WSM

WORKSHOP MANUAL
KUBOTA EXCAVATOR

KX080-3

Kubota

Code No.97899-61730

Record of Revisions

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

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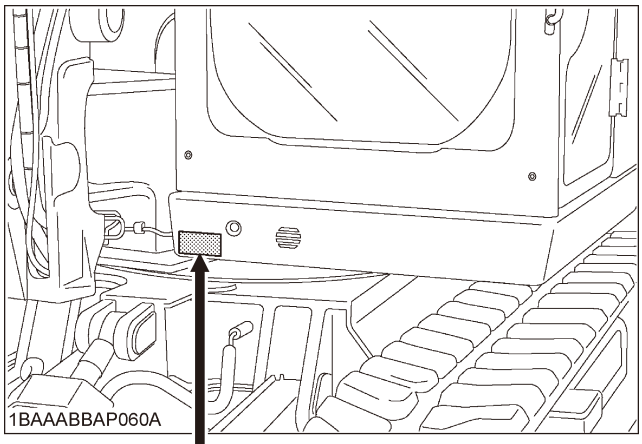
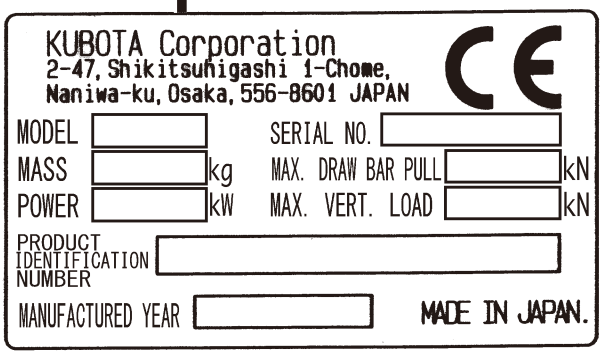
I General

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.

(1)Product number plate





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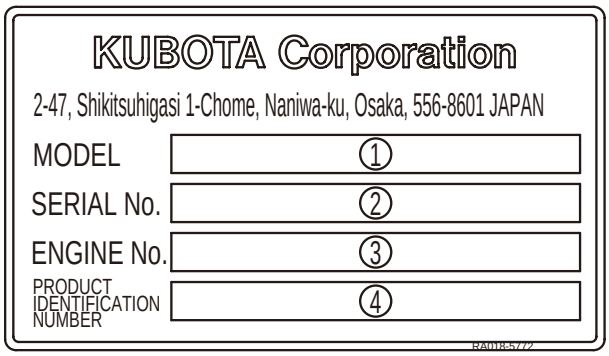
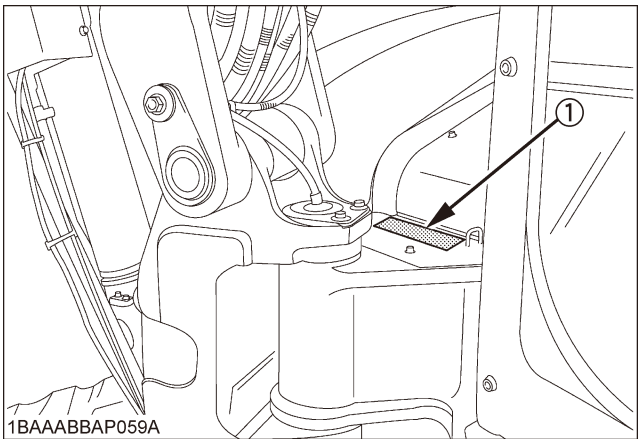
KTC, KCL, KTA-version



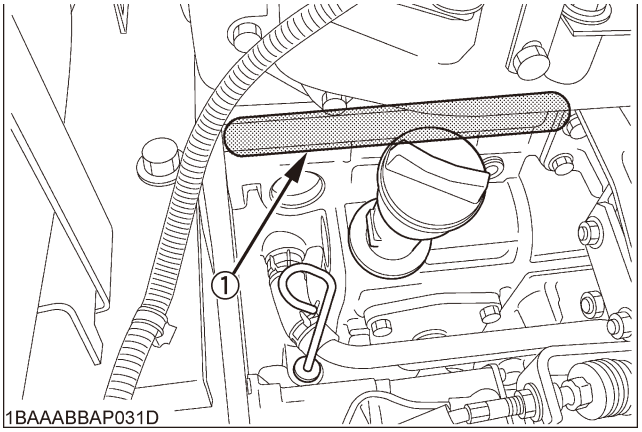
Name plate : Code No. RA018-57721

(3) Engine serial number
e.g. D1105-5L0025
"5" indicates year of 2005 and "L" indicates June. So, 5L indicates that the engine was manufactured in June 2005.

(2)Machine and engine serial number



(1) Machine serial No.



(1) Engine serial No.

(Engine production month code)

Month	Serial No.	
	0001~9999	10001~19999
Jan.	A	B
Feb.	C	D
Mar.	E	F
April	G	H
May	J	K
June	L	M
July	N	P
Aug.	Q	R
Sept.	S	T
Oct.	U	V
Nov.	W	X
Dec.	Y	Z

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 disassembled 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 hydrauric units 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. Crane 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 removing bolts.

(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 batteries, 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 to 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 coating.
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 panel, seat stand, 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.

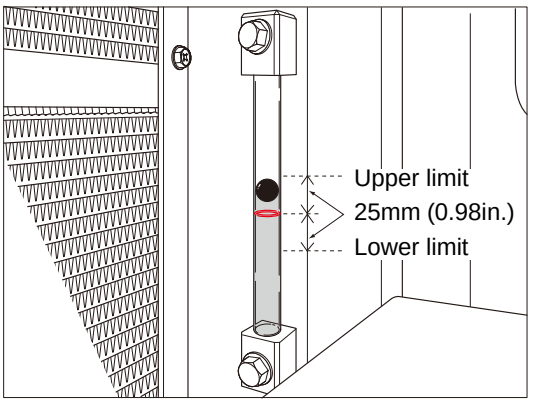
b Make Sure the Safety decals and Wireharness Clamps are in their Specified Positions.

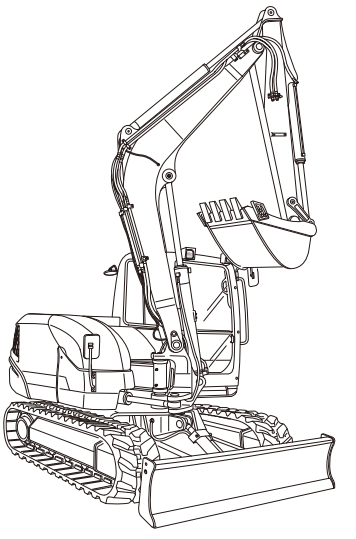
c With the Machine Front in a Specified Posture, Check the Amount of Hydrauric Oil

Checking the oil level (For further details, 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.

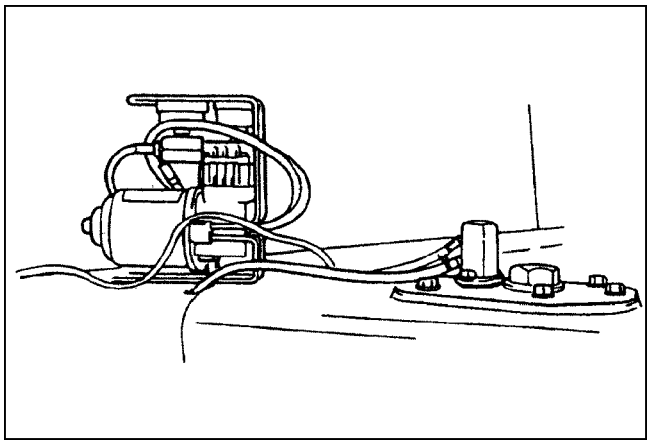
Place the front in the left swing position with the arm, boom and bucket cylinders stretched most.

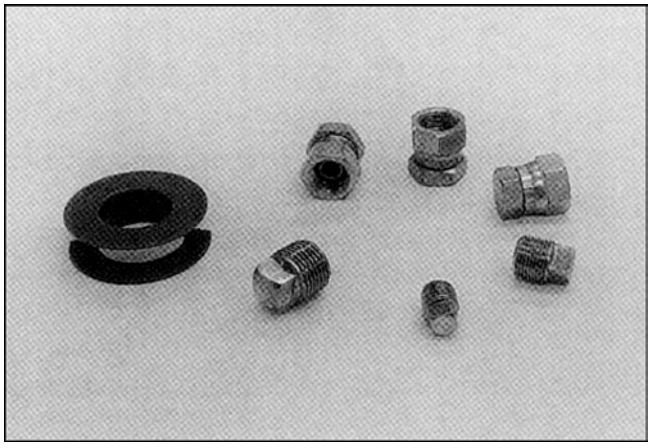


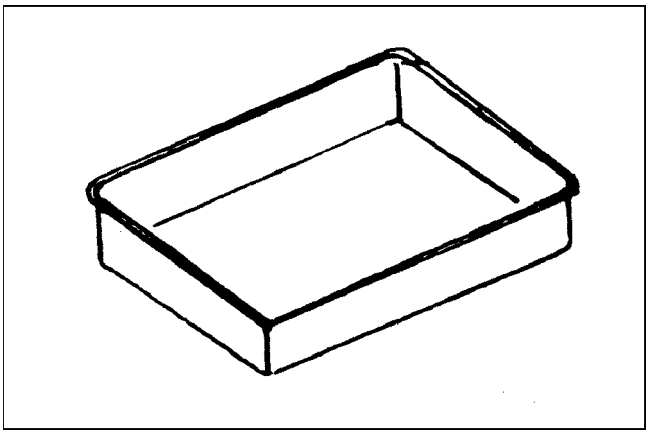


E.SERVICING FUNDAMENTALS

Locking adhesive







a. Items for Servicing

(1) Tighten bolts, nuts, adapters,and similar parts to their specified torques which are given in the list of tightening torques and adhesive as well as in this manual. Be sure to observe the specified torques for important tightened parts and components.

(2) Wipe out water, oil and grease off the screws on which LOCTITE adhesive is to be applied. Be sure to apply the adhesive to specified locations.

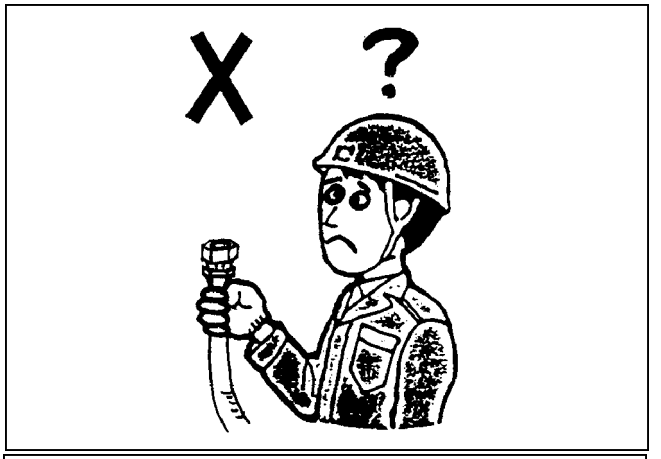
Types of screw adhesive
Equivalent to LOCTITE 271 (Heavy-duty) Equivalent to THREE-BOND 1305P (Heavy-duty) Equivalent to THREE-BOND TB1401B (Light-duty) Unless specified otherwise, use THREE-BOND 1324 (Medium-duty).

Type of instantaneous adhesive
Use THREE-BOND 1733 or 1741E

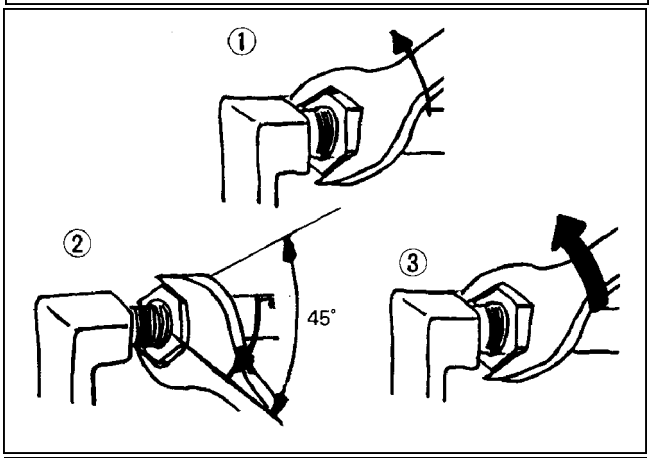
The word “LOCTITE“ in this manual denotes the red-color type.

(3) Precautions in disassembling the hydraulic equipment

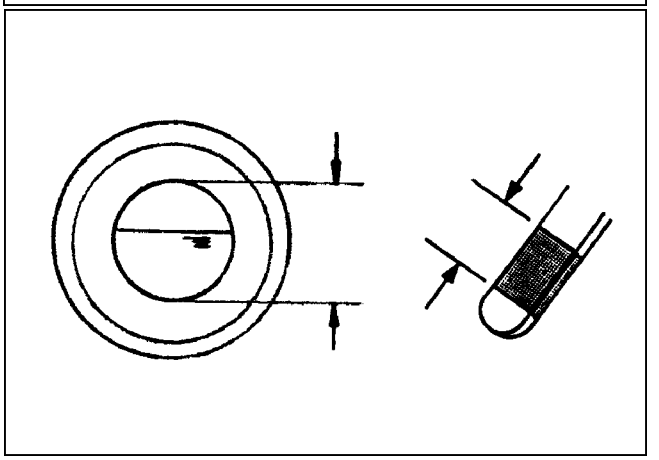
- Use a vacuum pump, plugs, oil pans, waste cloth and the like to prevent oil from running out or splashing.
  Wipe out leaking oil completely first and then add oil as required.
- Protect the openings with plugs, covers or the like to keep off foreign matters. Most of hydraulic system troubles are caused by the entry of foreign matters.
- Before reassembling, clean up the parts and components and apply hydraulic oil on them.
- The system consists of precision parts. Be careful not to scratch them and apply excessive force on them.



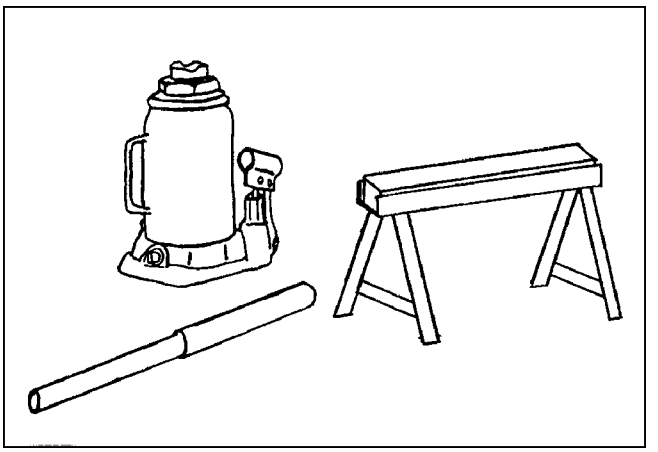
(4) Precautions in tightening hoses and pipes.
- Flexible hoses have a slight natural bend of their own. Utilize the natural bend. Be also careful not to twist them.
- Be careful not to confuse the routes of the hoses.
- Do not hold the hoses in tight contact with their adjacent parts and surfaces.



- Tightening steps
  1. First tighten the nut to its specified torque.
  2. Then loosen the nut by about 45° to fit the seat of the joint to the connection.

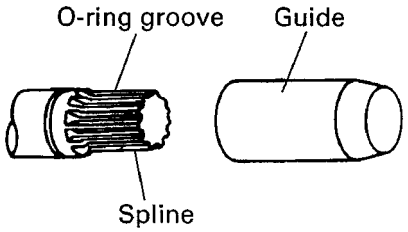


(5) The quantities of oil, fuel, water and others, except for the oil to be filled in the track rollers and idlers, are listed just as reference. Fill up the fluid up to the specified center level of a level gauge if it is provided.

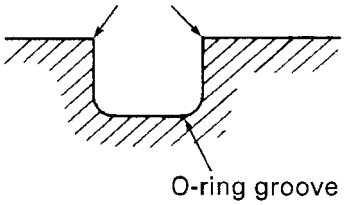


(6) Security support the machine with a jack and a supporting jig when it is jacked up for servicing.
(7) Be sure to use a crane in disassembling and reassembling heavy parts and components (frame, front attachment, crawler, etc.).

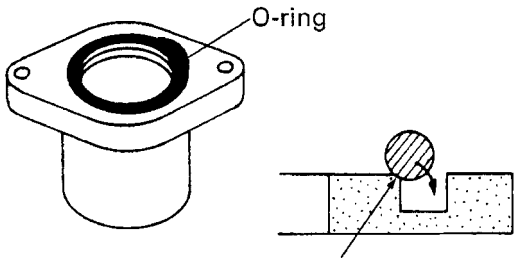
b. O-ring, Oil seal, Circlip and Roll Pin



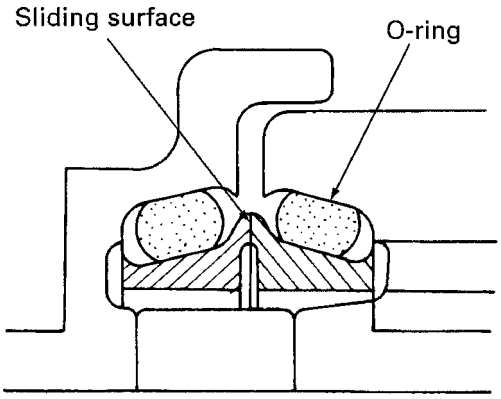
(1) General precautions
- Make sure the O-ring and the oil seal are free of anything unusual (uneven surface, scratches, chipping, etc.).
- Check the O-ring groove for burrs. Correct, if any, using an oil stone or the like.
- When putting a part past a sharp edge into position, protect such edge with a cover or get the part chamfered.



(2) O-ring
- Clean up the O-ring groove and deburr its edge as required.
- Before installing the ring, be sure to apply lubricant (grease) over it. (Do not do this to the floating seal.)
- Fit the O-ring into its groove without twist. With your fingertip, push the ring gently and evenly into the final position. Otherwise the ring would easily get twisted in contact with the inner edge of the groove.

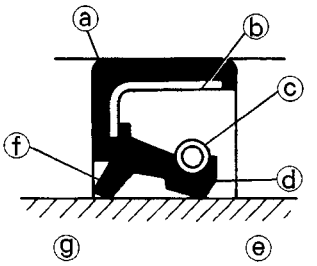


(3) Floating seal
- Be sure to wipe oil off the O-ring and the O-ring contact surface. (Note, however, that oil must be applied thinly over those of the wheel motor.)
- In fitting the O-ring into the floating seal, be careful not to twist the O-ring.
- Before installing the floating seal together with the O-ring, apply sealing oil thinly over the sliding surface. Be careful to keep the sliding surface and O-ring in alignment with the housing.
- Finally turn the floating seal 2 or 3 times by hand in order to form an oil film over the sliding surface as well as to get the sealing surface well it.

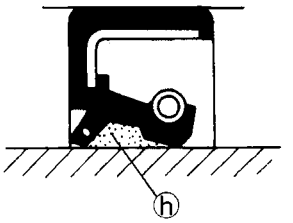


(4) Oil seal

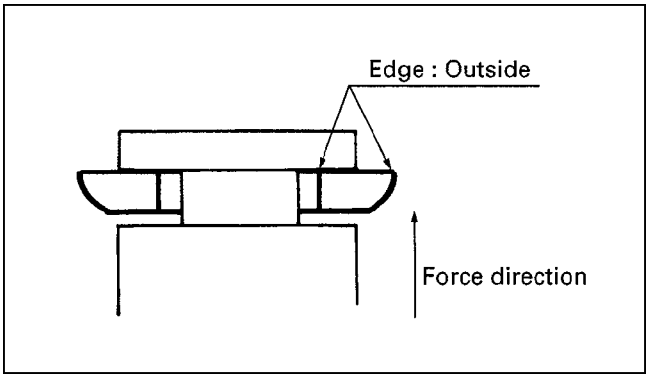
- Do not confuse the orientation of the oil seal lips. Direct the main lip toward the oil chamber; in other word, toward what is to be sealed.



a.	Packing	f.	Dustpans lip
b.	Metal ring	g.	Atmosphere (outside)
c.	Spring	h.	Grease
d.	Main lip		
e.	Oil chamber (inside)		

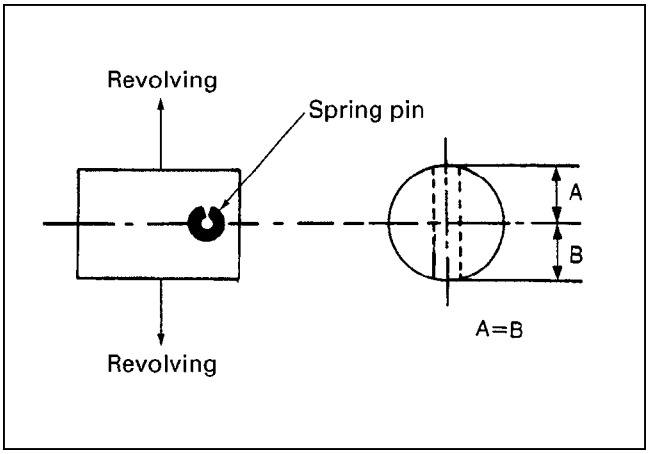


- If in dry state, the oil seal may wear out when running in the machine. To prevent this, be sure to apply lubricant (grease) over the lip sliding surface. If provided also with a dustproof lip, fill the space between this lip and the main lip with grease.
- As a rule, use a press to press-fit the oil seal. If not available, apply a suitable tool and tap it evenly without allowing any tilt. Press-fit the oil seal deep down to the bottom of the oil seal fitting boss.



(5) Mounting the circlip

- Place the circlip with its sharp edge facing outward (in the locking direction).
- Fit the circlip securely in the groove. For the hole circlip in particular, install and turn it slightly to make sure it fits well.



(6) Tapping the roll pin (spring pin)

- Place the roll pin (spring pin) with its opening perpendicular to the load.
- Place the roll pin (spring pin) with its opening in the turning direction.
- Evenly tap the roll pin (spring pin) into position.

c. Piping

(1) General precautions

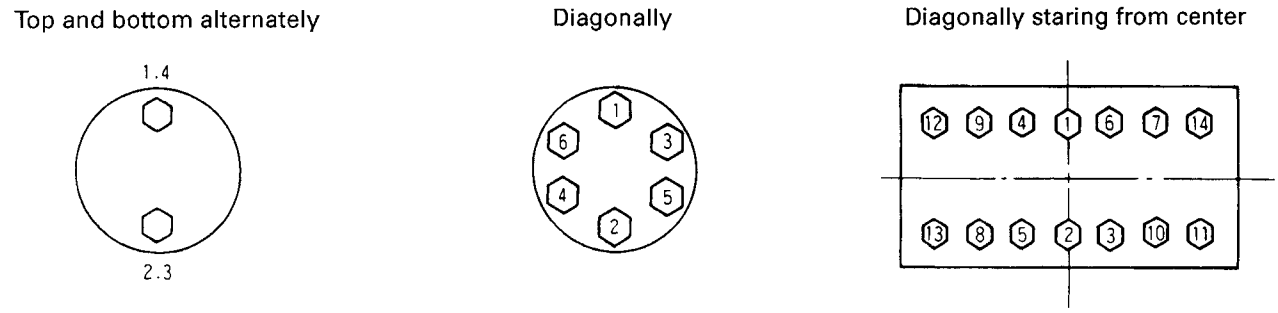
- Tightening the pipe socket to the specified torque. If too tight, the socket itself or a hydraulic component may get damaged. It too loose, an oil leak may result.
- In connecting a new hose or pipe, tighten its nut first to the specified torque and then turn it back (about 45°). Then tighten it again 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 disconnecting 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.

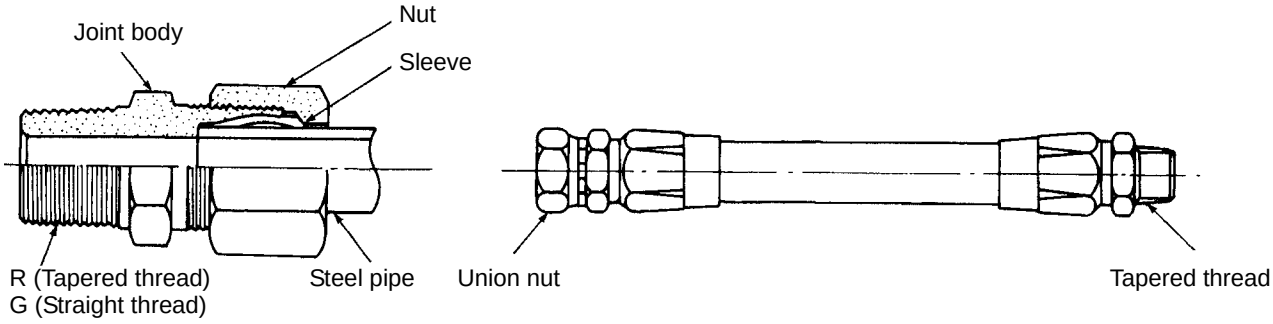
(2) Hydraulic hose

Check the hydraulic hose for too tight a connect or twist.
*Excessively 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 torque.
- 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) Hose clamp (screw-in type) tightening torque chart

Applicable diameter/Part code	Part name.	Tightening torque
(Ø10 ~ 14) 6C040-5872Δ	Hose clamp (screw-in type 14)	2.5~3.4N.m (25~35kgf.cm)1.8~2.5ft.lbs
(Ø12 ~ 16) 09318-81916	Hose clamp (screw-in type)	2.5~3.4N.m (25~35kgf.cm)1.8~2.5ft.lbs
(Ø13 ~ 20) RB101-6363Δ	Hose clamp (13-20)	2.5~3.4N.m (25~35kgf.cm)1.8~2.5ft.lbs
(Ø19 ~ 25) 09318-89024	Hose clamp (screw-in type)	2.5~3.4N.m (25~35kgf.cm)1.8~2.5ft.lbs
(Ø31 ~ 40) 09318-89039	Hose clamp (screw-in type)	2.5~3.4N.m (25~35kgf.cm)1.8~2.5ft.lbs
(Ø36 ~ 46) 09318-89045	Hose clamp (screw-in type)	2.5~3.4N.m (25~35kgf.cm)1.8~2.5ft.lbs
(Ø15 ~ 25) RC101-6458Δ	Hose clamp (15-24)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs
(Ø26 ~ 38) 68311-7282Δ	Hose clamp (26-38)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs
(Ø32 ~ 44) RD411-6382Δ	Hose clamp (32-44)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs
(Ø40 ~ 55) RD411-6318Δ	Hose clamp (40-55)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs
(Ø44~ 53) 09318-89052	Hose clamp (screw-in type)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs
(Ø49 ~ 60) 67890-5828Δ	Hose clamp (screw-in type 60)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs
(Ø50 ~ 60) RC401-6319Δ	Hose clamp (50-60)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs
(Ø58 ~ 75) 36919-0459Δ	Hose clamp (58-75)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs
(Ø66 ~ 88) 3F740-0459Δ	Hose clamp (66-88)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs
(Ø77 ~ 95) 69284-6137Δ	Hose clamp (77-95)	4.9~5.9N.m (50~60kgf.cm) 3.6~4.4ft.lbs

(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

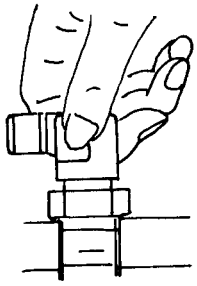
[ex. bolts]

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

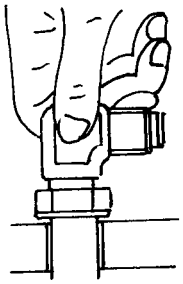
Size	N·m	kgf·m	ft·lbs
G1/8	15.0~16.5	1.5~1.7	11.1~12.2
G1/4	24.5~29.4	2.5~3.0	18.1~21.7
G3/8	49.0~53.9	5.0~5.5	36.1~39.8
G1/2	58.8~63.7	6.0~6.5	43.4~47.0
G$\frac{3}{4}$, G1	117.6~127.4	12.0~13.0	86.7~94.0
G1$\frac{1}{4}$	220.5~230.3	22.5~23.5	162.6~169.9
7/8-14UNF	55.9~60.8	5.7~6.2	41.2~44.8



Tightening procedure

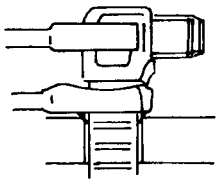
1. Connecting with the valve
   - Screw in the elbow by hand until the washer comes into contact.

Note: Clean up the mating seal beforehand.



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

1.Face sealing (ORS) type

Tighten to the specified torque.

Screw size	Part code of O ring
9/16UNF	RD809-6184Δ
11/16UNF	RD809-6161Δ
13/16UNF	RD809-6162Δ
1-14UNS	RD809-6163Δ

9/16UNF size
35.2~43.1N.m (3.6~4.4kgf.m) 26.0~30.8ft.lbs

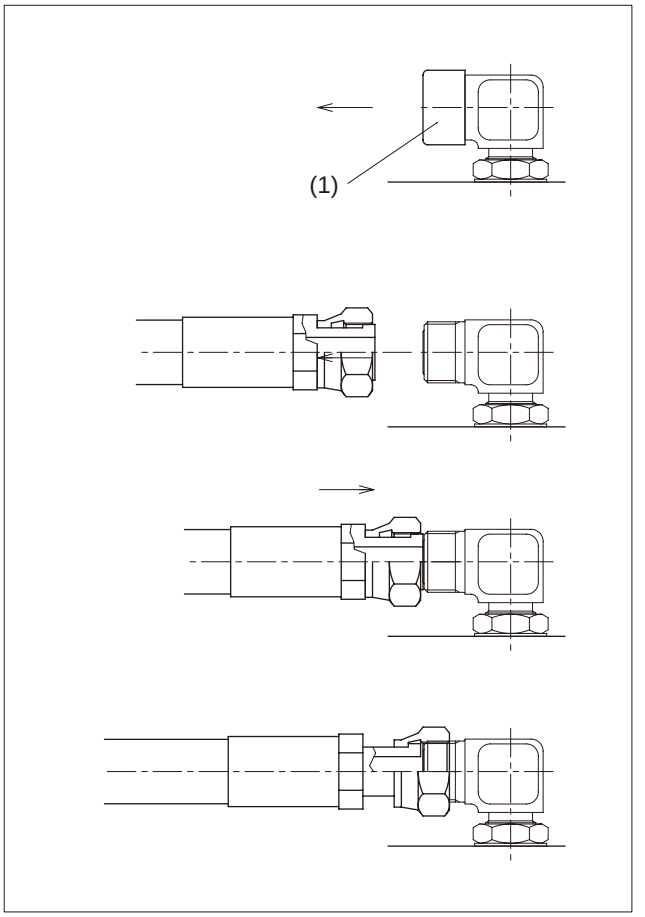
11/16UNF size
60.0~73.5N.m (6.1~7.5kgf.m) 44.3~54.2ft.lbs

13/16UNF size
70.6~86.2N.m (7.2~8.8kgf.m) 52.1~63.6ft.lbs

1-14UNS size
105.8~129.4N.m (10.8~13.2kgf.m)
78.0~95.4ft.lbs

2.Connecting the face sealing (ORS) type hose

Take the procedure at left.



Connecting the face sealing (ORS) type hose

1)Remove the protective cap from the adaptor and make sure the O-ring is installed in its groove. (If the O-ring is missing, fit the specified-size one in position.)

(1)Protective cap

2)Shift the hose's cap nut in the direction of arrow until the O-ring contact face stretched out of the cap nut.

3) Bring the hose's O-ring contact face in close contact with the joint's O-ring.
Make sure they do not come off each other.

4) Tighten up the cap nut to the specified torque.

Hose tightening torque chart

N.m (kgf.m) ft.lbs

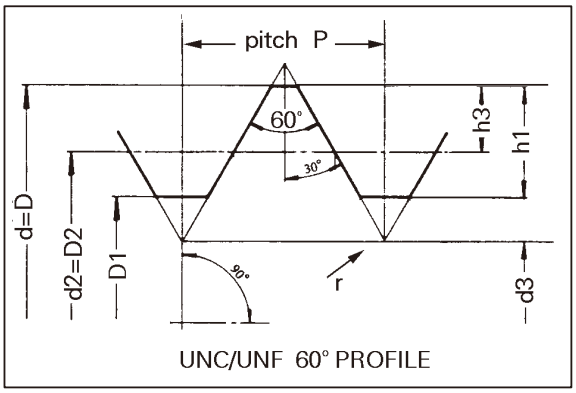
Size (ORS)	Union nut (metal sealing type)	Union nut (ORS type)
1/8 (-)	7.8~11.8N.m(0.8~1.2kgf.m) 5.8~8.7ft.lbs	-
1/4 (9/16-18)	24.5~29.4N.m(2.5~3.0kgf.m) 18.1~21.7ft.lbs	35.2~43.1N.m(3.6~4.4kgf.m) 26.0~31.8ft.lbs
3/8 (11/16-16)	37.2~42.1N.m(3.8~4.3kgf.m) 27.4~31.1ft.lbs	60.0~73.5N.m(6.1~7.5kgf.m) 44.3~54.2ft.lbs
1/2 (13/16-16)	58.8~63.7N.m(6.0~6.5kgf.m) 43.4~47.0ft.lbs	70.6~86.2N.m(7.2~8.8kgf.m) 52.1~63.6ft.lbs
3/4 (1-14)	117.6~127.4N.m(12.0~13.0kgf.m) 86.7~94.0ft.lbs	105.8~129.4N.m(10.8~13.2kgf.m) 78.0~95.4ft.lbs
$1\cdot\frac{1}{4}$ (-)	220.5~230.3N.m(22.5~23.5kgf.m) 162.6~169.9ft.lbs	-

Unified Screw Threads(Unified Standard Series)

Nominal Size, TPI, Series	Class	Allowance	Max Minor		Min Minor		Max Pitch		Min Pitch		Major diameter (Min)	
			inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
9/16-18UNF	2B	0.0014	0.5150	13.081	0.5020	12.751	0.5323	13.520	0.5264	13.371	0.5625	14.288
11/16-16UN	2B	0.0014	0.6340	16.104	0.6200	15.748	0.6531	16.589	0.6469	16.431	0.6875	17.463
13/16-16UN	2B	0.0015	0.7590	19.279	0.7450	18.923	0.7782	19.766	0.7719	19.606	0.8125	20.638
1-14UNS	2B	0.0017	0.9380	23.825	0.9230	23.444	0.9609	24.407	0.9536	24.221	1.0000	25.400

9/16-18UNF

9/16 : Major diameter
18 : Number of thread per 1 inch
UN : Unified Thread
UNF : Unified Thread Fine
UNS : Unified Standard Series



F. Maintenance intervals

a. Maintenance intervals chart : EU-version

	General Maintenance		Elapsed Operating Hours																					
		50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	Interval	
Operator Services	Check fuel level																					daily	
	Check coolant level																					daily	
	Check engine oil level																					daily	
	Check hydraulic oil level																					daily	
	Check V-belt																					daily	
	Check washer liquid																					daily	
	Check water separator																					daily	
	Check, clean air filter	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	50 h	
	Tracks and chassis: clean, visual inspection and check tension	○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	50 h	
	Grease swivel gear	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	50 h	
	Grease front attachments: Bucket and bucket link pin																					daily	
	Grease front attachments: Boom swing fulcrum		○		○		○		○		○		○		○		○		○		○	100 h	
	Grease front attachments: Others					○					○					○					○	250 h	
	Grease swivel gear bearing				○				○				○				○				○	200 h	
	Clean air conditioner filter				○				○				○				○				○	200 h	
	Check air conditioner drive belt				○				○				○				○				○	200 h	
	Clean air conditioner condenser				○				○				○				○				○	200 h	
	Drain water in fuel tank										○										○	500 h	
	Check battery electrolyte level										○										○	500 h	
	Check air conditioner pipes and hoses																					every 2 years	

Servicing by skilled personnel or KUBOTA dealer

Service	Elapsed Operating Hours																				Interval
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
Inspect coolant hoses and clamps					○					○					○					○	250 h
Check/adjust V-belt tension					○					○					○					○	250 h
Grease pilot valve linkage					○					○					○					○	250 h
Change engine oil and oil filter										○										○	500 h
Change drive unit oil	◉									○										○	500 h
Change fuel filter cartridge										○										○	500 h
Change hydraulic return line filter element					◉					○										○	500 h
Renewing the pilot circuit filter																				○	1000 h
Change hydraulic oil and suction filter																				○	1000 h
Change air filter elements																				○	1000 h
Change air conditioner filter																					1000 h
Change idler and track roller oil																					2000 h
Check alternator and starter motor																					2000 h
Inspect electric cables and connections																					annually
Change air conditioner pipes and hoses																					every 2 years
Change coolant																					every 2 years
Change hydraulic hoses																					every 6 years
Check refrigerant (gas)																					Service as required
Safety inspection																					annually

Please contact your KUBOTA dealer.

Please contact your KUBOTA dealer.

Please contact your KUBOTA dealer.

◉First operation

b. Maintenance interval chart : PP-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
5	Grease front attachments	Bucket and bucket link pin	-	Daily check									
		Boom swing fulcrum	-		○		○		○		○		every 100 hrs
		Others	-					○					every 250 hrs
6	Radiator and oil cooler		check	Daily check									
7	Washer liquid		check	Daily check									
8	Engine and electrical wiring		check	Daily check									every year
9	Fuel tank, Water separator		drain	○	○	○	○	○	○	○	○	○	every 50 hrs
10	Battery condition		check	○	○	○	○	○	○	○	○	○	every 50 hrs
11	Greasing swing bearing teeth		-	○	○	○	○	○	○	○	○	○	every 50 hrs
12	Fan belt tension		check	Daily check									
			adjust				○				○		every 200 hrs
13	Radiator hoses and clamps		check				○				○		every 200 hrs
			replace										every 2 years
14	Air filter element	Outer element	clean				○				○		every 200 hrs
			replace										every 1000 hrs
		Inner element	replace										every 1000 hrs
15	Greasing swing ball bearing		-				○				○		every 200 hrs
16	Fuel filter cartridge		replace										every 500 hrs
17	Engine oil filter		replace	◉					○				every 250 hrs
18	Drive unit oil		change		◉								every 500 hrs
19	Hydraulic return filter cartridge		replace					◉					every 500 hrs
20	Hydraulic suction filter element		replace										every 1000 hrs
21	Filter in the pilot hydraulic system		replace										every 1000 hrs
22	Fuel injection nozzle injection pressure		check										every 1500 hrs
23	Front idler and track roller oil		change										every 2000 hrs
24	Alternator and starter motor		check										every 2000 hrs
25	Injection pump		check										every 3000 hrs
26	Radiator system		rinse										every 2 years
27	Fuel line and Intake air line		check				○				○		every 200 hrs
			replace										every 2 years

* 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
5	Grease front attachments	Bucket and bucket link pin, Boom swing fulcrum	-	○		○		○		○	○	every 100 hrs
		Others	-	○					○		○	every 250 hrs
6	Radiator and oil cooler		check	Daily check								
7	Washer liquid		check	Daily check								
8	Engine and electrical wiring		check	Daily check								every year
9	Fuel tank, Water separator		drain	○	○	○	○	○	○	○	○	every 50 hrs
10	Battery condition		check	○	○	○	○	○	○	○	○	every 50 hrs
11	Greasing swing bearing teeth		-	○	○	○	○	○	○	○	○	every 50 hrs
12	Fan belt tension		check	Daily check								
			adjust			○				○	○	every 200 hrs
13	Radiator hoses and clamps		check			○				○	○	every 200 hrs
			replace									every 2 years
14	Air filter element	Outer element	clean			○				○	○	every 200 hrs
			replace								○	every 1000 hrs
		Inner element	replace								○	every 1000 hrs
15	Greasing swing ball bearing		-			○				○	○	every 200 hrs
16	Fuel filter cartridge		replace	○							○	every 500 hrs
17	Engine oil filter		replace		○					○		every 250 hrs
18	Drive unit oil		change			○						every 500 hrs
19	Hydraulic return filter cartridge		replace						○			every 500 hrs
20	Hydraulic suction filter element		replace								○	every 1000 hrs
21	Filter in the pilot hydraulic system		replace								○	every 1000 hrs
22	Fuel injection nozzle injection pressure		check									every 1500 hrs
23	Front idler and track roller oil		change									every 2000 hrs
24	Alternator and starter motor		check									every 2000 hrs
25	Injection pump		check									every 3000 hrs
26	Radiator system		rinse									every 2 years
27	Fuel line and Intake air line		check			○				○	○	every 200 hrs
			replace									every 2 years

c. Water and oil quantity

	Unit			Remarks
Radiator	L gal	8.2 (2.17)		Kubota LLC-N-50F 50%
Reserve tank	L gal	1.3 (0.34)		
Engine oil with filter	L gal	10.7 (2.83)		Engine Oil SAE10W30(CF-4)
Hydraulic oil Full	L gal	146 (38.6)		ISO 46
Hydraulic oil Tank gauge center	L gal	75 (19.8)		ISO 46
Wheel motor	L gal	1.3 (0.34)		Gear Oil SAE90 (API GL-4)
Track roller	cc cu.in.	80 (4.88)		Engine Oil SAE30(CD)
Upper roller	cc cu.in.	60 (3.66)		SAE30(CD)
Front idler	cc cu.in.	80 (4.88)		
Fuel tank	L cu.in.	115 (30.4)		Diesel Fuel JIS #3 (Initial)

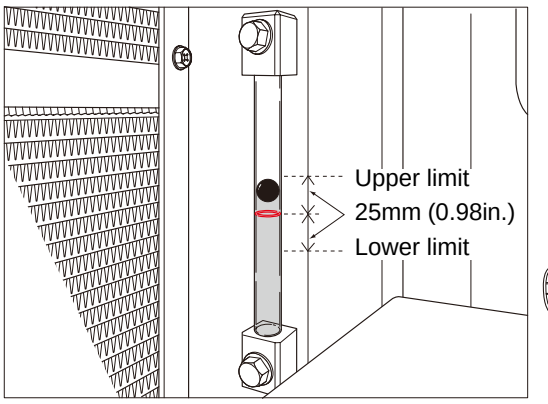
Note : Type of oil, fuel and coolant in the remarks are filled in the Factory.

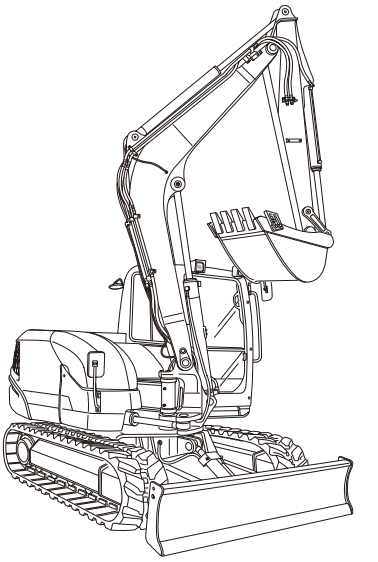
Grease	Supply grease to such amount that it oozes out of periphery of the rotating end.	Ultra -pressure grease : EP2, Beacon Q2
Control levers and links Du-bushing	Assemble after applying grease	

Inspection of hydraulic oil

The hydraulic tank of KX080-3 is pressurized type.
When checking the hydraulic oil level, satisfy the following conditions and make sure the oil level is above the center the oil gauge.

1) Oil temp. should be between 10 ~ 30 °C (50 ~ 86 °F)
2) Stance of front attachment :
   Swing : Left end
   Dozer blade : Down to the ground
   Boom :The highest position
   Arm : Crowd to end
   Bucket : Crowd to end





In this way, large amount of the hydraulic oil in the cylinders when checking and replenishing is supposed to return back into the hydraulic tank in order to keep the tank pressurized.

d. Recommended oil

IMPORTANT:

1. Before delivery the hydraulic oil used was an ISO 46 viscosity grade.
2. Use engine oil API service classification only CF/CF-4 for EU-version, and CD, CE or CF for North America and Oceanian-version.
3. Use SAE 90 (API, CLA/GL5) as drive unit oil for all seasons.

	Application	Viscosity	Shell	Mobil	Exxon	MIL-Standard
Engine oil	In winter or by low temperatures	SAE 10W	Shell Rotella T10W Shell Rimula 10W	Mobil Delvac 1310	XD-3 10W XD-3 Extra 10W	MIL-L-2104C MIL-L-2104D
		SAE 20W	Shell Rotella T20W-2 Shell Rimula 20W-2	Mobil Delvac 1320	XD-3 20W-20 XD-3 Extra 20W-20	
	In summer or by high ambient temperatures	SAE 30	Shell Rotella T30 Shell Rimula 30	Mobil Delvac 1330	XD-3 30 XD-3 Extra 30	
		SAE 40	Shell Rotella T40 Shell Rimula 40	Mobil Delvac 1340	XD-3 40 XD-3 Extra 40	
		SAE 50	Shell Rotella 50	Mobil Delvac 1350		
	All-Season Engine oil	Multi-purpose	Shell Rotella T15W-40		XD-3 15W-40 XD-3 Extra 15W-40	
Gear oil	In winter or by low temperatures	SAE 75		Mobilube HD80W-90		MIL-L-2105C
			Shell Oil S8643			
		SAE 80		Mobilube HD80W-90		
			Shell Spirax HD80W			
	In summer or by high ambient temperatures	SAE 90		Mobilube 46		MIL-L-2105
			Shell Spirax HD90	Mobilube HD80W-90		MIL-L-2105C
		SAE 140		Mobilube HD85W-140		MIL-L-2105C
			Shell Spirax HD140	Mobilube HD80W-140		MIL-L-2105C
	All-weather gear oil	Multi-purpose	Shell Spirax HD80W Shell Spirax HD85W	Mobilube HD80W-90	GX80W-90	MIL-L-2105C
Hydraulic oil	In winter or by low temperatures	ISO 32	Shell Tellus T32	Mobil DTE-Oil 13	NUTO H32	
		ISO 46	Shell Tellus T46	Mobil DTE-Oil 15	NUTO H46	
	In summer or by high ambient temperatures	ISO 68	Shell Tellus T68	Mobil DTE-Oil 16	NUTO H68	
Grease			Shell Alvania EP2	Mobilux EP2	BEACON Q2	
Fuel			Light oil No. 2-D (ASTM D975)			
Fuel under -5 °C (+23 °F)			Light oil No. 1-D (ASTM D975)			

f. Periodic replacement of important parts

To ensure safety in traveling and operating the machine, the user is strongly requested to carry out periodic inspection and servicing. For added safety, the following important parts, related to safety and fire hazards in particular, must be replaced at their specified intervals.
With the passage of time, these parts easily get degraded in material or worn out. They are difficult to check for anything unusual even at periodic inspection and servicing. Even if nothing unusual is found, it is essential to replace them with new ones after their specified service life, in order to maintain complete function.
If by any chance any of these parts gets in trouble even before its service life, it must be repaired or replaced as usual.
In replacing the hoses, check also the hose clamps for deformation, cracks and other troubles. Replace the hose clamps too with new ones, as required.
Check all the hydraulic hoses, including those to be replaced at regular intervals, for the following points. Tighten up or replace them, as required.
When replacing the hydraulic hoses, change their O-rings and sealing for new ones at the same time.

• Check the fuel and hydraulic hoses too at the following periodic inspections.

Inspection intervals	Inspection item
Daily inspection	Fuel and hydraulic hose connections as well as crimped parts for oil leak
Monthly inspection	Fuel and hydraulic hose connections as well as crimped parts for oil leak Fuel and hydraulic hoses for damages (cracks, wear-out and peel-off)
Specified self-imposed (yearly) inspection	Fuel and hydraulic hose connections as well as crimped parts for oil leak Fuel and hydraulic hoses for interference, deformation, degrading, twist and other damages (cracks, wear-out, peel-off)

• List of important parts

No.	Periodic-replaced parts	Q'ty	Replacement intervals
1	Fuel hose (Fuel tank ~ Fuel filter)	1	2 years or 4000 operating hours, whichever comes earlier
2	Fuel hose (Fuel filter ~ Fuel pump)	1	
3	Fuel hose (Fuel pump ~ Fuel nozzle)	1	
4	Fuel hose (Fuel nozzle ~ Fuel tank)	1	
5	Hydraulic hose (Main pump suction)	1	
6	Hydraulic hose (Main pump delivery)	4	
7	Hydraulic hose (Boom cylinder)	*2	
8	Hydraulic hose (Arm cylinder)	*2+2	
9	Hydraulic hose (Bucket cylinder)	*4	
10	Hydraulic hose (Swing cylinder)	2	
11	Hydraulic hose (Dozer cylinder)	4	
12	Hydraulic hose (Service port)	*2+2	
13	Hydraulic hose (Swivel motor)	2	

Note: The *-marked hydraulic hoses are Kubota's genuine ultra wear-resistant hoses. Be sure to use these parts.

II. Machine Body

Mechanism Section