm in.	15 ± 10 0.6 ± 0.4	←	←	
	Force	N kgf lbs	62.7 ± 10 6.4 ± 1.0 14.1 ± 2.2	←	49.0 ± 10 5.0 ± 1.0 11.0 ± 2.2	R, L

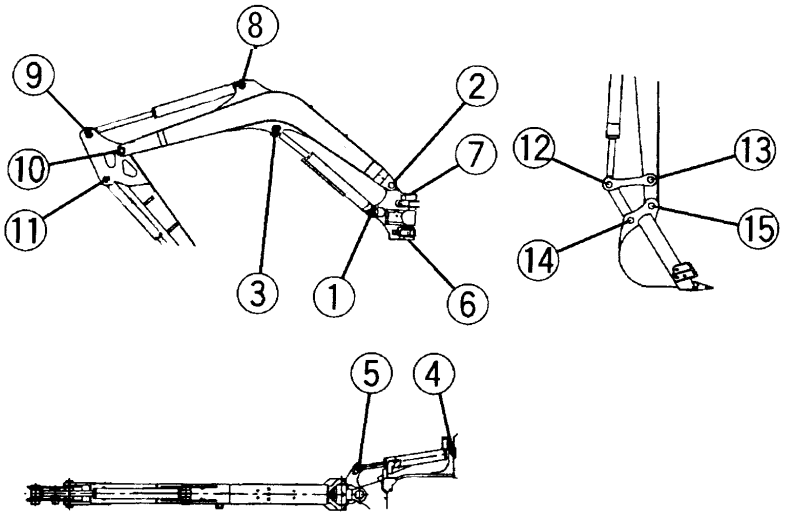
(1) Measured at 20 mm lower from grip tip.
(2) Measured at 30 mm lower from grip tip.

d. Dimensions of Parts

(1) Front pins

No.		Unit	KX36-3 (EU)	KX41-3S, V (EU)	KX41-3V (PP)	Remarks
1	Pin diameter × length	mm in.	35 × 160 1.38 × 6.30	←	←	Service limit Pin dia : 1.0 mm (0.04 in)
2	Pin diameter × length	mm in.	35 × 257 1.38 × 10.1	←	←	
3	Pin diameter × length	mm in.	35 × 160 1.38 × 6.30	←	←	
4	Pin diameter × length	mm in.	30 × 118 1.18 × 4.65	←	←	
5	Pin diameter × length	mm in.	30 × 86.5 1.18 × 3.41	←	←	
6	Pin diameter × length	mm in.	50 × 109 1.97 × 4.29	←	←	
7	Pin diameter × length	mm in.	50 × 109 1.18 × 6.30	←	←	
8	Pin diameter × length	mm in.	30 × 160 1.18 × 5.59	←	←	
9	Pin diameter × length	mm in.	30 × 142 1.18 × 7.52	←	←	
10	Pin diameter × length	mm in.	30 × 191 1.18 × 5.59	←	←	
11	Pin diameter × length	mm in.	30 × 142 1.18 × 7.19	←	←	
12	Pin diameter × length	mm in.	30 × 182.5 1.18 × 7.19	←	←	
13	Pin diameter × length	mm in.	30 × 182.5 1.18 × 7.19	←	←	
14	Pin diameter × length	mm in.	25 × 169 0.98 × 6.65	←	30 × 181 1.18 x 7.13	
15	Pin diameter × length	mm in.	25 × 169 0.98 ×6.65	←	30 × 181 1.18 x 7.13	





New pin tolerance : $25\phi\ ^{-0.05}_{-0.07}$, $30\phi\ ^{-0.05}_{-0.08}$, $35\phi\ ^{-0.05}_{-0.08}$

($0.98\ ^{-0.002}_{-0.003}$, $1.18\ ^{-0.002}_{-0.003}$, $1.37\ ^{-0.002}_{-0.003}$)

Material : S43C-D, S45C-D
Effective hard depth : 2 ~ 4 mm (0.08 ~ 0.16in.)
Surface hardness : HRC52 ~ 59HRC

(2) Bush Dimansion

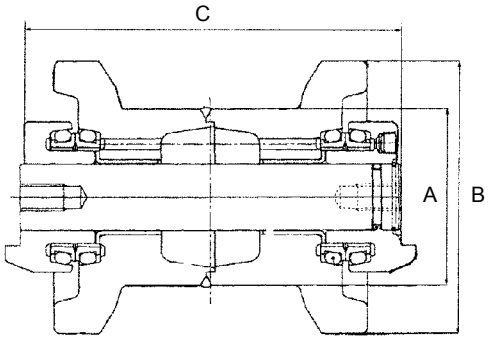
No.	Unit	Outer dia. × inner dia. × width			Remarks
		KX36-3 (EU)	KX41-3S, V (EU)	KX41-3V (pp)	
1	mm in.	43 × 35 × 48 1.69 x 1.38 x 1.89	←	←	Service limit bush inner dia : +1 mm (0.04 in)
1	mm in.	43 × 35 × 32 1.69 x 1.38 x 1.26	←	←	
2	mm in.	45 × 35 × 35 1.77 x 1.38 x 1.38	←	←	
6, 7	mm in.	60 × 50 × 37 2.36 x 1.97 x 1.46	←	←	
6, 7	mm in.	60 × 50 × 23 2.36 x 1.97 x 0.91	←	←	
9, 10	mm in.				
12	mm in.	38 × 30 × 40 1.50 x 1.18 x 1.57	←	←	
13	mm in.				
14	mm in.				
15	mm in.				

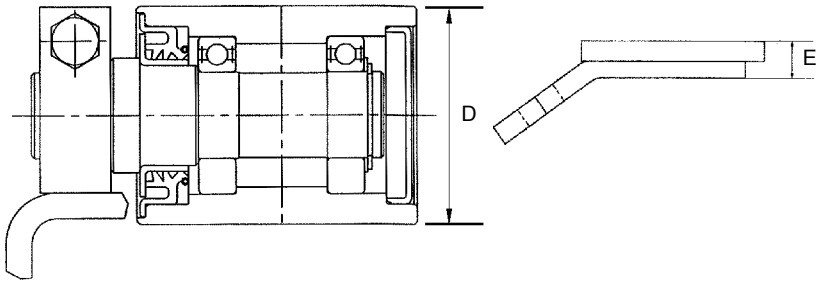
material : Normalizing, Hardness 170 to 229 HB

Surface treatment : Induction hardening & tempering
Effective case depth : 1 ~ 2 mm (0.04 ~ 0.08 in.)
Surface hardness : HRC52 ~ 59

(3) Track toller, idler, sprocket

	Unit	KX36-3 (EU)	KX41-3S, V (EU)	KX41-3V (PP)	Remarks
A : Guide width (A)/(B)	mm in	23 / 20 0.91 / 0.79	←	←	
B : Outer diameter (A)/(B)	mm in	80 / 76 3.15 / 2.99	←	←	
C : Roller width (A)/(B)	mm in	135 / 1.38 /	←	←	
D : Guide Hight (A)/(B)	mm in		15 / 0.59 /	←	
E : Upper roller diameter (A)/(B)	mm in	-	-	-	
F : Sliding plate thickness (A)/(B)	mm in	10 / 0.39 /	←	←	

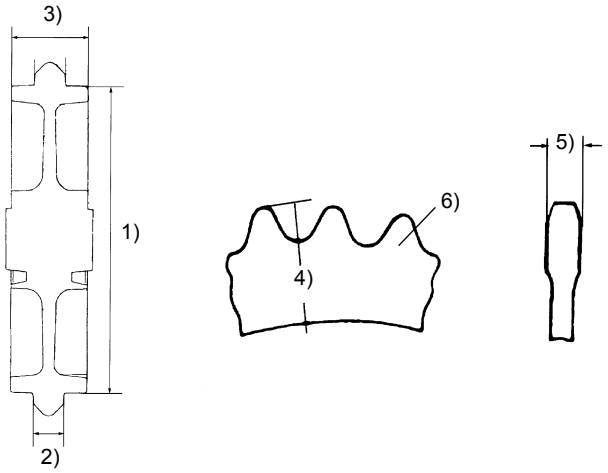




(A)New machine reference value
(B)Allowable limit

	Unit	KX36-3 (EU)	KX41-3S, V (EU)	KX41-3V (PP)	Remarks
1) Idler O.D. (A)/(B)	mm in	202 / 196 7.52 / 7.72	←	←	
2) Guide width (A)/(B)	mm in	27 / 23 1.06 / 0.91	←	←	
3) Idler width (A)/(B)	mm in	60 / 55 2.36 / 2.17	←	←	
4) Sprocket wheel O.D.. (A)/(B)	mm in	290 / 284 11.4 / 11.2	←	←	
5) Sprocket wheel width (A)/(B)	mm in	23 / 18 0.91 / 0.71	←	←	
6) Number of theeth	mm in		19 0.75		

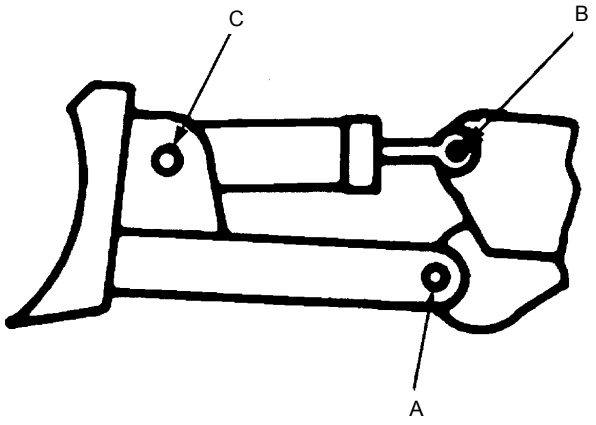
(A)New machine reference value
(B)Allowable limit

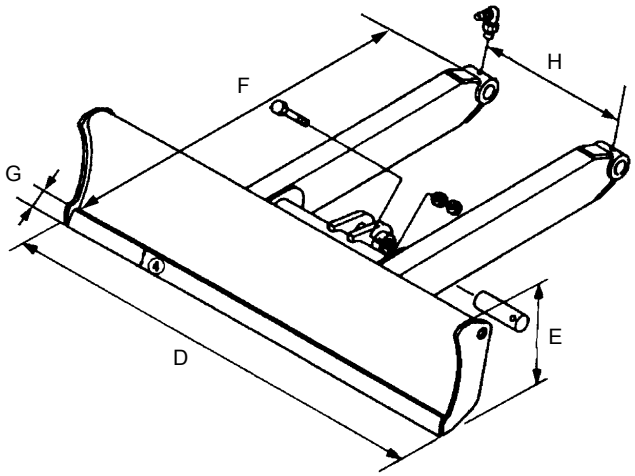


(4) Dozer

	Unit	KX36-3 (EU)	KX41-3S, V (EU)	KX41-3V (PP)	Remarks
Assy code No		RG038-74511	RG138-7441	RB238-7441	
A : Pin diameter × length	mm in	30 × 93 1.18 x 3.66	←	←	
B : Pin diameter × length	mm in	30 × 93 1.18 x 3.66	←	←	
C : Pin diameter × length	mm in	30 × 75 1.18 x 2.95	←	←	
D : Dozer width	mm in	990 39.0	990 / 1300 39.0 / 51.2	←	
E : Dozer height	mm in	225.5 8.88	277 10.9	←	
F : Dozer length	mm in	624 24.6	662 26.1	←	
G : Dozer tip plate height × thickness	mm in	-	–	–	
H : Length between dozer arm center	mm in	434 17.1	←	←	
I : Extension blade length	mm in	-	155 6.10	←	
J : Pin diameter × length	mm in	25 × 135 0.98 x 5.31	←	←	

Pin dia. service limit : -1 mm (0.04 in.)



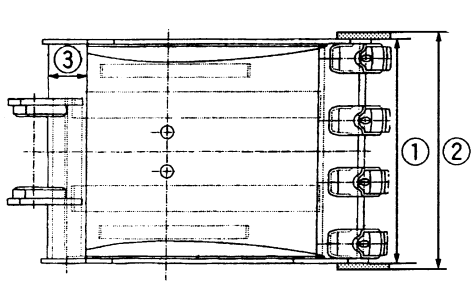


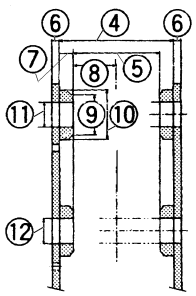
(5) Bucket

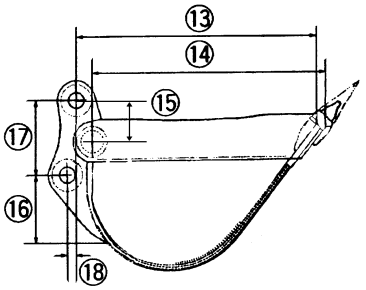
1) Bucket dimensions

No.	Unit	KX36-3 (EU)	KX41-3S, V (EU)	KX41-3V (PP)	Remarks
1	mm in.	600 23.6	650 25.6		
2	mm in.	624 24.6	674 25.6		
3	mm in.	101.6 × t0.5 4.00 × t0.33	←		
4	mm in.	204 8.03	215 8.46		
5	mm in.	134 5.28	145 5.71		
6	mm in.	12 0.47	16 0.63		
7	mm in.	35 1.38	←		
8	mm in.	67 2.64	72.5 2.85		
9	mm in.	75 2.95	83 3.27		
10	mm in.	90 3.54	100 3.94		
11	mm in.	40 1.57	45 1.77		
12	mm in.	40 1.57	45 1.77		
13	mm in.	670 26.4	725 28.5		
14	mm in.	617 24.3	652 25.7		
15	mm in.	89 3.50	113 4.45		
16	mm in.	175 6.89	150 5.91		
17	mm in.	180 7.09	230 9.06		
18	mm in.	10 0.39	20 0.79		

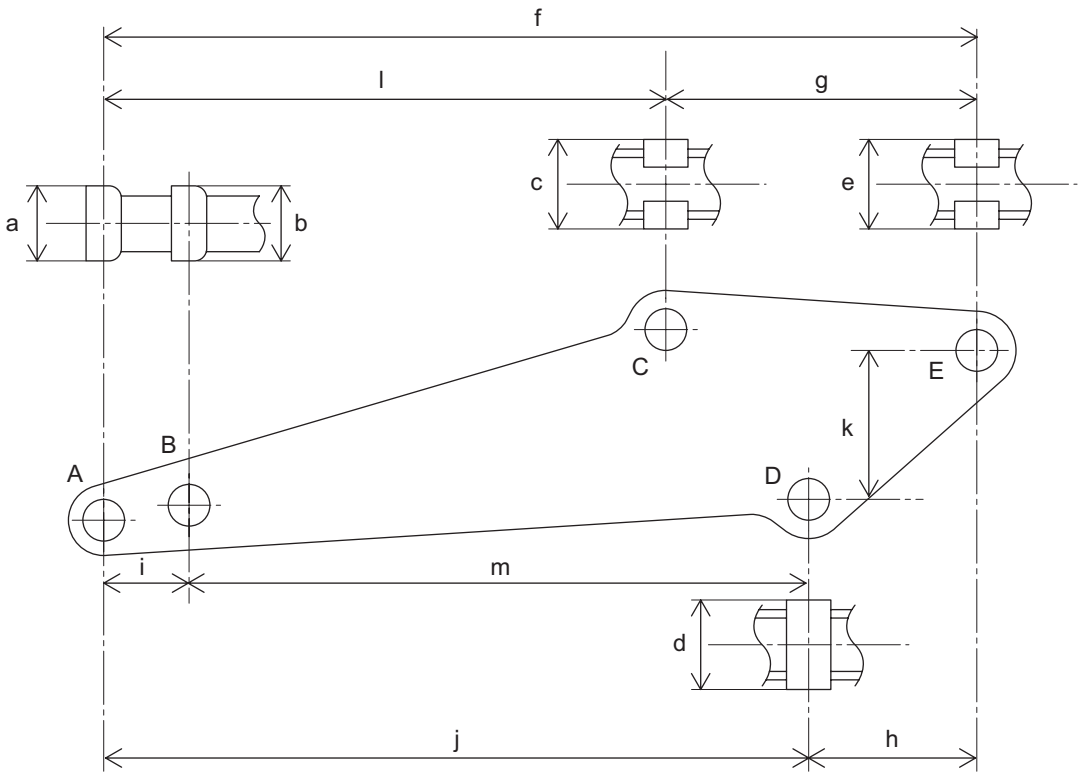
NOTE: KUBOTA JAPAN BUCKET







(6) Arm



mm (inch)

		KX36-3 (EU)	KX41-3S, V (EU)	KX41-3V (US)
Arm boss inner dia.	A	$38^{+0.025}_{0}$ ($1.50^{+0.001}_{0}$)	←	←
	B	$38^{+0.025}_{0}$ ($1.50^{+0.001}_{0}$)	←	←
	C	$30^{+0.10}_{+0.05}$ ($1.18^{+0.004}_{+0.002}$)	←	←
	D	$38^{+0.025}_{0}$ ($1.50^{+0.001}_{0}$)	←	←
	E	$30^{+0.10}_{+0.05}$ ($1.18^{+0.004}_{+0.002}$)	←	←
Arm boss width	a	$95.5^{-0.3}_{-0.5}$ ($3.76^{-0.01}_{-0.02}$)	←	←
	b	$125.5^{-0.15}_{-0.30}$ ($4.94^{-0.006}_{-0.012}$)	←	←
	c	137 ± 0.5 (5.39 ± 0.02)	←	←
	d	$116^{-0.2}_{-0.5}$ ($4.57^{-0.008}_{-0.02}$)	←	←
	e	137 ± 0.5 (5.39 ± 0.02)	←	←
	f	735 ± 1 (28.9 ± 0.04)	125.7 ± 1 (4.95 ± 0.04)	←
	g	368.5 (14.5)	522 (20.6)	←
	h	153 ± 1 (6.02 ± 0.04)	157 ± 1 (6.18 ± 0.04)	←
	i	85 ± 1 (3.35 ± 0.04)	←	←
	j	950 ± 2 (37.5 ± 0.08)	1100 ± 2 (43.3 ± 0.08)	←
	k	122.5 ± 1 (4.82 ± 0.04)	←	←
	l		735 ± 1 (28.9 ± 0.04)	←
	m		1015 (40.0)	←
	nl			

(7) Parts weight

	Unit	KX36-3 (EU)	KX41-3S, V (EU)	KX41-3V (PP)	Remarks
Pilot valve	kg lbs	1.9 4.2	1.9 4.2	2.0 4.4	
Track frame, side	kg lbs	-	70 154	71.2 157.0	
Track frame, center	kg lbs	148.9 328.3	87 192	84 185.2	
Swivel frame	kg lbs	188 414.5	186 410	180 396.8	
Swing bracket	kg lbs	28 61.7	28.0 61.7	29.8 65.7	
Boom	kg lbs	64 141.1	64 141	63.9 140.9	
Arm (1600)	kg lbs	35.0 77.0	35.0 77.0	36.7 80.9	
Bucket	kg lbs	77 59.5	28 61.7	local content	
Dozer (1700)	kg lbs	42 92.6	42 / 60 92.6 / 132.2	59.9 132.1	
Protector (left)	kg lbs	24.5 54	←	30 66.1	
Protector (right)	kg lbs	23.8 52.5	←	30.3 66.8	
Protector (rear)	kg lbs	29.2 64.4	←	30.3 66.8	
Rubber crawler	kg lbs	47 103.6	47 / 52 103.6 / 114.6	49.3 108.7	
Iron crawler	kg lbs	-	-	-	
Arch	kg lbs	24 52.9	24 52.9	23 50.7	
Engine	kg lbs	64 141	72 159	←	Dry condition
Hydraulic tank	kg lbs	13.6 30.0	←	16 35.3	
Fuel tank	kg lbs	2.9 6.4	←	←	
Swivel bearing	kg lbs	37 81.6	←	16.7 36.8	
Battery with electrolite	kg lbs	14 30.9	←	17.0 37.5	
Track roller	kg lbs	4.3 9.5	←	←	
Upper roller	kg lbs	-	-	-	
Rops/Fops canopy	kg lbs	62.4 137.6	62.0 136.7	62.7 138.2	
Rops/Fops cabin	kg lbs	167 368.2	←	-	
Pump	kg lbs	13 28.7	←	←	