PARTS & SERVICE NEWS

REF NO.	AA03056
DATE	April 10, 2003

SUBJECT: LOG LOADER CENTER HINGE

PURPOSE: Improve the strength at the pivot point.

APPLICATION: WA600-3L Wheel Loader Serial Number A52028, A52087, A52120, A52121, A52122, A52135, A52136, A52137, A52157, A52183, A52186, A52187, A52188

FAILURE CODE: 478130

DESCRIPTION: Due to the log loader work demand, more strength is required in the center hinge pivot area. This News introduces a method to accomplish this update. With the center hinge improvement, the log loader machines will be capable of performing fully in their demanding environment.

NOTE ***The following parts are non serviced and are applicable only on machines with the above serial numbers.***

Item	Service Part	Description	Qty	Old Part
①	A3003-01-01	PLATE	2	---
②	A3003-01-02	PLATE	4	---
③	A3003-01-03	PLATE	2	---
④	A3003-01-04	PLATE	2	---
⑤	A3003-01-05	ANGLE	1	---
⑥	A3003-01-06	ANGLE	1	---

NOTE ***After all repairs are completed, confirm that all bores diameters are within specifications. If the bores are not within the specifications, they must be repaired before reassembling the hinge.***

REMOVAL

WARNING! Stop the machine on level ground, lower the work equipment completely to the ground, then stop the engine. Apply the parking brake and block the wheels to prevent the machine from moving.

WARNING! Disconnect the cable from the negative (-) terminal of the battery.

WARNING! Loosen the oil filler cap slowly to release the pressure inside the hydraulic tank. Then operate the control levers several times to release the remaining pressure in the hydraulic piping.

1. Remove the right and left covers ①.
2. Remove the cab mounting bolts ②. ※ 1

★ Sling the cab temporarily.

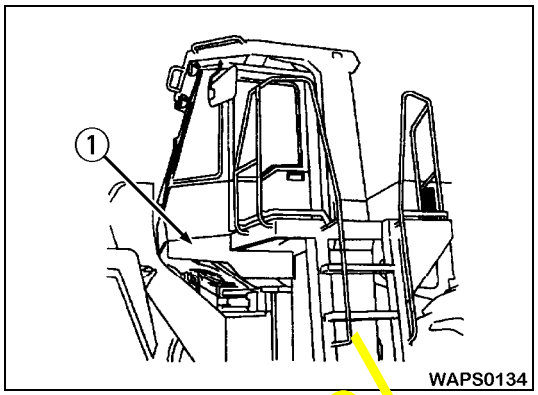
3. Sling and remove the cab ③.

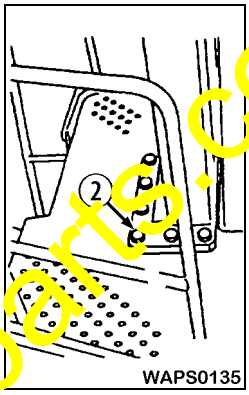
kg ROPS..... 810 kg

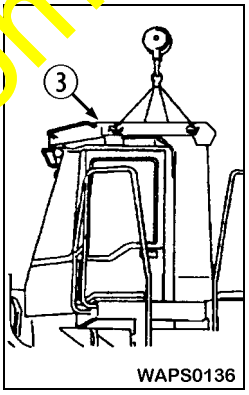
4. Remove the screw ④, then remove the plate ⑤.

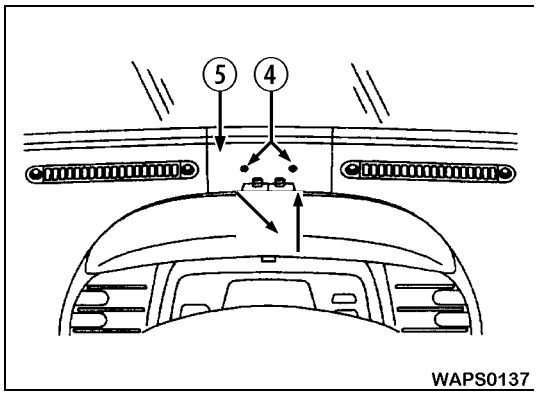
5. Remove the cover (6).
6. Disconnect the bracket (7).

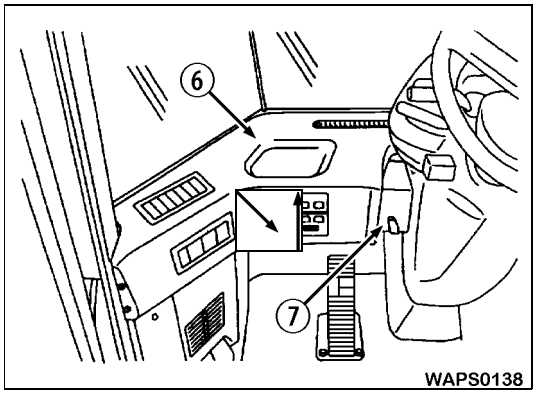
★ Move the harness and switch towards the column.







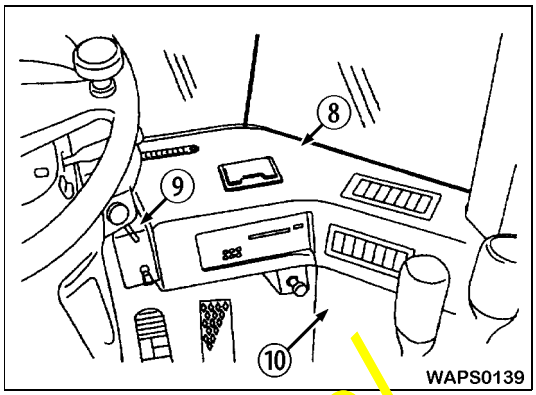




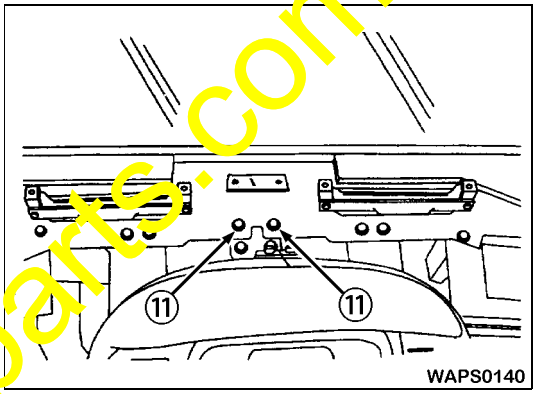
7. Remove the cover ⑧.
8. Disconnect the bracket ⑨.

★ Move the harness and switch towards the column.

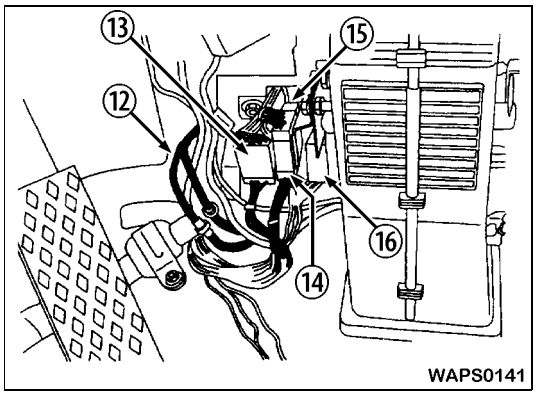
9. Remove the cover ⑩.



10. Remove the connecting bolt ⑪ of the column and cab.

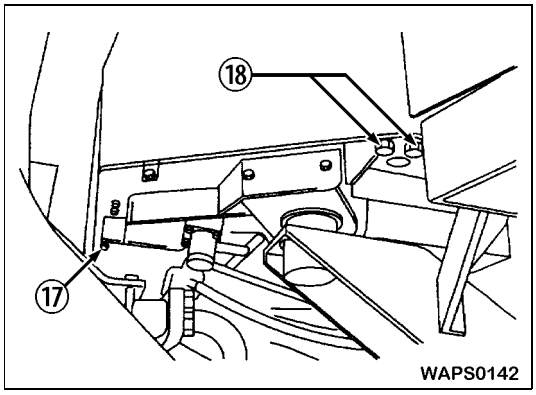


11. Disconnect the window washer vinyl tube ⑫.
12. Unplug connectors CL2 ⑬, CL3, ⑭, CL4, ⑮ and CL5 ⑯.



13. Remove the cab mounting bolts ⑰ and ⑱.

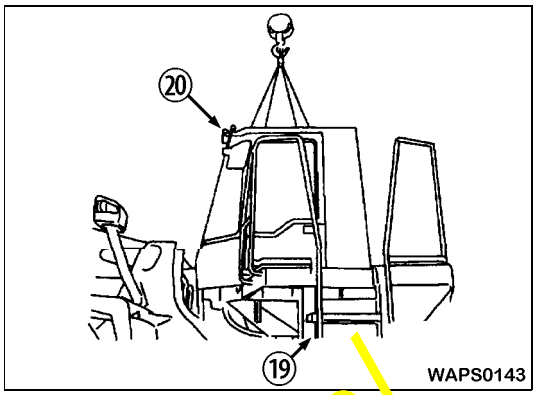
★ Sling the cab temporarily.



14. Remove the side ladders ⑲. Sling and remove the cab ⑳.

★ Install the sling carefully, checking that each harness is connected securely.

kg Cab ..... 440 kg



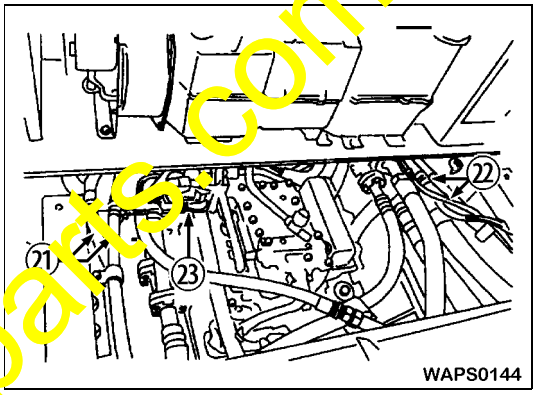
15. Disconnect the two heater hoses ㉑.

★ Plug the hoses to prevent the engine coolant from flowing out.

16. Disconnect the two air conditioner hoses ㉒.

★ Use tool 799-703-1200 to collect the air conditioner refrigerant (R134a). Be sure to use two wrenches to disconnect the hoses.

17. Unplug connector TL1, FR1.2, (LR1 2 3 4 5 6), ㉓.

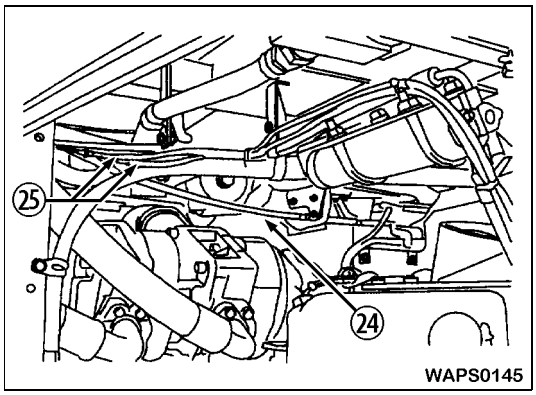


18. Disconnect the accelerator cable ㉔. ※2

★ Disconnect the accelerator clamped along the frame.

19. Disconnect the two washer hoses ㉕.

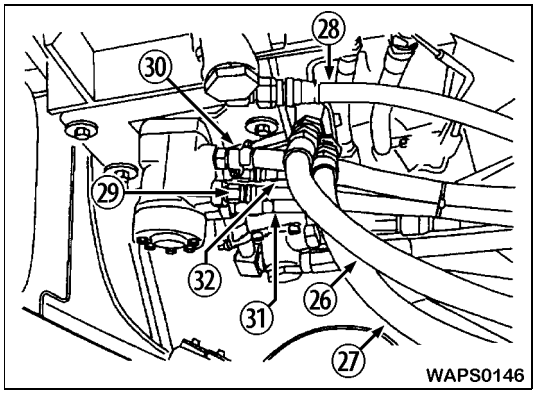
★ Bend the washer tank hoses and tie them with tape to prevent any washer fluid from leaking out.



20. Disconnect the hoses ㉖ from between the right brake valve and the rear brake. Then disconnect the hose ㉗ from between the right brake valve and the front brake.

21. Disconnect the hose ㉘ of the left brake valve accumulator.

22. Disconnect the hose ㉙ between the orbit roll and the accumulator, drain hose ㉚, the hose of the right stopper valve, and the hose ㉛ of the left stopper valve.

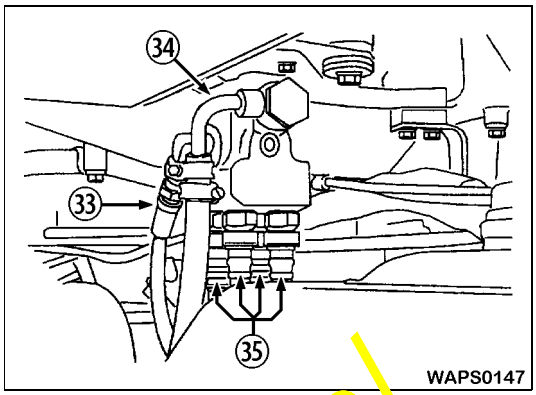


23. Disconnect the hose ㉝ between the accumulator charge valve and PPC valve.

24. Disconnect the PPC valve drain hose ㉞.

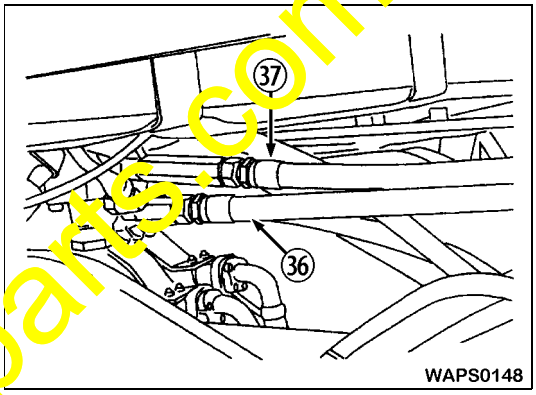
25. Disconnect the equipment hose ㉟ between the PPC valve and work equipment.

★ Each hose connected by means of a quick coupler. To disconnect this type hose connection, push the hose up slightly and turn it.



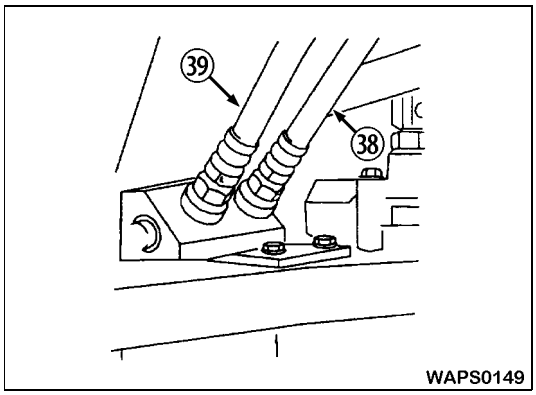
26. Disconnect the hoses ㊱ and ㊲ from between the right brake valve and accumulator.

★ Be sure these hoses are disconnected since there is a hanging clamp on the floor frame.



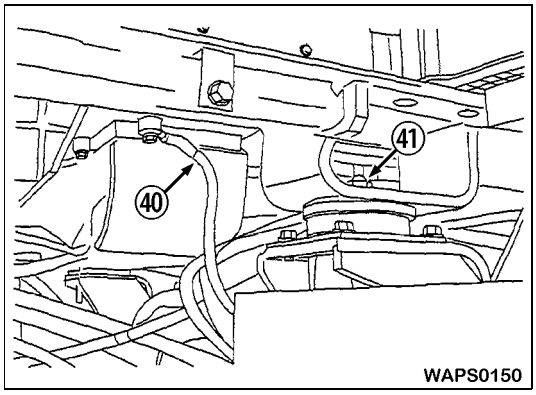
27. Disconnect the right brake valve drain hose ㊳.

28. Disconnect the left brake valve drain hose ㊴.



29. Disconnect the ground cable ㊵.

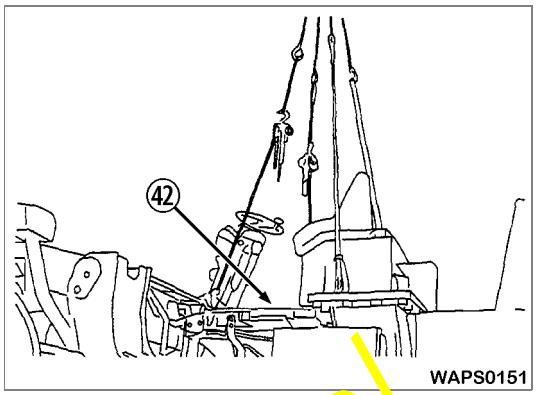
30. Remove the four nuts of the floor frame mount ㊶. ※ 3



31. Sling and remove the floor frame ㊷.

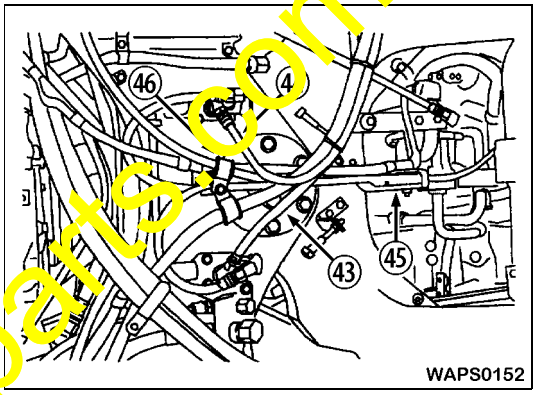
★ Sling the floor frame carefully and check that each clamp, wire, etc., is properly disconnected.

kg Floor frame ..... 290 kg



32. Disconnect the hoses ㊸ and ㊹ from between the stop valve and steering valve. Remove the bracket ㊺. Remove the mounting bolts and clamp ㊻.

★ Bind the hoses and harnesses and shift them towards the front frame.



33. Disconnect the work equipment valve drain hose ㊼. Disconnect the orange ㊽, yellow ㊾, blue ㊿ and red (51) PPC hoses.

34. Disconnect the work equipment valve drain hose (52).

35. Disconnect the cut off valve drain hose (53).

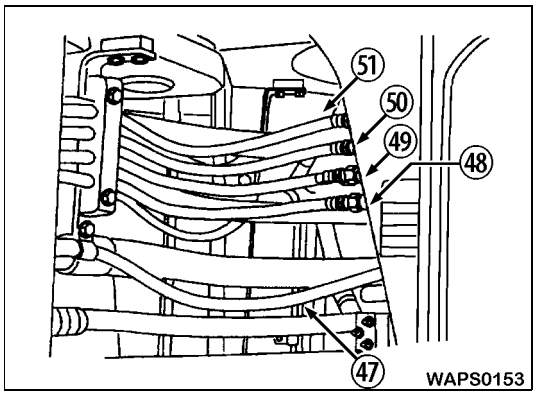
36. Disconnect the work equipment valve hose (54).

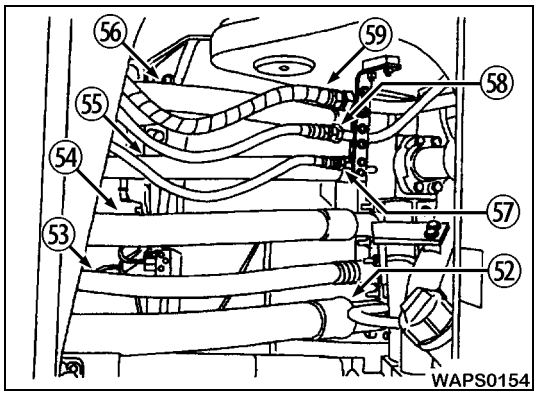
37. Disconnect the hose (55) from between the switch pump and steering valve.

38. Disconnect the hose (56) from between the steering pump and steering valve.

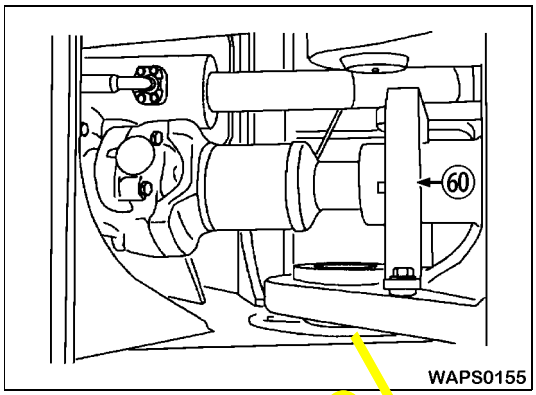
39. Disconnect the parking brake solenoid valve hoses (57) and (58).

40. Disconnect the front brake slack adjuster hose (59).





41. Remove the drive shaft guard ⑥⓪.

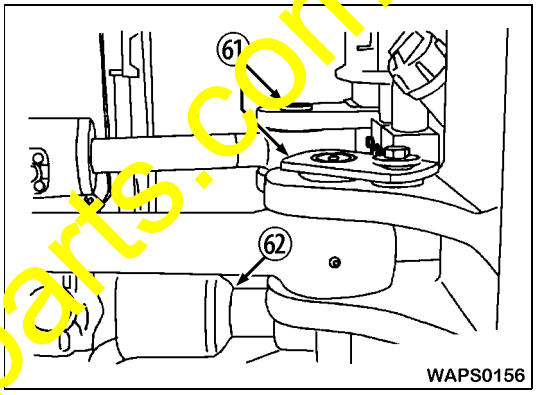


42. Remove the lock bolt of the steering cylinder head pin ⑥① on the right and left sides, then pull out the pin.

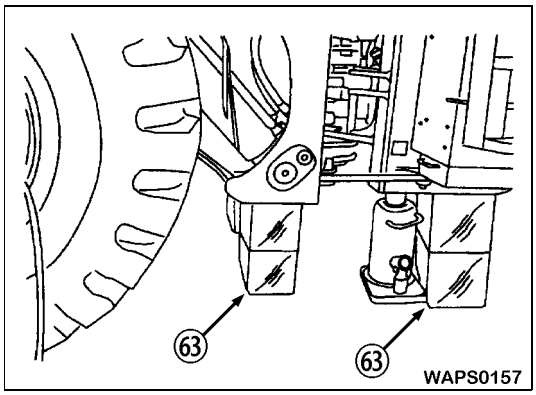
★ Note and store safely away any spacer shims for later reassembly. Disconnect the hose at each rod end and clamp to a drain receptacle. Push the piston into its cylinder. ※ 4

43. Disconnect the drive shaft ⑥②. ※ 5

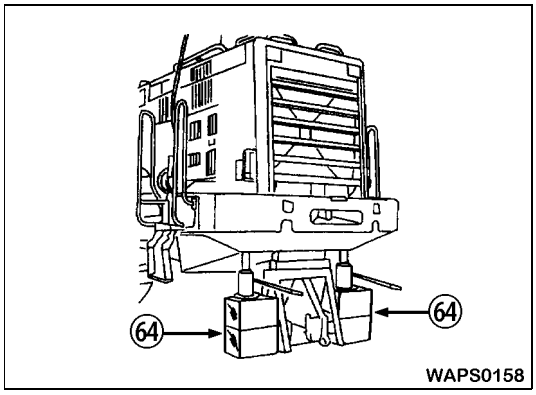
kg Drive shaft..... 56 kg



44. Place jacks certified for at least 45,359 kg under the front and rear frames, then raise the frames and set the support stands ⑥③ in place.

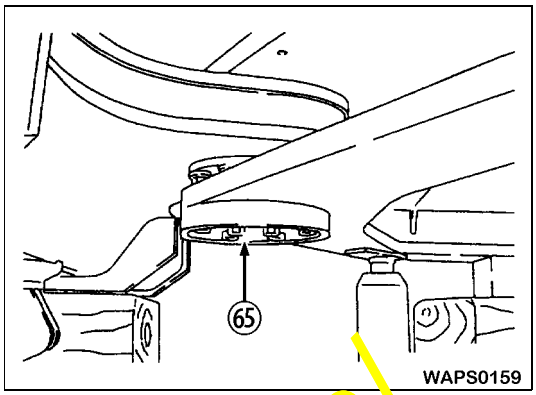


45. Use the jacks to raise the machine at the counterweight and set a support stand ⑥④ in place.

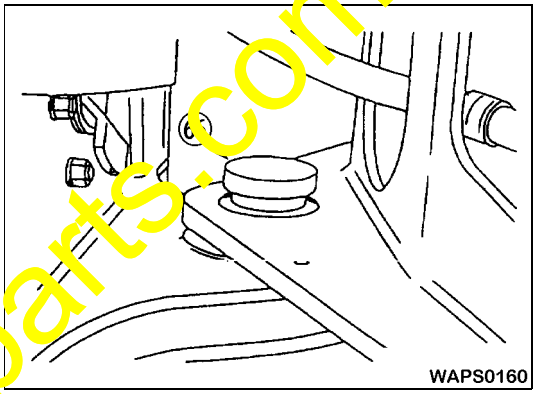


46. Remove the mounting bolt and remove the retainer ⑥⑤.

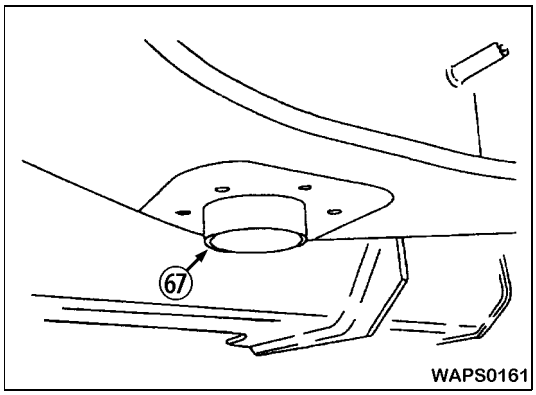
★ Note and store any spacer shims from between the retainer and frame for later reassembly. ※ 6



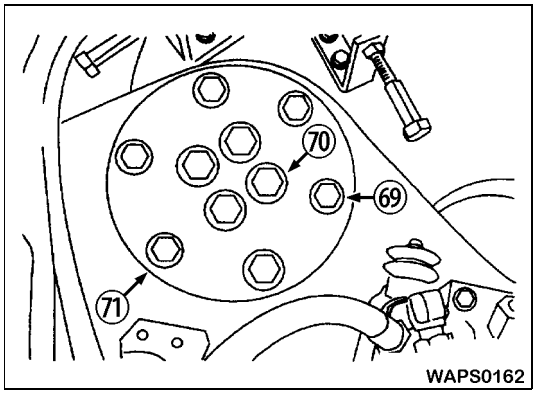
47. Adjust the height carefully and set it so that the lower hinge pin ⑥⑥ can be removed easily by hand.



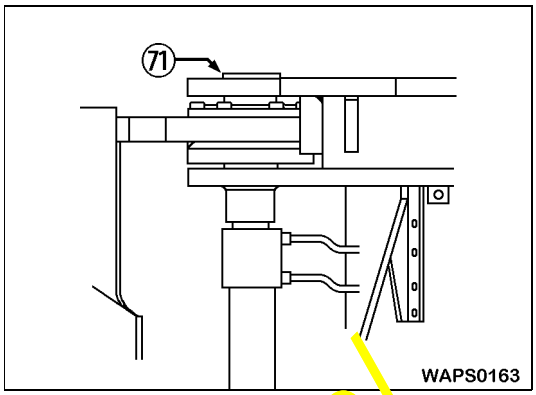
48. Remove the spacer ⑥⑦.



49. Remove the bolts ⑥⑧ and ⑥⑨, then the retainer ⑦⓪. ※ 7



50. Remove the upper hinge pin ⑦① and spacer ⑦②.

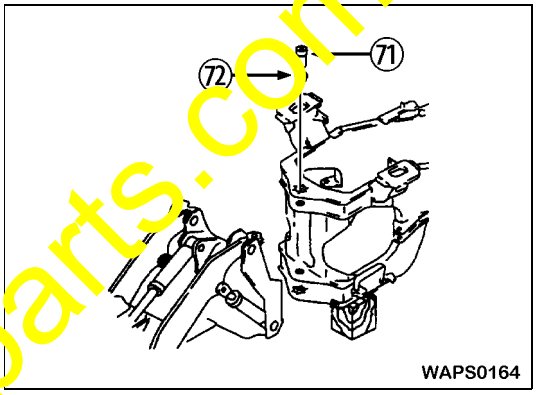


51. Remove the safety bar, then pull the front frame away and disconnect the frames from each other.

★ Be careful not to let the spacer at the top of the lower hinge get caught in the rear frame.

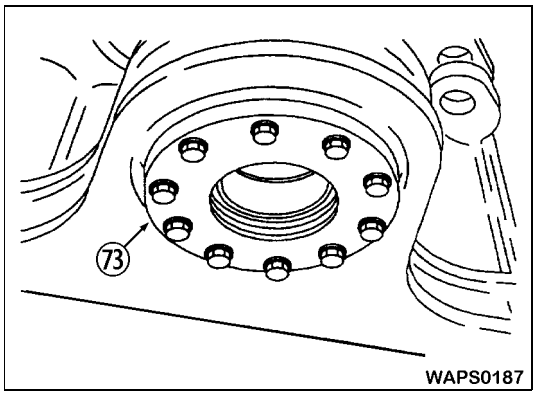
★ Perform this procedure carefully and make sure the machine remains balanced.

★ Move the frames approximately 100 mm apart, stop and inspect, then repeat.

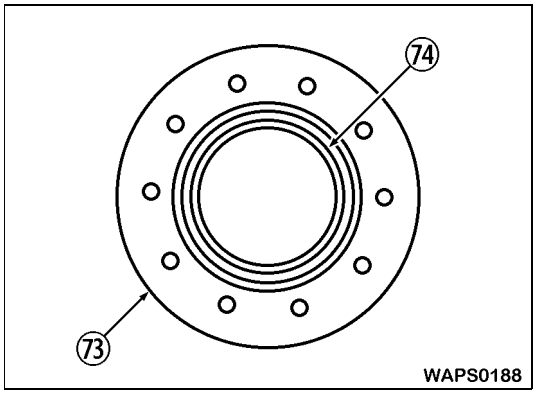


52. Remove the mounting bolts, then remove the retainer ⑦③. ※ 8

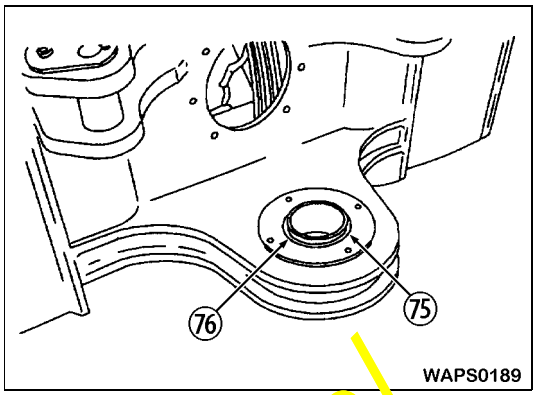
★ Note and store safely away any spacer shims from between the retainer and frame for later reassembly.



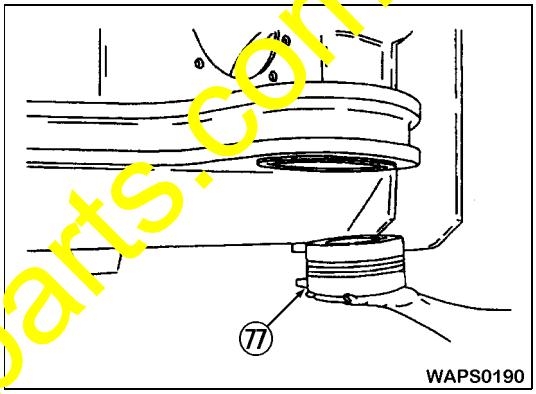
53. Remove the dust seal ⑦④ from the retainer ⑦③.



54. Remove the spacer ㉕ and dust seal ㉖ from the front frame.

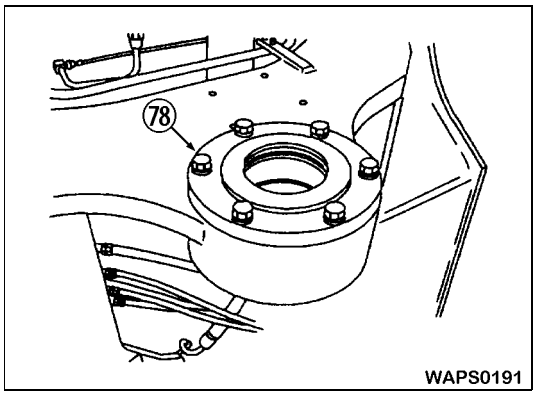


55. Remove the bearing ㉗.



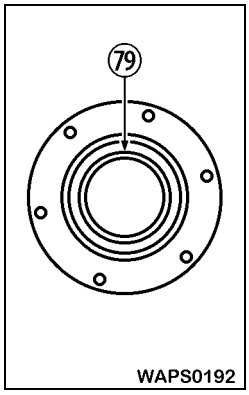
56. Remove the retainer ㉘.

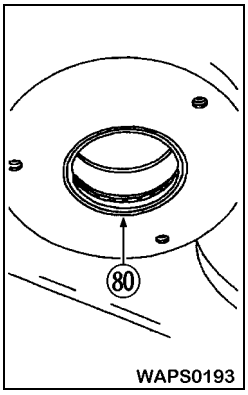
★ Note and store safely away any spacer shims from between the retainer and frame for later reassembly.



57. Remove the dust seal ㉙ from the retainer.

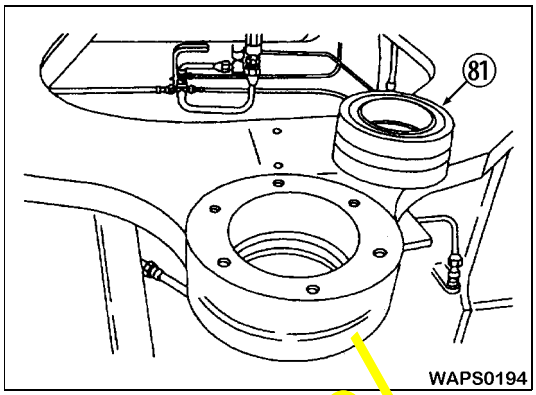
58. Remove the dust seal ㉚ at the frame end.





59. Remove the bearing ㉛.

60. Discard and replace the bearing all necessary parts.



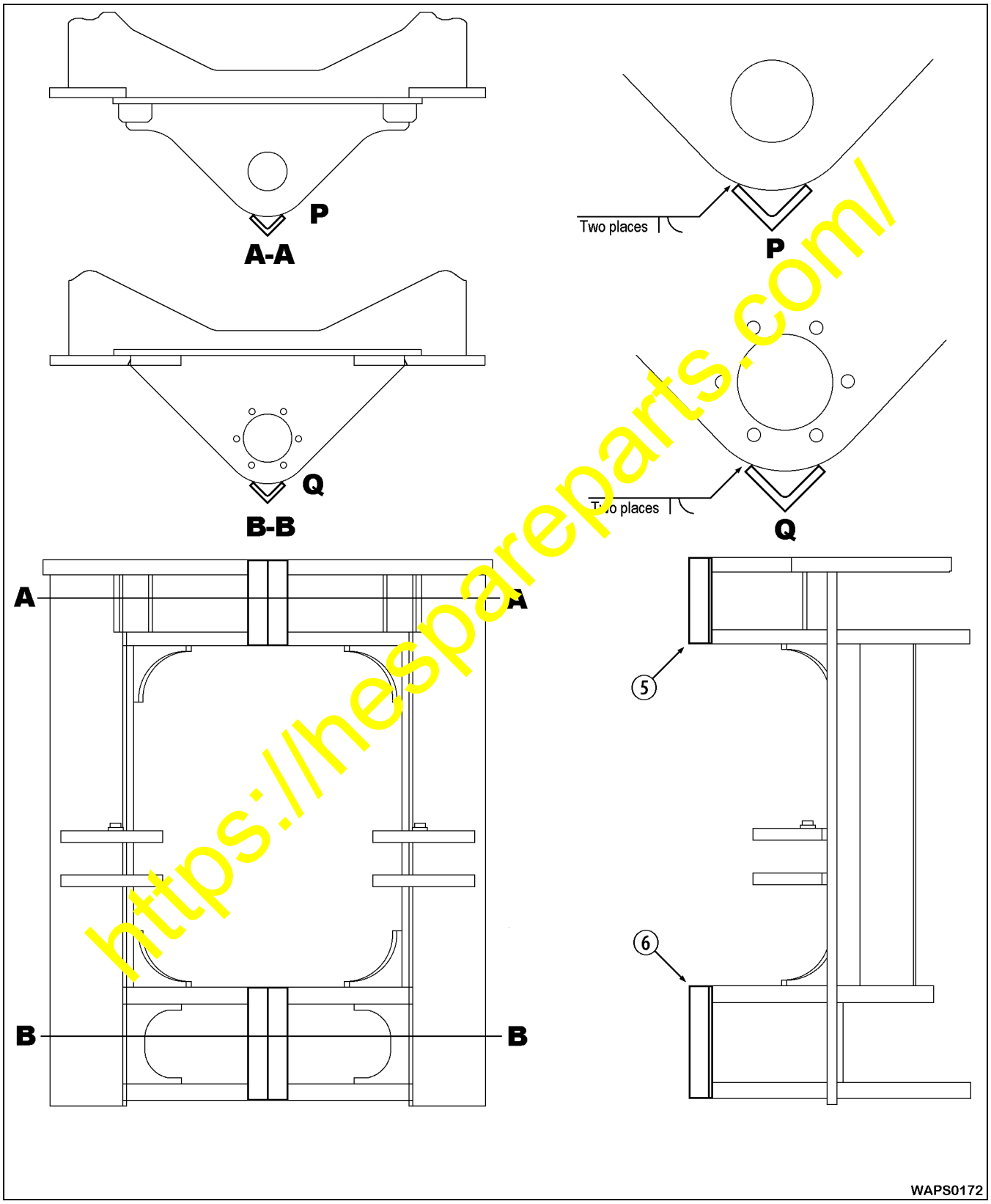
ATTENTION

After repairs are completed, confirm that ALL bore diameters are within specifications. If the bores are not within specifications, they must be repaired before reassembling the hinge. Once bore diameters have been confirmed, the machine can be reassembled by following disassembly instructions in reverse order.

REAR FRAME REWORK

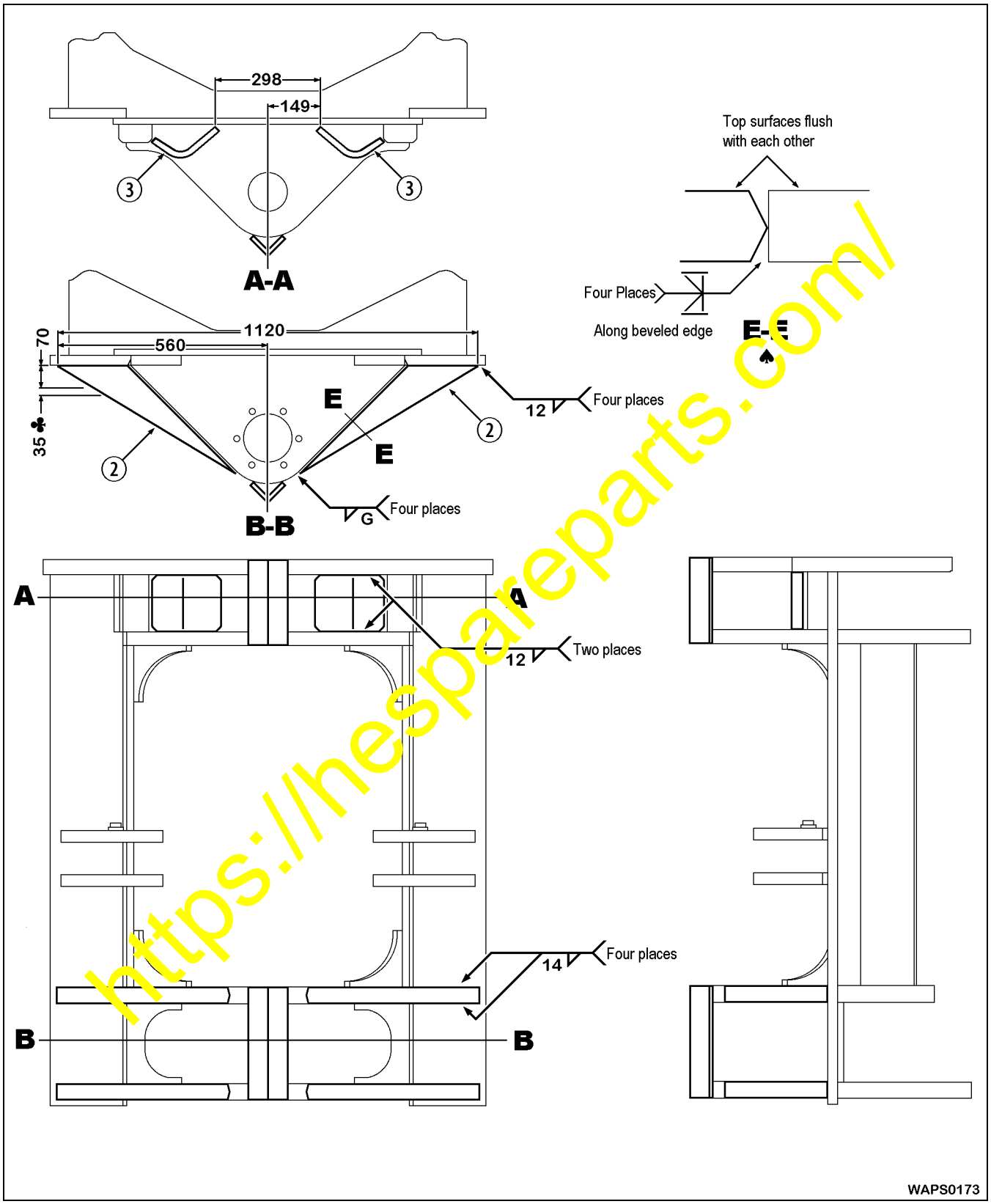
Process One

Unit : mm



Process Two

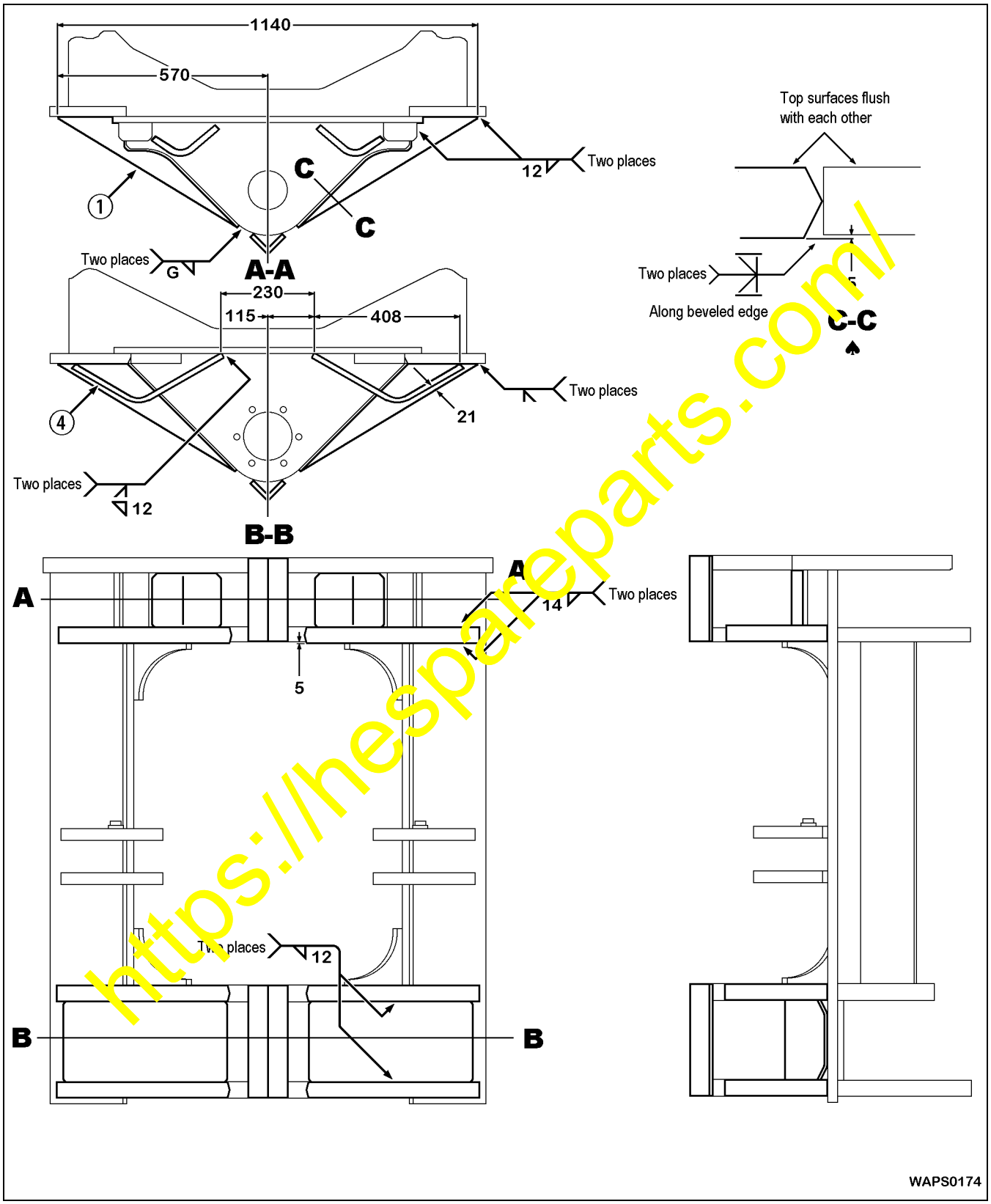
Unit : mm



♣ Finish level the marked area - 4 places - upper and lower sides with a grinder.

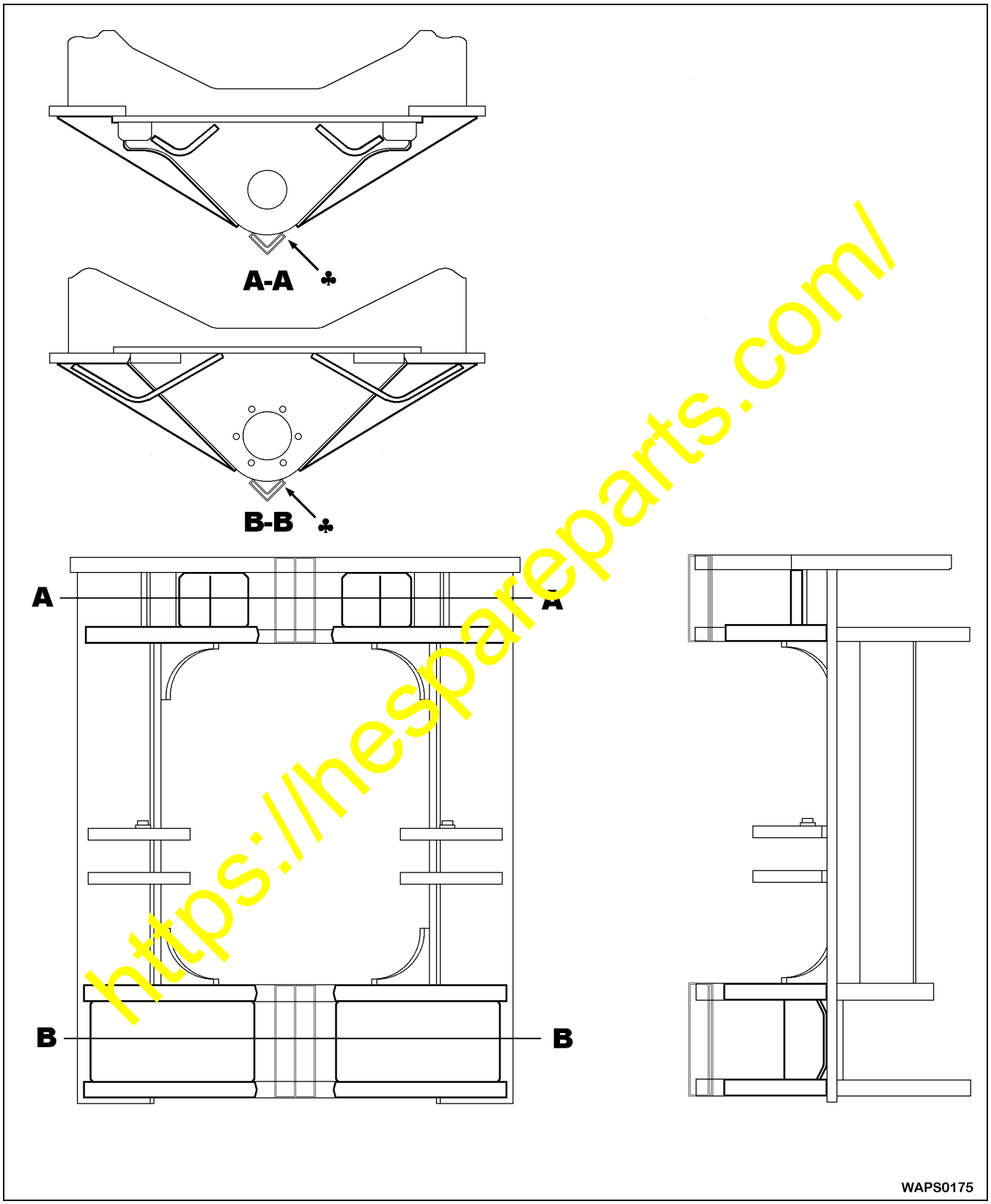
♠ Perform up and down welding alternately with the upper and lower sides.

Process Three **Unit : mm**



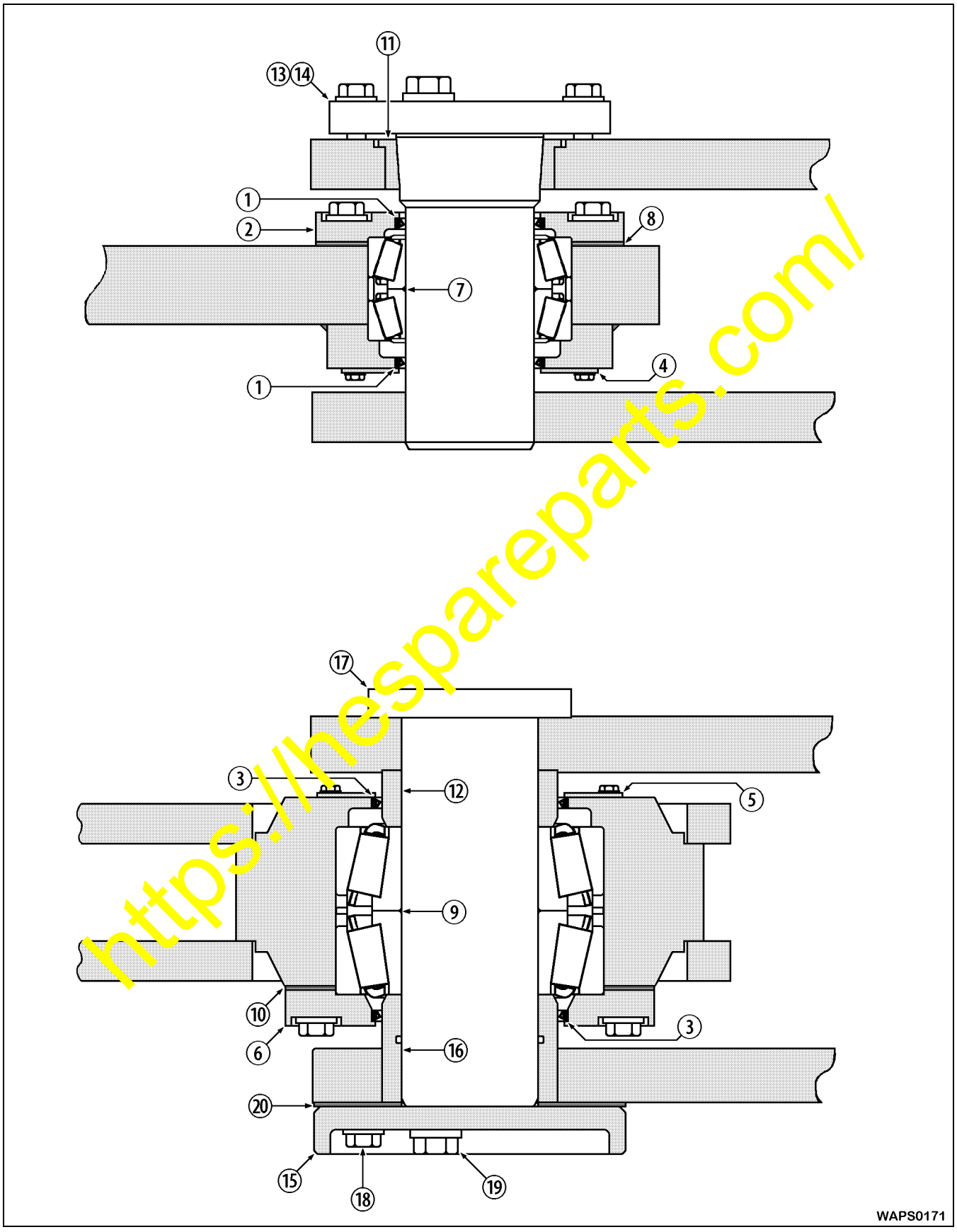
♠ Perform up and down welding alternately with the upper and lower sides.

Process Four **Unit : mm**



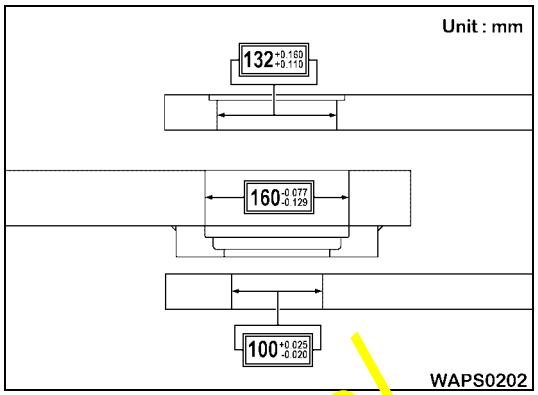
♣ Remove the angles ⑤ and ⑥ and finish the area smoothly using a grinder.

INSTALLATION

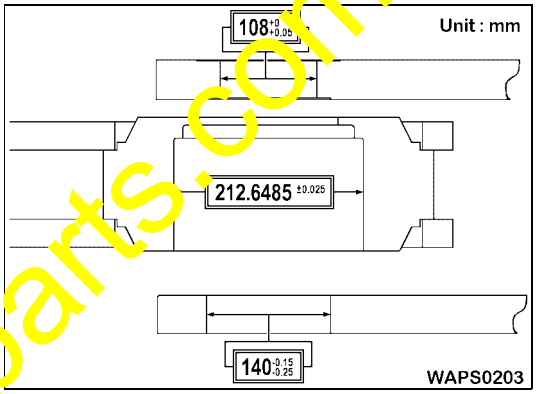


ATTENTION

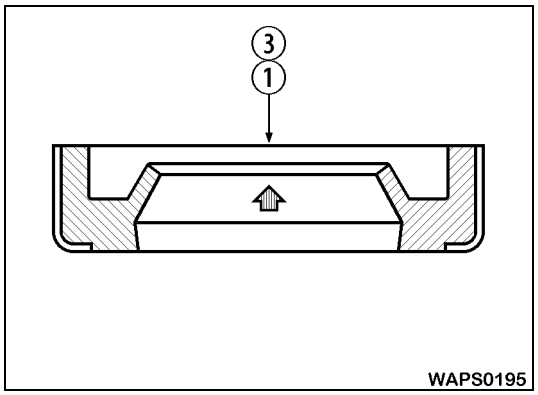
After repairs are completed, confirm that ALL bore diameters are within specifications. If the bores are not within specifications, they must be repaired before reassembling the hinge. Once bore diameters have been confirmed, the machine can be reassembled by following the disassembly instructions in reverse order.



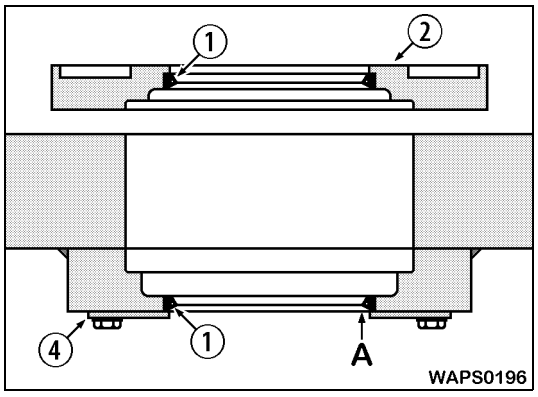
★ Refer to the Shop Manual, Section 40 for additional dimension.



1. Always install the grease seals ① and ③ with the lip facing outward.

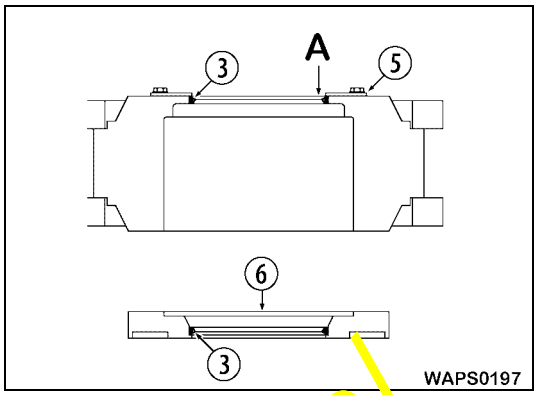


2. Using a driver, bottom the grease seal ① in the top retainer ② with the seal lip facing out.
3. Using a driver, install the grease seal ①, flush with the hinge, with the seal lip facing out. Install the seal retainer plate ④ and secure with the hardware.



4. Using a driver, install the grease seal ③ flush with the hinge, with the seal lip facing out. Install the seal retainer plate ⑤ and secure with the hardware.

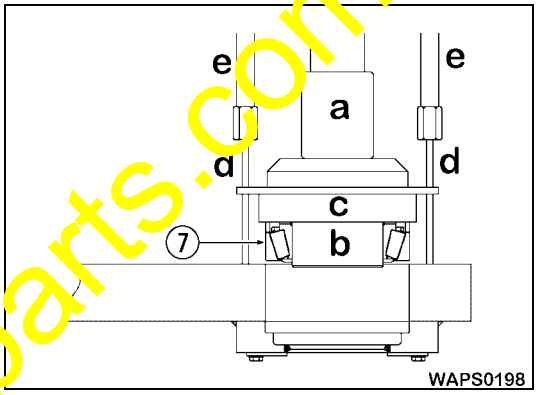
5. Using a driver, bottom the grease seal ③ in the bottom retainer ⑥ with the seal lip facing out.



6. Using a pusher tool, install a new upper hinge bearing ⑦ to the front frame.

Bearing Pusher Tool

- **a**. Ram 790-101-2102
- **b**. Push tool 793-520-2640
- **c**. Leg guide 790-438-1030
- **d**. Legs 790-438-1050
- **e**. Pusher bridge 790-101-2300
- Ram pump 790-101-1102

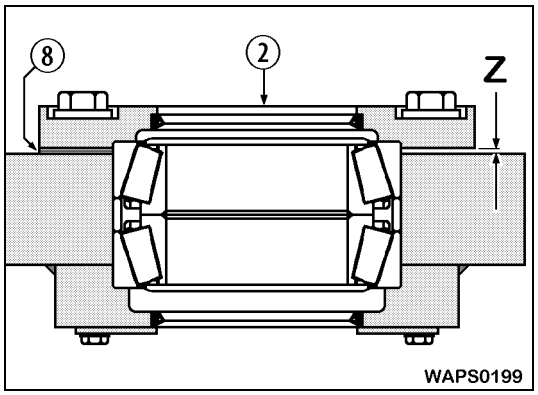


7. Measure clearance **Z** between the retainer ② and hinge at four places on the inside circumference, then select a shim ⑧ thickness to make the value 0.08 to 0.18 mm less than the measured value. After selecting the shim(s), assemble the retainer to the specified torque.

N•m Bolts - for measurement ..... 88 to 108 N•m

N•m Bolts - final ..... 245 to 309 N•m

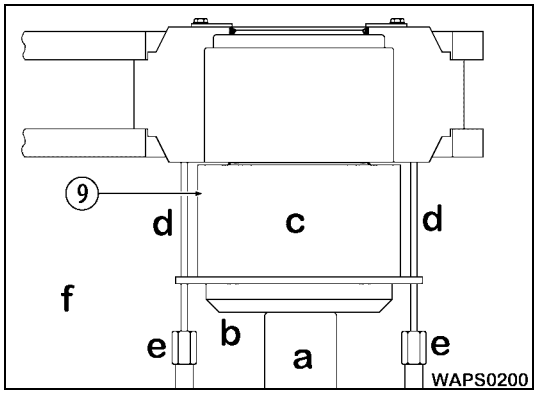
Bolt thread ..... Loctite #262



8. Using a pusher tool, install a new lower hinge bearing ⑨ to the front frame.

Bearing Pusher Tool

- **a**. Ram 790-101-1102
- **b**. Push tool 793-438-1010
- **c**. Leg guide 790-438-1020
- **d**. Legs 790-438-1050
- **e**. Pusher bridge 790-101-2300
- Ram pump 790-101-1102

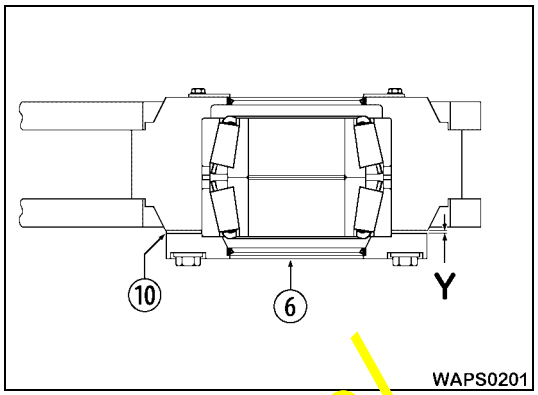


9. Measure clearance **Y** between the retainer ⑥ and hinge at four places on the inside circumference, then select a shim ⑩ thickness to make the value 0.08 to 0.18 mm less than the measured value. After selecting the shim(s), assemble the retainer to the specified torque.

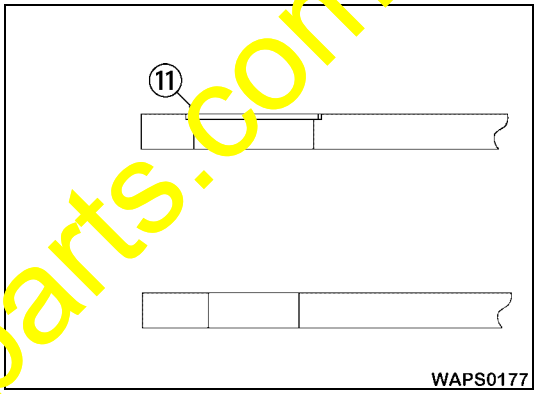
N•m Bolts - for measurement ..... 88 to 108 N•m

N•m Bolts - final ..... 245 to 309 N•m

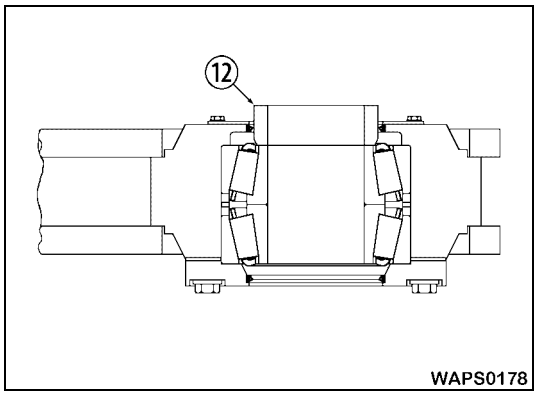
Bolt thread ..... Loctite #262



10. Install the bushing ⑪ into the upper hinge.

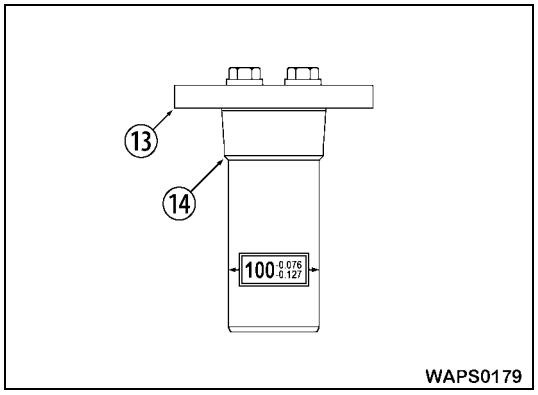


11. Install the bushing ⑫ into the lower hinge.

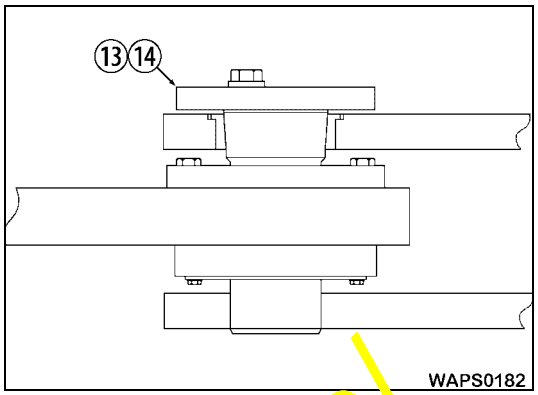


12. Install the upper plate ⑬ to the upper pin ⑭ with the hardware.

★ Torque the bolts at a later time.



13. Align the front and rear frame pin centers and insert the upper pin ⑬ and plate ⑭. Secure the plate and pin to the hinge with hardware using the following pattern.

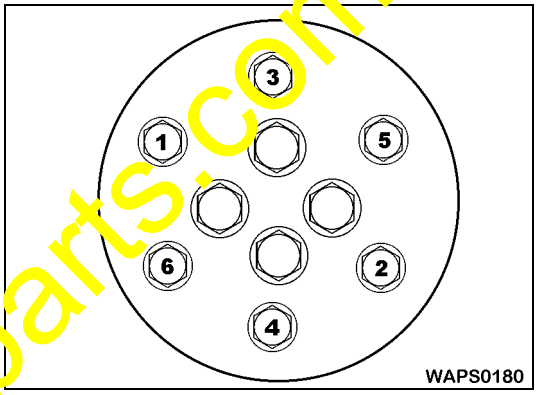


14. Tighten the outer bolts diagonally 1 through 6, then torque in a circular pattern 1, 3, 5, 2, 4 and 6. Torque the inner bolts.

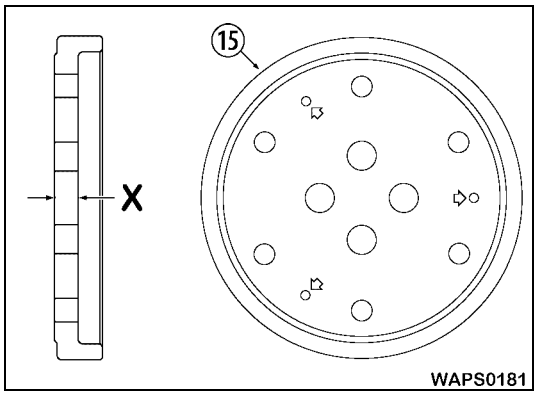
N•m Outer plate bolts ..... 245 to 309 N•m

N•m Inner plate bolts ..... 409 to 608 N•m

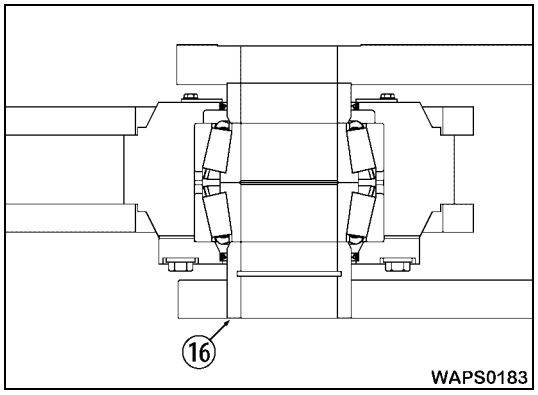
Inner and outer plate bolts ..... Loctite #262



15. Measure the thickness **X** of the bottom retaining plate ⑮ at the three holes provided. Average the readings.



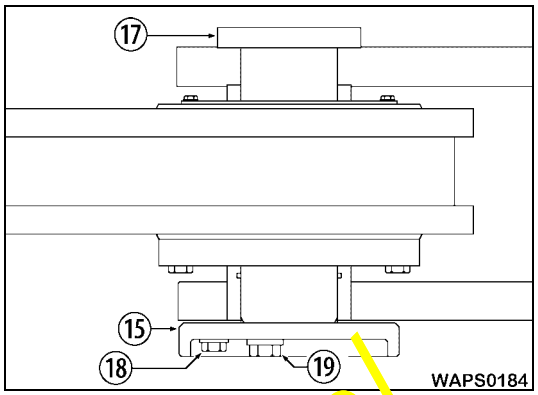
16. Install the lower bushing ⑯ at the bottom of the hinge.



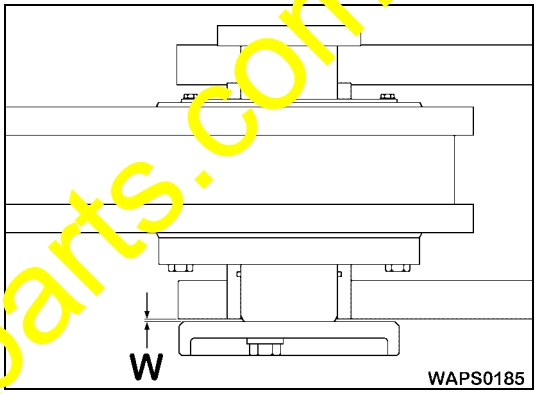
17. Insert the hinge pin ⑰ through each of the lower hinges. Secure the pin and the retainer plate ⑮ with three of the outside mounting bolts ⑱. Install the four inside bolts ⑲ and tighten, then remove the outside bolts.

N•m Inner plate bolts ..... 409 to 608 N•m

Inner plate bolts ..... Loctite #262



18. Through the three pilot holes, measure the gap **W** between the retainer plate and the lower hinge.

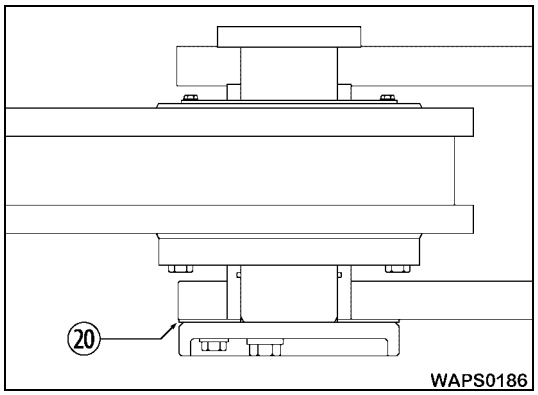


19. Select a shim pack ⑳ as follows;

    A. Subtract the averaged measurement **X** from **W**.

    B. From this measurement, select a shim pack ⑳ less 0.08 to 0.18 mm.

    C. The remaining is the averaged shim pack.



20. Install the shim pack ⑳ and secure with the outer bolts.

N•m Outer plate bolts ..... 245 to 309 N•m

Outer plate bolts ..... Loctite #262

21. Perform the remaining removal procedures in reverse order to complete installation.

※ 1

N•m Cab mounting bolt..... 1520 to1910 N•m

※ 2

Adjust the accelerator cable length as described in Section 20 in the Shop Manual.

※ 3

N•m Floor frame nuts..... 277 to 309 N•m

- Use tool 799-703-1200 to refill the air conditioner with refrigerant R134a.

※ 4

Install the spacer shims until the clearance is within the specified range.

Clearance ..... **U** + **V** = Less than 1.0 mm

※ 5

N•m Drive shaft mounting bolt ..... 157 to 196 N•m

※ 6

See Steps 17, 18 and 19 above.

※ 7

See Steps 12, 13 and 14 above.

※ 8

See Step 9 above.

※ 9

See Step 7 above.