



OPERATOR'S MANUAL

Hydraulic Excavator

SK350-9L

Tier 3

LC91Z00031P1

Issued October 2012

APPLICABLE:

SK350-9L YC13U3001~

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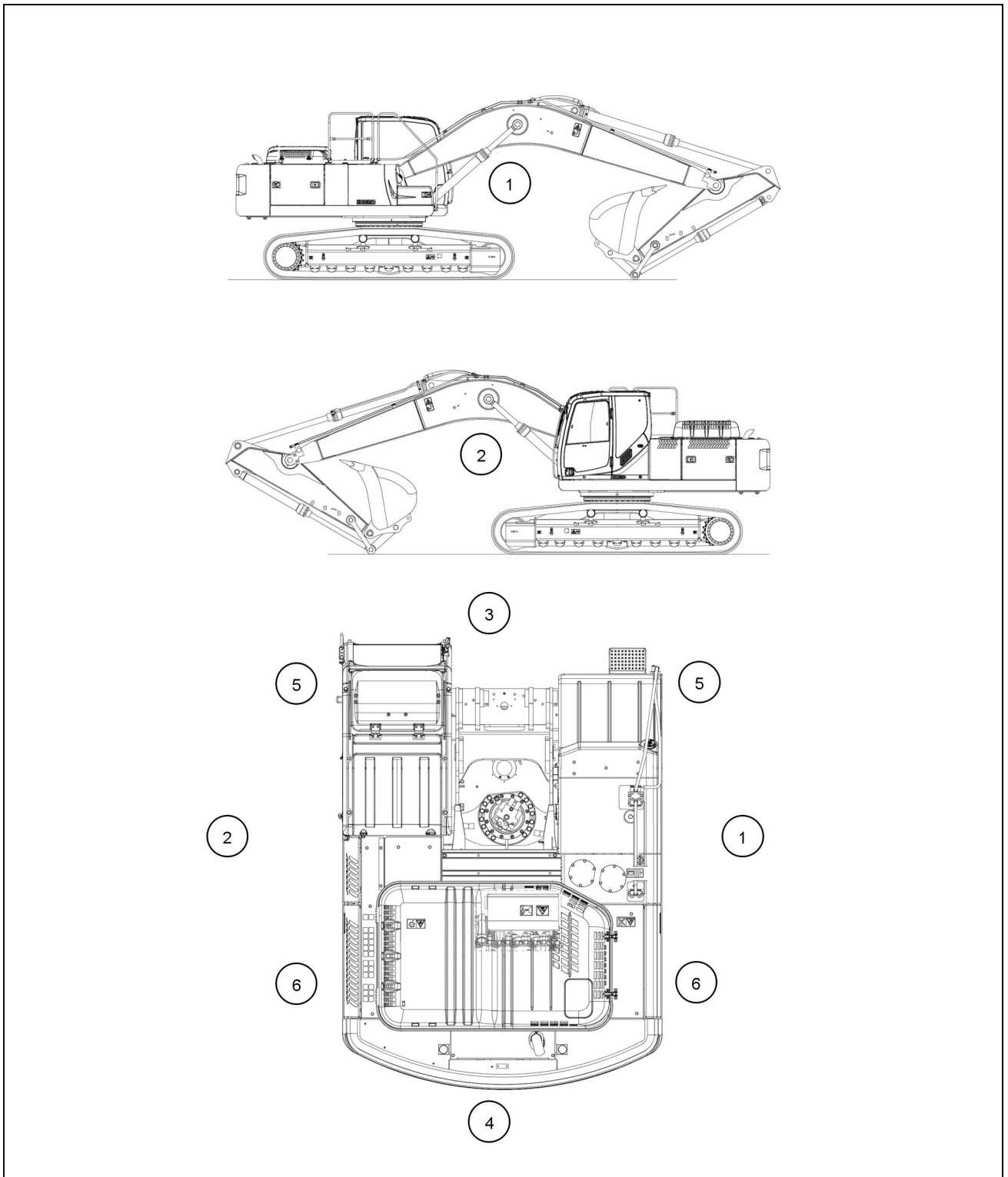


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Right, left, front and rear of the machine

The terms right-hand, left-hand, front, and rear are used in this manual to indicate the sides as they are seen from the operator seat when the cab is over the idler wheels. Normal travel mode for the machine is with the cab over the idler wheels and the travel motors below the upper structure (counterweights).



RCPH11EXC002HAD 1

1 Right side of machine
2 Left side of machine

3 Front of machine
4 Rear of machine

5 Idler wheels
6 Travel motor

⚠ Seat belts ⚠

Seat belts must be worn at all times.

Seat belt inspection and maintenance:

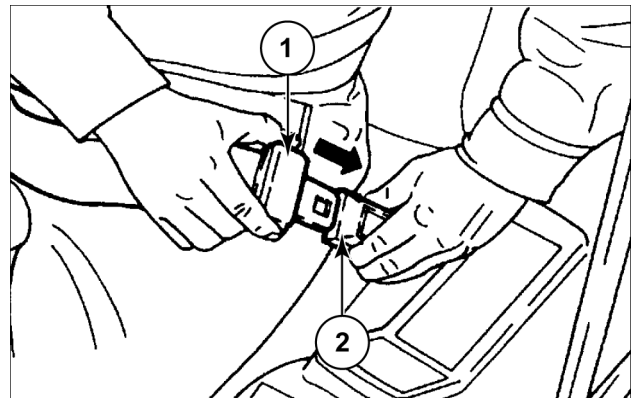
- Keep seat belts in good condition.
- Keep sharp edges and items that can cause damage away from the belts.
- Periodically check belts, buckles, retractors, tethers, slack take-up system, and mounting bolts for damage and wear.
- Replace all parts that have damage or wear.
- Replace belts that have cuts that can make the belt weak.

Fasten the seat belt

Fasten the seat belt as follows:

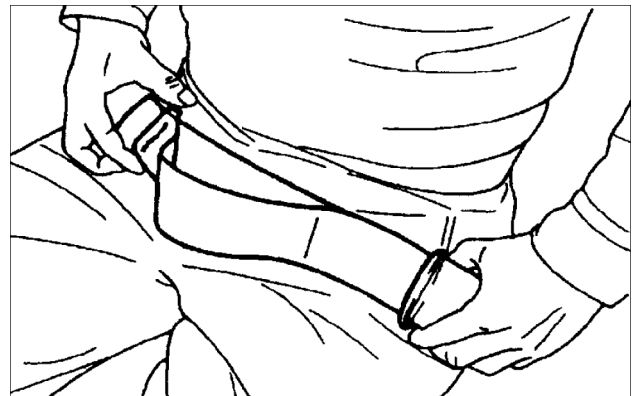
1. Insert the retaining clip (1) into the buckle (2).

- Check that bolts are tight on the seat bracket or mounting.
- If belt is attached to seat, make sure seat or seat brackets are mounted securely.
- Keep seat belts clean and dry.
- Clean belts only with soap solution and warm water.
- Do not use bleach or dye on the belts, as this can weaken the belts.



RAPH12CEX0360AA 3

2. Confirm the belt is securely fastened and adjust belt length.

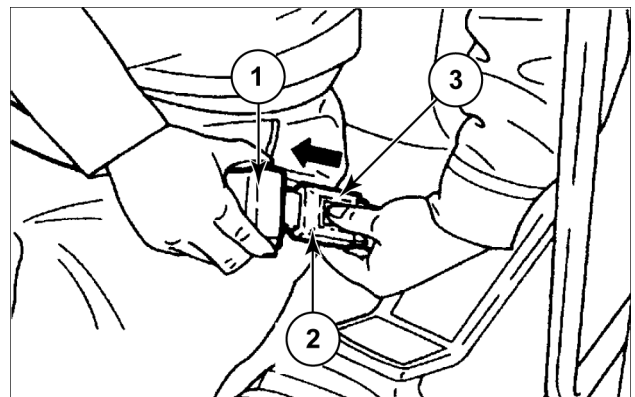


RAPH12CEX0361AA 4

Unfasten the seat belt

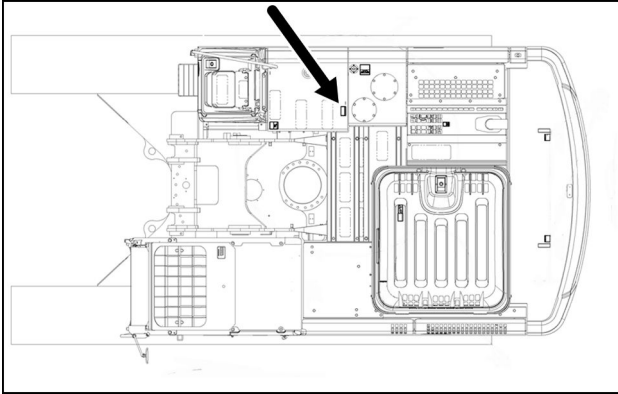
Unfasten the seat belt as follows:

1. Press the button (3) on the buckle (2).
2. Slide out the retaining clip (1).

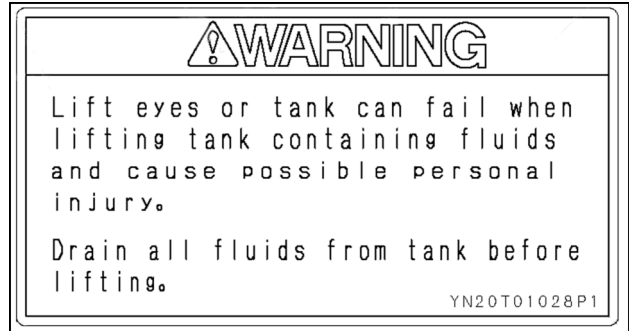


NH0194 5

Drain fluids in tanks



RAPH12CEX0550AA 7



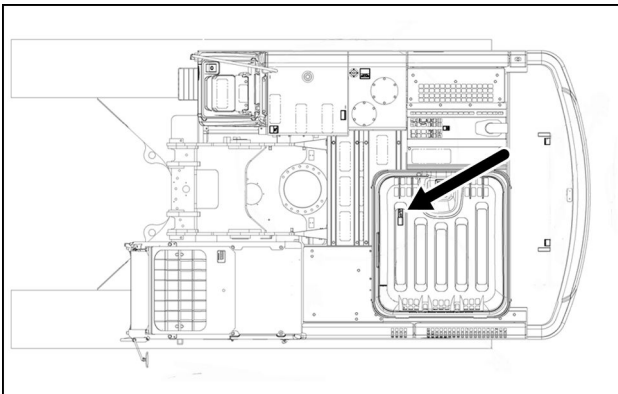
YN20T01028P1 8

WARNING

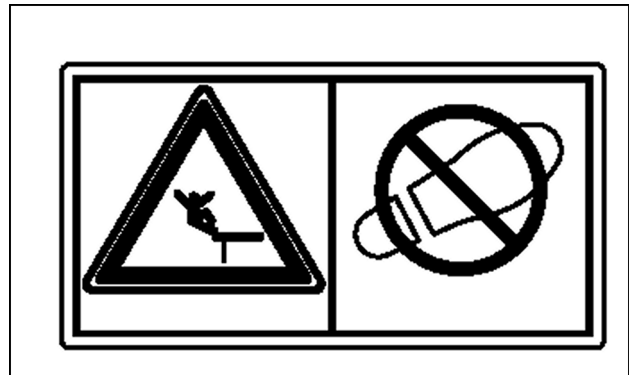
Lift eyes or tank can fail when lifting tank containing fluids and cause possible personal injury. Drain all fluids from tank before lifting. Failure to comply could result in death or serious injury. This WARNING safety sign is located on top of the fuel tank.

Part number – YN20T01028P1
Quantity – 1

Do not step on



RAPH12CEX0550AA 9



ZL11M02708 10

WARNING

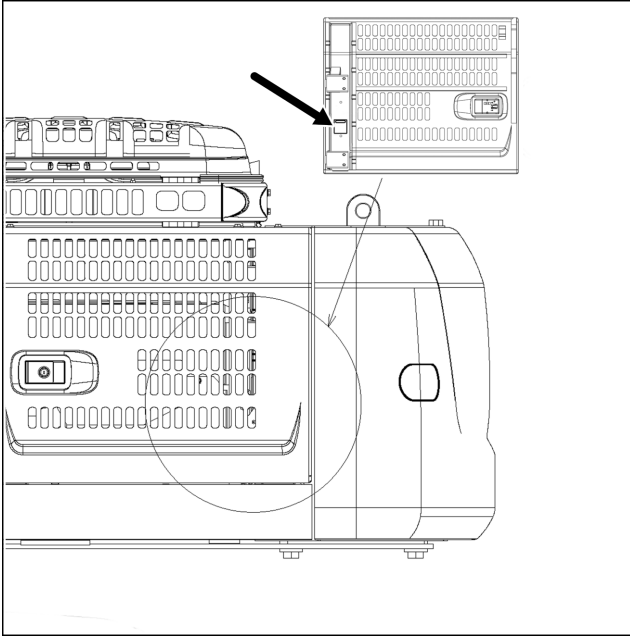
There is a danger of falling when work is conducted on areas above the ground. Do not step on the area where this safety sign is attached. Failure to comply could result in death or serious injury.

- Do not approach edges
- Use the appropriate equipment, such as ladders or platform when working above ground. In addition, strap yourself to the proper equipment accordingly.
- Do not leave any tools around the working area.
- Use extreme caution to avoid slipping while walking.
- Do not jump on or from the machine, Use the steps and handrails and securely maintain a three point contact while mounting or dismounting at all times.

This warning safety sign is located on top of the engine hood.

Part number – ZL11M02708
Quantity – 1

Antifreeze solution



RAPH12CEX0701GA 37

FILLED WITH ANTIFREEZE
THIS MACHINE IS FILLED WITH FOLLOWING
ANTIFREEZE SOLUTION.

JIS	K2234-1981
NAME	LONG LIFE COOLANT (LLC)
FREEZING POINT	-34 °C (-29.2 °F)
ANTIFREEZE SOL.	50 %

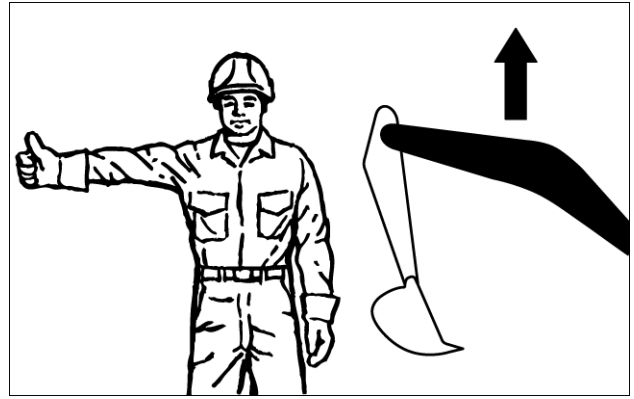
This safety sign is located on the back sided of the radiator compartment door.
 Part number – YN20T01832P1
 Quantity – 1



YN20T01832P1 38

Raise boom

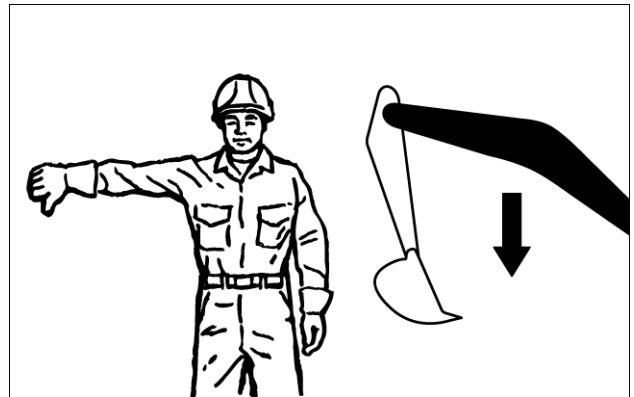
Face machine operator, extend right arm out horizontally from shoulder, make a fist with thumb up.



NH0085 5

Lower boom

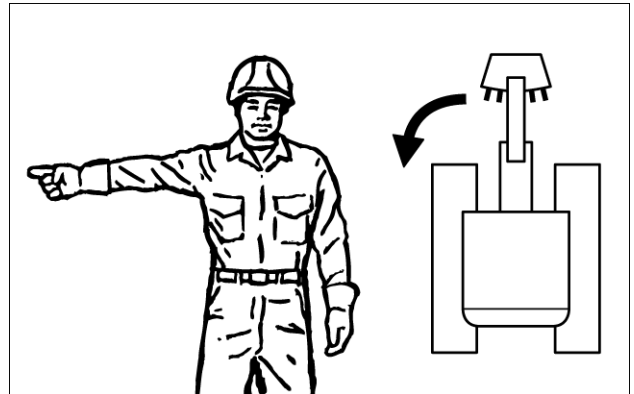
Face machine operator, extend right arm out horizontally from shoulder, make a fist with thumb down.



NH0086 6

Swing left

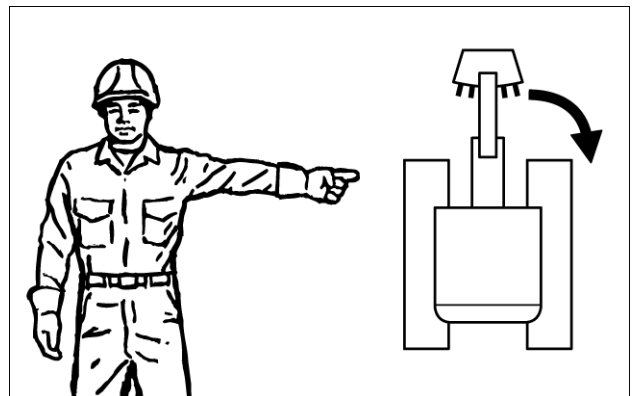
Face machine operator, extend right arm out horizontally from shoulder, make a fist with index finger pointing in swing direction.



NH0087 7

Swing right

Face machine operator, extend left arm out horizontally from shoulder, make a fist with index finger pointing in swing direction.



NH0088 8

AIR SUSPENSION SEAT

NOTE: The adjustment procedures of the air suspension seat are the same of the mechanical seat, except for the suspension adjustment.

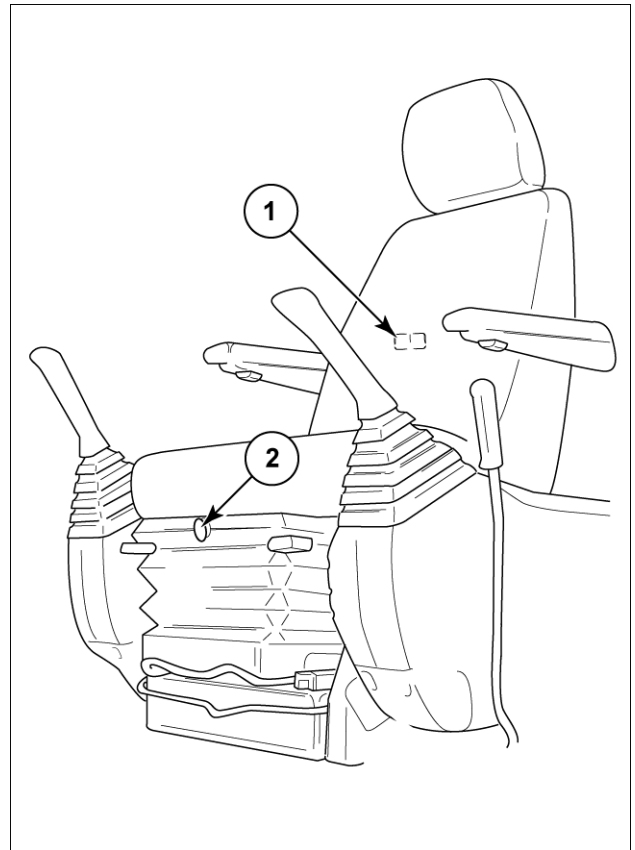
Suspension adjustment

- turn the starter key to ON position.
- push the manual air valve **(2)** to increase the suspension.
- pull the manual air valve **(2)** to decrease the suspension.

Cushion heater

- turn the starter key to ON position.
- press the switch **(1)**, located on the rear side of the backrest, to **I** position.

NOTICE: In order to preserve the charging of the batteries, it is recommended that the cushion heater is activated with the engine is running.

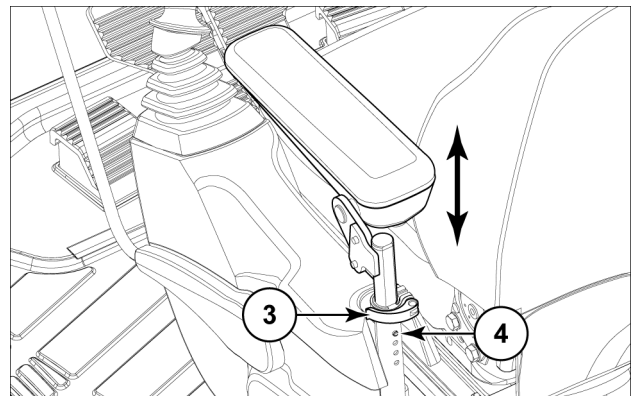


NH0191 2

ARMREST HEIGHT ADJUSTMENT

The height of the right and left armrests is adjustable in four positions:

- Open the clamp **(3)**.
- Push the pin **(4)**.
- Slide the armrest up or down to the desired height until the pin locks.
- Close the clamp **(3)**.

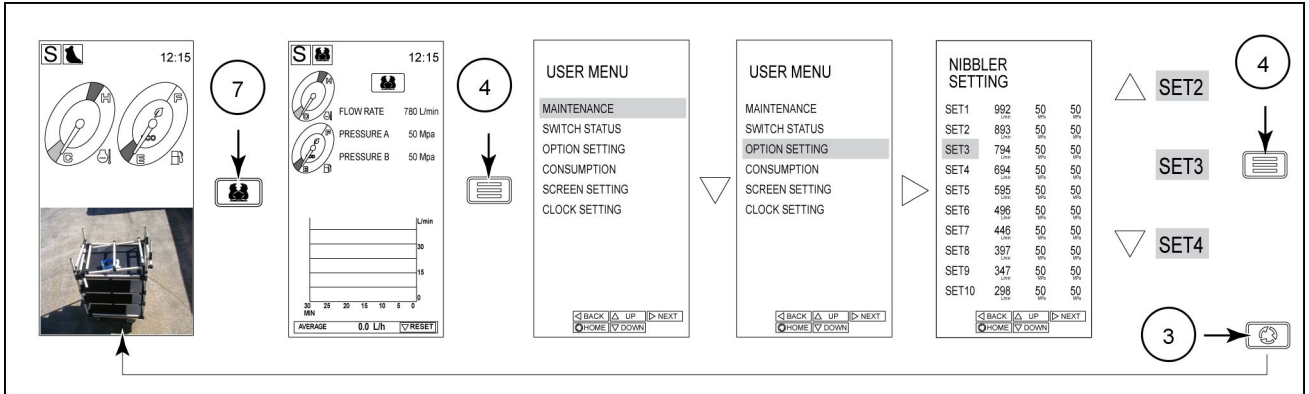


NHC0247 3

OPTION SETTING (Nibbler)

Depending upon the nibbler mounted, it is possible to select one of the ten pre-set flow rate and pressure settings.

- With the starter key in **ON** position or the engine running, keep pressed Nibbler mode button **(7)** until the flow rate and pressure screen appears.
- Press Menu button **(4)** to enter into USER MENU screen.
- Press DOWN button and select OPTION SETTING. Press NEXT button to enter the nibbler setting screen.
- Select the desired set pressing button UP or DOWN. Press Menu button to confirm the selection.
- Press the screen change button **(3)** to return to the main display.

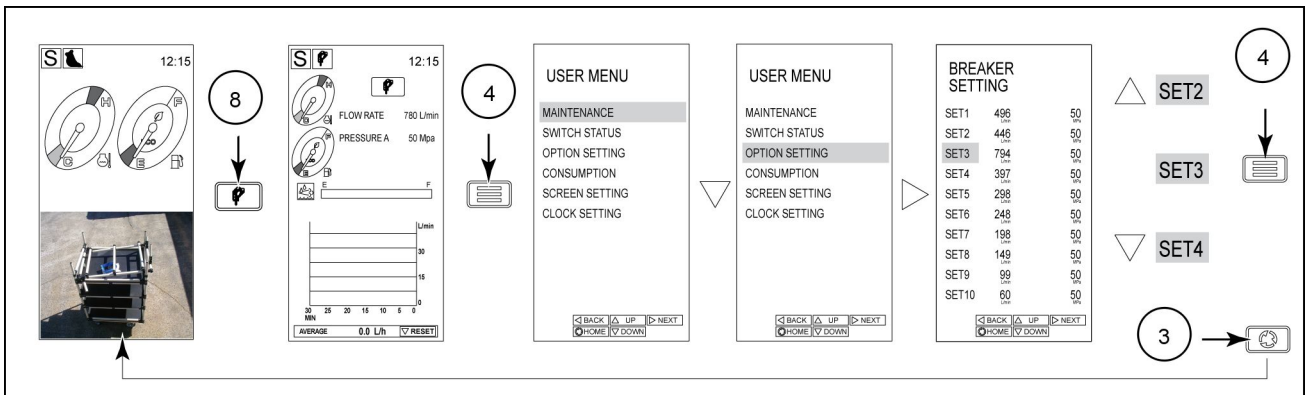


RAPH12CEX0193EA 8

OPTION SETTING (Breaker)

Depending upon the breaker mounted, it is possible to select one of the ten pre-set flow rate and pressure settings.

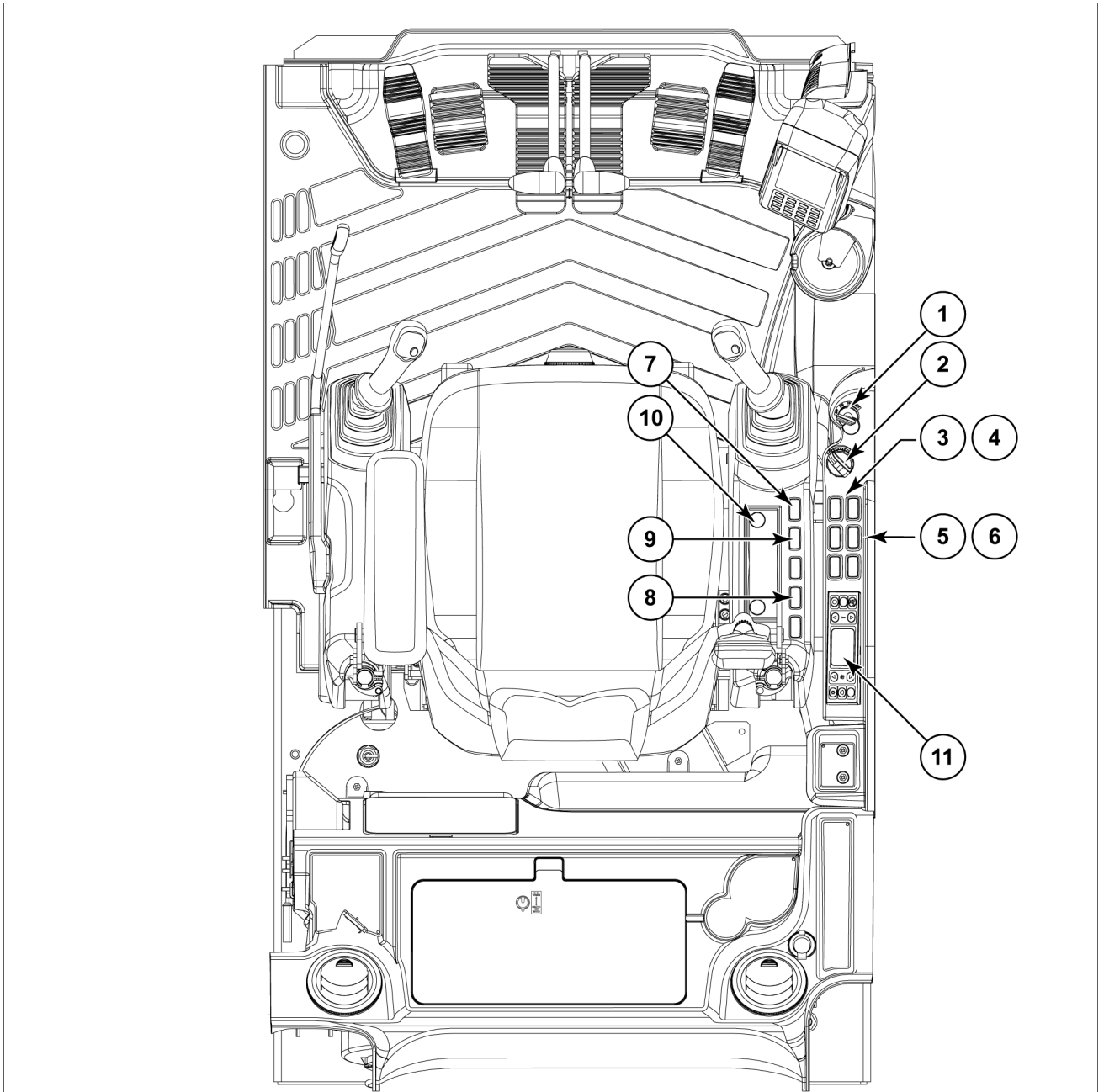
- With the starter key in **ON** position or the engine running, keep pressed Breaker mode button **(8)**. The flow rate and pressure screen appears.
- Press Menu button **(4)** to enter into USER MENU screen.
- Press DOWN button and select OPTION SETTING. Press NEXT button to enter the breaker setting screen.
- Select the desired set pressing button UP or DOWN. Press Menu button to confirm the selection.
- Press the screen change button **(3)** to return to the main display.



RAPH12CEX0202EA 9

RIGHT-HAND SIDE CONTROLS

Console Right-hand console - Operating



NHC0239 1

- 1. Starter switch
- 2. Engine speed throttle
- 3. Work light switch
- 4. Not used
- 5. Cab work light switch
- 6. Heavy lift switch

- 7. Rotary light switch
- 8. Not used
- 9. Not used
- 10. Radio
- 11. Climate control panel

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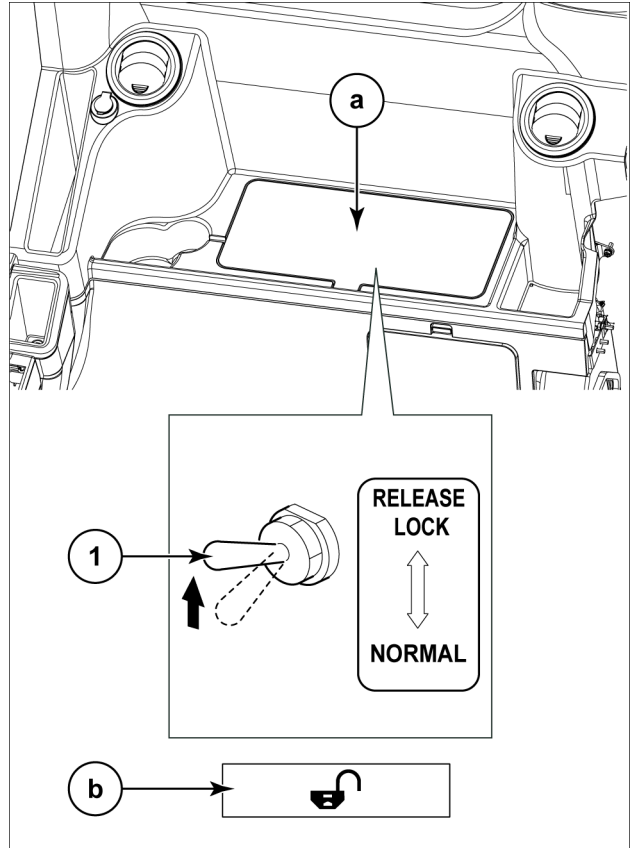
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Parking brake release switch

Switch (1) releases the swing parking brake, in case it does not occur normally during the swing and arm retracting operations. To release the parking brake, operate as follows:

- Remove panel (a) from its seat.
- Release the parking brake moving switch (1) into **RELEASE LOCK** position. The monitor shows the relevant icon (b) and the alarm buzzer is activated. Thus, it is possible to swing the turret by actuating the relevant control lever. Contact your authorized dealer.

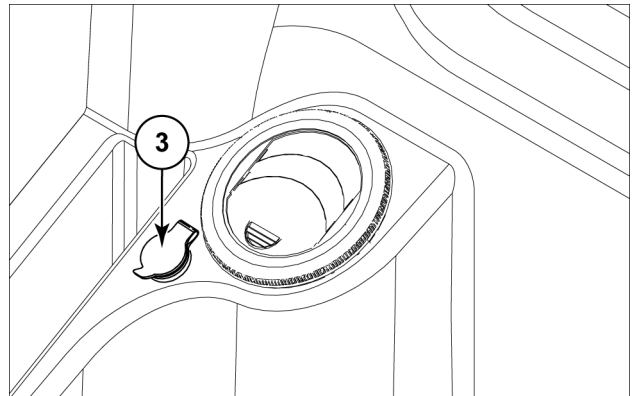


NHC0241 2

12 V socket

A 12 V socket (3) is located on the right side of the rear panel. The socket can be used to power small electrical equipment.

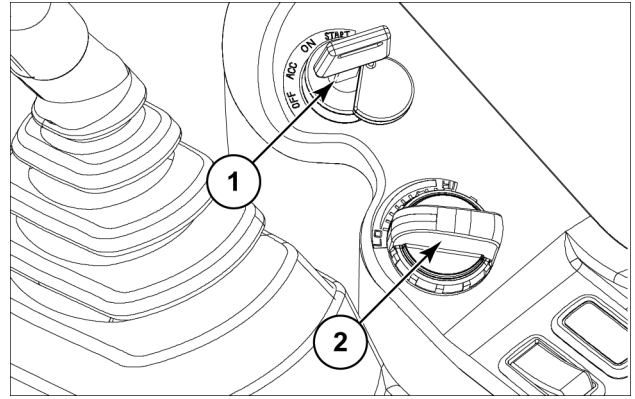
NOTE: Do not connect equipment that requires more than 60 W of power.



NHC0243 3

3. Make sure that all control levers are in neutral position.
4. Make sure that engine speed throttle **(2)** is turned to the engine idle speed position **LO**.
5. Turn the starter key **(1)** to the ON position, and check on the instrument cluster display that all operation conditions are normal.
6. Turn the starter key **(1)** to START until the engine starts. Release the starter key as soon as the engine is started. When released, the starter key returns automatically to the ON position.

NOTICE: Do not insist with the starter key in the START position for more than **15 s**. Should the engine fail to start, return the starter key to the OFF position. Wait for **30 s**, then try again to start the engine.



NHC0245A 2

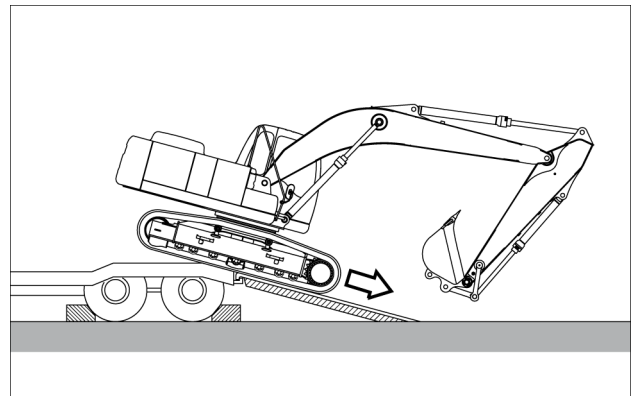
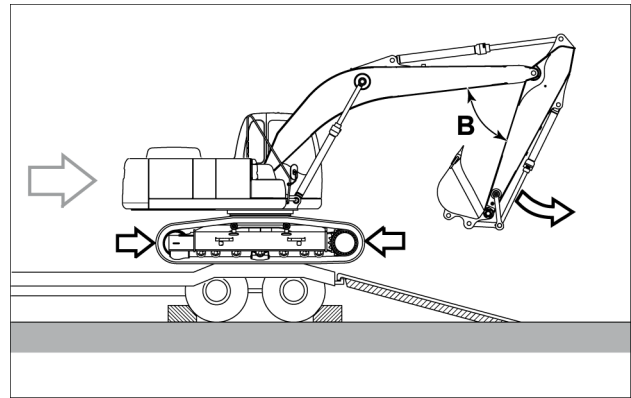
Unloading the machine

NOTICE: Before unloading the machine, make sure all tie-down chains are removed and the trailer wheels blocked.

1. Position the trailer on firm and level ground. Put blocks to the tires of trailer to prevent machine from moving.
2. Remove chains or wire ropes used to secure the machine.
3. Start the engine and move the safety lever to the UN-LOCK position.
4. From the instrument cluster, verify that the Auto Idle function is deactivated and the travel speed is set to SLOW.
5. Raise the attachment and travel slowly. Stop the machine horizontally on the rear end of trailer.
6. Set the arm and the boom to angle **(B)** between 90 to 110° and travel down slowly from trailer to ramps.

NOTICE: The point connecting the ramp with the trailer shows a bump. Proceed with extreme care once reaching this point since the machine has the tendency to drop suddenly. In arranging the attachment when unloading, avoid to fully extend the arm and bucket cylinders to prevent damaging them due to accidental impacts of the attachment with the ground.

7. Travel down on ramps slowly while operating boom and arm softly until the machine passes through the ramps completely.



7 - MAINTENANCE

GENERAL INFORMATION

Preparing machine for maintenance

⚠ DANGER

Improper operation or service of this machine can result in an accident.

Do not operate this machine or perform any lubrication, maintenance, or repair on it until you have read and understood the operation, lubrication, maintenance, and repair information.

Failure to comply will result in death or serious injury.

D0010A

⚠ WARNING

Maintenance hazard!

Before you start servicing the machine, attach a **DO NOT OPERATE** warning tag to the machine in a visible area.

Failure to comply could result in death or serious injury.

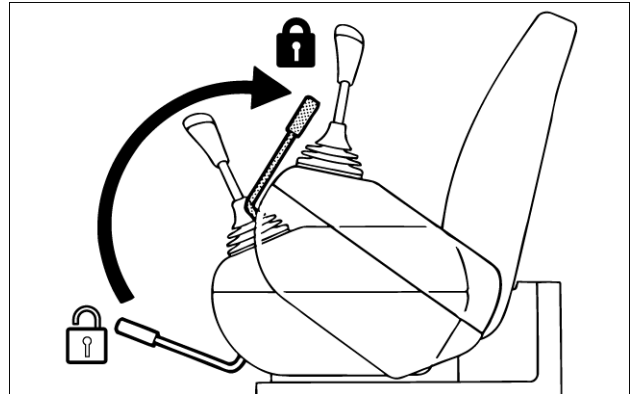
W0004A

Before following the maintenance procedures detailed in the following chapters, always perform the following operations if not otherwise specified:

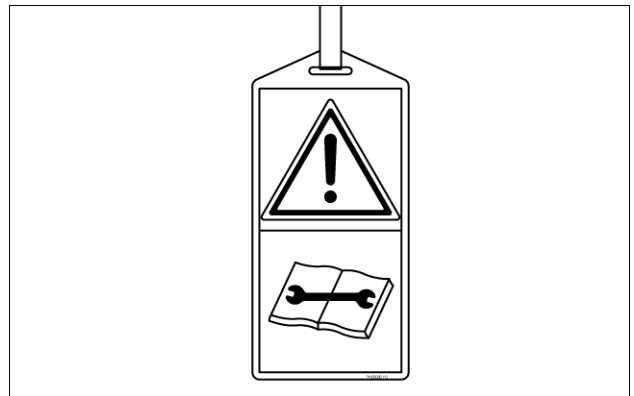
- Park the machine on a level surface.
- Rest the bucket to the ground.
- Deactivate the Auto-Idle function, turn the engine speed throttle to the LO position, stop the engine, extract the starter key and place the safety lever in the LOCK position.
- Attach a DO NOT OPERATE tag. This tag can be applied to the left control lever, safety lever or cab door.

Checking the hour meter

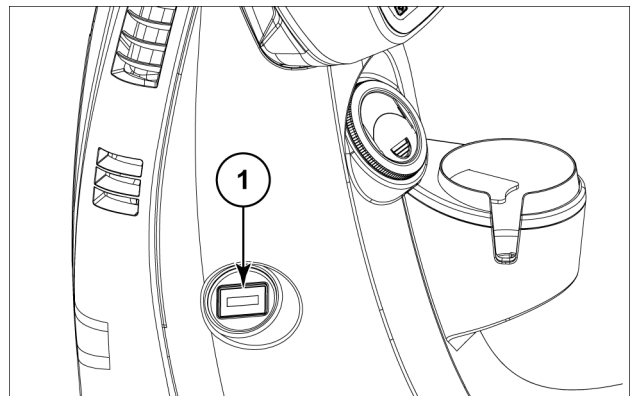
Read machine worked hours on the hour meter (1) located inside the cab and determine, on the basis of the Maintenance Chart, when and which type of servicing is required. Service intervals indicated in the table refer to a machine working under normal operating conditions. During the first period of use of the machine and under particularly heavy operating conditions shorter service intervals may be required than shown in the table.



NH0002 1



SP0043 2



NHC0272 3

Every 120 hours

Swing reduction unit oil

Level check

▲ WARNING

Burn hazard!

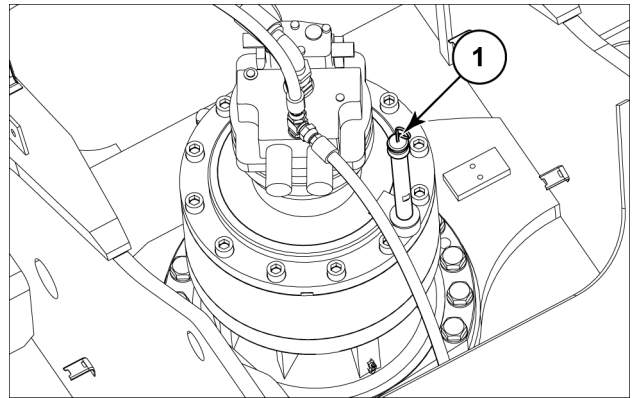
Be very careful to avoid contact with hot fluids. If fluid is extremely hot, allow it to cool to a moderately warm temperature before proceeding.

Failure to comply could result in death or serious injury.

W0362A

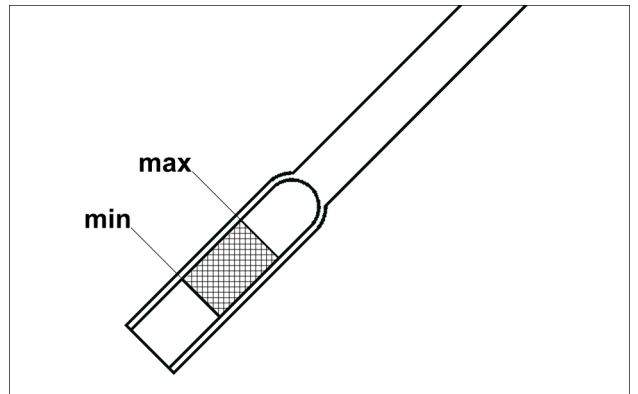
To check the swing reduction unit oil level, proceed as follows:

1. Park the machine on a level surface.
2. Lower the bucket to the ground.
3. Deactivate the Auto-Idle function, turn the engine speed throttle to the LO position, stop the engine, extract the starter key and place the safety lever in the LOCK position.
4. Remove the oil level dipstick **(1)**.



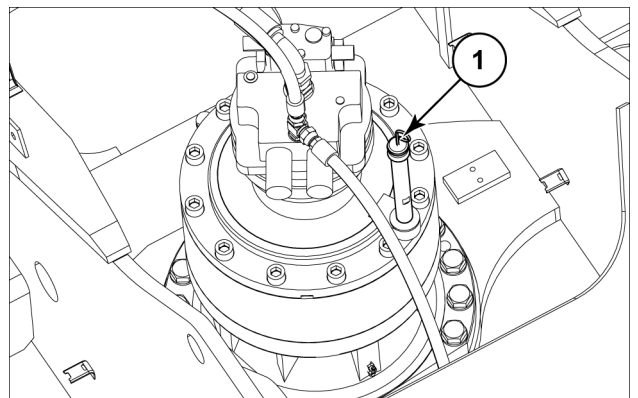
NHC0277 1

5. Check the oil level. Level should be between the MIN and MAX marks on the dipstick.



NHC0278 2

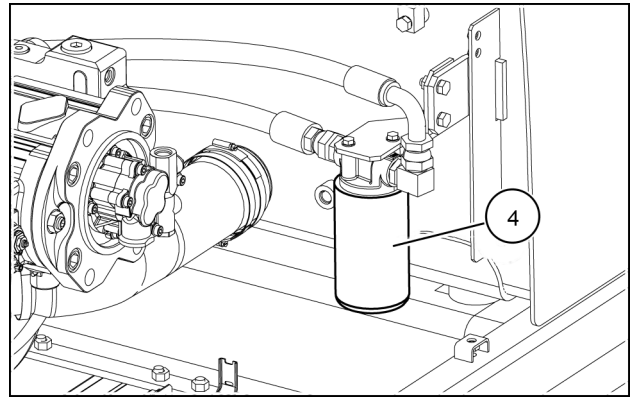
6. Add oil through the dipstick attaching hole if the oil level is low.
7. Reinstall the oil level dipstick **(1)**.



NHC0277 3

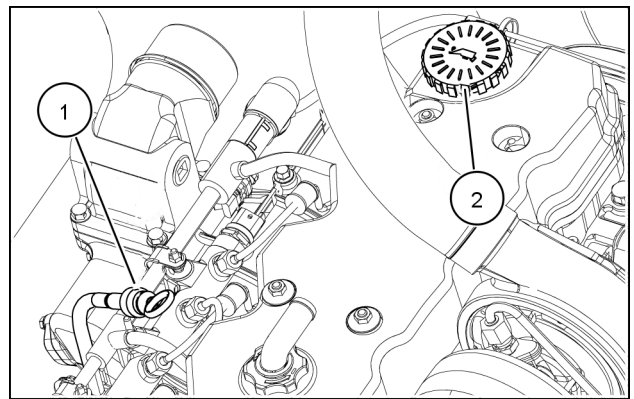
To replace the oil filter, proceed as follows:

1. Open the hydraulic pump compartment panel and lock it in open position.
2. Clean contact area and around the oil filter **(4)**
3. Place a drip pan under the oil filter **(4)**
4. Remove the oil filter **(4)** with a filter wrench.
5. Lubricate the gasket of the new oil filter with new engine oil. Fill the new oil filter with new engine oil.
6. Hand tighten the new filter until the gasket touches the support; then tighten the new filter and additional 3/4 turn using a filter wrench.



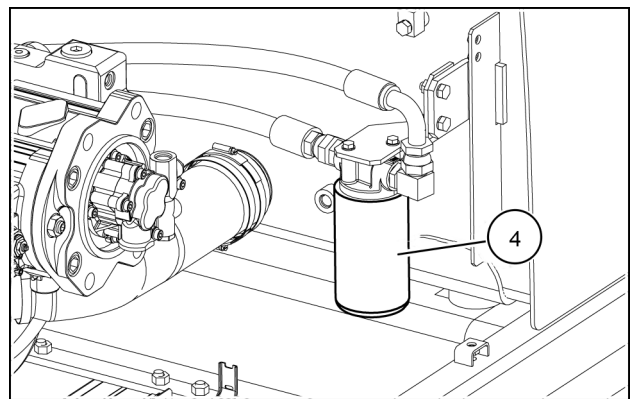
RAPH12CEX0977AA 3

1. Close the hydraulic pump compartment panel.
2. Pour oil into the engine through filler neck until the maximum level indicated on dipstick **(1)** is reached, then tighten the filler cap **(2)** and insert the dipstick.
3. Start the engine, let it run for several minutes. Stop the engine and use dipstick **(1)** to check again the level and top off in the event it has changed with respect to the previous check.



RAPH12CEX0978AA 4

4. Check the oil filter **(4)** for leaks.

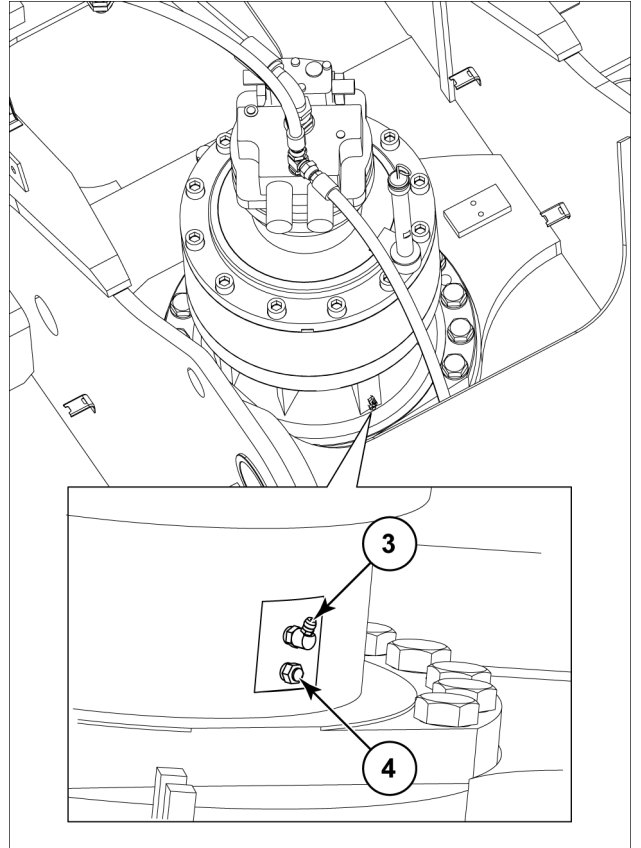


RAPH12CEX0977AA 5

5. Attach the panel under the engine. Close and lock the hydraulic door.
6. Close the engine hood.

NOTE: Handle and dispose the exhausted engine oil and filters in accordance with current regulations. Use only authorized disposal procedures and, in case of doubts, contact the appropriate authorities.

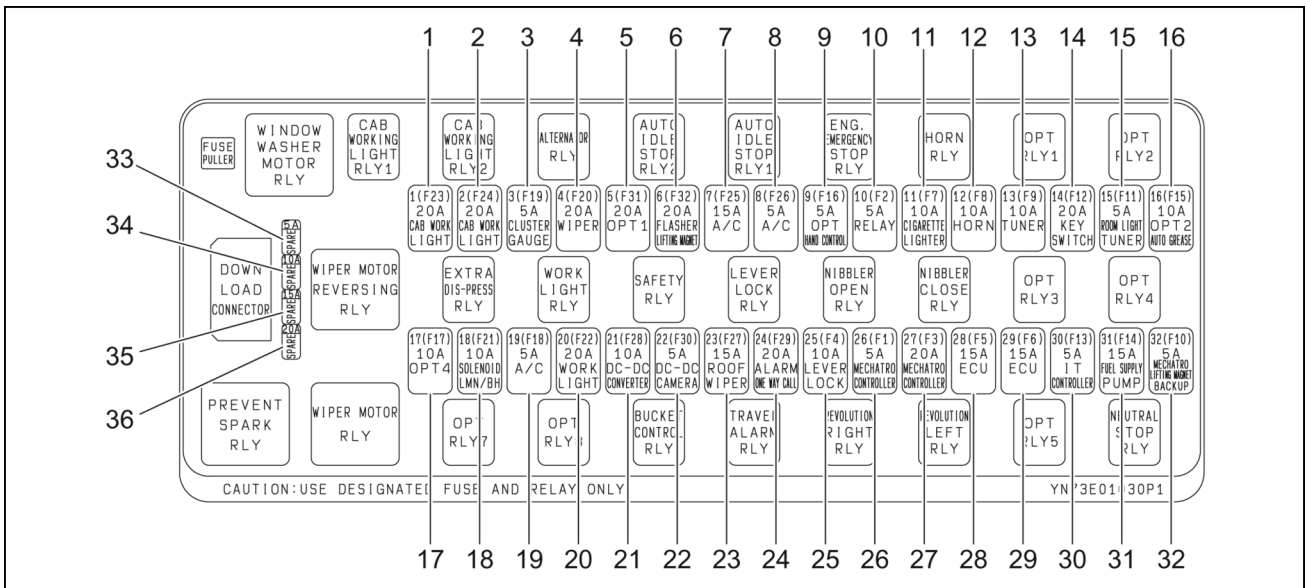
10. Use a grease gun to pump grease of the prescribed type (see 7-43) into grease fitting (3). Stop the operation once grease starts to get out from valve (4).



NHC0291 5

As required

Fuses and relays



RAPH12CEX1031FA 1

FUSES BOX		
FUSE number	PROTECTED CIRCUIT	RATING (A)
1	Cab work light 1	20
2	Cab work light 2	20
3	Instrument cluster / Rear camera	5
4	Windscreen wiper and washer	20
5	Optional	20
6	Flasher alarm, lifting magnet	20
7	Air conditioner (main)	15
8	Air conditioner (compressor)	5
9	Option (Hand Control)	5
10	Hour meter	5
11	Optional	10
12	Horn	10
13	Radio	10
14	Starter key switch	20
15	Cab room lamp	5
16	Optional	10
17	Optional	10
18	Bucket dump cut solenoid	10
19	Air conditioner	5
20	Work light	20
21	Seat heater	10
22	DC-DC converter (camera)	5
23	Optional (roof wiper)	15
24	Flasher, alarm, one way call	20
25	Safety lever	10
26	Mechatro controller	5
27	Mechatro controller	20
28	Engine Controller (ECU)	15
29	Engine Controller (ECU)	15
30	IT controller	5
31	Fuel transfer pump	15

8 - SPECIFICATIONS

SK350LC-9 RATED LIFT CAPACITY (HEAVY LIFT)

Based on machine equipped with
 Arm 8' 6" (2600mm) arm
 Bucket SAE heaped 2.09cu.yd (1.60m³) bucket Bucket weight 2357.6 lbs. (1069.4 kg)
 Shoe 31.5" (800mm) shoe

A \ B		LIFT POINT RADIUS				AT MAX. REACH		RADIUS				
		10' (3.0m)	15' (4.6m)	20' (6.1m)	25' (7.6m)							
25'	lb						*16280	*16280	23'5"			
(7.6m)	kg						* 7380	* 7380	(7.14m)			
20'	lb					*16290	15550	*16110	26'7"			
(6.1m)	kg					* 7390	7050	* 7300	(8.11m)			
15'	lb	*38980	*38980	*25340	*25340	*20040	*17340	15020	11880	28'6"		
(4.6m)	kg	*17670	*17670	*11490	*11490	* 9090	* 7860	6810	* 7380	(8.70m)		
10'	lb			*31760	31130	*23060	20250	*18850	14330	10850	29'6"	
(3.0m)	kg			*14400	14110	*10450	9180	* 8550	6500	* 7570	(9.00m)	
5'	lb			*36300	28890	19040	*20280	13680	16730	10460	29'7"	
(1.5m)	kg			*16460	13100	*11640	8630	* 9190	6200	7580	(9.04m)	
GROUND LEVEL	lb			*37620	27990	*27130	18290	*21140	13220	17160	10660	28'10"
	kg			*17060	12690	*12300	8290	* 9580	5990	7780	4830	(8.80m)
-5'	lb	*40980	*40980	*36530	27890	*27070	18030	*20960	13050	18700	11580	27'2"
(-1.5m)	kg	*18580	*18580	*16570	12640	*12270	8170	* 9500	5920	8480	5250	(8.29m)
-10'	lb	*45130	*45130	*33310	28280	*25110	18200			*19570	13730	24'4"
(-3.0m)	kg	*20460	*20460	*15100	12820	*11380	8250			* 8870	6220	(7.43m)
-15'	lb	*35560	*35560	*26990	*26990					*19880	19010	19'11"
(-4.6m)	kg	*16120	*16120	*12240	*12240					* 9010	8620	(6.07m)

LC20T01278P1 4

SK350LC-9 RATED LIFT CAPACITY

Based on machine equipped with
 Arm 8' 6" (2600mm) arm
 Bucket SAE heaped 2.09cu.yd (1.60m³) bucket Bucket weight 2357.6 lbs. (1069.4 kg)
 Shoe 35.4" (900mm) shoe

A \ B		LIFT POINT RADIUS				AT MAX. REACH		RADIUS				
		10' (3.0m)	15' (4.6m)	20' (6.1m)	25' (7.6m)							
25'	lb						*14260	*14260	23'5"			
(7.6m)	kg						* 6460	* 6460	(7.14m)			
20'	lb					*14240	*14240	*14060	13970	26'7"		
(6.1m)	kg					* 6460	* 6460	* 6370	6330	(8.11m)		
15'	lb	*34580	*34580	*22370	*22370	*17590	*17590	*15150	15140	*14200	11990	28'6"
(4.6m)	kg	*15680	*15680	*10140	*10140	* 7980	* 7980	* 6870	6860	* 6440	5430	(8.70m)
10'	lb			*27960	*27960	*20220	*20220	*16460	14450	*14530	10950	29'6"
(3.0m)	kg			*12680	*12680	* 9170	* 9170	* 7460	6550	* 6590	4960	(9.00m)
5'	lb			*31930	29120	*22500	19200	*17700	13800	*15030	10560	29'7"
(1.5m)	kg			*14480	13200	*10200	8700	* 8030	6250	* 6810	4780	(9.04m)
GROUND LEVEL	lb			*33060	28230	*23760	18450	*18450	13340	*15640	10760	28'10"
	kg			*14990	12800	*10780	8370	* 8360	6050	* 7090	4880	(8.80m)
-5'	lb	*37020	*37020	*32060	28120	*23680	18180	*18270	13170	*16340	11680	27'2"
(-1.5m)	kg	*16790	*16790	*14540	12750	*10740	8240	* 8280	5970	* 7410	5290	(8.29m)
-10'	lb	*39540	*39540	*29160	28520	*21920	18360			*17010	13550	24'4"
(-3.0m)	kg	*17930	*17930	*13220	12930	* 9940	8320			* 7710	6280	(7.43m)
-15'	lb	*30940	*30940	*23490	*23490					*17220	17220	19'11"
(-4.6m)	kg	*14030	*14030	*10650	*10650					* 7810	7810	(6.07m)

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SK350LC-9 RATED LIFT CAPACITY

Based on machine equipped with
 Arm 10'10" (3300mm) arm
 Bucket SAE heaped 1.83cu.yd (1.40m³) bucket Bucket weight 2357.6 lbs. (1069.4 kg)
 Shoe 23.6" (600mm) shoe

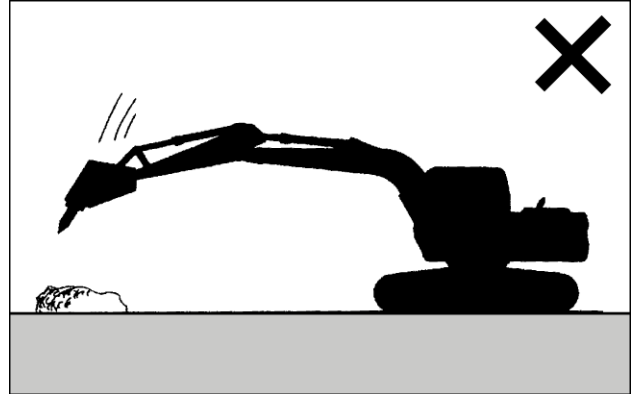
A \ B		LIFT POINT RADIUS						AT MAX. REACH		RADIUS					
		5' (1.5m)	10' (3.0m)	15' (4.6m)	20' (6.1m)	25' (7.6m)	30' (9.1m)								
25'	lb						*11160	*11160		* 8090	* 8090	26' 1"			
(7.6m)	kg						* 5060	* 5060		* 3660	* 3660	(7.97m)			
20'	lb						*12780	*12780		* 7840	* 7840	29' 0"			
(6.1m)	kg						* 5790	* 5790		* 3600	* 3600	(8.84m)			
15'	lb					*15850	*15850	*13870	*11230	10660	* 8130	* 8130	30' 9"		
(4.6m)	kg					* 7190	* 7190	* 6290	* 5090	4830	* 3680	* 3680	(9.39m)		
10'	lb		*31990	*31990	*25220	*25220	*18660	*15350	*13460	10290	* 8630	* 8630	31' 8"		
(3.0m)	kg		*14510	*14510	*11430	*11430	* 8460	* 6960	* 6100	4660	* 3910	* 3910	(9.67m)		
5'	lb		*16710	*30090	28680	*21310	18710	*16830	13310	*14200	9890	* 9520	8930	31' 10"	
(1.5m)	kg		* 7580	* 7580	*13650	13010	* 9660	8480	* 7630	6030	* 6440	4490	* 4310	4050	(9.70m)
GROUND LEVEL	lb		*23550	*32500	27240	*23090	17750	*17910	12730	*14670	9980	*10980	9030	31' 1"	
	kg		*10680	*14740	12350	*10470	8050	* 8120	5770	* 6650	4340	* 4960	4090	(9.49m)	
-5'	lb	*23920	*23920	*33550	*33550	26770	*23640	17280	*18230	12410	*13240	9670	*10980	9030	29' 6"
(-1.5m)	kg	*10850	*10850	*15210	*15210	*14770	12440	*10720	7830	* 8270	5630	* 6090	4380	(9.01m)	
-10'	lb	*33920	*33920	*43920	*43920	*30680	26920	*22700	17250	*17310	12430	*15440	11160	27' 0"	
(-3.0m)	kg	*15380	*15380	*19910	*19910	*13810	12200	*10290	7820	* 7850	5630	* 7000	5050	(8.23m)	
-15'	lb	*45270	*45270	*36570	*36570	*26410	*26410	*19590	17690			*16010	14410	23' 0"	
(-4.6m)	kg	*20530	*20530	*16580	*16580	*11980	*11980	* 8880	8020			* 7260	6530	(7.03m)	
-20'	lb			*17830	*17830							*15510	*15510	16' 10"	
(-6.1m)	kg			* 8080	* 8080							* 7030	* 7030	(5.14m)	

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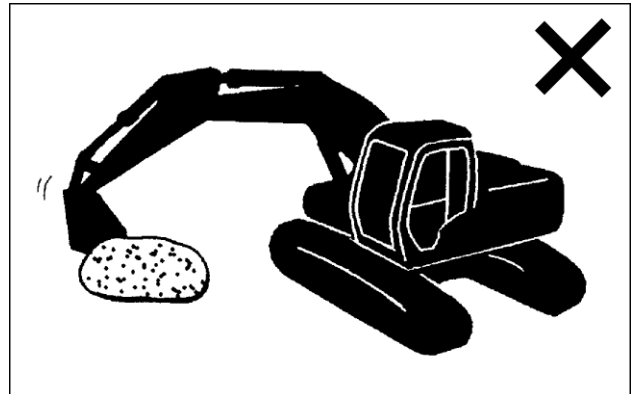
Breaker

NOTE: If it is required to install a hydraulic breaker to the excavator, select a breaker model that meets the requirements of stability, pressure and oil quantity of the excavator hydraulic system. Contact your authorized Dealer to select a type of hydraulic breaker suitable for this machine.

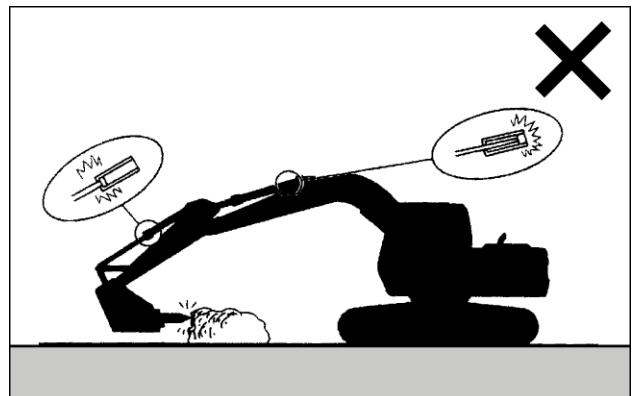
1. Avoid hitting objects with breaker. The breaker is heavier than the bucket and lowers faster. This may cause damages to the breaker, attachment, and upperstructure. Always lower the breaker slowly until the chisel point touches the object to be broken before starting breaker operation.
2. Do not use the hydraulic breaker and/or swing function to push objects as damages to the attachment may result.
3. Do not operate the breaker with the excavator cylinders fully extended or retracted to avoid attachment and/or cylinder damage.



NH0195 1



NH0196 2



NH0197 3

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