PART NO. W1JB-E-00

HITACHI

Workshop Manual

ZAXIS

850-3
850LC-3
870H-3
870LCH-3

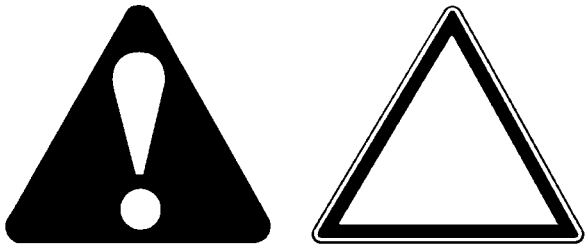
Hydraulic Excavator

Service Manual consists of the following separate Part No;

Technical Manual (Operational Principle)	: Vol. No.TO1JB-E
Technical Manual (Troubleshooting)	: Vol. No.TT1JB-E
Workshop Manual	: Vol. No.W1JB-E

RECOGNIZE SAFETY INFORMATION

- These are the **SAFETY ALERT SYMBOLS**.
  - When you see these symbols on your machine or in this manual, be alert to the potential for personal injury.
  - Follow recommended precautions and safe operating practices.



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UNDERSTAND SIGNAL WORDS

- On machine safety signs, signal words designating the degree or level of hazard - DANGER, WARNING, or CAUTION - are used with the safety alert symbol.
  - **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
  - **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
  - **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
  - **DANGER** or **WARNING safety signs** are located near specific hazards. General precautions are listed on **CAUTION safety signs**.
  - Some safety signs don't use any of the designated signal words above after the safety alert symbol are occasionally used on this machine.
- To avoid confusing machine protection with personal safety messages, a signal word **IMPORTANT** indicates a situation which, if not avoided, could result in damage to the machine.
- **NOTE** indicates an additional explanation for an element of information.

SA-1223

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SECTION AND GROUP CONTENTS

WORKSHOP MANUAL

SECTION 1 GENERAL INFORMATION

SECTION 2 UPPERSTRUCTURE

SECTION 3 UNDERCARRIAGE

SECTION 4 FRONT ATTACHMENT

TECHNICAL MANUAL (Operational Principle)

TECHNICAL MANUAL (Troubleshooting)

SECTION 1
GENERAL

— CONTENTS —

PRECAUTIONS FOR DISASSEMBLING AND ASSEMBLING

Precautions for Disassembling and Assembling

- Clean the Machine

  Thoroughly wash the machine before bringing it into the shop. Bringing a dirty machine into the shop may cause machine components to be contaminated during disassembling/assembling, resulting in damage to machine components, as well as decreased efficiency in service work.

- Inspect the Machine

  Be sure to thoroughly understand all disassem-bling / assembling procedures beforehand, to help avoid incorrect disassembling of components as well as personal injury.
  Be sure to and record the items listed below to prevent problems from occurring in the future.

  - The machine model, machine serial number, and hour meter reading.
  - Reason for disassembly (symptoms, failed parts, and causes).
  - Clogging of filters and oil, water or air leaks, if any.
  - Capacities and condition of lubricants.
  - Loose or damaged parts.

- Prepare and Clean Tools and Disassembly Area

  Prepare the necessary tools to be used and the area for disassembling work.

- Precautions for Disassembling

  - To prevent dirt from entering, cap or plug the removed pipes.
  - Before disassembling, clean the exterior of the components and place on a work bench.
  - Before disassembling, drain gear oil from the reduction gear.
  - Be sure to provide appropriate containers for draining fluids.
  - Use matching marks for easier reassembling.
  - Be sure to use the specified special tools, when instructed.
  - If a part or component cannot be removed after removing its securing nuts and bolts, do not attempt to remove it forcibly. Find the cause(s), then take the appropriate measures to remove it.
  - Orderly arrange disassembled parts. Mark and tag them as necessary.
  - Store common parts, such as bolts and nuts with reference to where they are to be used and in a manner that will prevent loss.
  - Inspect the contact or sliding surfaces of disassembled parts for abnormal wear, sticking, or other damage.
  - Measure and record the degree of wear and clearances.

- Precautions for Assembling

  - Be sure to clean all parts and inspect them for any damage. If any damage is found, repair or replace part.
  - Dirt or debris on the contact or sliding surfaces may shorten the service life of the machine. Take care not to contaminate any contact or sliding surfaces.
  - Before assenbling, coat all inner parts with clean hydraulic oil or gear oil. Especially coat the sliding surfaces with clean hydraulic oil or gear oil.
  - Be sure to replace O-rings, backup rings, and oil seals with new ones once they are disassembled. Apply a film of grease before installing.
  - Check that liquid-gasket-applied surfaces are clean and dry.
  - If an anti-corrosive agent has been used on a new part, be sure to thoroughly clean the part to remove the agent.
  - Utilize matching marks when assembling.
  - Be sure to use the designated tools to assemble bearings, bushings and oil seals.
  - Keep a record of the number of tools used for disassembly / assembly. After assembling is complete, count the number of tools, so as to make sure that no forgotten tools remain in the assembled machine.

Bleeding Air from Hydraulic System

When hydraulic oil is drained, the suction filter or the suction lines are replaced, or the removal and installation of the pump, swing motor, travel motor or cylinder is done, bleed air from the hydraulic system in the following procedures:

IMPORTANT: If the engine is started with air trapped in the hydraulic pump housing, damage to the pump may result.
If the hydraulic motor is operated with air trapped in the hydraulic motor housing, damage to the motor may result.
If the cylinder is operated with air trapped in the cylinder tube, damage to the cylinder may result.
Be sure to bleed air before starting the engine.

- Bleeding Air from Hydraulic Pump

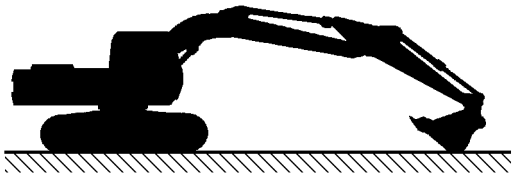
  - Remove the air bleeding plug from the top of the pump and fill the pump housing with hydraulic oil.
  - After the pump housing is filled with hydraulic oil, temporarily tighten the plug. Then, start the engine and run at slow idle speed.
  - Slightly loosen the plug to bleed air from the pump housing until hydraulic oil oozes out.
  - After bleeding all the air, securely tighten the plug.

- Bleeding Air from Travel Motor / Swing Motor

  - With the drain plug / hose on travel motor / swing motor removed, fill the motor case with hydraulic oil.

- Bleeding Air from Hydraulic Circuit

  - After refilling hydraulic oil, start the engine. While operating each cylinder, swing motor and travel motor evenly, operate the machine under light loads for 10 to 15 minutes. Slowly start each operation (never fully stroke the cylinders during initial operation stage). As the pilot oil circuit has an air bleed device, air trapped in the pilot oil circuit will be bled while performing the above operation for approx. 5 minutes.
  - Reposition the front attachment to check hydraulic oil level.
  - Stop the engine. Recheck hydraulic oil level. Replenish oil as necessary.



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Floating Seal Precautions

1. In general, replace the floating seal with a new one after disassembling.
   If the floating seal is to be reused, follow these procedures:

   (1) Keep seal rings together as a matched set with seal ring faces together. Insert a piece of cardboard to protect surfaces.

   (2) Check the slide surface on seal ring (A) for scuffing, scoring, corrosion, deformation or uneven wear.

   (3) Check O-ring (B) for tears, breaks, deformation or hardening.

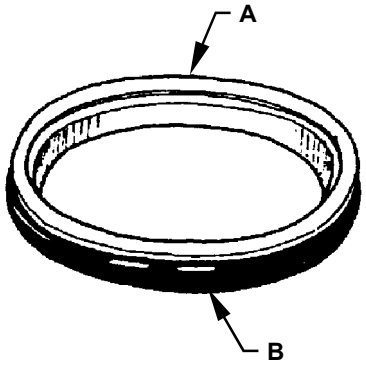
2. If incorrectly assembled, oil leakage or damage will occur. Be sure to do the following, to prevent trouble.

   (1) Clean the floating seal and seal mounting bores with cleaning solvent.
   Use a wire brush to remove mud, rust or dirt.
   After cleaning, thoroughly dry parts with compressed air.

   (2) Clean the floating seal and seal mounting bores. Check the bore surface for scuffing or scoring by touching the surface with touch.

   (3) Check that the O-ring is not twisted, and that it is installed correctly on the seal ring.

   (4) After installing the floating seal, check that seal ring surface (A) is parallel with seal mating face (C) by measuring the distances (A) and (C) at point (a) and (b), as illustrated. If these distances differ, correct the O-ring seating.



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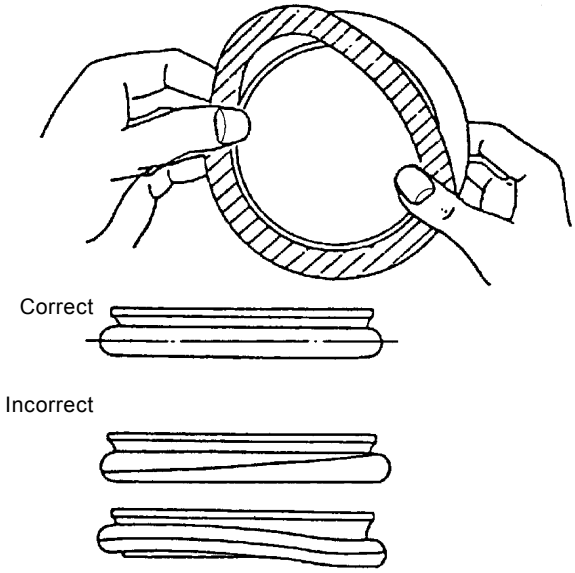

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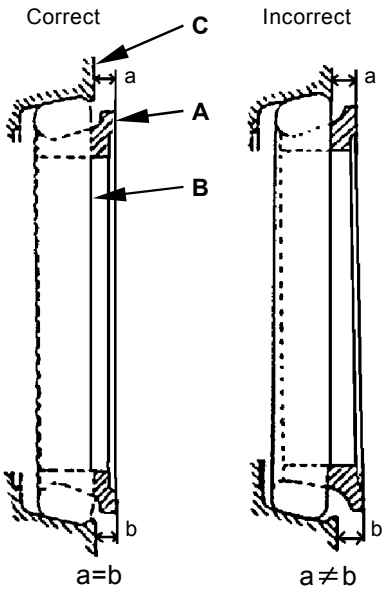

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TIGHTENING TORQUE SPECIFICATION

No.	Descriptions		Bolt Dia mm	Q'ty	Wrench Size (mm)	Torque N·m	Torque (kgf·m)	Torque (lbf·ft)
1	Engine cushion rubber mounting bolt	Front	27	2	41	1050	(105)	(775)
		Rear	33	2	50	1950	(195)	(1440)
2	Engine bracket mounting bolt	Front	14	8	22	210	(21)	(155)
		Rear	20	12	30	400	(40)	(295)
3	Radiator mounting bolt		27	4	41	1050	(105)	(774)
4	Oil cooler mounting bolt		24	4	36	950	(95)	(700)
5	Hydraulic oil tank mounting bolt		20	8	30	400	(40)	(295)
6	Fuel tank mounting bolt		18	8	27	300	(30)	(220)
7	ORS fittings for hydraulic hoses and piping		$1-\frac{3}{16}$–12UNF		36	180	(18)	(135)
			$1-\frac{7}{16}$–12UNF		41	210	(21)	(155)
8	Pump transmission mounting bolt		12	14	19	110	(11)	(80)
9	Pump device mounting bolt		20	4×2	17 hole	400	(40)	(295)
10	Fan pump mounting bolt		16	4	14 hole	210	(21)	(155)
11	Fan motor mounting nut		12	2	19	110	(11)	(80)
12	Control valve mounting bolt		20	4	30	400	(40)	(295)
13	Control valve bracket mounting bolt		20	8	30	400	(40)	(295)
14	Swing device mounting bolt		24	14×2	36	950	(95)	(700)
15	Swing motor mounting bolt		20	12×2	30	400	(40)	(295)
16	Battery mounting bolt		12	2	19	35	(3.5)	(25)
17	Cab mounting nut		16	6	24	210	(21)	(155)
18	Swing bearing mounting bolt to upperstructure		33	41	50	2200	(220)	(1620)
	Swing bearing mounting bolt to undercarriage		30	48	46	1750	(175)	(1290)
19	Travel device mounting bolt		27	24×2	41	1400	(140)	(1030)
	Travel motor mounting bolt		18	4×2	27	300	(30)	(220)
	Sprocket mounting bolt		27	24×2	41	1400	(140)	(1030)
20	Upper roller mounting		22	24	32	750	(75)	(555)
21	Lower roller mounting bolt	STD, H	24	64	36	950	(95)	(700)
		LC, LCH	27	72	36	950	(95)	(700)
22	Track shoe bolt	STD, H	27	376	41	2000	(200)	(1475)
		LC, LCH	27	408	41	2000	(200)	(1475)
23	Track guard mounting bolt	STD	27	16	41	1400	(140)	(1030)
		LC	27	36	41	1400	(140)	(1030)
24	Track frame mounting bolt		36	44	55	2800	(280)	(2065)
25	Coupling and clamp of low pressure piping	Flex Master Coupling	8		13	10.5 to12.5	(1.05 to 1.25)	(7.7 to 9.2)
		Clamp	1/4-28 UNF		11	10	(1)	(7.4)
26	Counterweight mounting bolt		45	2	65	2800	(280)	(2065)
	Counterweight retaining bolt		24	4	36	700	(70)	(515)
27	Signal control valve mounting bolt		10	4	8 hole	50	(5)	(37)
28	Front pin-retaining bolt		20	24	30	400	(40)	(295)
	Front pin retaining bolt		20	7	30	400	(40)	(295)

NOTE 1.Apply lubricant (e.g. white zinc B dissolved into spindle oil) to bolts and nuts to reduce friction coefficient of them.

2.Make sure bolt and nut threads are clean before installing.

TORQUE CHART

CAUTION: Use tools appropriate for the work to be done. Makeshift tools and procedures can create safety hazards. For loosening and tightening nuts and bolts, use correct size tools. Otherwise, tightening tools may slip, potentially causing personal injury.

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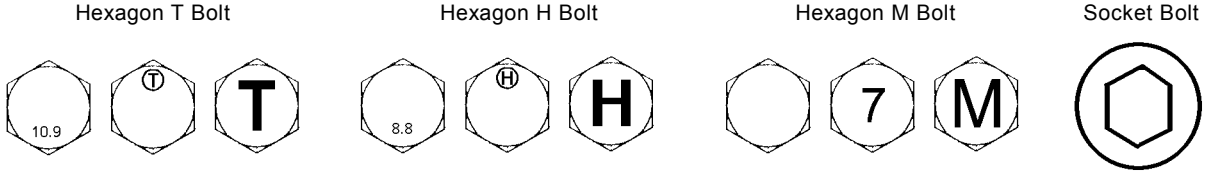
Bolt Types

Tighten nuts or bolts correctly to torque specifications. Make sure to employ correct bolts and tighten them correctly when assembling the machine or components.



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Specified Tightening Torque Chart

Bolt Dia.	Wrench Size	Hexagon Wrench Size	10.9 T T M552-07-091 Socket Bolt			8.8 H H M552-07-090			M552-07-092		
			N·m	(kgf·m)	(lbf·ft)	N·m	(kgf·m)	(lbf·ft)	N·m	(kgf·m)	(lbf·ft)
M6	10	5							3.3 to 4.2	(0.3 to 0.4)	(2.4 to 3.0)
M8	13	6	30	(3.0)	(21.5)	20	(2.0)	(14.5)	10	(1.0)	(7.2)
M10	17	8	65	(6.5)	(47)	50	(5.0)	(36)	20	(2.0)	(14.5)
M12	19	10	110	(11)	(80)	90	(9.0)	(65)	35	(3.5)	(25.5)
M14	22	12	180	(18)	(130)	140	(14)	(101)	55	(5.5)	(40)
M16	24	14	270	(27)	(195)	210	(21)	(152)	80	(8.0)	(58)
M18	27	14	400	(40)	(290)	300	(30)	(215)	120	(12)	(87)
M20	30	17	550	(55)	(400)	400	(40)	(290)	170	(17)	(123)
M22	32		750	(75)	(540)	550	(55)	(400)	220	(22)	(159)
M24	36		950	(95)	(690)	700	(70)	(510)	280	(28)	(205)
M27	41		1400	(140)	(1010)	1050	(105)	(760)	400	(40)	(290)
M30	46		1950	(195)	(1410)	1450	(145)	(1050)	550	(55)	(400)
M33	50		2600	(260)	(1880)	1950	(195)	(1410)	750	(75)	(540)
M36	55		3200	(320)	(2310)	2450	(245)	(1770)	950	(95)	(690)

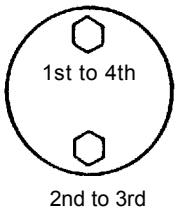
IMPORTANT: The following items are applied to both fine and coarse pitch threads.

1. **Apply lubricant (i. e. white zinc B dissolved Into Spindle oil) to nuts and bolts to reduce their friction coefficients.**
   The plated bolts require no lubricant.
2. **Torque tolerance is ±10 %.**
3. **Be sure to use bolts of correct length. Bolts that are too long cannot be tightened, as the bolt tip comes into contact with the bottom of the bolt hole. Bolts that are too short cannot develop sufficient tightening force.**
4. **The torques given in the chart are for general use only. Do not use these torques if a different torque is given for a specific application.**
5. **Make sure that nut and bolt threads are clean before installing.**
   Remove dirt or corrosion, if any.

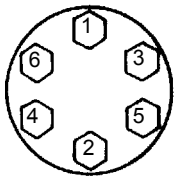
Bolt Tightening Order

When tightening two or more bolts, tighten them alternately, as shown, to ensure even tightening.

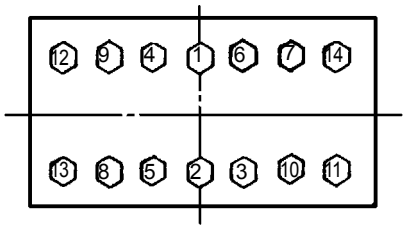
Equally tighten upper and lower alternately



Tighten diagonally



Tighten from center and diagonally



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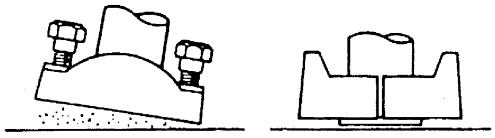
Service Recommendations for Split Flange

IMPORTANT:

1. **Be sure to clean and inspect sealing surfaces. Scratches / roughness cause leaks and seal wear.**
   Unevenness causes seal extrusion. If defects cannot be polished out, replace the component.
2. **Be sure to use only specified O-rings. Inspect O-rings for any damage. Take care not to file O-ring surfaces. When installing an O-ring into a groove, use grease to hold it in place.**
3. **While lightly tightening split flange halves, check that split is centered and perpendicular to the port. Hand-tighten bolts to hold parts in place. Take care not to pinch the O-ring.**
4. **Tighten bolts alternately and diagonally, as shown, to ensure even tightening.**
5. **Do not use air wrenches. Using an air wrench often causes tightening of one bolt fully before tightening of the others, resulting in damage to O-rings or uneven tightening of bolts.**



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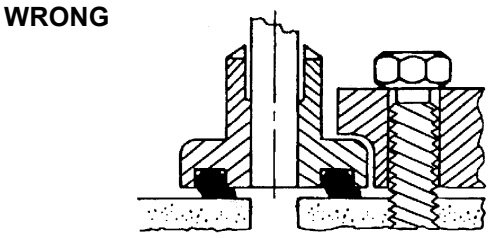

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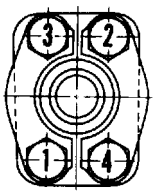

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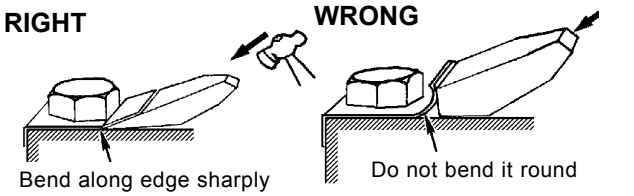


Nut and Bolt Locking

- Lock Plate

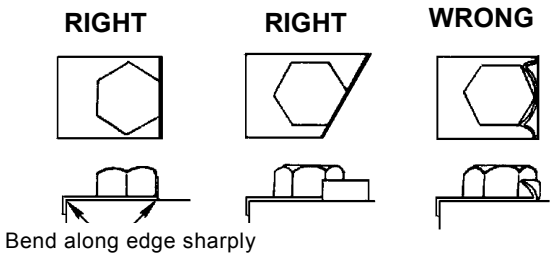
IMPORTANT: **Do not reuse lock plates. Do not try to bend the same point twice.**

- Cotter Pin

IMPORTANT: **Do not reuse cotter pins. Match the holes in the bolt and nut while tightening, not while loosening.**

- Lock Wire

IMPORTANT: **Apply wire to bolts in the bolt-tightening direction, not in the bolt-loosening direction.**



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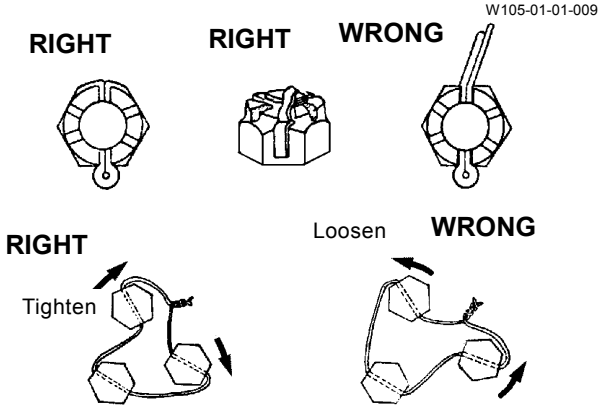

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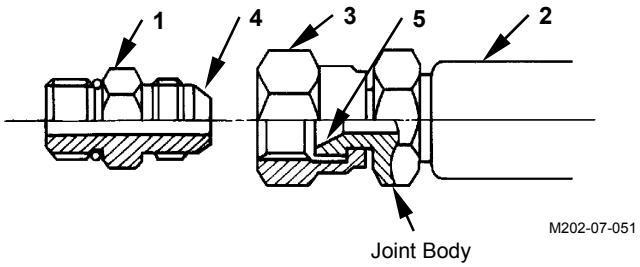
PIPING JOINT

IMPORTANT: The torques given in the chart are for general use only.
Do not use these torques if a different torque is given for a specific application.



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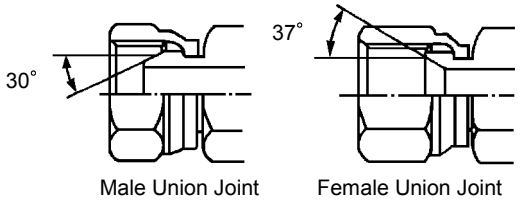
Union Joint

Metal sealing surfaces (4) and (5) of adapter (1) and hose (2) fit together to seal pressure oil. Union joints are used to join small-diameter lines.

IMPORTANT:
1. **Do not over-tighten nut (3). Excessive force will be applied to metal sealing surfaces (4) and (5), possibly cracking adapter (1). Be sure to tighten nut (3) to specifications.**
2. **Scratches or other damage to sealing surfaces (4) or (5) will cause oil leakage at the joint. Take care not to damage them when connecting/disconnecting.**



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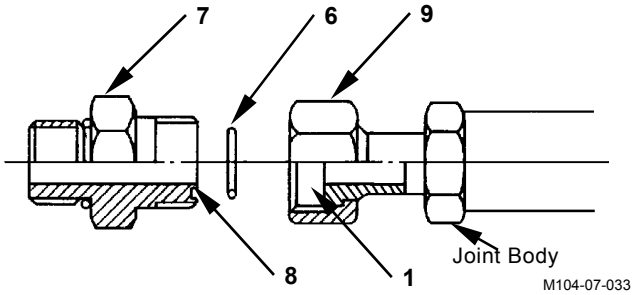
Description	Wrench Size mm	Wrench Size mm	Tightening Torque
	Union Nut	Hose Fittings	N·m (kgf·m, lbf·ft)
30° male	17	17	24.5 (2.5,18)
	19	19	29.5 (3.0,21.5)
	22	22	39 (4.0,28.5)
	27	27	93 (9.5,69)
	32	32	137 (14.0,101)
	36	36	175 (18.0,129)
	41	41	205 (21.0,151)
37° female	17	14	24.5 (2.5,18)
	19	17	29.5 (3.0,21.5)
	22	19	39 (4.0,28.5)
	27	22	93 (9.5,69)
	32	27	137 (14.0,101)
	36	32	175 (18.0,129)
	41	36	205 (21.0,151)

NOTE: Tightening torque of 37° male coupling without union is similar to tightening torque of 37° female.

O-ring Seal Joint

O-ring (6) seats against the end surface of adapter (7) to seal pressure oil.

IMPORTANT:
1. **Be sure to replace O-ring (6) with a new one when reconnecting.**
2. **Before tightening nut (9), confirm that O-ring (6) is seated correctly in O-ring groove (8). Tightening nut (9) with O-ring (6) displaced will damage O-ring (6), resulting in oil leakage.**
3. **Take care not to damage O-ring groove (8) or sealing surface (10).**
   Damage to O-ring (6) will cause oil leakage.
4. **If nut (9) is loose and oil is leaking, do not re-tighten nut (9). Replace O-ring (6) with a new one and check that O-ring (6) is correctly seated in place, tighten nut (9).**

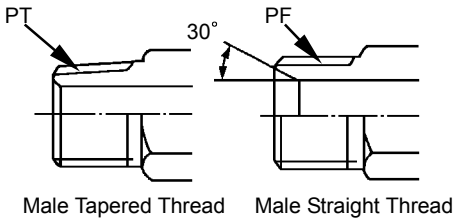


Wrench Size mm	Wrench Size mm	Tightening Torque
Union Nut	Joint Body	N·m (kgf·m, lbf·ft)
19	17	29.5 (3.0,21.5)
22	19	69 (7.0,51)
27	22	93 (9.5,69)
32	27	137 (14.0,101)
36	30,32	175 (18.0,129)
41	36	205 (21.0,151)
46	41	205 (21.0,151)

Screw-In Connection

Depending on types of screw and sealing, different types of screw fittings are used.

IMPORTANT: Be sure to confirm that the thread pitch and thread type (tapered or straight) are the correct type before using any screw-in connection.

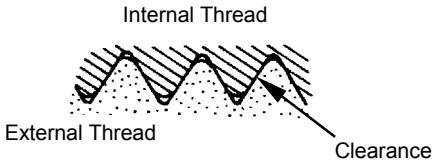


W105-01-01-018

Male Tapered Thread		
Wrench Size mm	Tightening Torque N·m (kgf·m, lbf·ft)	
Hose Fittings	FC material	SS material
19	14.5 (1.5,10.5)	34 (3.5,25)
22	29.5 (3.0,21.5)	49 (5.0,36)
27	49 (5.0,36)	93 (9.5,69)
36	69 (7.0,51)	157 (16,116)
41	108 (11,80)	205 (21,151)
50	157 (16,116)	320 (33,235)
60	195 (20,144)	

Seal Tape Application

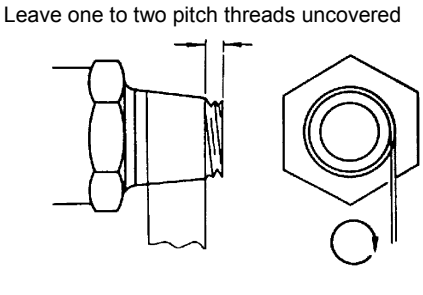
Seal tape is used to seal clearances between male and female threads, so as to prevent any leaks between threads.
Be sure to apply just enough seal tape to fill up thread clearances. Do not overwrap.



W105-01-01-019

- Application Procedure

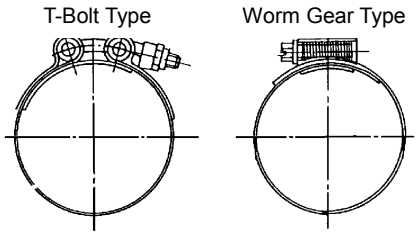
Confirm that the thread surface is clean and, free of dirt or damage.
Apply seal tape around threads as shown. Wrap seal tape in the same direction as the threads.



M114-07-041

Low-Pressure-Hose Clamp Tightening Torque

Low-pressure-hose clamp tightening torque differs depending on the type of clamp.
T-Bolt Type Band Clamp:
4.4 N·m (0.45 kgf·m, 3.25 lbf·ft)
Worm Gear Type Band Clamp:
5.9 to 6.9 N·m (0.6 to 0.7 kg·m, 4.3 to 5.1 lbf·ft)



M114-07-043 M114-07-042

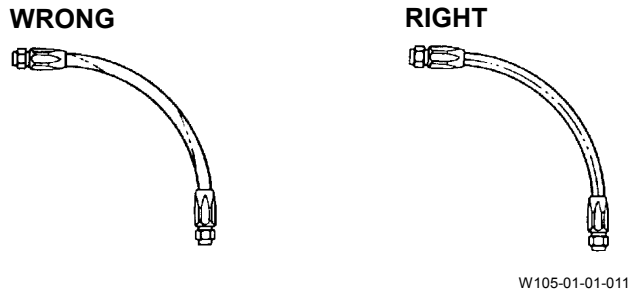
Connecting Hose

CAUTION: When replacing hoses, be sure to use only genuine Hitachi service parts. Using hoses other than genuine Hitachi hoses may cause oil leaks, hose rupture or Separation of fitting, possibly resulting in a fire on the machine.

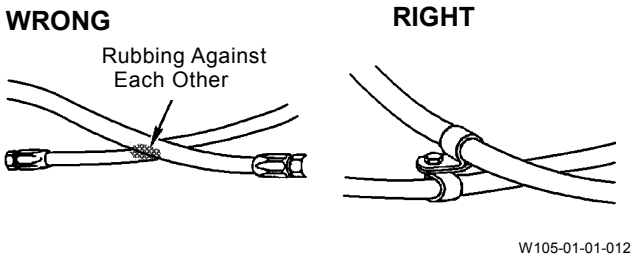
Do not install hoses kinked. Application of high oil pressure, vibration, or an impact to a kinked hose may result in oil leaks, hose rupture or separation of fitting. Utilize Print marks on hoses when installing to prevent hose from being kinked.

If hoses rub against each other, wear to the hoses will result, leading to hose rupture. Take necessary measures to protect hoses from rubbing against each other.

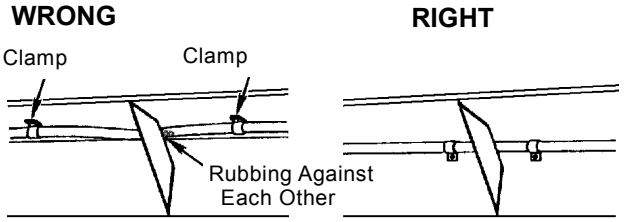
Take care so that hoses do not come into contact with moving parts or sharp objects.



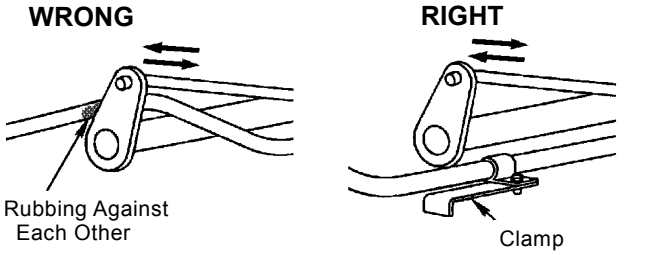
W105-01-01-011



W105-01-01-012



W105-01-01-013



W105-01-01-014

PERIODIC REPLACEMENT OF PARTS

The parts listed below deteriorate as the machine ages and are worn out or fatigued by repeated loads, resulting in possible severe personal injury and/or machine trouble. The service life of these parts cannot be detected through machine operation or visual inspection.
Therefore, these parts should be replaced at regular intervals even if no abnormalities are noticed. In case any abnormalities are found on a part at any time regardless of its specified replacement interval, immediately replace the part.

		Periodic Replacement Parts	Replacement Intervals
Engine		Fuel hose (Fuel tank to filter)	Every 2 years or 6000 hours
		Fuel hose (Fuel tank to injection pump)	Every 2 years or 6000 hours
		Heater hose (Heater to engine)	Every 2 years or 6000 hours
Hydraulic System	Basic Machine	Pump suction hose	Every 2 years or 6000 hours
		Pump delivery hose	Every 2 years or 6000 hours
		Swing hose	Every 2 years or 6000 hours
		Travel hose	Every 2 years or 6000 hours
	Front-End Attachment	Boom cylinder line hose	Every 2 years or 6000 hours
		Arm cylinder line hose	Every 2 years or 6000 hours
		Bucket cylinder line hose	Every 2 years or 6000 hours
		Pilot hose	Every 2 years or 6000 hours
		Seat Belt	Every 3 years

NOTE: Be sure to replace seals, such as O-rings and gaskets, when replacing hoses.

PAINTING

Painting specification

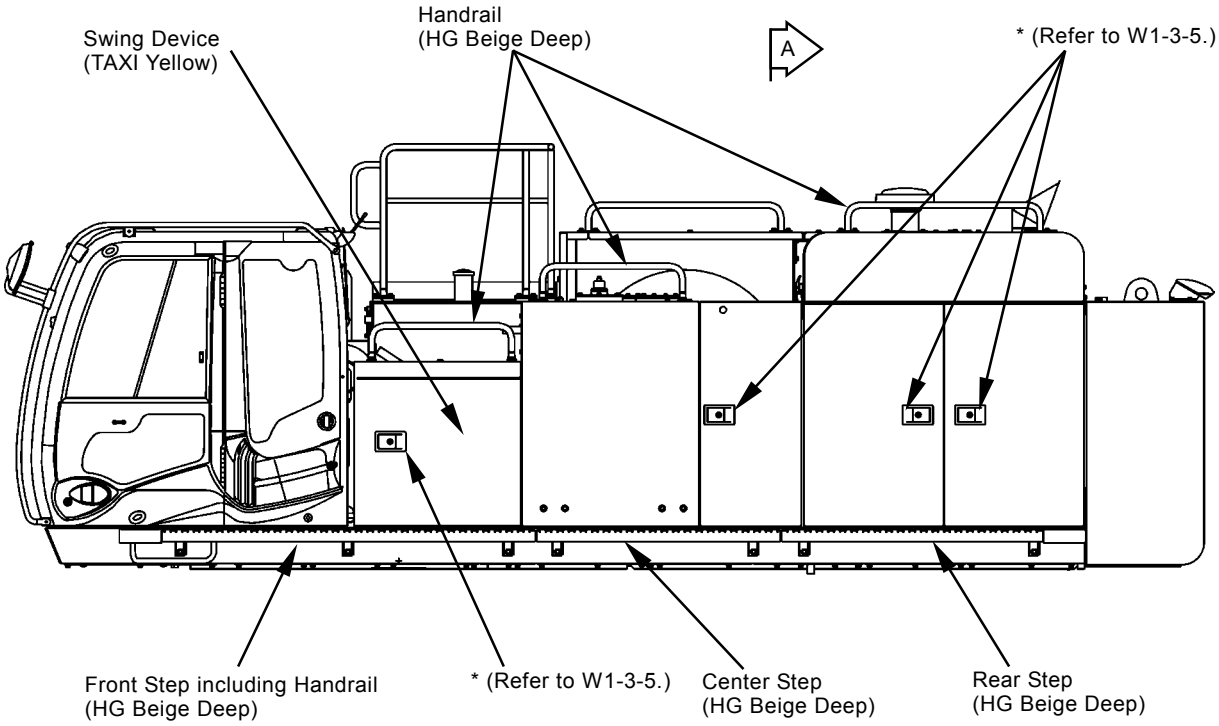
Surfaces to Be Painted	Painting Colour
・Main surface of upperstructure (except cab)	YR-01 [TAXI yellow]
Bed cover	HG Beige Deep
Inner	Grey
Front left step, center, rear left step	HG Beige Deep
Counterweight	YR-01 [TAXI yellow]
Handrail	HG Beige Deep
・Front attachment	YR-01 [TAXI yellow]
・Track (including swing ring)	N1.0 [Black]
・Floor plate	M/F Cation (allowed)

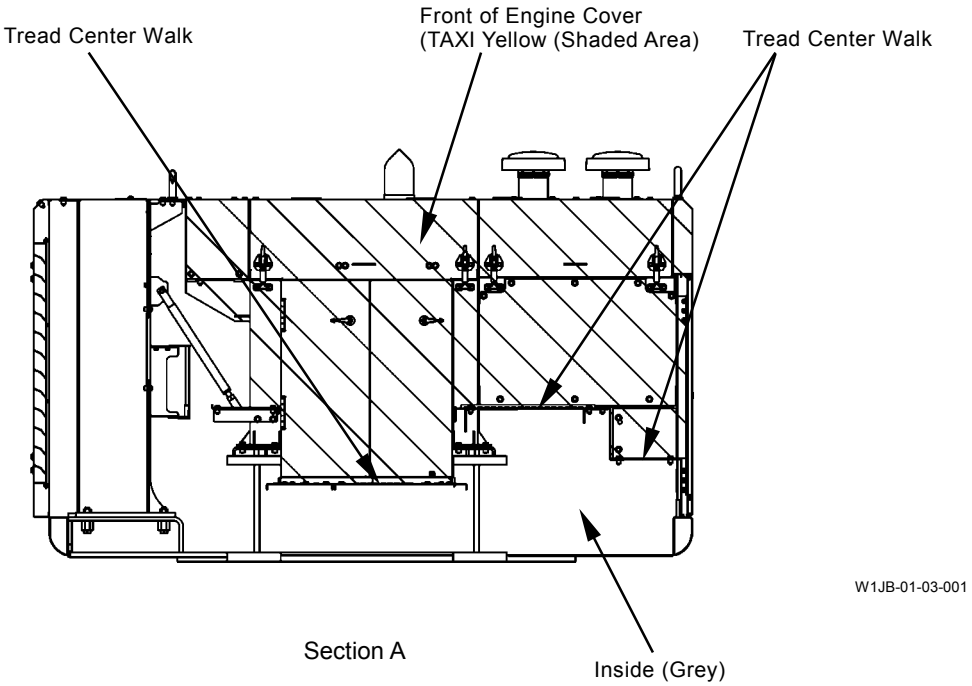
Final painted color

・Inside and outside surface of cab	HG Beige Deep
・Shaded area on cab outside	Shining Silver
・Right window beam, U-Bolt	[KANSAI PAINT LF-113-230B (Charcoal series black, half glossy)]
・Suspension lifter (chair bottom)	[N2.0 (Black)]
・Lever (travel, pilot shut-off, foot rest)	High Grade Brack
・Nonslip cover	KANSAI PAINT AMYLAC 1400 (Deep Black)
・Mirror stay	High Grade Brack
・Rear camera assembly	HG Beige Deep, HG Brack

Specified masked position

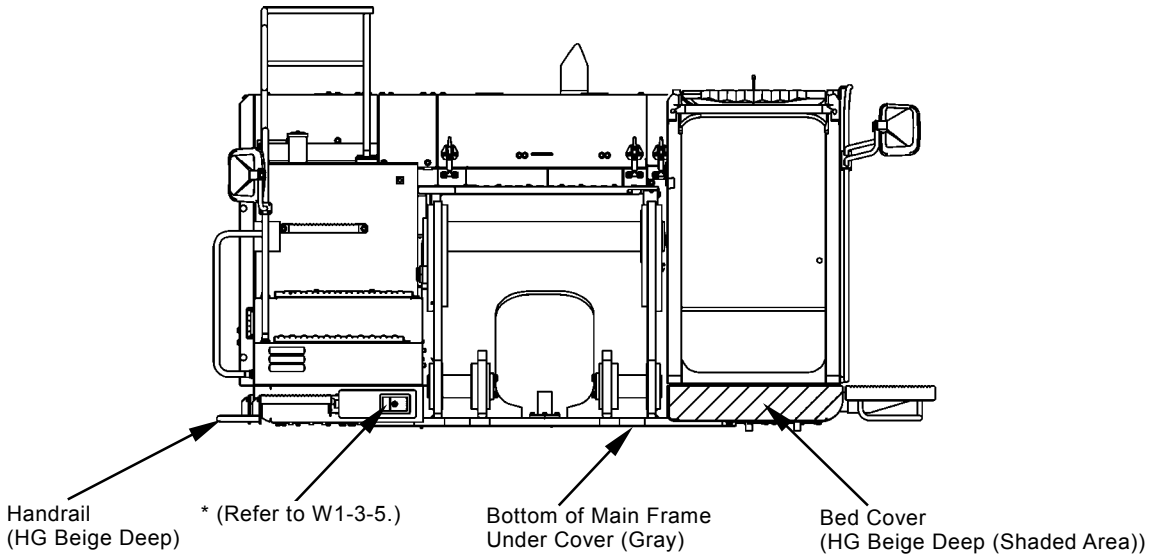
・Engine plate	
・Control valve plate	・Cover catch, door handle
・Swing motor plate	・Battery cable terminal cover
・Pump plate	・Air cleaner
・Fan pump plate	・Fan motor plate
・Muffler [including U-bolt]	・Atmospheric pressure [battery space]

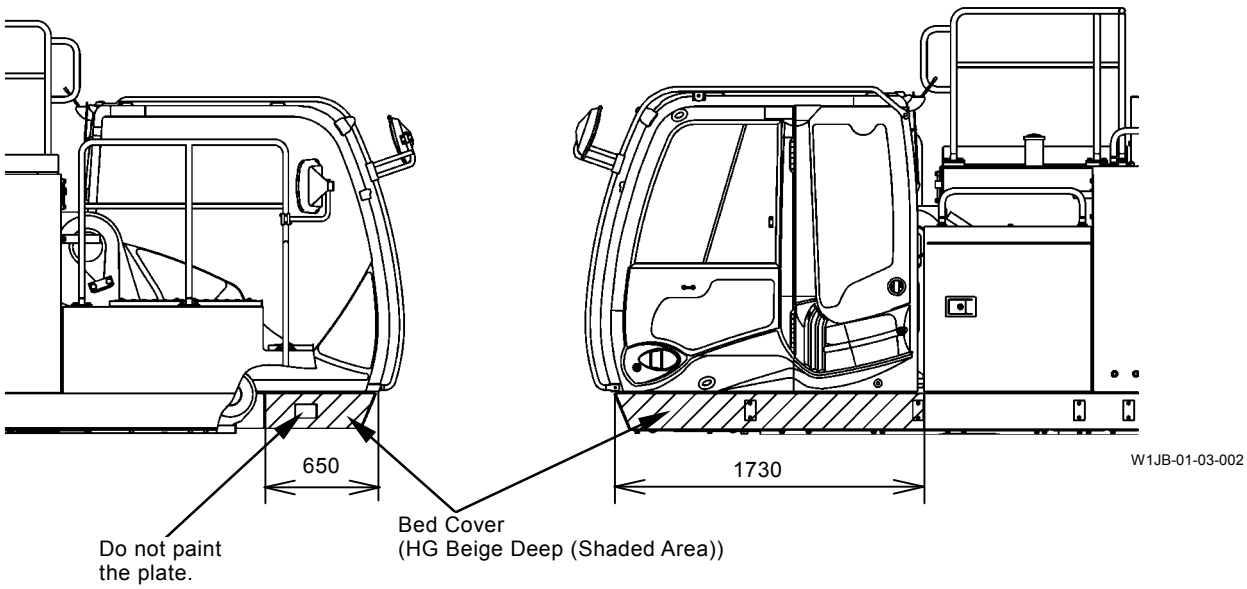


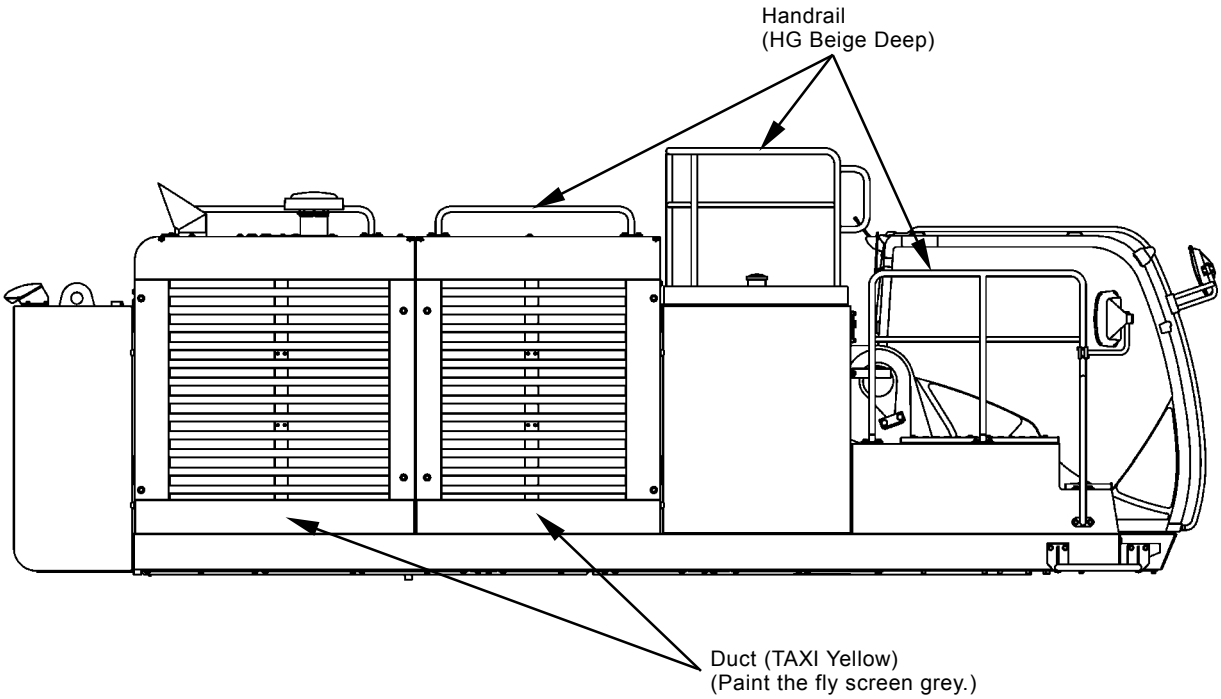


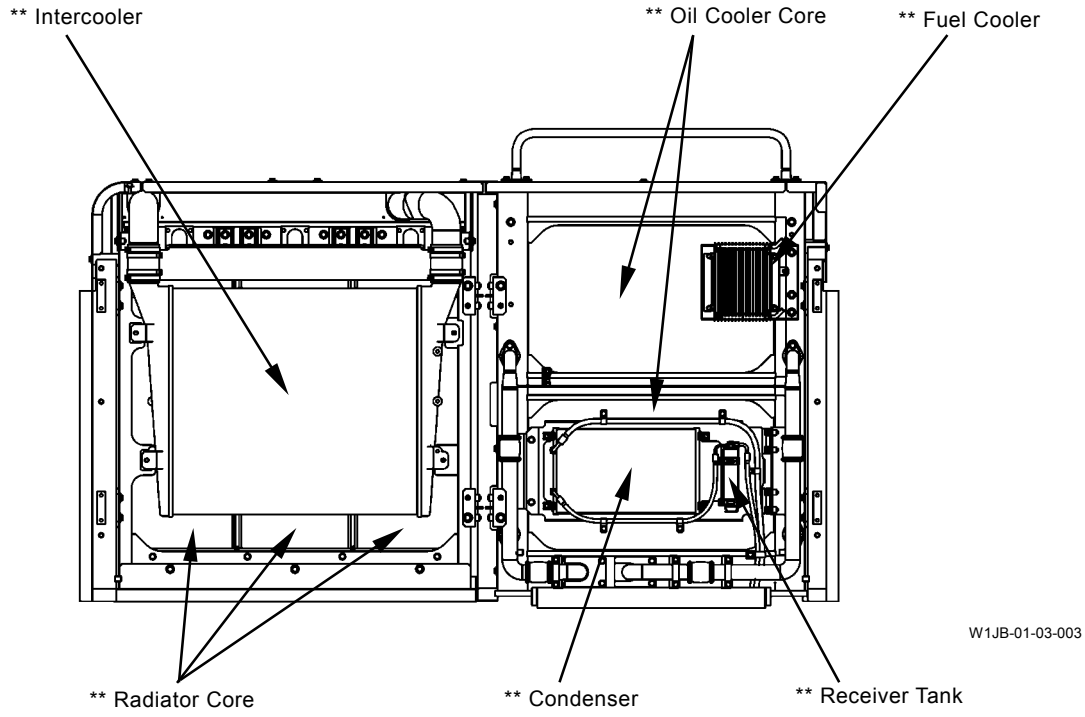
W1JB-01-03-001

Section A

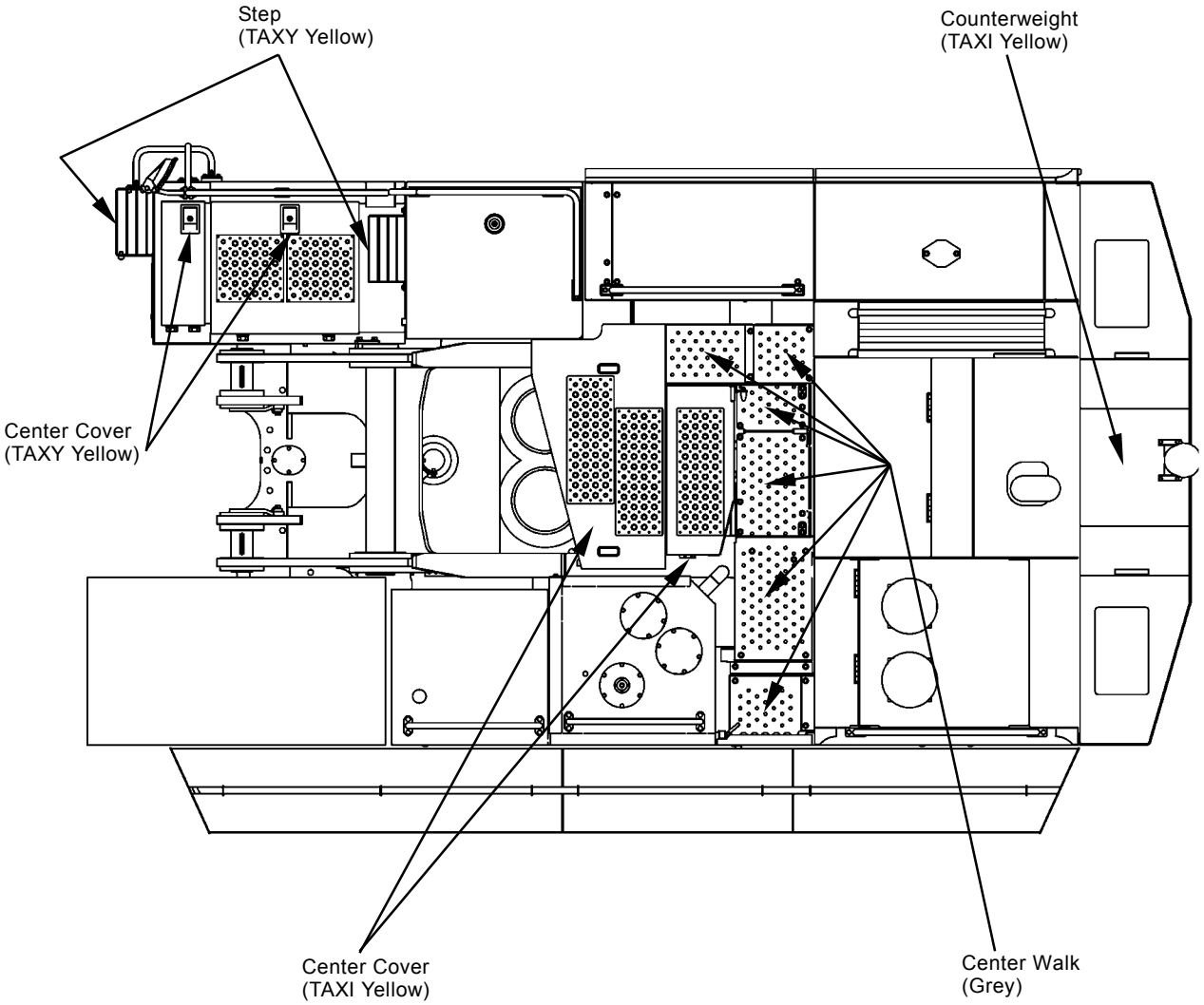

Handrail
(HG Beige Deep)
* (Refer to W1-3-5.)
Bottom of Main Frame
Under Cover (Gray)
Bed Cover
(HG Beige Deep (Shaded Area))

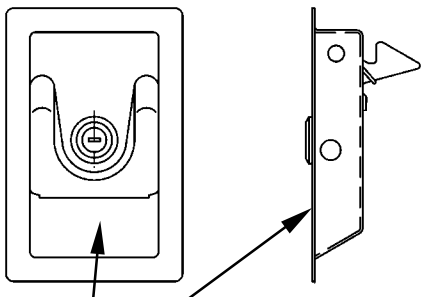

650
1730
W1JB-01-03-002
Do not paint
the plate.
Bed Cover
(HG Beige Deep (Shaded Area))





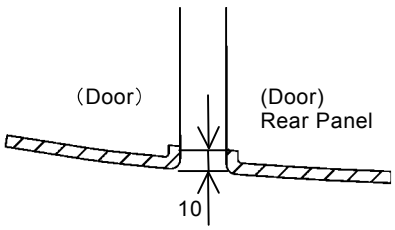
*NOTE: Do not paint the item with mark **.*
(Put the mask here.)





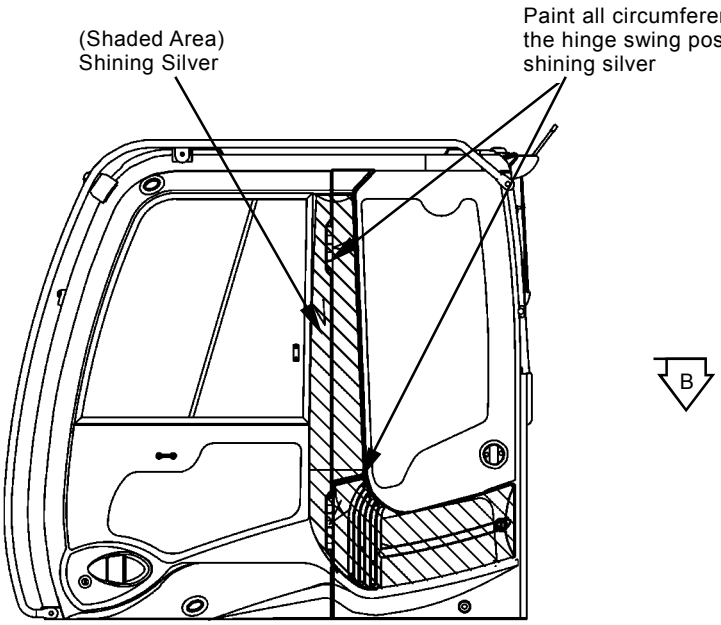
W1JB-01-03-004

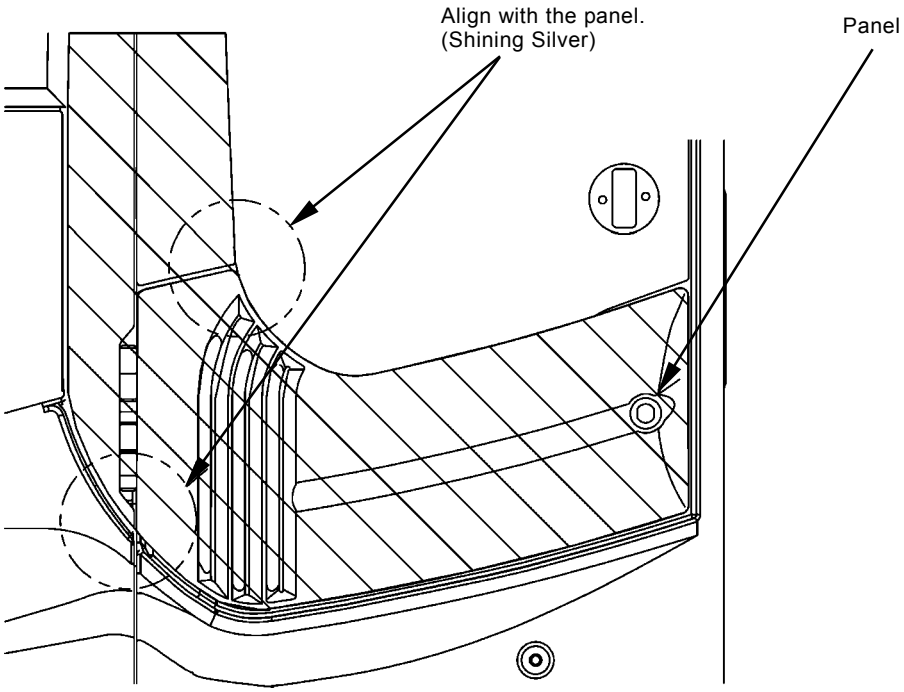
Detail of Position (7 places) with mark *.
Inside of Door Latch (TAXI Yellow)



Shining Silver Painted Range on Door

Section B





W1JB-01-03-005

BLEED AIR FROM HYDRAULIC OIL TANK

CAUTION: Escaping fluid under pressure may penetrate the skin and eyes, and cause serious injury. Release the pressure before removing hydraulic or other lines.
Hot hydraulic oil just after operation may spout and cause severe burns. Wait for oil in order to cool before starting any work.
Do not turn the cap on hydraulic oil tank quickly. The cap may fly off by internal pressure. Release any remaining pressure and remove the cap.

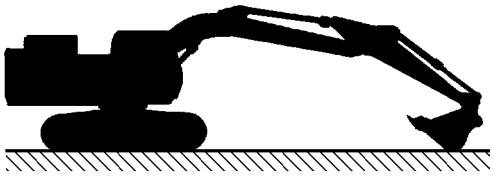
Preparation

1. Park the machine on a solid, level surface. Lower the front attachment onto the ground.

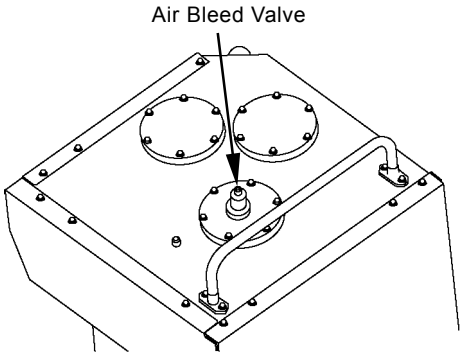
2. Stop the engine. Push the air bleed valve on the hydraulic oil tank and release any remaining pressure in the hydraulic oil tank.

3. Remove the cap on the hydraulic oil tank. Install an adapter of vacuum pump to the cap mounting part in hydraulic oil tank. Operate the vacuum pump in order to maintain negative pressure in the hydraulic oil tank.

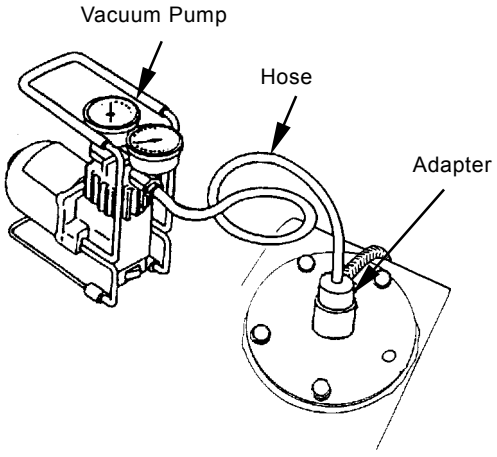
NOTE: Run the vacuum pump continuously while working。



W800-01-04-002

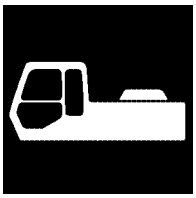


W800-01-04-001



W562-02-03-008

SECTION 2
UPPERSTRUCTURE



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