WEAM002702

Operation & Maintenance Manual

PC12R-8
PC12R-8 HS
PC15R-8
PC15R-8 HS

HYDRAULIC EXCAVATOR

SERIAL NUMBER

PC12R-8 - F31493 and up
PC12R-8 HS - F31493 and up
PC15R-8 - F22262 and up
PC15R-8 HS - F22262 and up

WARNING

Unsafe use of this machine may cause serious injury or death. Operators and maintenance personnel must read this manual before operating or maintaining this machine.
This manual should be kept inside the cab for reference and periodically reviewed by all personnel who will come into contact with the machine.

KOMATSU
Utility

1.4.7 SERIAL NUMBERS AND DEALER'S ADDRESS

Machine n. _____ Model _____

Engine n. _____

Travel reduction gear n. _____

Swing reduction gear n. _____

Cab n. _____

Dealer:

_____

_____

_____

_____

Address: _____

_____

_____ Tel. _____

Person to contact: _____

NOTES: _____

SAFETY AND ACCIDENT PREVENTION

2.2 GENERAL PRECAUTIONS

2.2.1 GENERAL SAFETY RULES

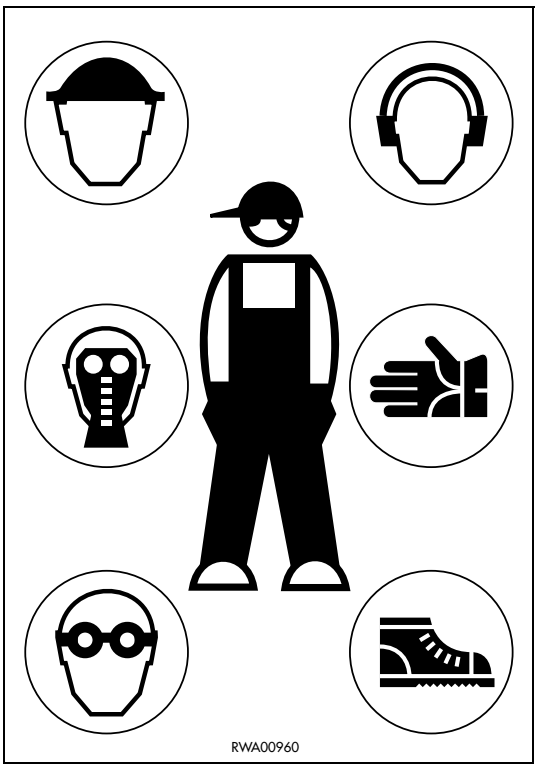
- Only trained and authorized personnel can use the machine and perform maintenance operations.
- Follow all the safety rules, precautions and instructions when using the machine or performing maintenance operations.
- When working with other operators or when the work site is often occupied by other operators, make sure that everyone knows and understands all the agreed signals and, in any case, that everyone works in such a way as to be able to see the machine and to be visible to the operator.

2.2.2 SAFETY DEVICES AND GUARDS

- Make sure that all the guards and covers are in the correct position. Have guards and covers changed or repaired if damaged. Neither use the machine without guards, nor remove the guards when the engine is running.
- Always use the proper safety devices to lock the machine when parking and fasten the safety belt.
- For the safety devices, see “3.1 SAFETY LOCKS”.
- For the safety belt, see “3.5.6 SAFETY BELT”.
- Do not remove the safety devices and always keep them in good operating conditions.
- Any improper use of the safety devices may result in serious injuries or even death.

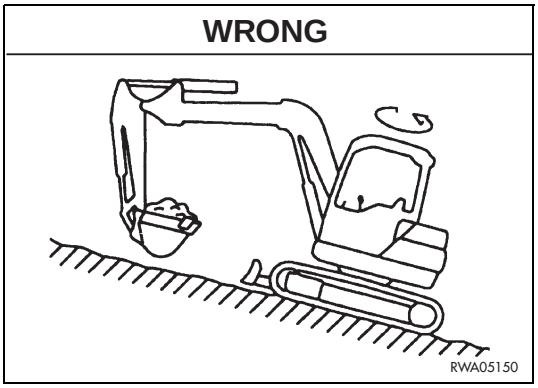
2.2.3 CLOTHING AND PERSONAL PROTECTION ITEMS

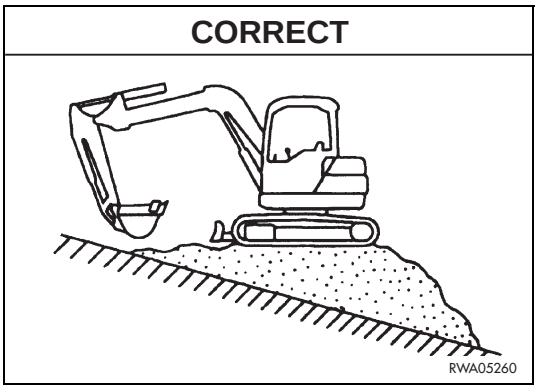
- Do not wear large or loose clothes, rings and watches and do not approach the machine with loose long hair, since they can get entagled in the moving parts of the machine and cause serious injuries or damage.
  Avoid also wearing clothes dirty with oil or fuel, since they are flammable.
- Wear a hard hat, goggles, safety shoes, mask, gloves and headphones when operating the machine or performing maintenance operations.
- Always wear safety goggles, a hard hat and heavy gloves if your job involves scattering metal chips or minute materials; these precautions are particularly useful when driving the equipment connection pins with a hammer and when blowing compressed air into the air filter and the radiator to clean them. During these operations, make also sure that no one is standing or working near the machine without the necessary protections.
- When working for 8 hours with a noise level exceeding 90 dBA, it is necessary to use headphones or ear plugs and be particularly careful, especially at the end of the work shift.



2.4.6 WORKING ON SLOPES

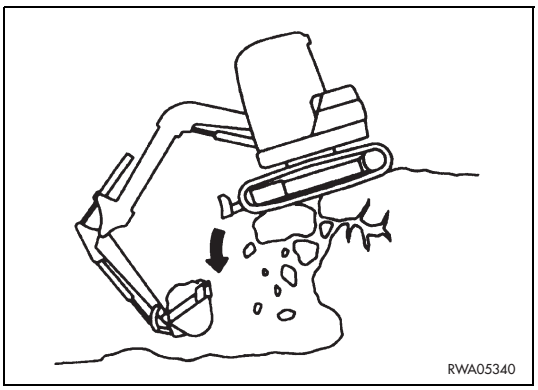
- When working on slopes, if possible avoid rotating the upper structure, since the machine may lose balance and overturn.
  It is particularly dangerous to swing on slopes when the bucket is full.
  If these operations must last longer, accumulate soil in such a way as to create a horizontal platform on which the machine can be positioned.

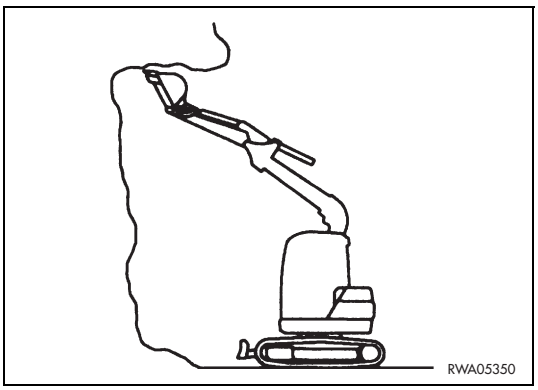




2.4.7 UNAUTHORIZED OPERATIONS

- Do not dig under overhangs.
  The protruding surface, in fact, may collapse on the machine.
- Do not dig too deeply under the front part of the machine, since the ground may collapse and cause the machine to fall down.



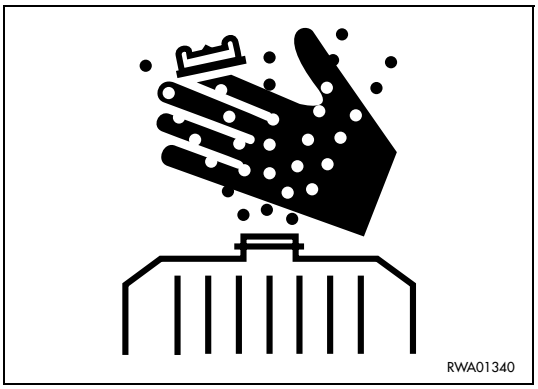


2.8.10 RULES TO BE FOLLOWED DURING FUEL OR OIL TOPPING UP

- Keep away from naked flames while refuelling or topping up oil.
- Spilled fuel or oil make the ground slippery and may cause accidents; clean any dirty area immediately and carefully.
- Always tighten the fuel tank and the hydraulic circuit oil safety caps securely.
- Do not use fuel to clean any part of the machine that may be dirty with oil or dust.
- Always top up the fuel and oil tanks in properly ventilated place and avoid smoking.
- When refuelling, hold the fuel gun firmly and keep it constantly in contact with the filler until you have finished, in order to avoid sparks due to static electricity.
- Do not fill the tank completely, in order to leave room for the fuel to expand.

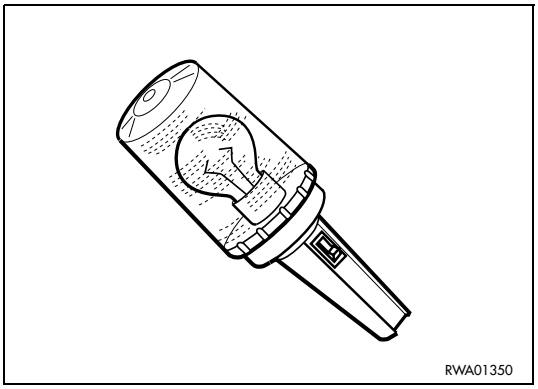
2.8.11 CHECKING THE COOLANT LEVEL IN THE RADIATOR

- Let the engine and the radiator cool down before checking the coolant level.
- If it is necessary to remove the cap with hot engine, wear suitable clothes and protections and loosen the cap slowly, in order to gradually release the pressure.



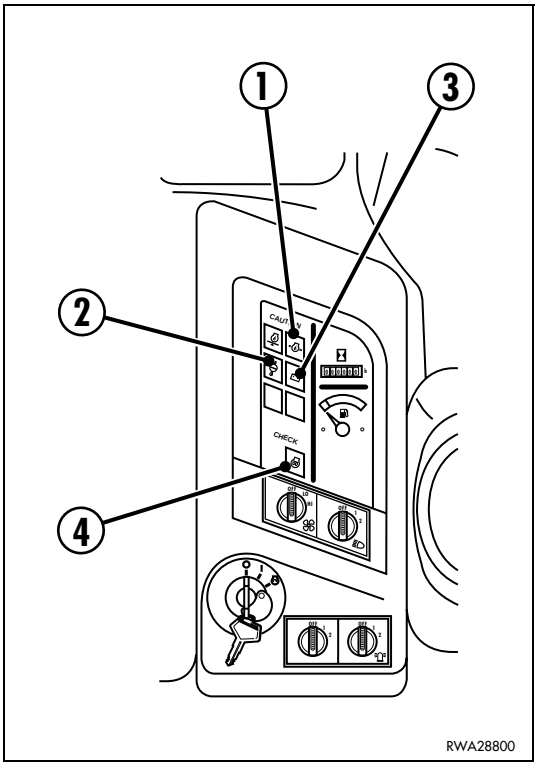
2.8.12 USING LAMPS

- When checking the fuel, oil, coolant or battery electrolyte levels, always use homologated explosion-proof lamps.
  If such lighting equipment is not used, there is danger of fire or explosion.



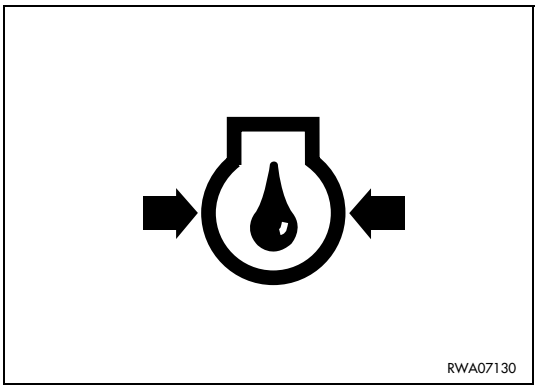
3.3.2 WARNING LIGHTS

1 - Engine oil pressure warning light
2 - Engine coolant temperature warning light
3 - Generator warning light
4 - Pre-heating warning light



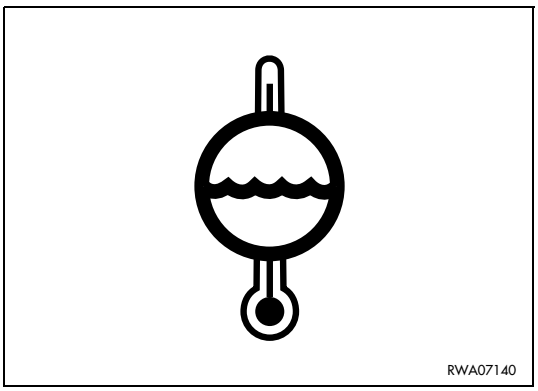
1 - ENGINE OIL PRESSURE WARNING LIGHT

This warning light comes on with engine at rest when the ignition circuit is operated and goes out as soon as the engine lubrication circuit is pressurized.
If this warning light remains on or comes on with the engine running, stop the machine immediately and try to locate the trouble.
If the warning light comes on together with the engine coolant temperature warning light, the failure refers only to the engine oil pressure.

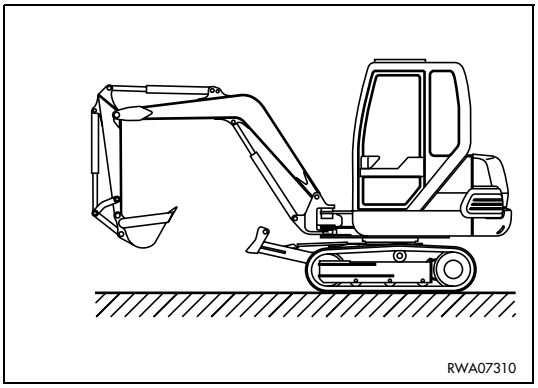


2 - ENGINE COOLANT TEMPERATURE WARNING LIGHT

It comes one for 3 seconds when the automatic check is operated or when the engine coolant exceeds the maximum temperature allowed; in this case, let the engine idle until it stops.
If this inconvenience occurs again, make sure that the radiator is clean.



3-4 - TRAVEL AND STEERING CONTROL LEVERS



DANGER

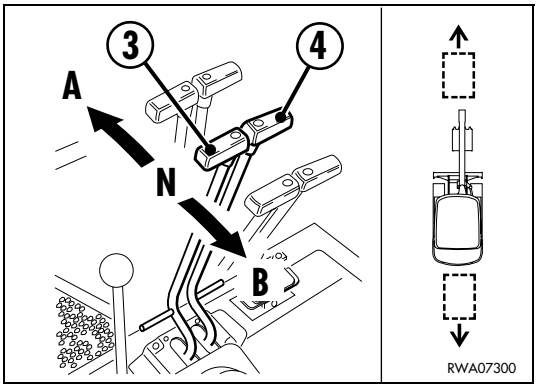
- **Before carrying out any manoeuvre with these levers, the operator must be seated in the work position with fastened safety belt.**
- **Before moving, make sure that the upper structure is directed towards the blade and that all the safety devices have been engaged; if the upper structure is turned by 180°, the controls are inverted.**
  (See "3.6.5 HOW TO MOVE THE MACHINE").
- **Failure to comply with these rules may result in serious accidents.**

The levers (3) and (4) serve to operate the left and right travel motors, respectively, and control the forward and the reverse gear according to the movements indicated.

N - Neutral

A - Forward gear

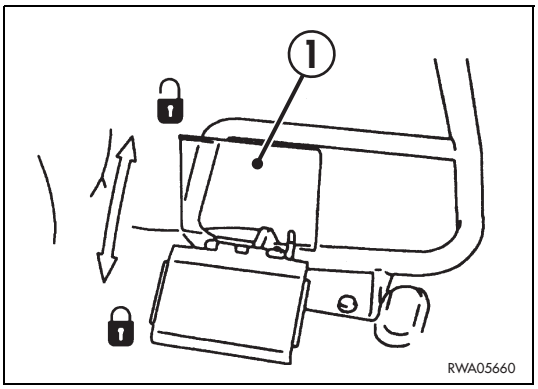
B - Reverse gear



IMPORTANT

- **All movements are locked by shifting the safety device lever to the lock position (see pos. 8/9).**

5 - BOOM SWING CONTROL PEDAL



DANGER

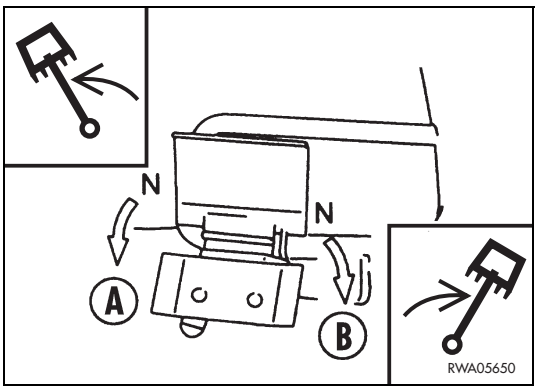
- **Always engage the safety device (1) when the use of this control pedal is not required, during travel and when parking the machine.**
  If this control pedal is inadvertently pressed, it may cause serious accidents.

This pedal controls the boom swing to the right and to the left according to the movements indicated.

N - Neutral

A - Swing to the left

B - Swing to the right



IMPORTANT

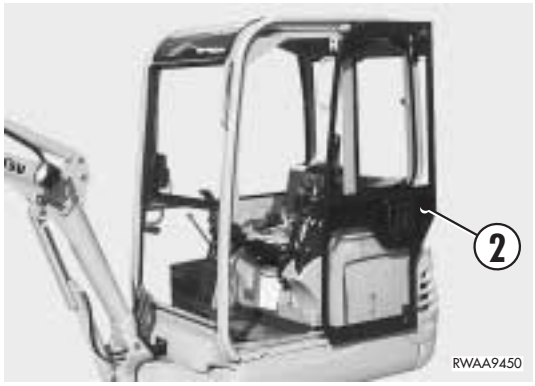
- **All movements are locked by shifting the safety device lever to the lock position (see pos. 8/9).**
- **The boom swing is useful when it is necessary to dig beyond the track outline; do not use it during the work cycle.**

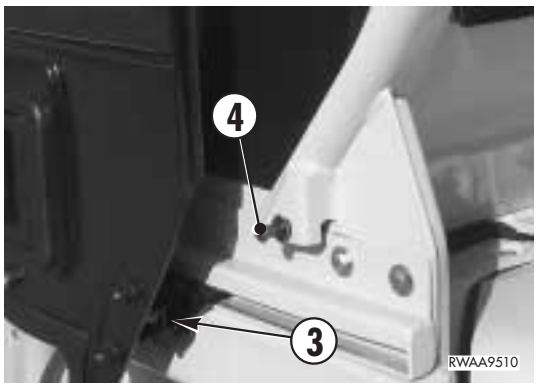
3.5.3.1 SLIDING DOOR

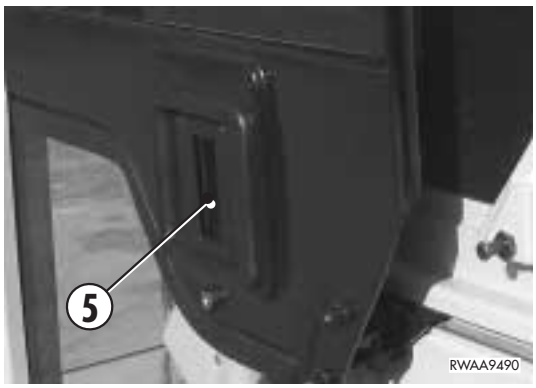
CAUTION

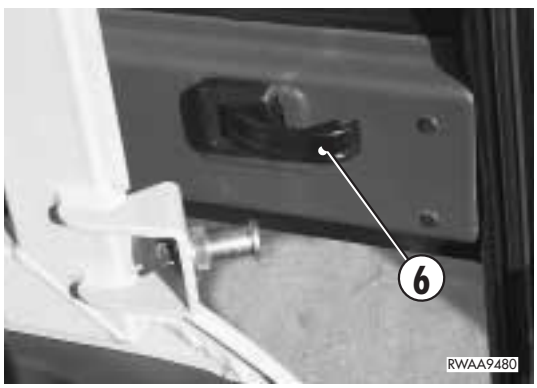
- **Make sure that the sliding door is locked either when open and when closed.**
- **Open or close the sliding door only when the machine is positioned on level ground.**
- **Avoid opening the sliding door on slopes, since the effort required for this operation may change suddenly.**
- **Always use the handle to open or close the door.**

- The cab door (2) is a sliding door and it can be opened completely and held in position by the couplings (3).
  The coupling is automatic and it engages when the door strikes against the retainer (4).
  To release the door from the coupling (3), use the external handle (5) or the internal lever (6).
- When closing the door, pull the handle to release the lock and move the door forward.









3.6.2 STARTING THE ENGINE

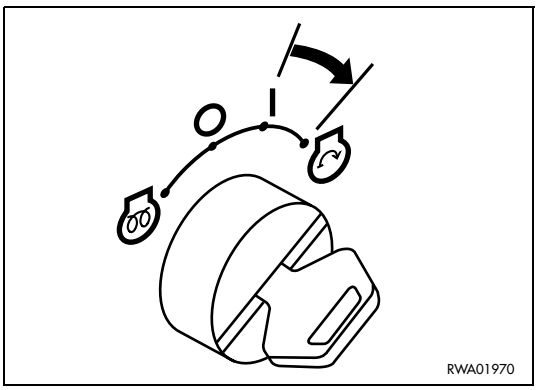
DANGER

- **Before starting the engine, carefully read the instructions and information regarding safety given in this manual and make sure that you know the controls.**
  From the moment in which the engine is started, the operator is directly responsible for any damage that may be caused by wrong manoeuvres and non-compliance with the safety regulations and the rule of the road.
- **Before starting the engine, make sure that there is no one within the operating radius of the machine and sound the horn.**
- **Before starting the engine, turn the ignition key to position «I» to operate the automatic check and make sure that all the warning lights are working correctly.**

3.6.2.1 STARTING WITH WARM ENGINE OR IN TEMPERATE CLIMATES

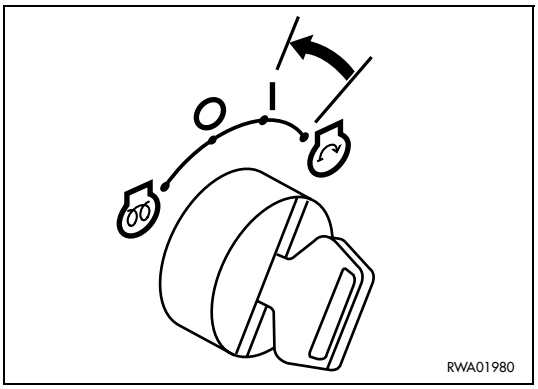
1 - Turn the ignition key directly to position «» (START).

2 - As soon as the engine starts, release the ignition key, which will automatically return to position «I».



IMPORTANT

- **If the engine does not start within 15 seconds, release the key, which will automatically return to position «I» and wait for 30 seconds before trying again.**



3.9 TRANSPORTING THE MACHINE ON MOTOR VEHICLES

3.9.1 LOADING AND UNLOADING THE MACHINE

DANGER

- **The loading and unloading of the machine on/from the means of transport must be carried out on a flat surface and at a safety distance from the edges of ditches or from the road side.**
- **Block the means of transport by positioning wedges before and behind each wheel.**
- **Make sure that the ramps are sufficiently strong; if necessary, reinforce them with blocks, in order to prevent any dangerous bending.**
- **Make sure that the ramps have the same length, are firmly anchored to the motor vehicle, are parallel to each other and perpendicular to the loading board; the distance between the ramps must be suitable for the machine gauge.**
- **Position the ramps with a maximum inclination of 15°.**
- **Remove any trace of oil, grease or ice from the ramps and the loading board.**
- **Do not change direction when the machine is already on the ramps; if necessary, go down and find the correct direction.**

1 - The machine must get on the ramps with the bucket (1) directed forward and raised from the ground.

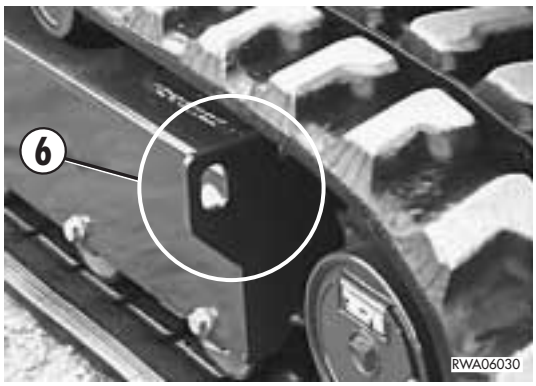
2 - Once the machine has been loaded, rotate the upper structure by 180° and engage the antirotation lock, lower the blade (2) and the work equipment to the ground and shift the safety device lever to the lock position.

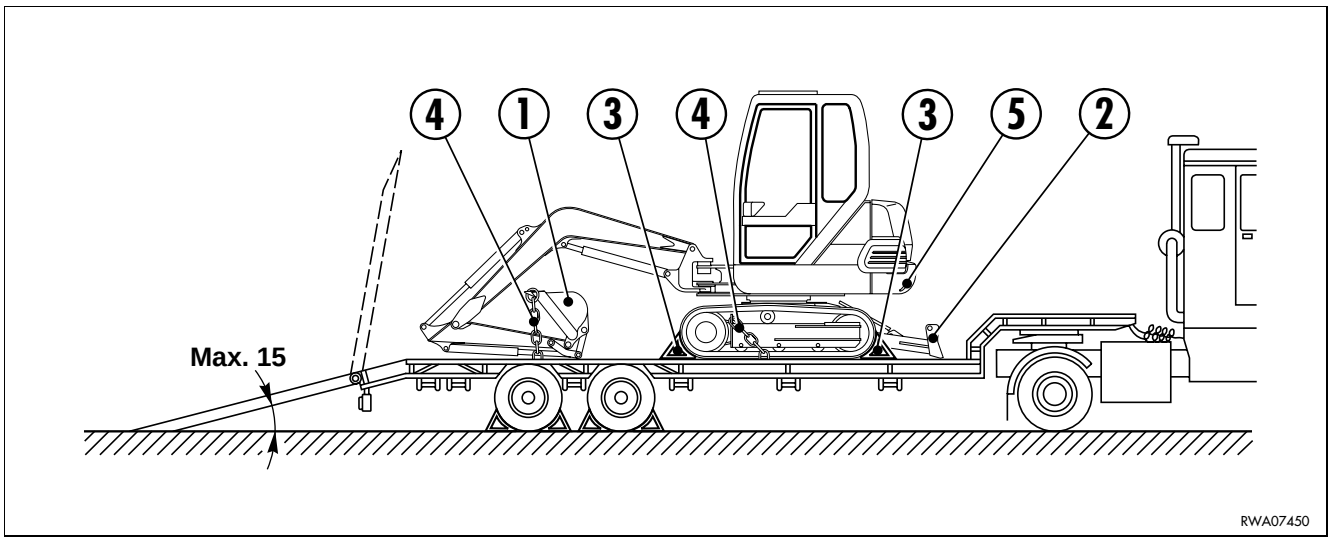
3 - Stop the engine and remove the ignition key.

4 - Keep the machine in position also by putting wedges (3) before and behind the tracks.

5 - Fix the machine with tie-downs or chains (4) in the anchorage points (6).

6 - Protect the end of the exhaust pipe (5).





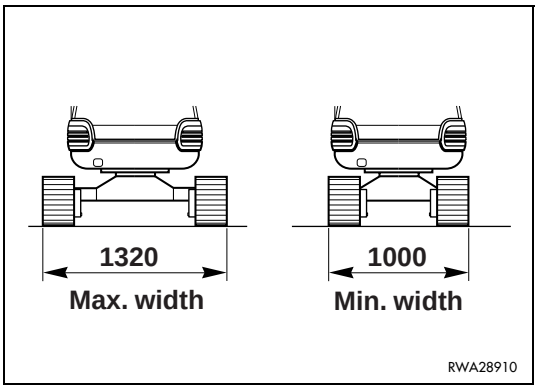
3.14 USING THE MACHINE WITH VARIABLE TRACK GAUGE

The machine with variable track gauge makes it is easier to pass through narrow spaces and increases safety when carrying out side digging operations.
It is possible to adjust the track gauge as desired within the following range:

Track gauge width:

Max. 1320 mm

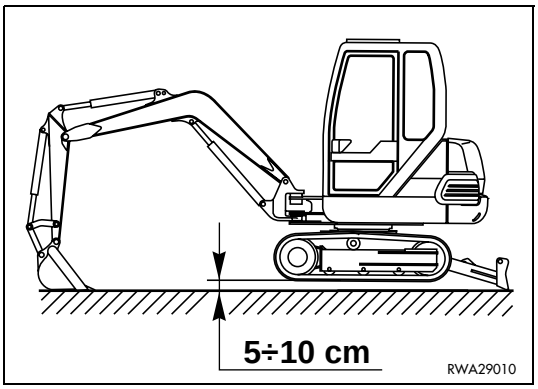
Min. 1000 mm



3.14.1 HOW TO USE THE VARIABLE TRACK GAUGE

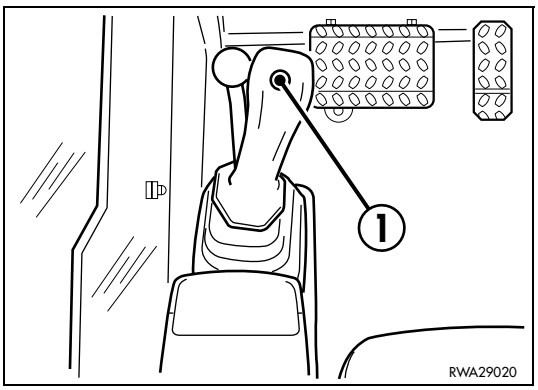
DANGER

- **If the track gauge width is modified on slopes, the lateral stability of the machine may change. For this reason it is advisable to carry out this operation on level surfaces.**
- **When the track gauge is reduced as much as possible, the lateral stability of the machine is reduced as well. In working sites where the machine may overturn, widen the track gauge and be careful during travel.**



CAUTION

- **Always raise the machine before modifying the track gauge. If the machine is not raised, the shoes and the hydraulic motors may get damaged.**

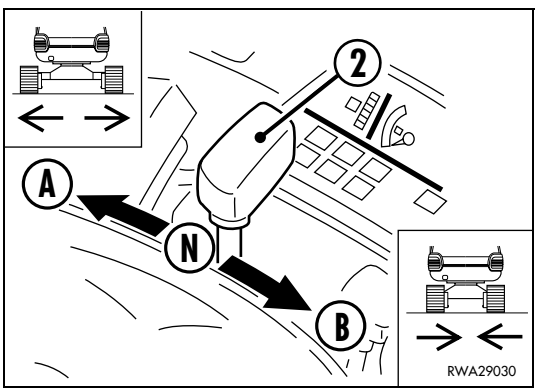


1 - Stop the machine on a level surface.

2 - Raise the machine by means of the work equipment and the blade, so that the lower shoes are at a distance of approximately 5-10 cm from the ground.

3 - Press the button (1) positioned on the left joystick lever (see ”3.3.3 pos. 7 VARIABLE TRACK GAUGE CONTROL PUSH BUTTON”).

4 - Shift the blade control lever (2) forward to widen the track gauge or backward to narrow it (see ”3.3.5 pos. 6 BLADE CONTROL LEVER”).



MAINTENANCE

4.4 DRIVING TORQUES FOR SCREWS AND NUTS

4.4.1 STANDARD DRIVING TORQUES

★ Nm (Newton metre): 1 Nm = 0.102 kgm

Thread diameter (mm)	Pitch (mm)	Spanner size (mm)	8.8		10.9	
			kgm	Nm	kgm	Nm
6	1	10	0.96 ± 0.1	9.5 ± 1	1.3 ± 0.15	13.5 ± 1.5
8	1.25	13	2.3 ± 0.2	23 ± 2	3.2 ± 0.3	32.2 ± 3.5
10	1.5	17	4.6 ± 0.5	45 ± 4.9	6.5 ± 0.6	63 ± 6.5
12	1.75	19	7.8 ± 0.8	77 ± 8	11 ± 1	108 ± 11
14	2	22	12.5 ± 1	122 ± 13	17.5 ± 2	172 ± 18
16	2	24	19.5 ± 2	191 ± 21	27 ± 3	268 ± 29
18	2.5	27	27 ± 3	262 ± 28	37 ± 4	366 ± 36
20	2.5	30	38 ± 4	372 ± 40	53 ± 6	524 ± 57
22	2.5	32	52 ± 6	511 ± 57	73 ± 8	719 ± 80
24	3	36	66 ± 7	644 ± 70	92 ± 10	905 ± 98
27	3	41	96 ± 10	945 ± 100	135 ± 15	1329 ± 140
30	3.5	46	131 ± 14	1287 ± 140	184 ± 20	1810 ± 190

IMPORTANT

- **This driving torque table is not valid for screws or nuts that must lock parts made of nylon or similar materials onto washers or components made of nylon or nonferrous materials.**

4.4.2 SPECIFIC DRIVING TORQUES

ITEM	DESCRIPTION	kgm	Nm
Engine	Front support central screw Rear support central screw	5.5 ± 0.5 5.5 ± 0.5	54 ± 5 54 ± 5
Engine supports	Screws for fastening to the engine	6.5 ± 0.5	64 ± 5

4.7.5 MAINTENANCE EVERY 100 HOURS OF OPERATION

N.	PART	OPERATION	PAGE
a	Joint and ball-bearing ring articulations	Lubricate	157
b	Variable track gauge sliding guides	Lubrication	159
c	Air cleaner	Clean the cartridge	160

4.7.6 MAINTENANCE AFTER THE FIRST 250 HOURS OF OPERATION

(Operations to be carried out together with those prescribed at point “4.7.7 MAINTENANCE EVERY 250 HOURS OF OPERATION”)

N.	PART	OPERATION	PAGE
a	Travel reduction gears	Change the oil	171
b	Engine valves	Check the clearance	174

4.7.7 MAINTENANCE EVERY 250 HOURS OF OPERATION

N.	PART	OPERATION	PAGE
a	Fan belt	Check the fan belt condition and its tension	161
b	Battery	Check the electrolyte level	162
c	Travel reduction gears	Check the levels (n. 2)	163
d	Hydraulic oil drainage filter	Change	164
e	Engine oil	Change	165

4.7.8 MAINTENANCE AFTER THE FIRST 500 HOURS OF OPERATION (Only for machines in which the synthetic biodegradable oil type HEES is used)

(Carry out these operations together with those to be performed every 500 HOURS, see “4.7.9 MAINTENANCE EVERY 500 HOURS OF OPERATION”)

N.	PART	OPERATION	PAGE
a	Hydraulic oil and suction filter (Only for machines with synthetic biodegradable oil)	Change oil and clean filter	172

4.7.1.g CHANGING THE RUBBER TRACK

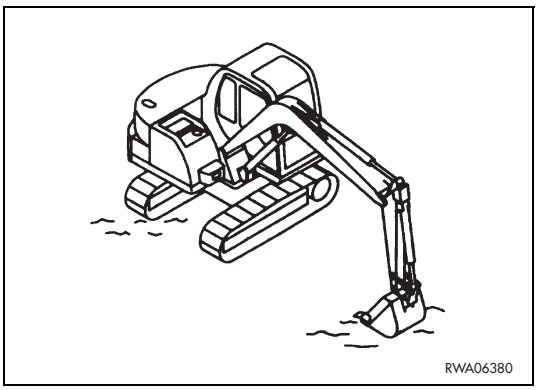
DANGER

- **This operation must be carried out by two persons. One operator must sit in the cab and move the machine according to the signals of the operator who carries out the check and the adjustment.**
- **The shoe tension must be checked with the frame lifted from the ground. Do not operate any control lever while the operator is carrying out the check.**
- **During the check, do not remove any part except the shoe to be changed.**
- **If the shoe tension cannot be loosened by proceeding as indicated below, contact your Komatsu Utility Dealer, who will carry out the necessary repairs.**

REMOVING THE RUBBER TRACK

DANGER

- **The grease contained in the hydraulic cylinder is under pressure. For this reason, do not loosen the greasing valve (2) giving it more than one turn; if the valve is loosened excessively, it may be pushed out due to the grease pressure and this is very dangerous for the operator.**
  Do not loosen any other component in addition to the valve (2).
- **When assembling or removing the track, before rotating the sprocket make sure that the grease contained in the cylinder has been removed.**
- **If you notice excessive resistance while injecting grease, slowly move the machine forward and backward for a short distance.**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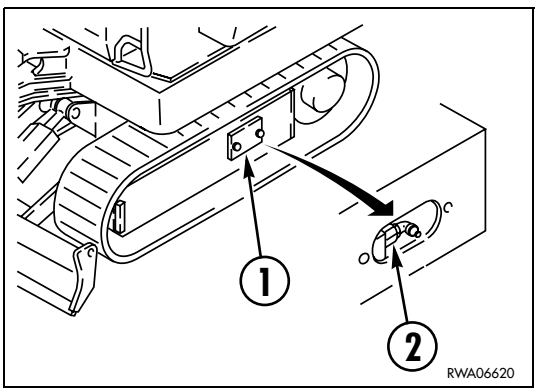
Stop the machine on a firm and level surface, after lowering the equipment to the ground.

1 - Raise the undercarriage by means of boom and arm.
When carrying out this operation, move the control levers slowly.

2 - Loosen the screws and remove the cover (1) to reach the adjustment point.
Use a 17 mm hexagon spanner.



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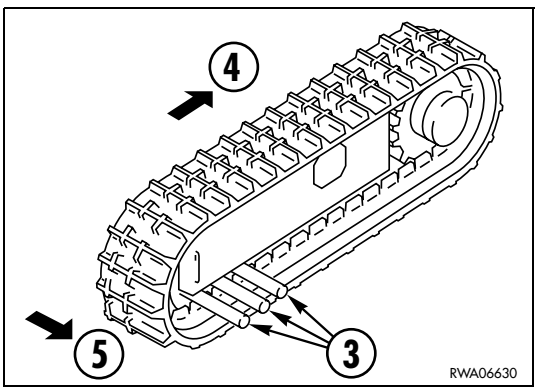
3 - Gradually loosen the greasing valve (2) to let the grease out; do not give the valve more than one turn.
Use a 19 mm hexagon spanner.

4 - If the grease does not flow out freely, move the track slowly forward and backward for a short distance.

5 - Insert the steel tubes (3) inside the track, rotate the sprocket as if in reverse (4), so that the steel tubes move with the track and engage in the idler roller; slide the track (5) sidewards and remove it.



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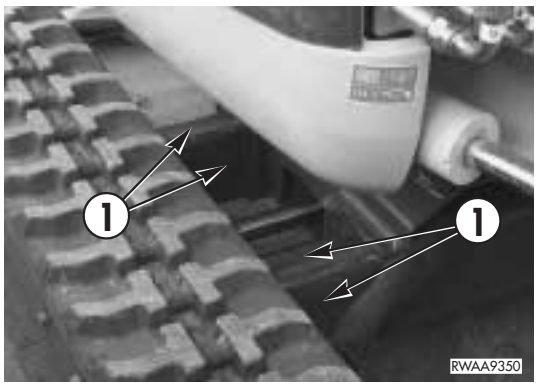
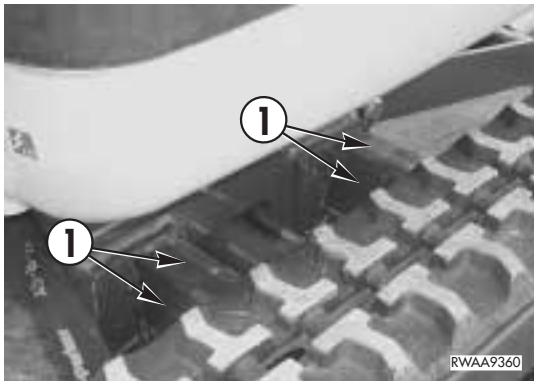
4.7.5.b LUBRICATING THE VARIABLE TRACK GAUGE SLIDING GUIDES (PC12R HS – PC15R HS)

IMPORTANT

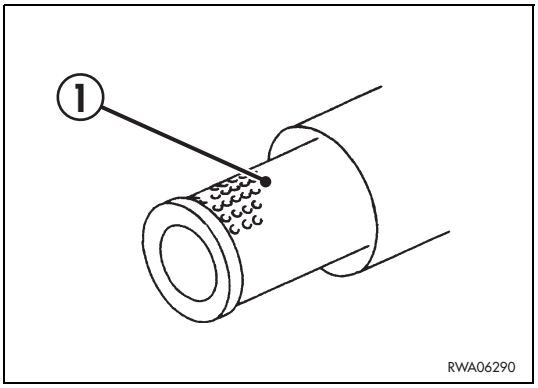
- **Carefully clean the sliding guides before applying grease.**
- **If the machine is used in difficult conditions, carry out this maintenance operation more frequently.**

This operation must be carried out with the machine resting on level ground and the track gauge widened as much as possible (see ”3.14.1 HOW TO USE THE VARIABLE TRACK GAUGE”).
For the lubrication, use a brush and smear the prescribed grease on all the surfaces of the guides (1) (see ”4.3 FUEL, COOLANT AND LUBRICANTS”).





4.7.9.d CHANGING THE AIR CLEANER CARTRIDGE



DANGER

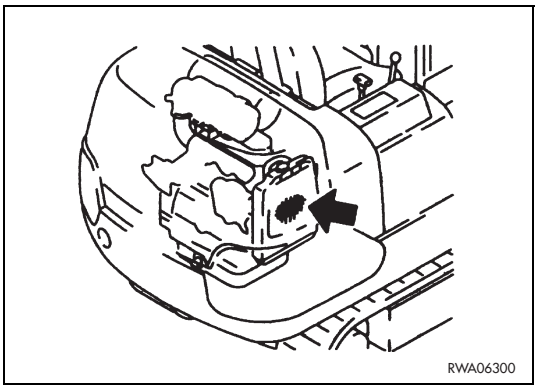
- **Remove the air cleaner (1) only after stopping the engine and do not start the engine if the air cleaner casing is open.**

For this operation, it is necessary to remove the filtering element as described at point 3.7.5.c for the periodical cleaning operations to be carried out every 100 hours.

IMPORTANT

- **Change the filtering element after 5 cleaning operations or after one year.**

4.7.9.e CLEANING THE OUTSIDE OF THE RADIATORS



DANGER

- **If compressed air, steam or water are directed against a person, they may cause injuries.**
  Always wear an eye shield and safety shoes.

The outside of the radiators must be cleaned with a jet of compressed air and, if necessary, with a low-pressure water or steam washing cycle; the specific products available on the market can be certainly used, provided that the instructions given on the package are followed and that the washed parts are carefully dried at the end of the operations.

IMPORTANT

- **Do not use products containing oily substances, even if in slight quantities, since these facilitate the adhesion of dust, which affects the heat exchange adversely.**
- **Clean the outside of the radiators whenever the radiator or the heat exchanger are dirtied, even if accidentally, with oil, diesel oil, greasy or oily substances.**
- **If the machine is used in dusty places, clean the radiator and the exchanger more frequently, in order to avoid any clogging of the fins.**

5.1.4 TECHNICAL CHARACTERISTICS PC12R HS (VARIABLE TRACK GAUGE)

TOTAL MASS

Total mass with TOPS canopy and steel shoes	kg	1630
Total mass with TOPS cab and steel shoes	kg	1755
Total mass with TOPS canopy and rubber tracks	kg	1555
Total mass with TOPS cab and rubber tracks	kg	1680

STANDARD BUCKET CAPACITY

Capacity (SAE)	m^3	0.04

ENGINE

Komatsu diesel engine model		3D68-N3FAE
Maximum power (2450 rpm EEC 80/1269)	kW	10.3
Maximum torque (1800 rpm EEC 80/1269)	Nm	49

ELECTRICAL SYSTEM

Alternator		12V
Electrical output		20 A
Earthing		negative
Battery		45 Ah - 12V
Starter	kW	0.8

UPPER STRUCTURE ROTATION

Upper structure rotation speed	rpm	9.0

SPEEDS

Travel speed with steel shoes	km/h	1.9
Travel speed with rubber tracks	km/h	2.0
Travel speed with increase and steel shoes (optional)	km/h	3.7
Travel speed with increase and rubber tracks (optional)	km/h	3.8

5.1.14 LIFTING CAPACITY WITH LOWERED BLADE PC12R HS (VARIABLE TRACK GAUGE WIDENED)

CAUTION

- **Carry out the lifting operations only with the machine resting on firm and level ground.**
- **Carry out the lifting operations only with the blade equipped with the appropriate safety device.**

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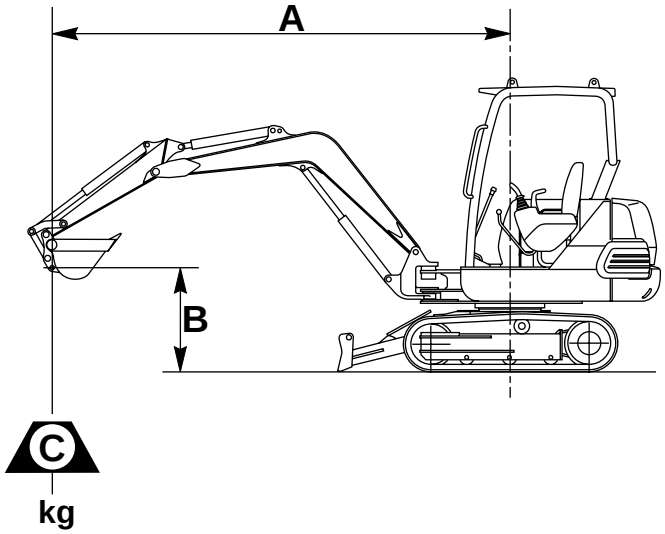
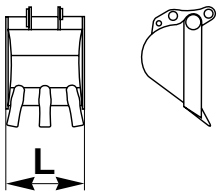


: Raiting over front

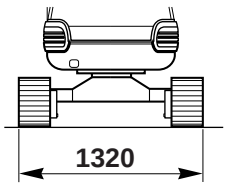
: Raiting over side

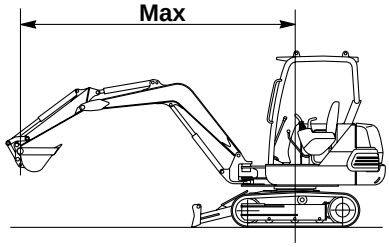
❋ : Load is limited by hydraulic capacity rather than tipping



Bucket width L= 350 mm
Bucket weight kg 24

A - Reach from swing center
B - Bucket hook height
C - Lifting capacity





Arm lenght	A / B		2 m			
880 mm	2m	C	❋ 260	❋ 260	160	❋ 200
	1m		280	❋ 360	150	❋ 205
	0		270	❋ 380	150	❋ 210
	-1m		275	❋ 375	175	❋ 260
1130 mm	0	C	260	❋ 360	120	❋ 185