ORIGINAL INSTRUCTIONS *- according to Directive 2006/42/EC, Annex I, 1.7.4.1*

CX250D
CX250D Long Reach
Crawler Excavator

OPERATOR'S MANUAL

Part number 48085261
1st edition English
December 2016

CASE CONSTRUCTION

Manual scope and required training level

Introduction to this manual

This manual gives information about the use of your CASE CONSTRUCTION machine as intended and under the conditions foreseen by CASE CONSTRUCTION during normal operation, routine service, and maintenance.

This manual does not contain all the information that relates to periodic service, conversions, and repairs that only trained service personnel can perform. Some of these activities may require appropriate facilities, technical skills, and/or tools that CASE CONSTRUCTION does not supply with the machine.

The manual contains the chapters as shown on the Contents pages. See the Index at the end of this manual to locate specific items about your CASE CONSTRUCTION machine.

Normal operation

Normal operation consists of the use of this machine for the purpose CASE CONSTRUCTION intends by an operator that:

- Is familiar with the machine and any mounted equipment or towed equipment
- Complies with the information on operation and safe practices as specified by CASE CONSTRUCTION in this manual and by the signs on the machine

Normal operation includes:

- Preparation and storage of the machine
- Addition and removal of ballast
- Connection and disconnection of mounted equipment and/or towed equipment
- Adjustment and configuration of the machine and equipment for the specific conditions of the job site, field, and/or crop
- Movement of components into and out of working positions

Routine service and maintenance

Routine service and maintenance consists of the daily activities necessary to maintain the proper machine function. The operator must:

- Be familiar with the machine characteristics
- Comply with the information on routine service and safe practices as specified by CASE CONSTRUCTION in this manual and by the signs on the machine

Routine service can include:

- Fueling
- Cleaning
- Washing
- Topping up fluid levels
- Greasing
- Replacing consumable items such as light bulbs

Periodic service, conversions, and repairs

Periodic service consists of activities that are necessary to maintain the expected life of the CASE CONSTRUCTION machine. These activities have defined intervals.

Trained service personnel familiar with the machine characteristics must perform these activities at the defined intervals. Trained service personnel must comply with the information on periodic service and safe practices as partly specified by CASE CONSTRUCTION in this manual and/or other company literature.

Periodic service includes:

- Oil change service for the engine, hydraulic circuits, or transmission
- Periodic exchange of other substances or components as required

Conversion activities rebuild the CASE CONSTRUCTION machine in a configuration that is appropriate for a specific job site, crop, and/or soil conditions (e.g., installation of dual wheels). Conversion activities must be done:

- By trained service personnel familiar with the machine characteristics
- By trained service personnel that comply with the information on conversion as partly specified by CASE CONSTRUCTION in this manual, assembly instructions, and/or other company literature

Repair activities restore proper function to a CASE CONSTRUCTION machine after a failure or degradation of performance. Dismantling activities occur during the scrapping and/or dismantling of the machine.

Trained service personnel familiar with the machine characteristics must perform these activities. Trained service personnel must comply with the information for repair as specified by CASE CONSTRUCTION in the service manual.

Before you operate

Read this manual before you start the engine or operate this CASE CONSTRUCTION machine. Contact your CASE CONSTRUCTION dealer if:

- You do not understand any information in this manual
- You need more information
- You need assistance

Finding Diesel Exhaust Fluid (DEF)/AdBlue®

Your CASE CONSTRUCTION dealer is fully equipped to accommodate all your **DEF/ADBLUE®** needs.

Case Construction Toll free number: 00800 2273 7373			
Country	Toll free fax	Local number	E-mail
Italy (0039)	-	02 44412 342	-
La chiamata è gratuita. Tuttavia, con alcuni gestori europei le chiamate da telefono cellulare sono a pagamento. Per qualsiasi informazione sulle tariffe, consultare in anticipo il proprio gestore telefonico. In caso di difficoltà a chiamare il numero verde, è possibile rivolgersi anche al numero 0244412342.			
Country	Toll free fax	Local number	E-mail
United Kingdom (0044)	8000856134	02030245588	EUCaseCEUKROI@cnh.com
The call is free. However some European Operators may apply a charge, if the call is made from a mobile phone. For any information about charge rate, please enquire in advance from your provider. Should you have difficulties getting through to the free phone number, you can also call 02030245588.			
Country	Toll free fax	Local number	E-mail
Republic of Ireland (00353)	-	012421888	EUCaseCEUKROI@cnh.com
In the Republic of Ireland please only use 00800 64655263 if calling from a land line. The call will be free of charge. However, to call using a mobile telephone please dial 01 2421888. A call made from a mobile telephone will not be free but will be charged to you. For information about charge rates, please contact your service provider before making the call.			
Country	Toll free fax	Local number	E-mail
France (0033)	-	0157323204	CaseCustomerAssistance.France@cnh.com
L'appel est gratuit. Toutefois, certains opérateurs européens peuvent facturer l'appel s'il provient d'un téléphone portable. Pour plus d'informations sur les tarifs, veuillez vous renseigner à l'avance auprès de votre opérateur. Si vous rencontrez des difficultés à joindre la ligne téléphonique gratuite, vous pouvez également appeler le 0157323204.			
Country	Toll free fax	Local number	E-mail
Spain (0034)	-	912754405	CaseCustomerAssistance.Spain@cnh.com
La llamada es gratuita. No obstante, con algunos operadores europeos la llamada puede ser de pago si se efectúa desde un teléfono móvil. Para obtener mayor información acerca de las tarifas, consulte previamente a su proveedor. Si tiene problemas para comunicar con el número de teléfono gratuito, puede llamar al número de pago 912754405.			
Country	Toll free fax	Local number	E-mail
Germany (0049)	-	06951709325	CaseCustomerAssistance.Germany@cnh.com
Der Anruf ist gebührenfrei. Bei Anruf aus dem Mobilnetz könnten einige europäische Netzbetreiber Gebühren berechnen. Bitte erfragen Sie die Tarife zuvor bei Ihrem Anbieter. Falls Sie Probleme bei der Anwahl der Freecall-Nummer haben sollten, empfehlen wir Ihnen den Anruf unter unserer kosten- pflichtigen Rufnummer 06951709325.			

- When alighting from or getting into the operator's compartment, always face the machine and use the steps and access handles.
- Be sure you know the position and function of each control. Incorrect operation of the controls can cause serious injuries.
- Check all controls and safety devices in a safe, open area before starting work.
- Keep away from dangerous areas such as ditches, overhangs, rocky areas, etc. Make a survey of the work-site and determine the possible dangers before using the machine.
- Before parking the machine, make sure that the ground is stable. Plan the worksite so that the ground is flat, hard and level.
- Before moving the machine to work in a new area, walk around to determine all possible causes of accidents there. Holes, obstacles, debris and other danger risks in the working area can cause serious injury.
- Be ready to meet emergencies. Always carry a first aid kit and if possible, fire extinguisher (not supplied) within easy reach on board. Make sure the fire extinguisher is regularly serviced in conformance with the manufacturer's instructions.
- Check the fastening of the main components: counterweight, turntable bearing and operator's compartment. In the event of problems, consult your CASE CONSTRUCTION Dealer.
- Make sure you understand the symbols used on the machine safety decals. Keep the decals clean so that they are perfectly legible at all times.
- Work out a means of convenient escape from the machine (emergency exit via the windshield or the rear window glass) in the event of the machine turning over or tipping over or the cab door being jammed.
- Make sure you are perfectly familiar with traffic regulations and special safety equipment requirements before transporting this machine on a public highway.
- When loading trucks, never swing the load over the truck cab.
- Before undertaking any travel on the job site, make sure the itinerary to be followed is completely safe. If bridges are to be crossed, make sure they are perfectly capable of supporting the weight of the machine.
- Always steer round large obstacles such as boulders, big trees, etc.

Quick coupler (optional)

- Every day, check that the locking bar functions correctly and that it is not fouled by foreign matter. Clean the locking system if necessary.
- If you are obliged to use the quick coupler with buckets not manufactured by CASE CONSTRUCTION, make sure the diameter of the pins and the width between the bucket lugs meet the dimensions needed to fit the quick coupler (pins, washers, bushings, etc.). Consult your CASE CONSTRUCTION Dealer.

⚠ Operating the machine⚠

- When working on a public highway, use standard traffic signs and take into consideration the working range of the upperstructure and its attachments. Local or national regulations stipulate the number, type and location of reflector strips.
- Avoid running the engine in a confined space. If there is no alternative, proper ventilation must be provided at all times.
- Do not allow anyone else on the machine. The passenger could fall or cause an accident.
- Never operate the working or travel controls unless you are properly seated in the operator’s seat with the seat belt correctly fastened.
- Before starting the engine, check the direction of travel (in forward drive, the reduction gears should be to the rear of the machine).
- Do not work near overhead high-voltage electric lines without checking beforehand that all necessary measures have been taken to respect the minimum distances:
  Less than 57000 volts: **3 m** (**9.8 ft**).
  More than 57000 volts: **5 m** (**16.4 ft**).
- Study the position of any existing pipelines or conduits before starting work. Electrical cables, gas and water pipes and other underground installations can cause serious injury.
- Always make allowance for working conditions (sloping or rough ground), the site and weather conditions when driving the machine.
- Do not allow anyone to stand in the machine working area. Accidental operation of the upperstructure swing control or of an attachment control could cause an accident. Stop all operations until everyone has moved away.
- Before operating the dozer blade (if equipped) make sure that there is no one in the working area of the latter.
- Operate all controls gradually to ensure smooth machine operation.
- Whenever load handling operations are to be carried out, it is imperative to adhere strictly to the instructions given in this manual and local legislation.
- It is forbidden to use the machine to carry out tasks other than those for which it is intended. Never use the equipment for sweeping the ground to level out rubble or push objects (transversal stress on the attachment).
- Stop the engine and remove the ignition key when the machine is not in use, even for short periods of time.

Vibration levels

The vibration level transmitted to the operator depends mainly upon the conditions of the ground on which operations take place, the mode of operation of the machine and its equipment. The exposure to vibrations can be considerably reduced when the following recommendation are complied with:

- use equipment compatible with the machine and the type of work do be done;
- adjust and lock the seat in the correct position; also inspect regularly the suspensions of the seat, performing the adjustments and repairs as required;
- perform regularly the current maintenance operations of the machine at the prescribed intervals;
- operate the equipment in a uniform manner, preventing, as far as possible, sharp movements or excessive loads;
- when travelling, avoid, as far as possible, particularly rough terrain or the impact against possible obstacles.

This machine is equipped with an operator's seat complying with the requisites of standard **ISO 7096:2008**. This ensures that the exposure of the operator's body to vibrations comply with the protection requisites for the protection against vibrations when the machine operates as required by the operational scopes, in accordance with the prescriptions of this Manual. The operator's seat has been tested in accordance with EM6 input spectral class and has a SEAT transmissibility factor < 0.7.

- The weighted average quadratic acceleration value to which the operator's arms are subjected does not exceed **2.5 m/s²** (**8.20 ft/s²**)
- The weighted average quadratic acceleration value to which the operator's body is subjected does not exceed **0.5 m/s²** (**1.64 ft/s²**). These results were obtained using an acceleration gauge while digging ditches.

NOTE: *the Whole-Body exposure value is determined under particular operating and terrain conditions and therefore may not be representative for all the possible operating conditions within the intended use of the machine. Consequently this single Whole-Body vibration emission value is not intended to determine the Whole-Body vibration exposure as required by European Directive* ***2002/44/EC****. For this purpose it is recommended to conduct working conditions measurement. If this is not feasible use of information provided in the table below from* ***ISO/TR 25398:2006*** *(*).*

Working conditions	Basic emissions value			Standard deviation		
	1.4*aw,eqx	1,4*aw,eqy	aw,eqz	1.4*sx	1.4*sy	sz
Excavation	**0.44 m/s²** (**1.44 ft/s²**)	**0.27 m/s²** (**0.89 ft/s²**)	**0.30 m/s²** (**0.98 ft/s²**)	**0.24 m/s²** (**0.79 ft/s²**)	**0.16 m/s²** (**0.52 ft/s²**)	**0.17 m/s²** (**0.56 ft/s²**)
Hydraulic hammer	**0.53 m/s²** (**1.74 ft/s²**)	**0.31 m/s²** (**1.02 ft/s²**)	**0.55 m/s²** (**1.80 ft/s²**)	**0.30 m/s²** (**0.98 ft/s²**)	**0.18 m/s²** (**0.59 ft/s²**)	**0.28 m/s²** (**0.92 ft/s²**)
Mine	**0.65 m/s²** (**2.13 ft/s²**)	**0.42 m/s²** (**1.38 ft/s²**)	**0.61 m/s²** (**2.00 ft/s²**)	**0.21 m/s²** (**0.69 ft/s²**)	**0.15 m/s²** (**0.49 ft/s²**)	**0.32 m/s²** (**1.05 ft/s²**)
Travel	**0.48 m/s²** (**1.57 ft/s²**)	**0.32 m/s²** (**1.05 ft/s²**)	**0.79 m/s²** (**2.59 ft/s²**)	**0.19 m/s²** (**0.62 ft/s²**)	**0.20 m/s²** (**0.66 ft/s²**)	**0.23 m/s²** (**0.75 ft/s²**)

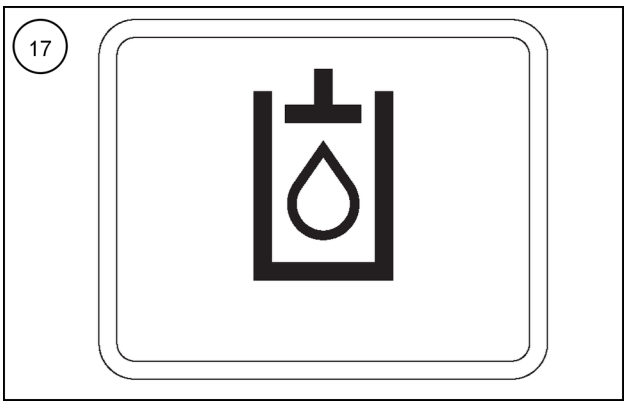
(*) **ISO/TR 25398:2006** Mechanical vibrations – Guidelines for assessment of exposure to whole-body vibration of ride-on machine – Use of harmonized data measured by international institutes, organizations and manufacturers.

Hydraulic tank

Part number: KHP1330

Hydraulic tank contains pressurized hot fluid that can cause serious injuries.

Always shut down the engine, cool down the machine and release pressure in the hydraulic tank before doing any maintenance operation to the hydraulic tank or to the hydraulic system.



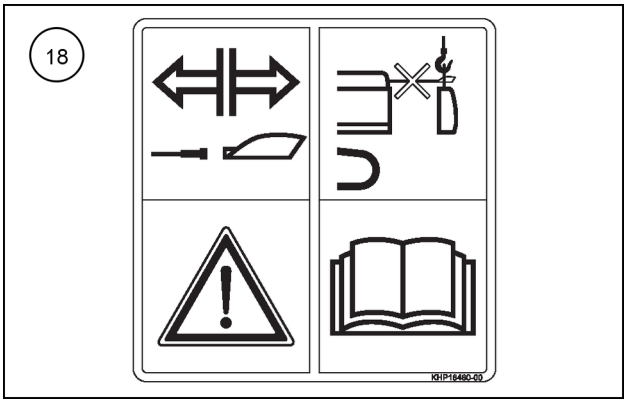
SMIL14CEX1639AB 26

Camera wiring precautions

Part number: KHP18460

Always disconnect the wiring of the cameras before removal of the counterweight.

Make sure to read operator's manual to understand proper procedures to be used for removal of the counterweight.



SMIL14CEX1640AB 27

DEF/ADBLUE® tank

Part number: KHP25870

Do not fill the **DEF/ADBLUE®** tank with diesel fuel, water or any fluid other than **DEF/ADBLUE®**.

Using any other kind of fluid will cause serious damages to the machine.

Make sure to read operator's manual to understand proper procedures to be used for storage and usage of **DEF/ADBLUE®**.

SMIL14CEX1642AB 28

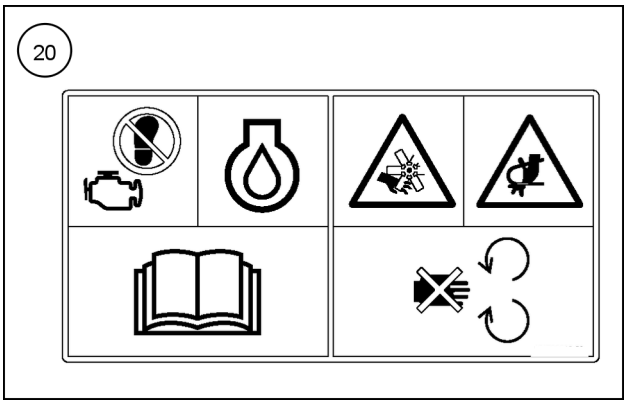
Engine operation general decal

Part number: KHP26000

Always stop and cool down the engine before making any maintenance operation in the engine compartment.

Do not step on the engine as this can cause serious damages to the engine components and serious injuries to the operator.

Engine fan and other rotating parts can cause serious injuries.



SMIL14CEX1643AB 29

Forward controls

Forward controls

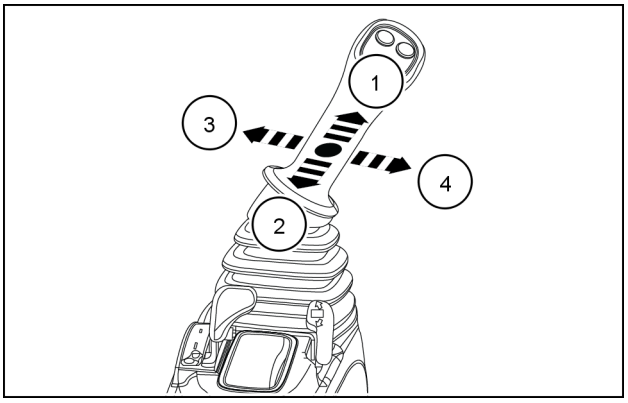
Control levers

Left-hand control lever:

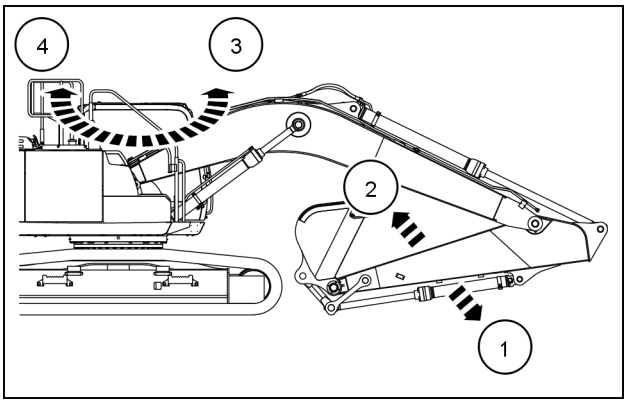
1. The arm extends.
2. The arm retracts.
3. The upper structure swings to the left.
4. The upper structure swings to the right.

NOTE: *The speed of movement of the arm or the swing depends on the control lever tilt angle. In the intermediate position two movements can be obtained simultaneously.*

NOTE: *when the upper structure swing control is released, the upper structure may continue to rotate due to the force of inertia. In this event, make allowance for the extra movement by releasing the control slightly earlier.*

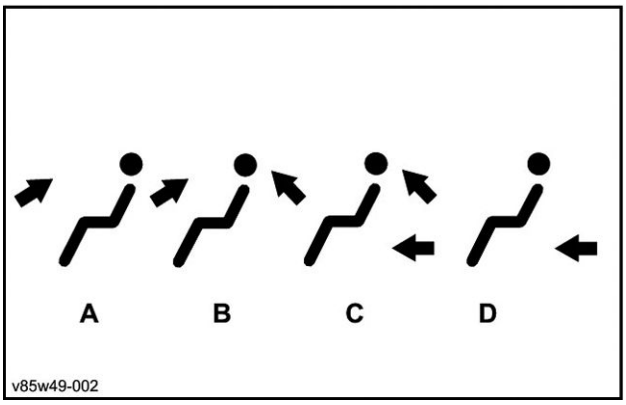


SMIL15CEXY854AA 1



SMIL16CEX1324AA 2

(A) Upper front distribution.
(B) Upper rear distribution.
(C) High force upper distribution and low force rear distribution.
(D) Lower rear distribution (feet) and windshield.

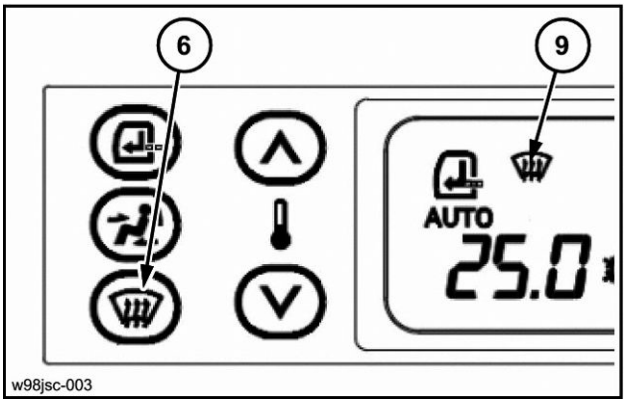


V85W49-002 7

Windshield defroster

This button **(6)** allows the windshield to be defrosted. Press the button to defrost the windshield. The display screen will show that the defroster is working **(9)**. To turn the defroster off, press the button again and the indication on the display screen will disappear.

NOTICE: *When this button is used, the control* ***(7)*** *is deactivated.*



W98JSC-003 8

Air conditioning

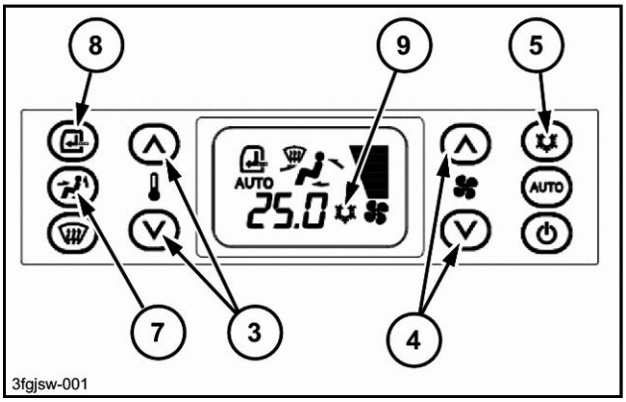
NOTE: *Operate the air conditioning system at least once a week, if only for a short time.*

NOTE: *When using the air conditioning, it is essential for all the operator's compartment windows, the windshield and the cab door to be kept closed. The air vents must be kept in open position.*

The air conditioning can be used in two different ways: manual or automatic air conditioning.

Manual:

This button **(5)** is used to turn the air conditioning on and off. When the air conditioning is running, confirmation is given on the display screen **(9)**. Manual adjustments can be made using controls **(3)**, **(4)**, **(7)** and **(8)**.



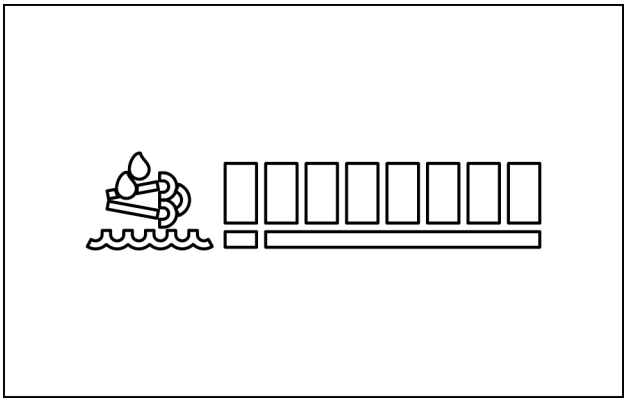
6CSC9W-001 9

1. Work mode icon
2. Travel mode icon
3. Attachment selection icon
4. Idle mode icon
5. Diagnostic Trouble Code
6. Fuel gauge
7. Engine coolant temperature gauge
8. Date and time
9. Camera view icon
10. Camera view guidelines
11. Working lights icon
12. Wiper icon
13. Radio mute icon
14. Power boost icon, or Seat belt icon
15. Security function icon
16. Messages
17. **DEF/AdBlue®** level gauge
18. SCR detection icon
19. **DEF/AdBlue®** refill warning
20. Engine derate icon
21. Auxiliary hydraulics settings, or SCR failure warnings
22. SCR CLEANING icon
23. **DEF/AdBlue®** thawing icon, or Engine preheating icon

NOTICE: *if a Diagnostic Trouble Code is displayed, contact the CASE CONSTRUCTION dealer.*

DEF/ADBLUE® gauge

The number of lit segments indicates the remaining level of **DEF/ADBLUE®**. If all segments are lit, the **DEF/ADBLUE®** tank is full.

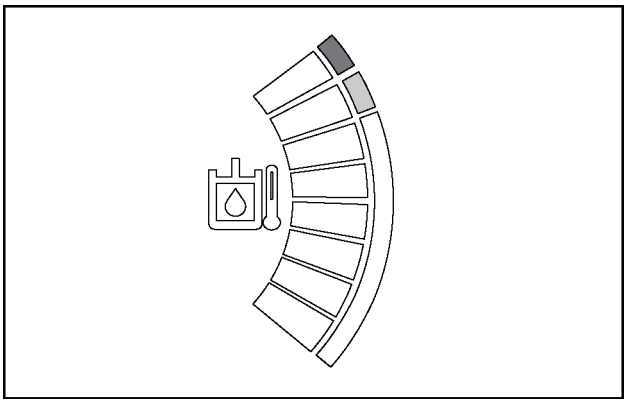


SMIL16CEX1213AA 21

Hydraulic oil temperature gauge

NOTE: *The hydraulic oil temperature gauge is visible only in the user information mode of the display.*

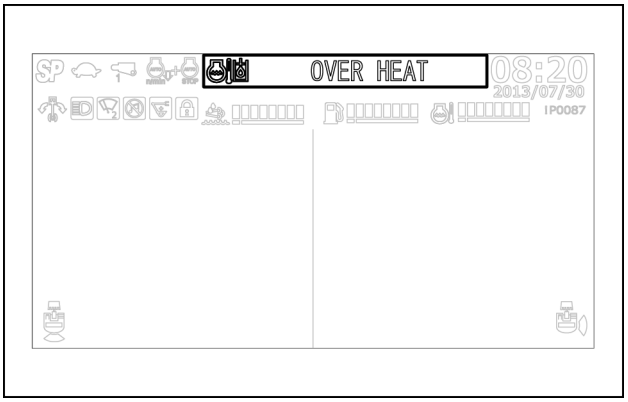
The number of lit segments indicates the temperature of the hydraulic oil. The greater the number of lit segments, the higher the hydraulic oil temperature is.



SMIL14CEX1716AA 22

If all segments are lit, an alarm sounds and the OVER HEAT message is displayed.

If the OVER HEAT message appears, lower the engine speed. If the temperature does not drop, stop the engine, remove the starter key, and call the CASE CONSTRUCTION dealer for machine inspection.



SMIL16CEX0716AA 23

SCR configuration

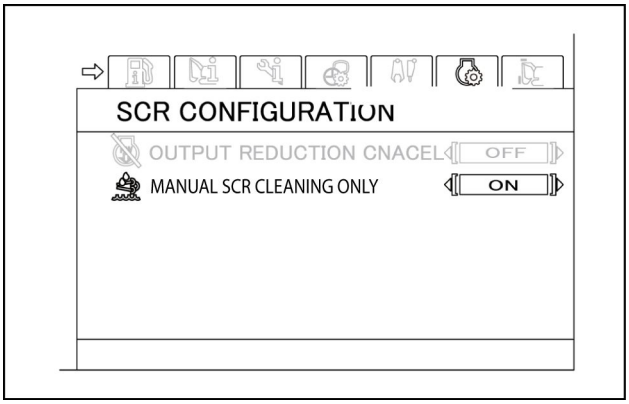
Some settings of the SCR system can be changed.

OUTPUT REDUCTION CANCEL (ON/OFF)

MANUAL SCR CLEANING ONLY (ON/OFF)

Use the up/down buttons to select an item and the left/ right buttons or numeric keypad to change the setting.

NOTE: *The OUTPUT REDUCTION CANCEL setting can be changed only in specific conditions with operational limitations.*



SMIL14CEX4935AA 33

In case of operations where protection from large objects, e.g. large rocks, large debris and other large objects encountered in applications such as construction and demolition a FOPS Level 2 is required and available as option.

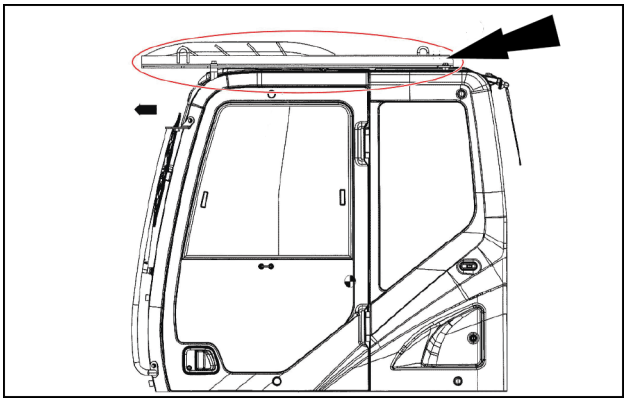
The protective structure, the fitting supports and fastening elements on the machine are an integral part of the structure.

After a fire, corrosion or collisions, any possible damage to the cab protection structure must be carefully evaluated by specialised and qualified personnel.

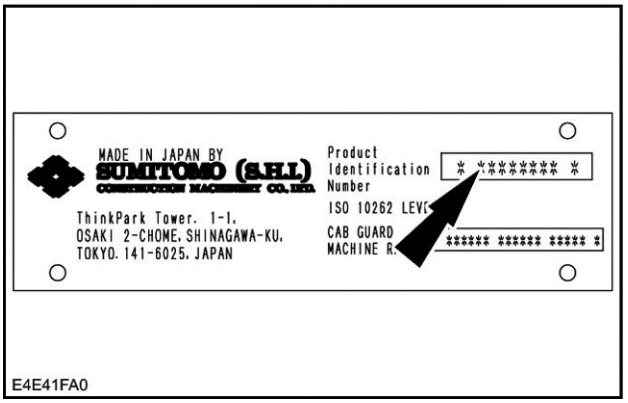
In any case, all damaged parts must be replaced with genuine spare parts, in order to return the machine to its original conditions.

For an inspection of the functions of the cab's protective structures or to get parts or entire structures replaced, please consult your CASE CONSTRUCTION Dealer.

Match the part number. Do not perform modifications.



SMIL15CEX5029AA 3

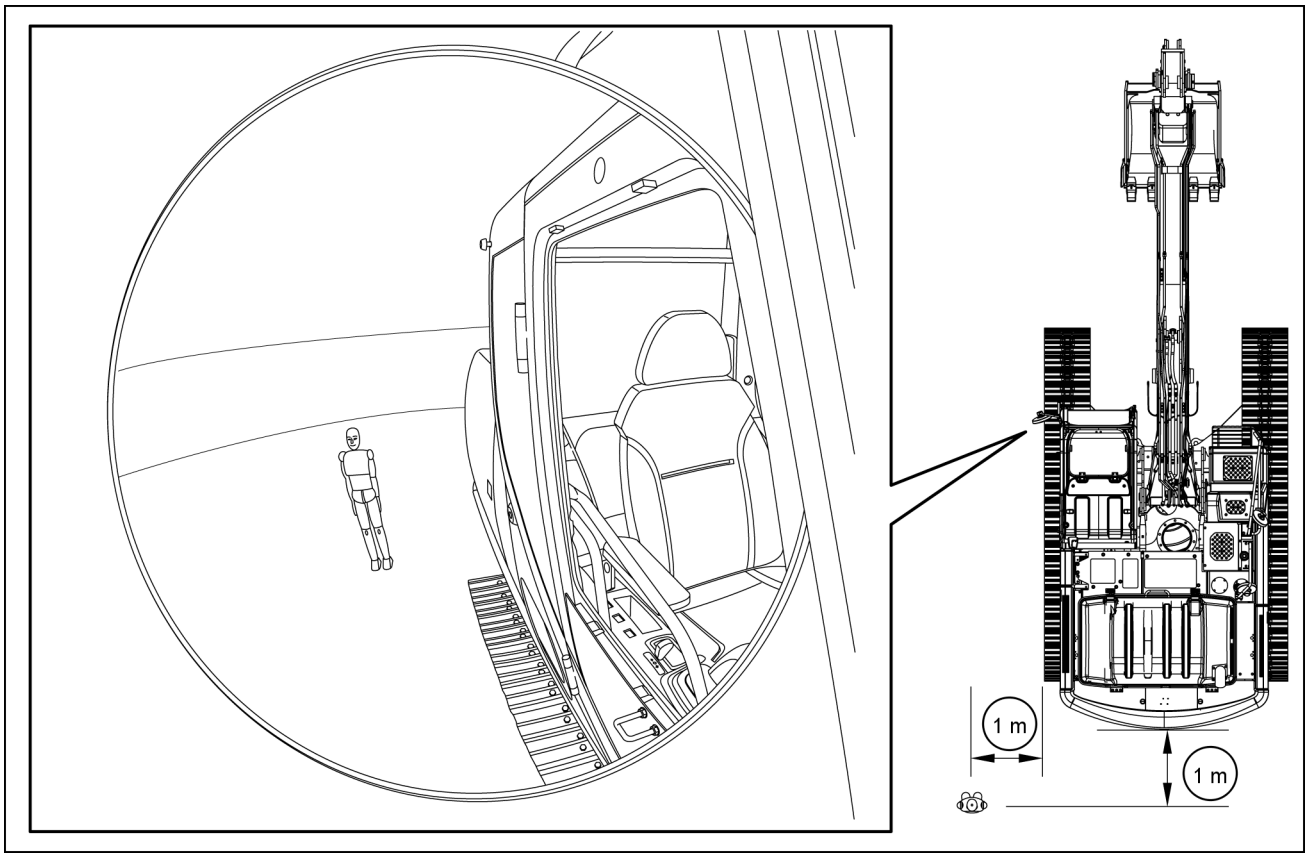


E4E41FA0 4

The mirror shall be positioned according to the references shown in picture:

The side on the rear left of the machine shall be visible.

The area around a reference body positioned **1 m** (**39.4 in**) behind the machine and **1 m** (**39.4 in**) leftward the machine shall be visible.



SMIL16CEX0694FA 4

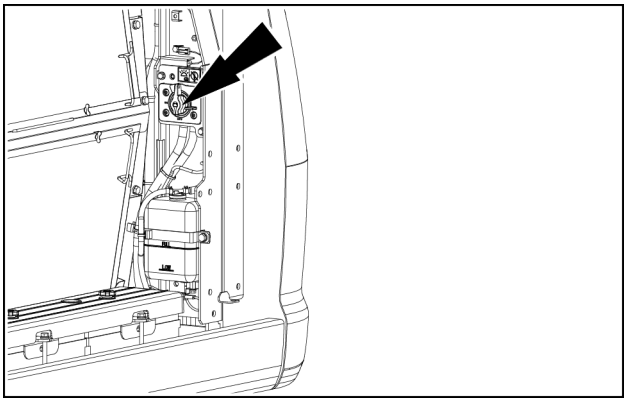
NOTICE: *After installing and positioning all the mirrors, the visibility around the machine shall be checked from the operator's seat. Set the seat into the desired position, and make sure to confirm all the reference views in the mirrors. If necessary, fine tune the positioning of the mirrors in order to ensure proper visibility around the machine.*

Battery disconnect switch

The battery disconnect switch is located near the batteries. It can thus be reached by opening the rear left-hand door.

The battery disconnect switch allows to cut off any power supply in the electrical system of the machine.

NOTE: *When the switch is turned to OFF position, all electrical circuits are cut off and the stations stored on the radio presets and the time set for the clock will be cleared.*



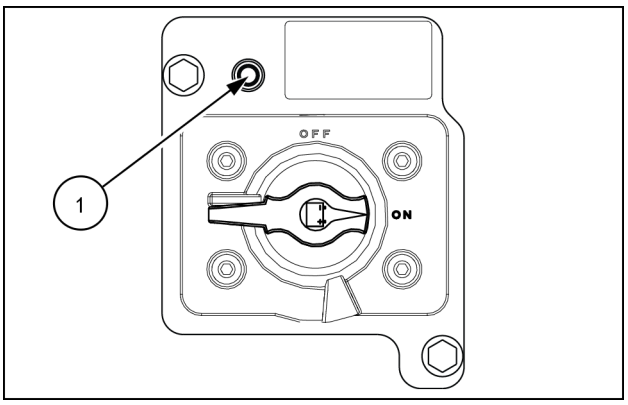
SMIL15CEXZ409AB 4

The battery disconnect switch shall be in ON position for normal operation.

The battery disconnect switch shall be turned to OFF position only when taking the actions below for inspection, repair and welding:

1. Batteries removal.
2. Electrical system connectors removal.
3. Service on the electrical system.
4. Long-term storage.

NOTICE: *Never turn the battery disconnect switch to OFF position with the engine running. This could damage the electrical system.*

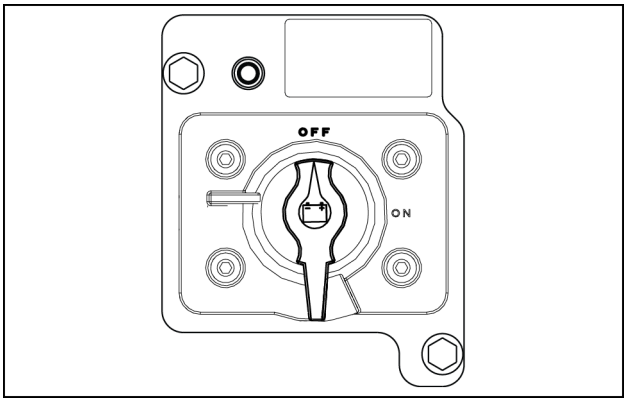


SMIL16CEX1803AA 5

The battery disconnect switch shall never be turned to OFF position within **3 min** after the engine is stopped.

NOTICE: *The SCR system continues to operate for approximately **3 min** after the starter key is turned off in order to suck **DEF/ADBLUE®** back into the tank. **DEF/ADBLUE®** expands when freezing, and it will thus damage the lines of the SCR system.*

NOTICE: *Never turn the battery disconnect switch to OFF position within **3 min** after the starter key is turned off. The machine control system and the engine control system will be damaged.*



SMIL16CEX1802AA 6

The LED indicator **(1)** above the battery disconnect switch is lit up in yellow as the main control systems are still operating after the engine stop. Never turn the battery disconnect switch to OFF position when the LED indicator **(1)** is lit up in yellow.

Follow the steps below to add **DEF/AdBlue®**:

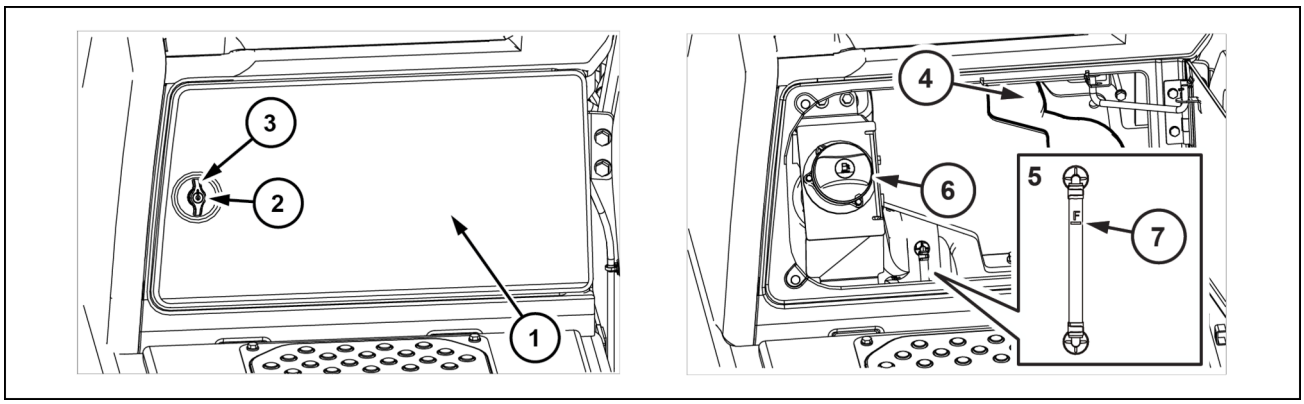
1. Turn the starter key to OFF position. Wait **3 min** for SCR system to completely suck **DEF/AdBlue®** back into the tank.
2. Turn the key cylinder **(2)** with the starter key to unlock the **DEF/AdBlue®** tank cover **(1)**. Turn the cover access handle **(3)** and draw open the cover **(1)** frontward.
3. Wipe the inlet on the **DEF/AdBlue®** tank **(4)** clean of dirt, mud, and foreign objects.

   NOTICE: *some white powder deposits may form when **DEF/AdBlue®** adheres and dries in places such as the supply inlet. Wipe off these deposits to prevent them from entering the **DEF/AdBlue®** tank.*
4. Turn the cap **(6)** counterclockwise and open the filler neck.

   NOTICE: DEF/AdBlue® *may emit an odor when the tank cap is opened. Do not attempt to smell inside the tank from the supply inlet.*
5. Refill up to the F (upper limit) mark **(7)** on the level gauge **(5)**.

   NOTICE: *never refill **DEF/AdBlue®** over the F (upper limit) mark on the level gauge. Adequate air volume must be present in the top of the tank for proper functionality of the after treatment system. Moreover, **DEF/AdBlue®** may leaks from the breather hose during use, and sensors may be damaged when it becomes frozen.*

   NOTICE: *if **DEF/AdBlue®** spills while adding, wipe off the spillage with a cloth and then rinse the area with fresh water. **DEF/AdBlue®** will cause corrosion on painted and unpainted metallic surfaces, and may distort some plastic and rubber components.*
6. Put the cap **(6)** on the filler neck. Turn the cap clockwise to close the filler neck.



AB21C991 3

1. **DEF/AdBlue®** tank cover
2. Key cylinder
3. Cover access handle
4. **DEF/AdBlue®** tank
5. Level gauge
6. Tank cap
7. Upper limit level of **DEF/AdBlue®** to be refilled.

If any of the following occurs within **40 h** after **DEF/AdBlue®** replacement, or after completion of SCR system repair:

The quality of **DEF/AdBlue®** is abnormal and the detection lasts for **10 s**.

An SCR system abnormality is detected and the detection lasts for **10 h**.

The machine control system immediately resumes the inducement sequence to the step **(C)**.

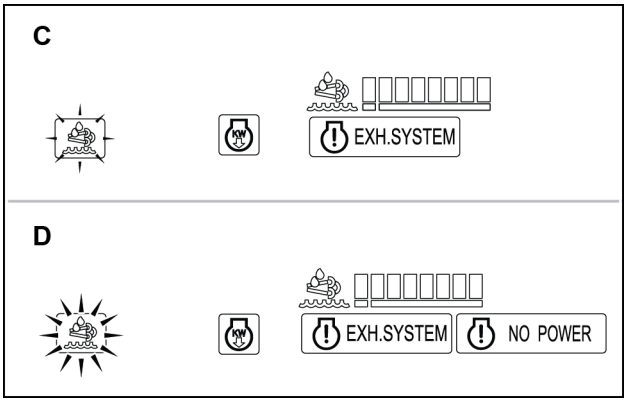
(C) DEF/AdBlue® bad quality, or SCR problem.

SCR detection icon slow flashing.
CHECK SCR SYSTEM displayed.
Three short beeps.

(D) After **30 min** with no action taken.

SCR detection icon fast flashing.
CHECK SCR SYSTEM CHECK ENGINE displayed.
Continuous beep.

At the step **(D)**, the operation of the machine shall be stopped. Reach a safe condition for the machine, and immediately call the CASE CONSTRUCTION dealer for inspection and repair of the SCR system, and for replacement of the fluid into the **DEF/AdBlue®** tank with the proper one.



SMIL16CEX1376AA 12

Digging and loading operations

Use the H work mode for general digging and truck loading operations.

Use the SP work mode for heavy digging operation.

Filling

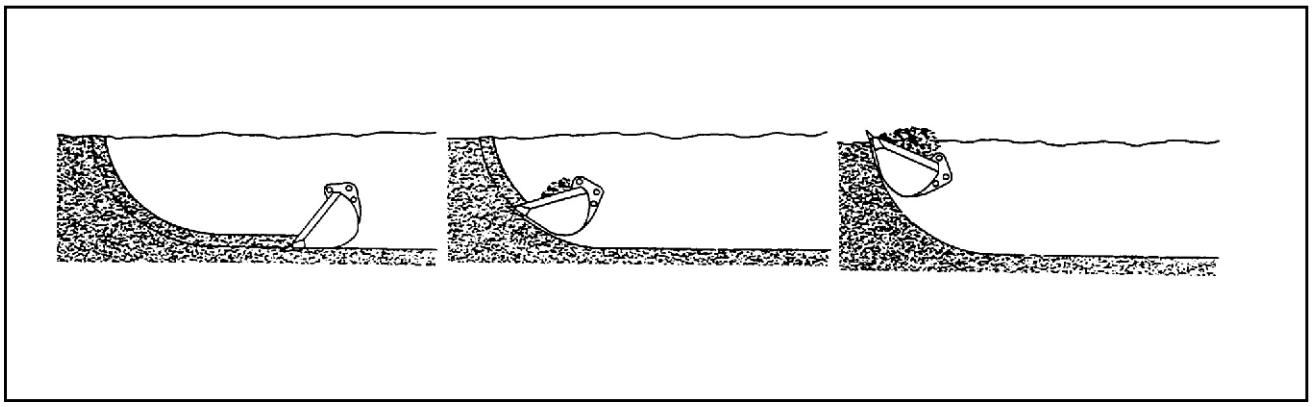
Fill the bucket by manoeuvring the arm.

Keep the bottom of the bucket parallel to the cut.

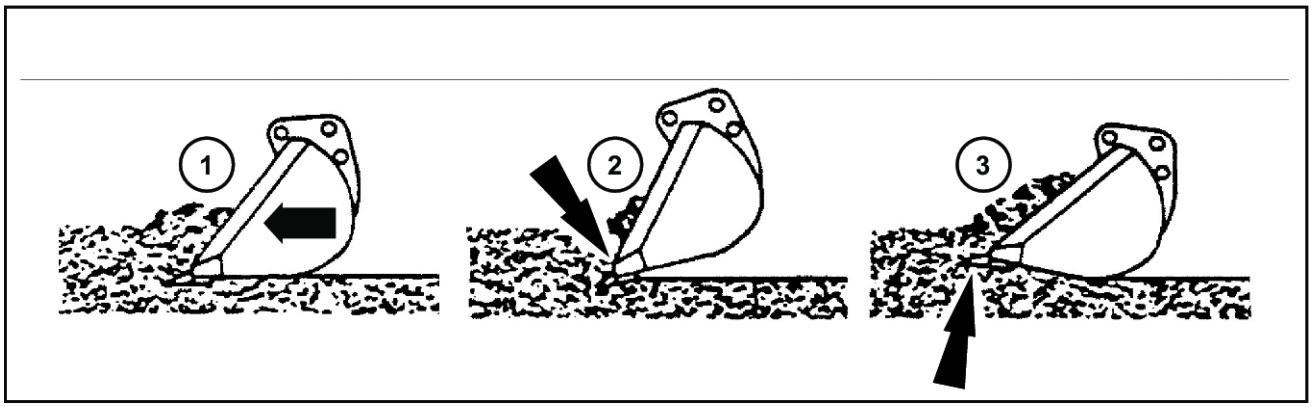
The bucket teeth and blade must cut the ground like the blade of a knife.

The depth of dig varies depending on the type of material.

Excavating method



SMIL13CEX2693EA 2



SMIL13CEX2694EB 3

1. Correct
2. Incorrect. The bucket will dig in and cause a stall.
3. Incorrect. The bucket is pushed upwards. This will also increase the cycle time.

Parking the unit

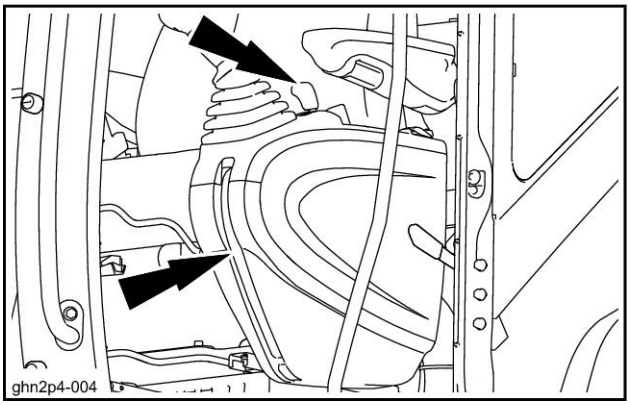
Parking the machine

⚠ WARNING

Fall hazard!
Jumping on or off the machine could cause an injury. Always face the machine, use the handrails and steps, and get on or off slowly. Maintain a three-point contact to avoid falling: both hands on the handrails and one foot on the step, or one hand on the handrail and both feet on the steps.
Failure to comply could result in death or serious injury.

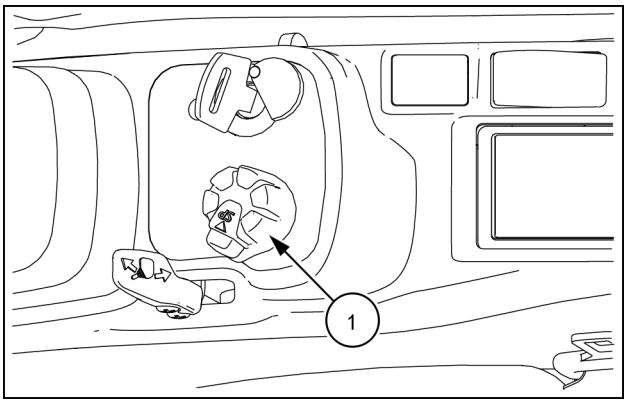
W0141A

1. Park the machine on flat and level area away from soft ground, dug holes and ground cavity without solid support.
2. Orient the upper structure frame parallel to the under-carriage, retract the attachment and touch the bucket to ground to firmly secure the machine.
3. Set the gate lock lever to central position (the safety bar is in inward position).



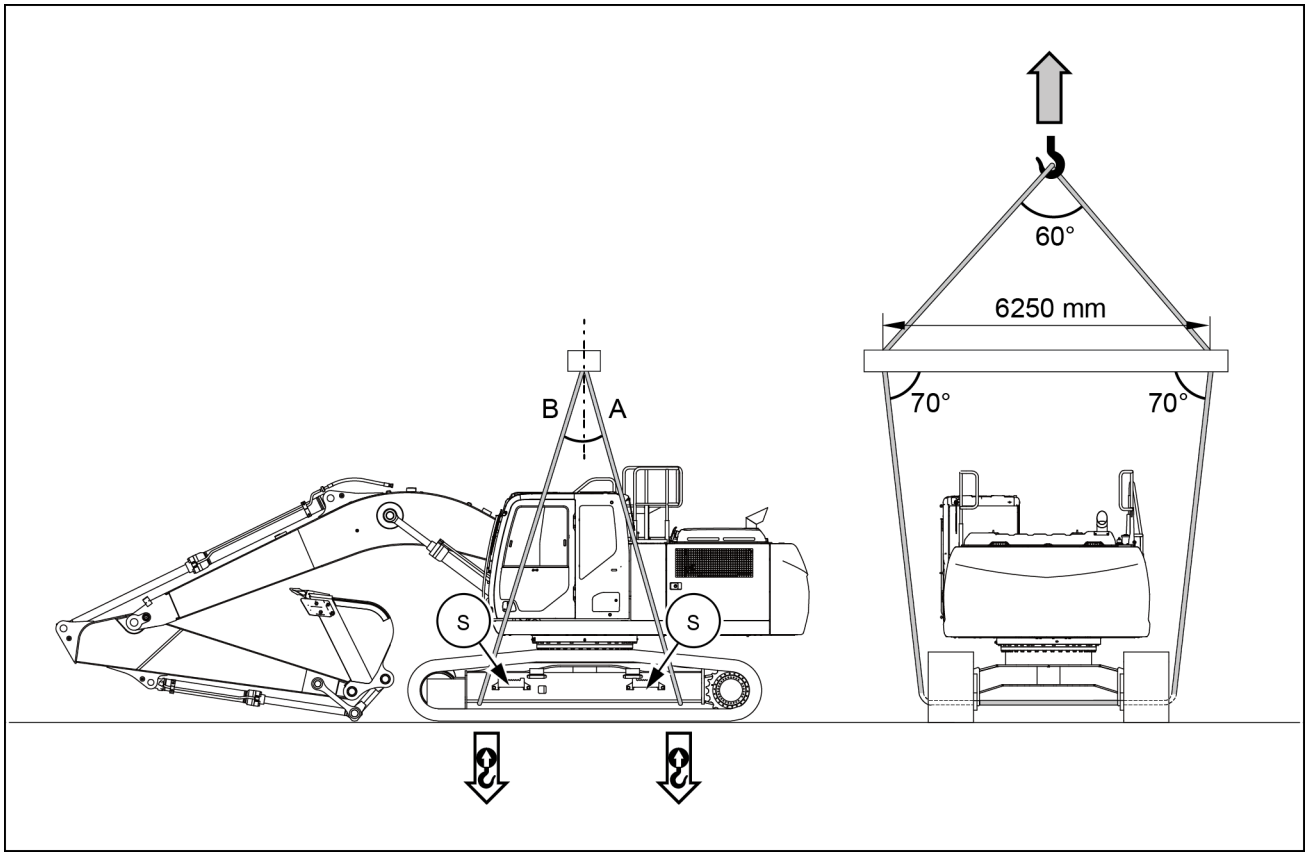
GHN2P4-004A 1

4. Turn the engine throttle **(1)** to low idle position and run the engine for about **5 min**.



SMIL15CEXY892AB 2

Position the machine on a firm and level ground, and proceed as follows:



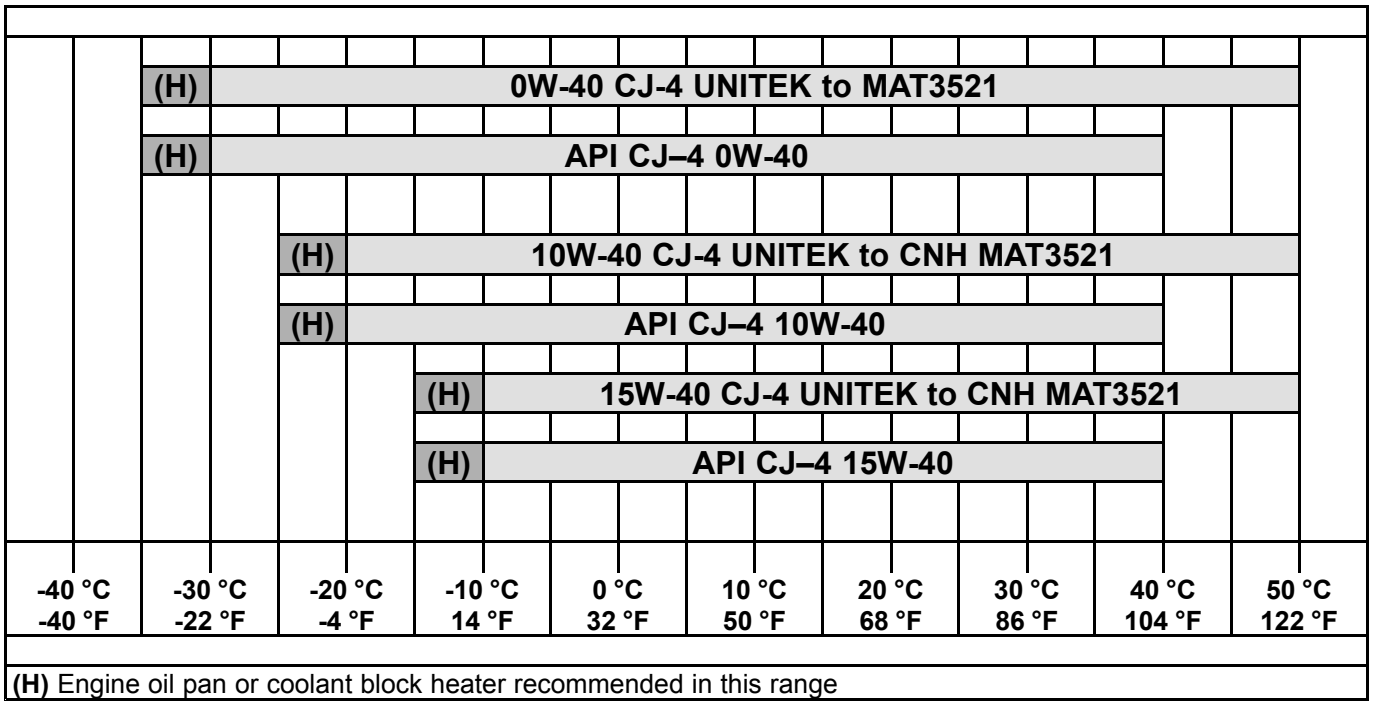
SMIL16CEX0453FA 1

1. Set the machine in the position for transport: fully retract the arm, curl the bucket and lower the boom. Place the gate lock lever in central position. Stop the engine and remove the starter key. Check the operator's compartment for any loose item, tools, etc. that could fall or cause a problem or injury during the procedure and remove or secure them. Get off the machine. Retract the radio antenna. Fold the rear view mirrors. Lock the cab door and the side panels. Remove the four side steps **(S)**.
2. Check for lifting point decals on the undercarriage of the machine in order to know where the wire ropes shall be routed. Pass-through the first wire rope between the first two lower rollers on the front of the machine undercarriage. Pass-through the second wire rope between the two last lower rollers on the rear of the machine undercarriage.
3. Link the front wire rope and the rear wire rope to the expander. Slowly lift the expander to tension the wire ropes in order to reach the layout of the lifting devices shown in figure.
4. Carry out a final check of the linkages on the expander and then start lifting the machine.
5. Lift the machine slowly and vertically and make sure for its stability. If needed, lower the machine to the ground slowly and calibrate the layout of the wire ropes to tackle the actual machine configuration.

   NOTICE: *The overall angle A+B shall be kept at* ***30 - 35 °****.*
6. Complete the vertical lift up to the height of the platform where the machine has to be placed. Slowly move the crane laterally to get the machine right over the platform. Gently lower the machine to the platform.

NOTICE: *always avoid sliding movements of the crane (lift and move laterally at the same time). Sliding movements definitely affect machine stability during lifting operation.*

Engine oil recommended operating temperature range



(H) Engine oil pan or coolant block heater recommended in this range

Hydraulic oil level

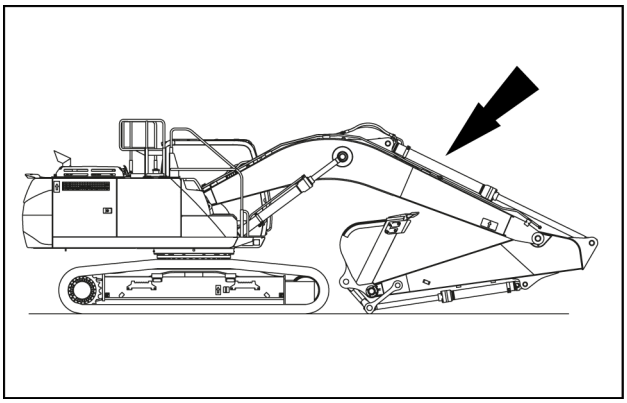
⚠ WARNING

Burn hazard!
Before performing any service on the hydraulic system, you must allow it to cool. Hydraulic fluid temperature should not exceed 40 °C (104 °F).
Failure to comply could result in death or serious injury.

W0241A

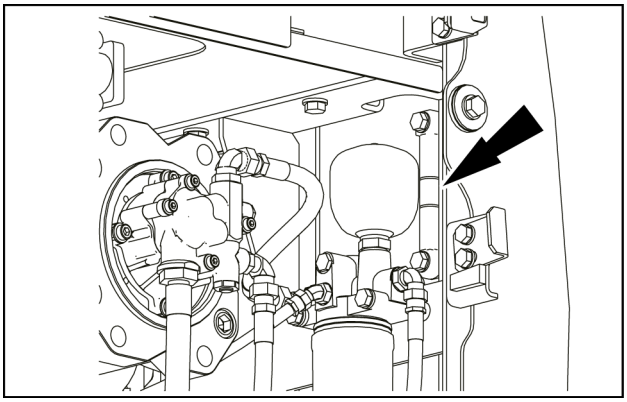
Check the hydraulic oil level every **10 h** or every day
Fluid: **CASE AKCELA HYDRAULIC LL 46**

1. Park the machine on a flat and level place, and arrange the attachment as shown in the figure. Stop the engine, and remove the starter key.



SMIL14CEX2775AA 1

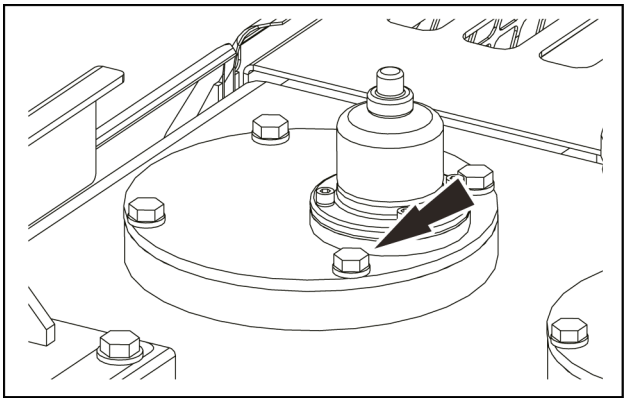
2. The oil should be in the middle of the indicator.



SMIL14CEX2776AA 2

3. If the hydraulic oil level is not in range proceed as follows:
   - Release all pressure in the hydraulic tank. Refer to page **6-10**.
   - Clean the cover plate and the area around the plate.
   - Remove the cover plate, and supply hydraulic fluid to the tank.
   - If necessary, replace the seal of the cover plate, and attach the cover plate.

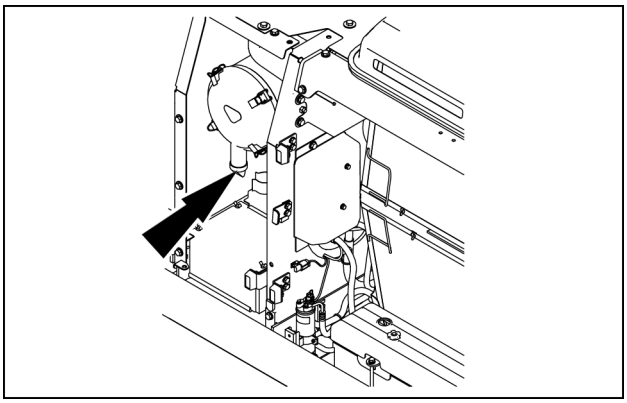
NOTICE: *make sure that no contaminant (water, sand etc.) enters the reservoir during filling.*



SMIL14CEX2777AA 3

5. Check that the dust ejector under the filter is operating correctly.

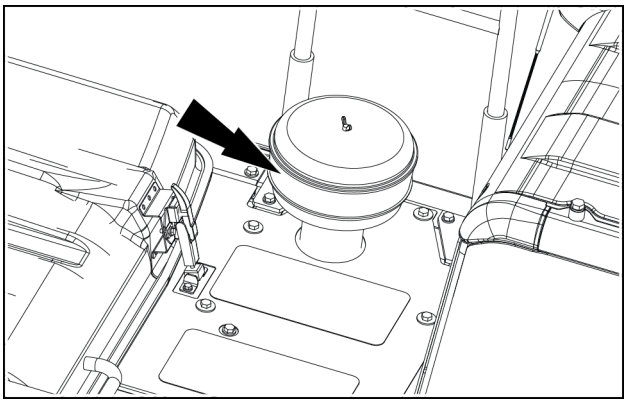
NOTE: *If, after cleaning, smoke exhaust is abnormal, be sure to replace the primary element of the air cleaner.*



SMIL16CEX1307AA 7

Pre-cleaner (If equipped)

Unlock the pre-cleaner cover, and remove the pre-cleaner cup. Get down from the machine, and discharge dust and debris accumulated into the cup. Clean the pre-cleaner cup. Install the pre-cleaner cup, and lock the pre-cleaner cover.



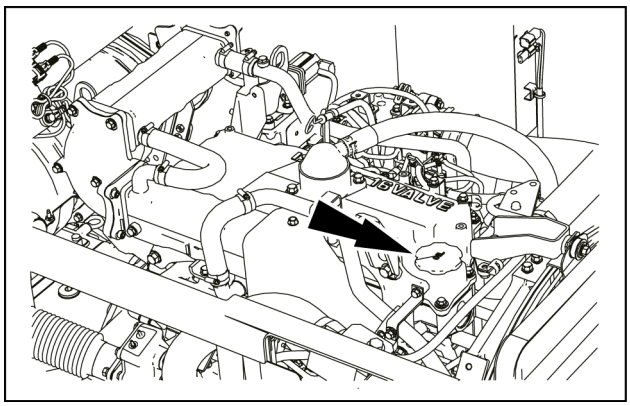
SMIL16CEX1785AA 8

Engine oil and filter

Replace the engine oil every **500 h**
Replace the engine oil filter every **500 h**
Lubricant: **CASE AKCELA UNITEK 10W-40**
Quantity: **23.1 L** (**6.1 US gal**)

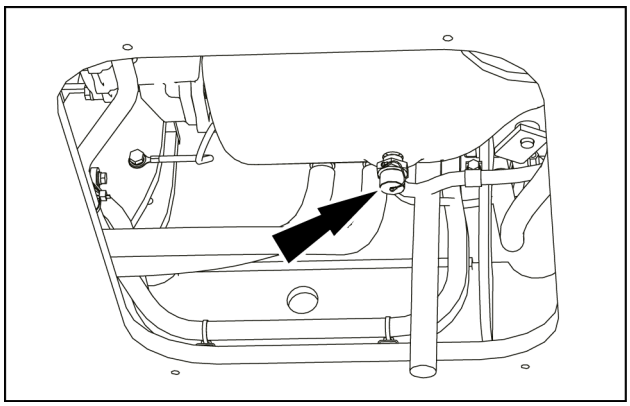
NOTE: *Replace the oil while the engine is warm. Doing so helps the oil in flowing.*

1. Park the machine on a flat and level place. Stop the engine and remove the starter key.
2. Raise and lock the engine hood, and remove the filling plug.



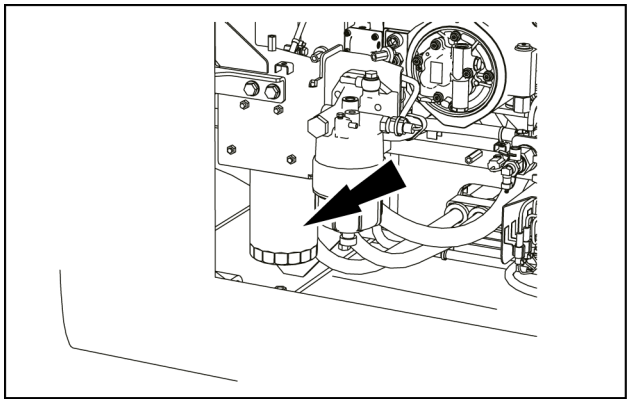
SMIL14CEX2748AA 1

3. Remove the lower panel under the engine oil pan.
4. Remove the protection cap from the drain valve on the engine oil pan.
5. Take out the extension drain hose provided with the machine from the front storage box. Screw one end of the extension drain hose onto the drain valve on the engine, and put the other end into a container with an appropriate capacity to drain the oil.
6. Remove the extension drain hose, and attach the protection cap to the drain valve on the engine housing. Stow the extension drain hose in the front storage box.



SMIL14CEX2749AA 2

7. Open the rear right-hand door. Clean the area around the engine oil filter and remove it with the specific tool provided with the machine.

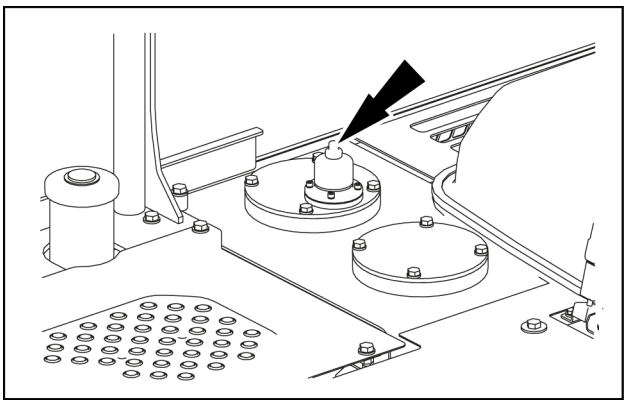


SMIL14CEX2750AA 3

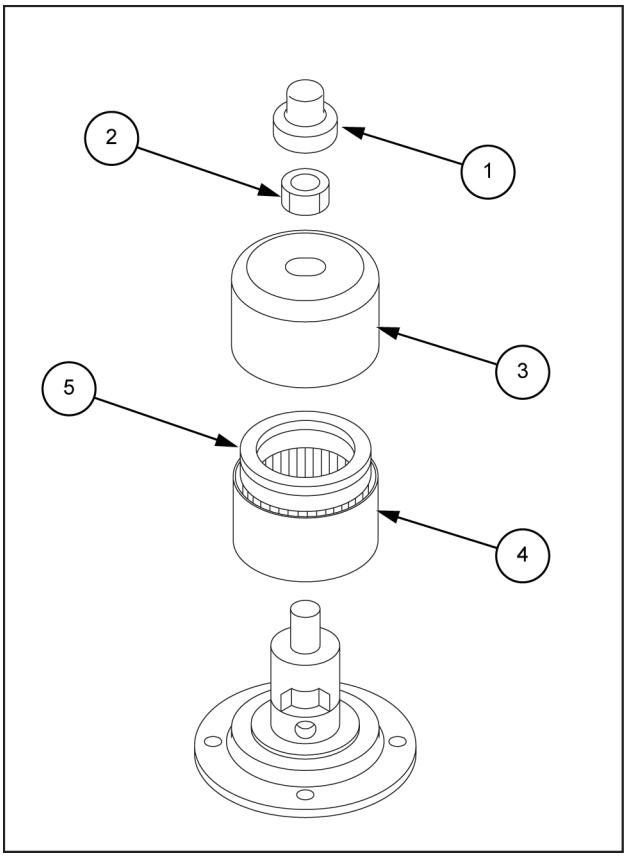
Hydraulic tank breather

Replace the hydraulic tank breather every **1000 h**

1. Press the button **(1)** to release all the pressure in the hydraulic tank.
2. Remove the nut **(2)** and the cover **(3)** from the breather.
3. Remove and discard the used filter element **(4)**.
4. Attach a new element **(4)** with the seal **(5)** facing up.
5. Attach the cover **(3)** together with the nut **(2)**.



SMIL14CEX2774AA 1



SMIL14CEX2782BB 2

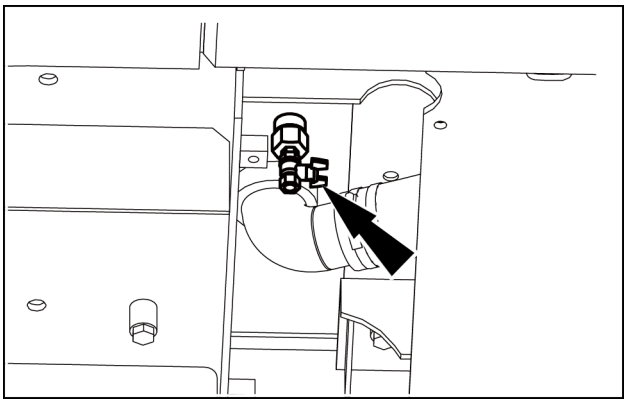
Air conditioner filters

Replace the air conditioning filters every **2000 h**
The air conditioning system has to be inspected by a specialist every 6 months.

To replace the air conditioning filters, proceed as follows:

1. Remove the air conditioning filters. Refer to page **6-22**.
2. Place the new filters in the housings according to the installation procedure.

4. Place a container with an appropriate capacity under the reservoir drain valve.
5. Open the reservoir drain valve to drain the remaining hydraulic fluid.
6. Replace the suction filter as described on page **6-56**.
7. Replace the return filter as described on page **6-57**.
8. Close the reservoir drain valve.
9. Add new hydraulic oil to the tank.
10. Replace the cover plate seal if necessary and install the cover plate on the tank.
11. Start the engine, and run it with no load for about **5 min**.
12. Move each control several times to remove all air from the system.
13. Swing the upper structure all the way from left to right equally twice or more.
14. Park the machine at the specified position, and then stop the engine.
15. Check the oil level of the hydraulic tank, refill it with oil as necessary. Check that there are no bubbles in the hydraulic tank.



SMIL15CEX2514AA 2

Bleeding air from the hydraulic components

NOTE: *After bleeding air from the components, stop the engine for five minutes and check there are no bubbles at the surface of the hydraulic fluid in the reservoir.*

Bucket teeth

The bucket teeth might be replaced because of either wearing or different operating needs.

NOTE: *The wear of the bucket teeth depends upon several application factors. Examples of these factors are the materials mainly handled on the jobsite and the operator's digging style.*

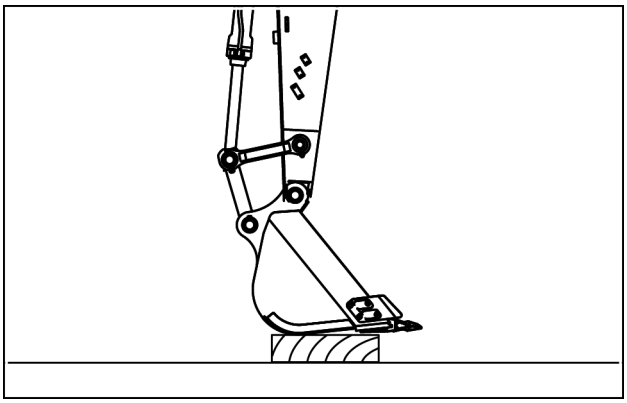
NOTICE: *some types of teeth have a symmetrical design that allows to flip them in case of uneven wear. Consult the CASE CONSTRUCTION DEALER or the bucket supplier and make sure to understand the proper practices to increase the service life of the teeth, as for example flipping and swapping.*

NOTICE: *Never work with a tooth that is completely worn: the adapter on the bucket will be seriously damaged.*

The CASE CONSTRUCTION buckets are equipped with the SMARTFIT teeth system that allows either to easily replace a worn tooth, or to easily switch between several types of teeth.

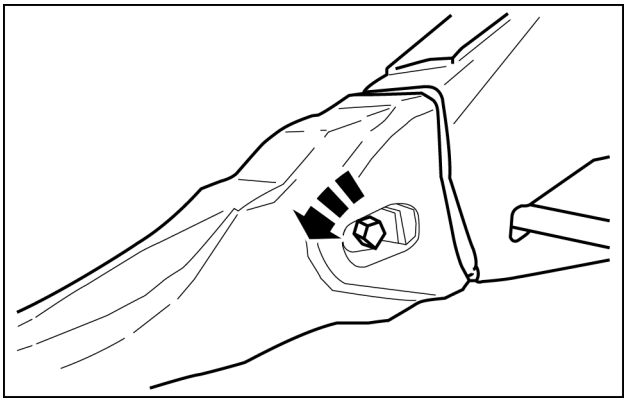
To replace a SMARTFIT bucket tooth proceed as follows:

1. Position the machine on a hard and level ground. Place the bottom side of the bucket on a block so that the bucket teeth are ahead of the block.



SMIL16CEX0479AA 1

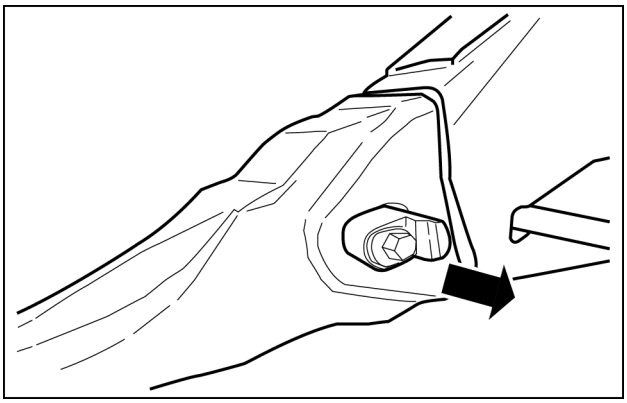
2. Place the gate lock lever in central position, stop the engine and remove the starter key.
3. Turn the locking stud of the mounting pin **90 °** counterclockwise using an hexagonal wrench.



SMIL16CEX0461AA 2

4. Extract the mounting pin.
5. Check the mounting pin for wear or damages.
6. Extract the tooth from the adapter on the bucket.

NOTICE: *If the tooth does not easily come out from the adapter, hit on its sides with a hammer as the mating surfaces come unstuck.*



SMIL16CEX0462AA 3

7. Clean the mating surfaces on the adapter. Check the adapter for wear and damages.
8. Insert a new tooth as it completely mate the adapter.

7 - TROUBLESHOOTING

Fault code resolution

Engine - Troubleshooting

NOTE: *This chapter describes the easy diagnostic methods for engine-related problems and the remedies for them. If you cannot find the cause of a problem or solve a problem, consult the CASE CONSTRUCTION dealer.*

Problem	Possible Cause	Correction
The engine does not start	Defect in starter switch (Deactivation of starter)	Check the starter switch
	Poor running of starter (Starter running slowly)	Discharged battery, defect in starter, dirt or looseness of connectors
	Poor viscosity of engine oil	Inspect and, as necessary, replace
	Poor air bleeding for fuel system	Bleed it of air completely
	Cold engine (in cold weather)	Preheat suction air, or warm coolant
	No fuel in fuel tank	Add
	Low-quality fuel	Inspect and, as necessary, replace
	Clogging in fuel filter	Clean or replace
	Engine stuck	Consult the CASE CONSTRUCTION dealer
	Low compression	Consult the CASE CONSTRUCTION dealer
	Defect in fuel injection pump	Consult the CASE CONSTRUCTION dealer
	Battery disconnect switch is OFF	Set to ON
	No urea solution remaining in urea solution tank	Add
	Other urea solution than that of specified concentration added	Consult the CASE CONSTRUCTION dealer
The engine stops during operation	No fuel in fuel tank	Add
	Clogging in fuel filter	Clean or replace
	Air entry in fuel system	Retighten the connections of fuel lines
Abnormal oil pressure	Low oil level	Add
	Clogging in oil filter	Replace the oil filter
	Low oil viscosity	Replace with the oil of suitable viscosity for temperature
	Oil leaks from connections	Tighten the connections
	Defect in oil pressure switch	Consult the CASE CONSTRUCTION dealer
	Malfunction in oil pump	Consult the CASE CONSTRUCTION dealer
Exhaust gas from the engine is white or blue	Excess oil	Give an overhaul or replace components
	Very low oil viscosity	Replace with the oil of correct viscosity
	Overcooling by radiator	Adjust
	Incorrect fuel injection timing	Consult the CASE CONSTRUCTION dealer
	Low compression	Consult the CASE CONSTRUCTION dealer
Exhaust gas from the engine is black or deep gray	Wrong fuel	Replace with the correct fuel
	Incorrect valve clearance	Adjust
	Poor suction (Clogging in air cleaner)	Clean or replace the air cleaner
	Defect in fuel injection pump	Consult the CASE CONSTRUCTION dealer
	Low compression	Consult the CASE CONSTRUCTION dealer

Arm	**2.50 m** (**103.54 in**)	**3.00 m** (**118.11 in**)	**3.52 m** (**159.06 in**)
(A) Max digging reach	**9.85 m** (**387.80 in**)	**10.30 m** (**405.51 in**)	**10.80 m** (**425.20 in**)
(B) Max digging reach at ground level **(GL)**	**9.66 m** (**380.31 in**)	**10.13 m** (**398.82 in**)	**10.65 m** (**419.29 in**)
(C) Max digging depth	**6.43 m** (**253.15 in**)	**6.93 m** (**272.83 in**)	**7.47 m** (**294.09 in**)
(D) Max dump height	**6.51 m** (**256.30 in**)	**6.73 m** (**264.96 in**)	**7.03 m** (**276.77 in**)
(E) Max dump distance	**6.96 m** (**274.02 in**)	**7.42 m** (**292.13 in**)	**7.85 m** (**309.06 in**)
(F) Max working height	**9.53 m** (**375.20 in**)	**9.73 m** (**383.07 in**)	**10.04 m** (**395.28 in**)
(G) Reach at max working height	**6.12 m** (**240.94 in**)	**6.60 m** (**259.84 in**)	**7.00 m** (**275.59 in**)
(H) Min equipment swing radius	**3.98 m** (**156.69 in**)	**4.03 m** (**158.66 in**)	**4.05 m** (**159.45 in**)
(I) Height at min equipment swing radius	**7.82 m** (**307.87 in**)	**7.75 m** (**305.12 in**)	**7.74 m** (**304.72 in**)
(L) Min clean up distance	**3.14 m** (**123.62 in**)	**2.47 m** (**97.24 in**)	**2.11 m** (**83.07 in**)
(M) Max clean up distance	**7.32 m** (**288.19 in**)	**7.78 m** (**306.30 in**)	**8.29 m** (**326.38 in**)
(N) Max digging depth on a vertical face	**5.14 m** (**202.36 in**)	**5.56 m** (**218.90 in**)	**6.08 m** (**239.37 in**)
(O) Reach at max digging depth on a vertical face	**6.80 m** (**267.72 in**)	**7.04 m** (**277.17 in**)	**7.20 m** (**283.46 in**)
(P) Max flat-bottomed trenching depth	**6.24 m** (**245.67 in**)	**6.77 m** (**266.54 in**)	**7.32 m** (**288.19 in**)
(Q) Distance of flat-bottomed trench	**2.92 m** (**114.96 in**)	**2.89 m** (**113.78 in**)	**2.90 m** (**114.17 in**)
(R) Flat-bottomed trench reference lenght	**2.44 m** (**96.06 in**)		
(S) Swing tail radius	**2.95 m** (**116.14 in**)		

NOTE: *the dimensions of the working range are defined basing on the two reference lines* ***(GL)*** *(ground level) and* ***(CL)*** *(center line, i.e. rotation axis of the machine). All the dimensions related to the* ***(GL)*** *are defined with the grousers indented into the ground.*

Setting ranges for Single-acting auxiliary high-flow hydraulic circuit

The maximum flow rate for the Single-acting auxiliary high-flow hydraulic circuit can be selected within the following range:

Level	1 pump flow
1	**50 L/min** (**13.2 US gpm**)
2	**77 L/min** (**20.3 US gpm**)
3	**100 L/min** (**26.4 US gpm**)
4	**120 L/min** (**31.7 US gpm**)
5	**141 L/min** (**37.2 US gpm**)
6	**161 L/min** (**42.5 US gpm**)
7	**184 L/min** (**48.6 US gpm**)
8	**202 L/min** (**53.4 US gpm**)
9	**218 L/min** (**57.6 US gpm**)
10	**234 L/min** (**61.8 US gpm**)

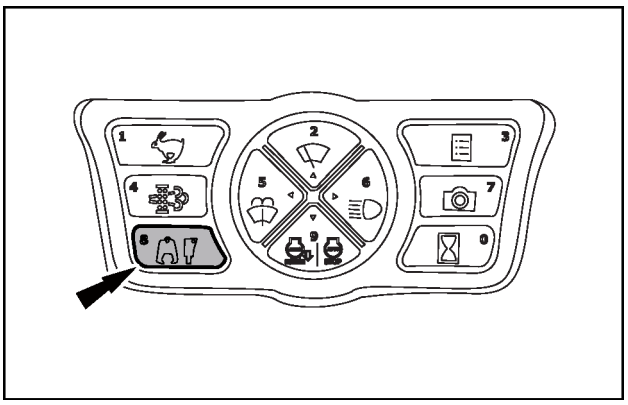
The maximum flow rate for Breaker 1 combination is set from factory:

Single-acting circuit	Breaker 1: **202 L/min** (**53.4 US gpm**)

NOTICE: *the working pressure can be set from the instrument cluster only for the Multi-function auxiliary high-flow hydraulic circuit. For the Single-acting circuit the working pressure shall be set manually.*

NOTICE: *the working pressure of the Single-acting auxiliary high-flow hydraulic circuit shall be set manually by the relief valve located behind the boom foot. The factory setting of the relief valve located behind the boom foot is* ***18 MPa*** *(****2611 psi****) . The maximum setting of the relief valve is* ***20.6 MPa*** *(****2988 psi****).*

7. Start the engine. Press and hold the attachment selector button for **1 s** to get directly to the dedicated tab for operational settings of the auxiliary high-flow hydraulic circuit.

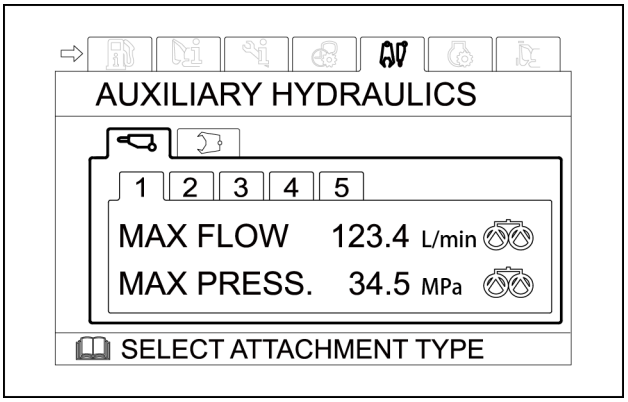


SMIL14CEX1709AA 21

8. Select the breaker page and set the proper flow rate/ pressure combination.

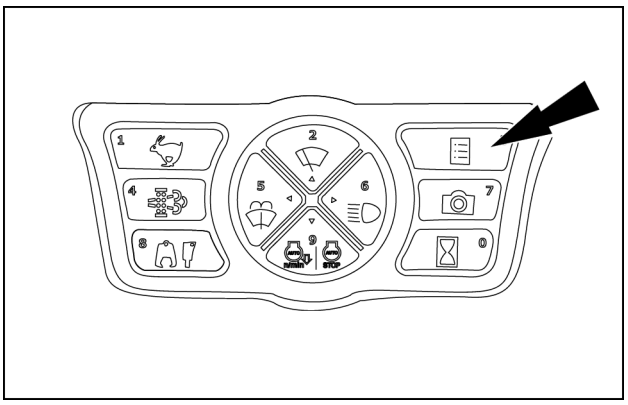
   NOTICE: *the maximum working pressure of the auxiliary high-flow hydraulic circuit shall be set according to the specification of the breaker.*

   NOTICE: *the working pressure of the Single-acting auxiliary high-flow hydraulic circuit shall be set manually by the relief valve located behind the boom foot.*



SMIL16CEX0260AA 22

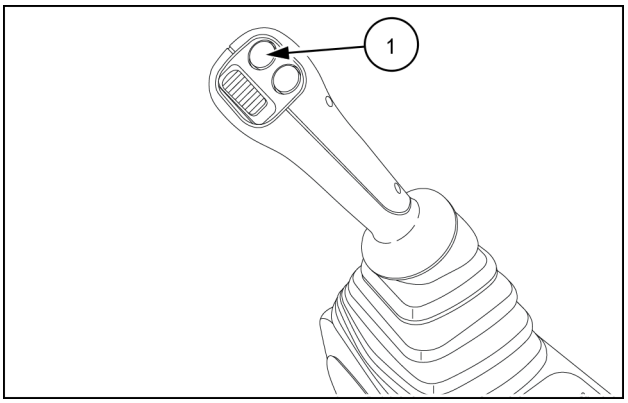
9. Press the display mode selector button to confirm the selection.
10. Select the SP work mode.
11. Set the gate lock lever in forward position.
12. Operate the controls of boom, arm and bucket in order to position the breaker right to the structure or to the object to be crushed.



SMIL15CEX1234AA 23

13. If the proportional switch on the right-hand control lever is equipped, press and hold the ON/OFF button **(1)** to operate the hydraulic breaker with the continuous selected flow providing a constant blowing frequency. Release the button to stop breaker operation.

    NOTE: *To change the blowing frequency, get back to the dedicated tab for operational settings of the auxiliary high-flow hydraulic circuit, and change the flow rate/pressure combination to be used.*

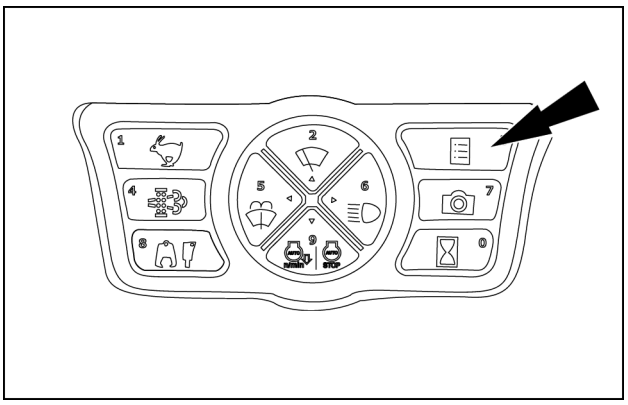


SMIL15CEXZ396AB 24

Press the display mode selector button to confirm the selected flow rate level.

NOTICE: *if operation with the hydraulic attachment is attempted without going throughout the set up process and without confirming any selection, a warning buzzer sounds and the warning message AUXILIARY SETUP REQUIRED is displayed.*

Resume the operating mode of the display. An icon on the left-top of the display indicates the storing number (1 to 5) of the flow rate value currently in use. The flow rate is displayed below the **DEF/ADBLUE®** and fuel gauges.



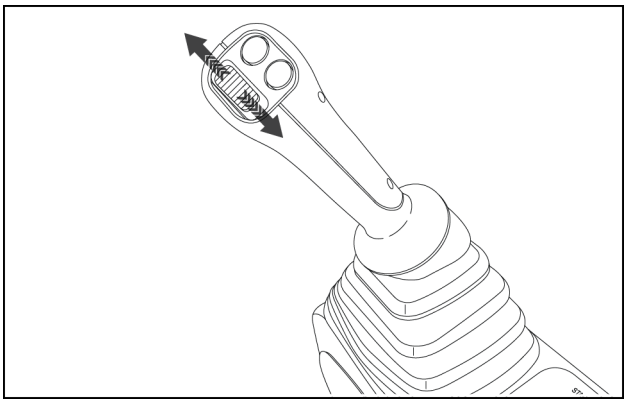
SMIL15CEX1234AA 6

Operating Controls

The auxiliary high-flow hydraulic circuit can be equipped with two alternative control types: a proportional switch on the right-hand control lever, or a right-hand auxiliary pedal.

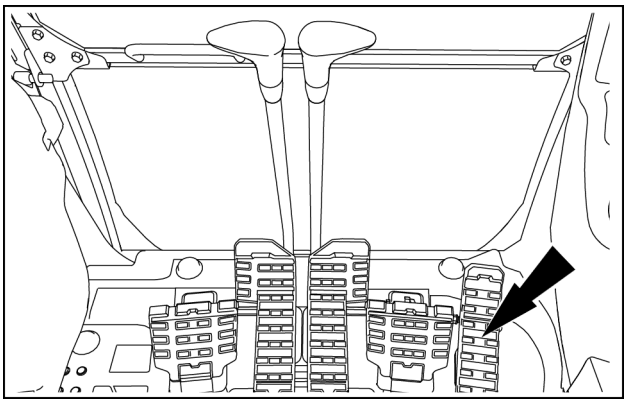
If the proportional switch on the right-hand control lever is equipped, use this switch to operate the hydraulic attachment with a variable power.

NOTICE: *If not using any hydraulic attachment, do not operate controls for auxiliary hydraulic circuits.*



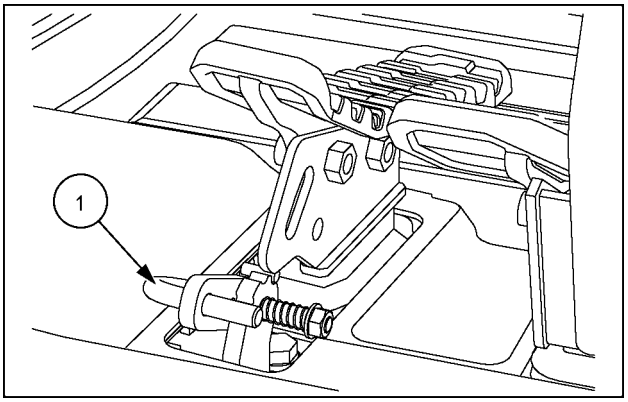
SMIL15CEXY965AB 7

If the right-hand auxiliary pedal is equipped, press the pedal to operate the hydraulic attachment with a variable power.



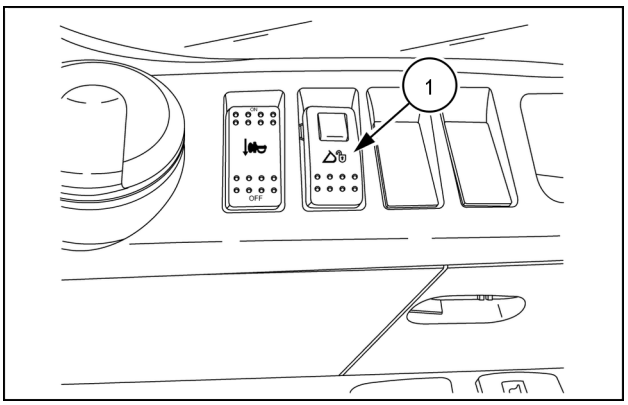
SMIL16CEX0262AA 8

To operate the auxiliary pedal, place the locking pin **(1)** in outward position.



SMIL15CEX5130AA 9

9. Press the front side of the quick coupler switch **(1)** to set the locking status of the quick coupling system. The audible alarm device stops sounding.

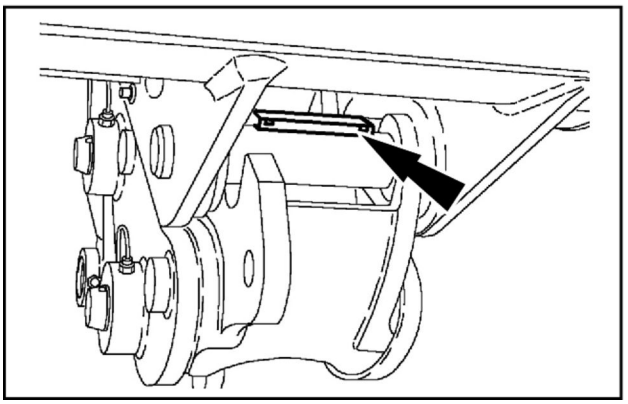


SMIL15CEXY501AA 7

10. Maintain the hydraulic pressure in the bucket cylinder for approximately **5 - 10 s** to allow the latching hook to close.
11. Confirm that the attachment pin is correctly engaged in the latching hook.

NOTE: *the latching hook has a different color to ease the visual confirmation of the engagement of the pin.*

NOTICE: *If visual confirmation is not possible from the operator's seat, get down from the machine and make sure that the attachment pin is correctly engaged in the latching hook.*

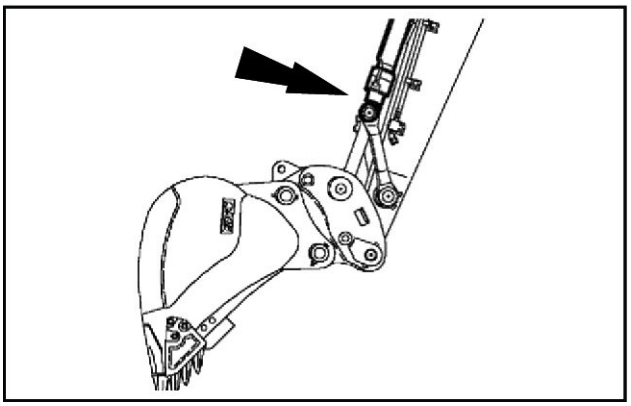


SMIL13CEX2702AB 8

12. Operate the bucket control to retract the cylinder rod and allow the safety device to engage.
13. To ensure that the bucket/attachment pins are securely held by the quick coupler, apply force to the bucket/attachment by pressing it against the ground.

    NOTE: *This operation is commonly known as “Bump Test” or “Ground test”.*

    NOTICE: *If the quick coupler is used in conjunction with an hydraulic breaker, do not apply force with the chisel.*



SMIL13CEX2703AB 9