

BACKHOE

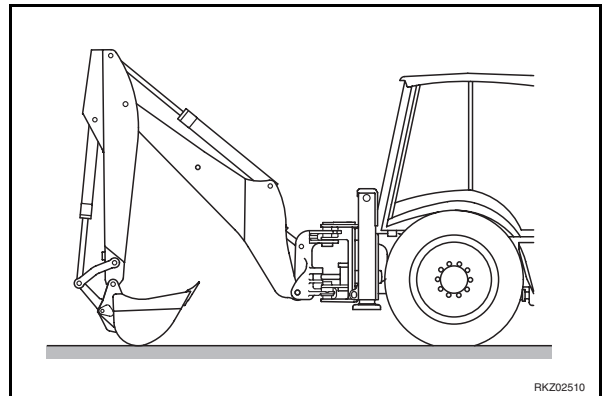
★ Test condition:

- Backhoe aligned
- Lifted outriggers

1. Boom testing

1 - Set the machine with arm in vertical position and with bucket on level ground leaned on the side.

2 - Stop the engine and remove the remain hydraulic pressure.

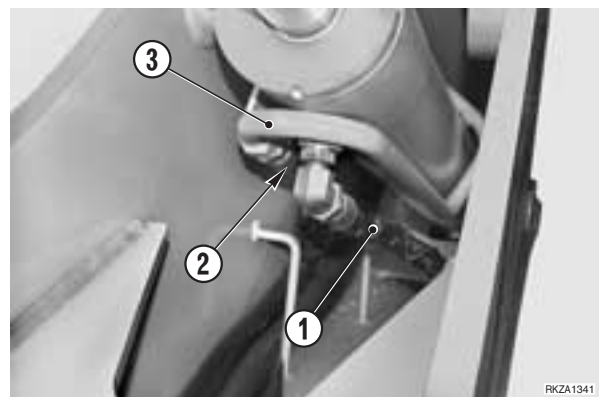


3 - Disconnect hoses (1) and (2) that feed cylinder (3).

4 - Plug the two hoses to avoid impurity inlet.

5 - Plug the cylinder head side.

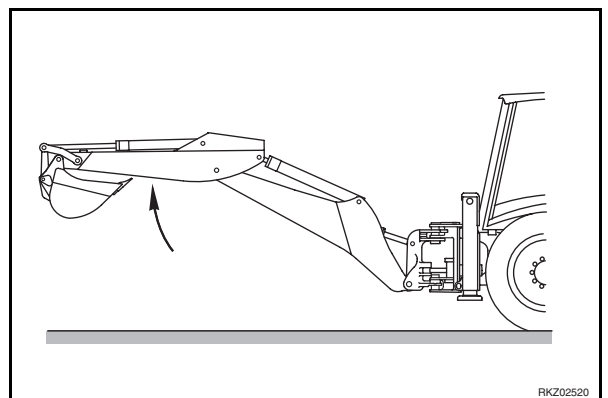
6 - Apply a temporary pipe on pipe (3) base side to catch possible oil leakage.



7 - Start the engine and extend completely the arm.

8 - Stop the engine and check the boom position for 5 minutes.

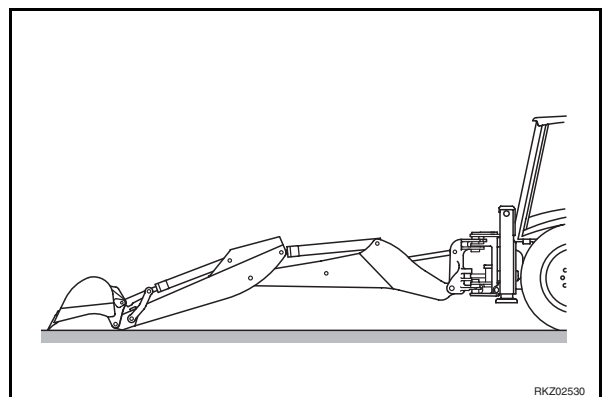
- If boom has a lowering movement, drift is due to cylinder gaskets.
- If boom has no lowering movement, drift is due to control valve.



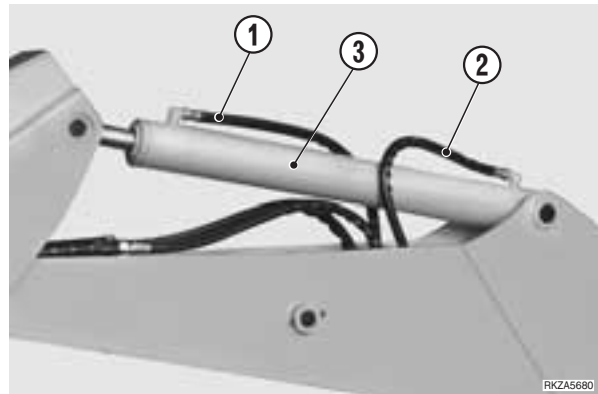
2. Arm testing

1 - Set the machine with arm fully extended and with bucket teeth on ground.

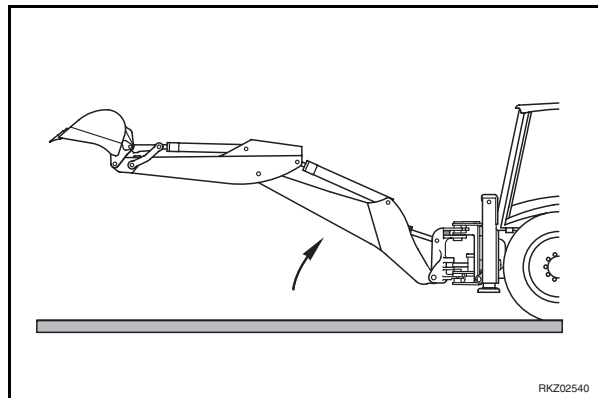
2 - Stop the engine and remove the remain hydraulic pressure.



- 3 - Disconnect pipes (1) and (2) pipes from arm cylinder (3) and plug them to avoid impurity inlet.
★ If safety valve is fitted, provide to removal.
- 4 - Plug arm cylinder hole on head side and fit a temporary pipe on base side to catch possible oil leakage.

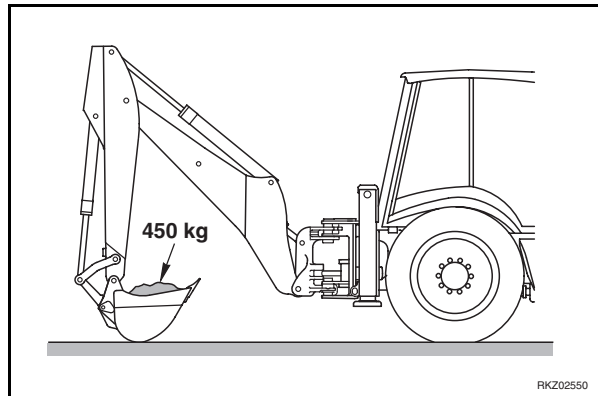


- 5 - Start the engine and raise the boom.
- 6 - Stop the engine and check the arm position for 5 minutes.
 - If arm has a lowering movement, drift is due to cylinder gaskets.
 - If arm has no movement, drift is due to control valve.

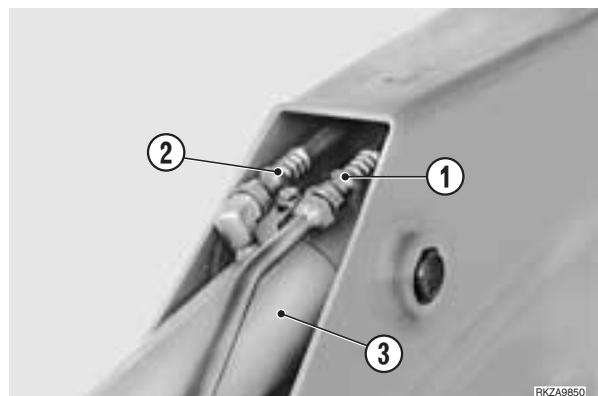


3. Bucket testing

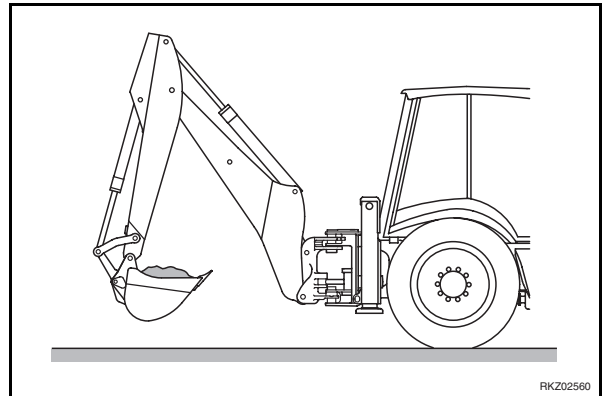
- 1 - Set the machine with vertical arm and horizontal bucket leaned at level ground on the side.
Put in the bucket a weight of 450 kg or fill it with earth.



- 2 - Stop the engine and remove the remain hydraulic pressures.
- 3 - Disconnect bucket cylinders (3) pipes (1) and (2) and plug them to avoid impurity inlet
- 4 - Plug bucket cylinder hole on base side and fit a temporary pipe on head side to catch possible oil leakage.

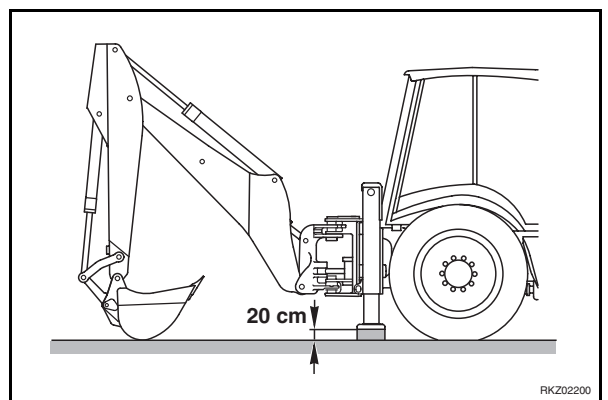


- 5 - Start the engine and raise the boom.
- 6 - Stop the engine and check the bucket position for 5 minutes.
 - If bucket has an opening movement, drift is due to cylinder gaskets.
 - If bucket has no movement, drift is due to control valve.

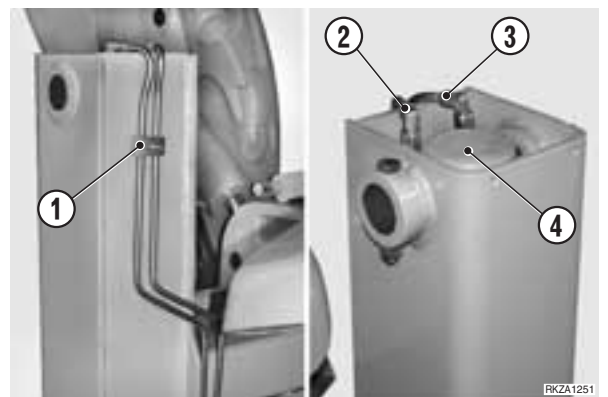


4. Outriggers testing

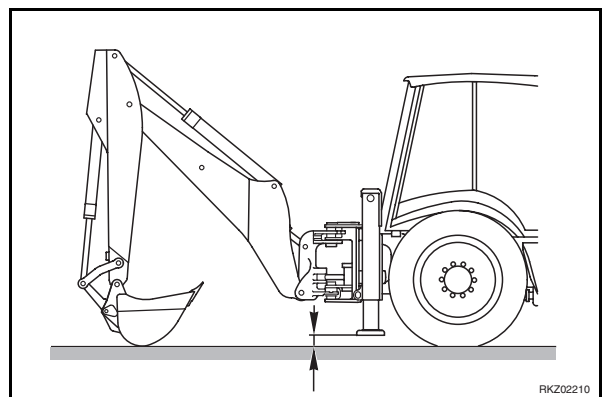
- 1 - Set machine with vertical arm and with bucket leaned at ground on the side.
- 2 - Put blocks of about 20 cm under the outriggers.
- 3 - Without forcing them, lower the outriggers onto the trestles.



- 4 - Stop the engine and release residual hydraulic pressures.
- 5 - Remove clamp (1) and disconnect from cylinders (4) the pipes (2) and (3).
- 6 - Plug cylinders pipes (2) base side and apply on head sides temporary pipes to catch possible oil leakage.
- 7 - Start the engine, use force on the boom to raise the machine, and remove the trestles supporting the outriggers.



- 8 - Lower the machine and stop the engine.
- 9 - Check the outriggers position for 5 minutes.
 - If one or both outriggers have a lowering movement, drift is due to single or both cylinders.
 - If there is no lowering, drift is due to control valve.



TESTING THE AIR-CONDITIONING UNIT

- ★ Test conditions:
 - Machine on level ground with the working equipment raised and in safety conditions
 - Parking brake engaged

1. Testing the working temperature

- 1 - Connect the maintenance station to the high pressure valve (H.P.) and the low pressure valve (L.P.)
- 2 - Start the engine and bring it up to a speed of 1500 rpm.
- 3 - Switch on the A/C unit using the switch in the cab.
- 4 - Select an intermediate ventilation speed inside the cab.
- 5 - Use the thermometer/hygrometer **M2** to check that the temperature inside the cab is equal to or lower than the ambient temperature.
 - ★ If the temperature of the cab is higher than the ambient temperature, open the doors and widows and wait until the cab temperature stabilizes at the outside value.
- 6 - Close the doors and windows and let the A/C unit operate in these conditions for 5 - 10 minutes.
- 7 - Use the thermometer **M2** to check the temperature of the air at the central outlets.
 - ★ Position the probe as close as possible to the air outlets.
- 8 - Compare the average value of the measured temperatures using the following table

Ambient temperature (°C)	20	25	30	35
Outgoing air temperature (°C)	6–8	8–10	8–12	9–14

- 9 - If the average value of the temperature measured does not fall within the values given in the table, it will be necessary to thoroughly check the unit.



2. Checking the unit

Check the unit after the point 1., 2., 3., 4. and 6. of the precedent paragraph.

A diagnosis of faults in the unit is based on the working pressures.

When the pressures do not fall within the values given in the following table, the causes must be sought by checking the high-pressure (H.P.) and low pressure (L.P.) pressure gauges.

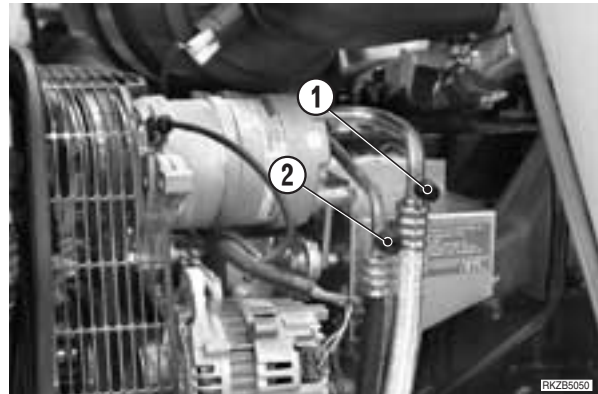
Outside Temperature (°C)	Unit with R134a.			
	L.P. (kg/cm ²)		H.P. (kg/cm ²)	
	Min.	Max	Min.	Max
20	1.2	2.5	6.0	9.0
25	1.0	2.5	7.5	10.5
30	1.1	2.4	9.5	13.0
35	1.3	2.4	12.0	15.5
40	1.5	1.8	18.0	18.8
45	1.8	1.9	21.5	22.0

The following conditions may be found:

Conditions	Causes - Faults
L.P. high - H.P. normal or low	<ul style="list-style-type: none"> • Electromagnetic pulley that slips or does not engage correctly • Expansion valve blocked in open position • Compressor damaged
L.P. low - A.P. high or normal	<ul style="list-style-type: none"> • Expansion valve blocked in closed position or obstructed • Filter saturated with moisture • Obstruction in the L.P. line or in the H.P. line between the filter and the evaporatorL.P.
L.P.normal - H.P. normal	<ul style="list-style-type: none"> • Infiltration of hot air into the evaporator group, the pipes or the cab • Hot air circulating in the heating group • Formation of ice on the evaporator
L.P. high - H.P. high	<ul style="list-style-type: none"> • Normal condition with very high ambient temperature (higher than 43°C) • Excess coolant(30 – 35% more) • Overheating of condenser • Air present in the unit • Obstruction in the H.P. line between the compressor and the condenser-filter tube, behind the measurement point of the H.P
L.P. normal or low - H.P. low	<ul style="list-style-type: none"> • Normal condition with very low temperature (lower than 5°C) • Lack of coolant (70 - 75% less) (probable leakages) • Obstruction in the H.P. line between the compressor and the condenser-filter tube, before the measurement point of the H.P. • Compressor damaged
L.P. roughly equal to H.P.	<ul style="list-style-type: none"> • Compressor belt missing • Electromagnetic pulley that slips or does not engage • Compressor damaged

EMPTYING THE AIR-CONDITIONING UNIT

- 1 - Connect the maintenance station **M1** to the service valves (1) and (2) and follow the specific maintenance station instructions relative to the drainage of the unit.
- 2 - Disconnect the group to be substituted or reconditioned immediately after switching off the maintenance station. **Plug the removed or disconnected connection tubes tightly and with a minimum of delay.**
- 3 - Carefully check the quantity of anti-freeze oil recovered and contained in the disassembled parts, since the same quantity must be replaced when the air-conditioning unit is refilled.



TROUBLESHOOTING

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FRONT AXLE TROUBLESHOOTING

Wheel vibration; front tyre resistance; halfshaft breakage	
CAUSES	REMEDY
Incorrect installation	Correct installation
Defective axle	Replace the differential in case it does not survive any one of the test phases
Overloading/ incorrect weight distribution	Remove excessive weight and redistribute load, following instructions related to the vehicle
Different rotation radius of the tyres	Replace the tyre or adjust pressure to have same radius on both tyre
Bent halfshaft	Replace halfshaft

Steering is difficult; vehicle goes straight while its turning.	
CAUSES	REMEDY
Incorrect installation	Correct installation
Defective axle	Replace the differential in case it does not survive any one of the test phases
Overloading/ incorrect weight distribution	Remove excessive weight and redistribute load, following instructions related to the vehicle
Different rotation radius of the tyres	Replace the tyre or adjust pressure to have same radius on both tyre
Broken halfshaft	Replace halfshaft

No differential action; jamming while steering.	
CAUSES	REMEDY
Incorrect installation	Correct installation
Defective axle	Replace the differential in case it does not survive any one of the test phases
Broken halfshaft	Replace halfshaft
Bent halfshaft	Replace halfshaft

Excess of noise	
CAUSES	REMEDY
Incorrect installation	Correct installation
Defective axle	Replace the differential in case it does not survive any one of the test phases
Overloading/ incorrect weight distribution	Remove excessive weight and redistribute load, following instructions related to the vehicle
Different rotation radius of the tyres	Replace the tyre or adjust pressure to have same radius on both tyre
Bent or broken halfshaft	Replace halfshaft
Incorrect wheel adjustment	Verify group integrity and wheel side bearings.
Contamination in the axle box or incorrect assembly of parts	Look for foreign particles. Check assembly of the various parts of the axle.