ORIGINAL INSTRUCTIONS - *according to Directive 2006/42/EC, Annex I 1.7.4.1 and according to Supply of Machinery (Safety) Regulations 2008, Annex I 1.7.4.1*

CX210Es
CRAWLER EXCAVATORS

OPERATOR'S MANUAL

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CASE CONSTRUCTION

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1 - GENERAL INFORMATION

Note to the Owner

Improper operation of this machine can cause injury or death. Before using this machine, make certain that every operator:

- Is instructed in safe and proper use of the machine.
- Reads and understands the Manual(s) pertaining to the machine.
- Reads and understands ALL Safety Decals on the machine.
- Clears the area of other persons.
- Learns and practices safe use of machine controls in a safe, clear area before operating this machine on a job site.

It is your responsibility to observe pertinent laws and regulations and follow CASE CONSTRUCTION instructions on machine operation and maintenance.

Your machine has been designed and built to the highest standards of quality. It conforms to all current safety regulations. However, the risk of accidents can never be completely excluded. That is why it is essential to observe elementary safety rules and precautions.

Read this manual carefully, paying particular attention to the instructions concerning safety, operation and maintenance so as to avoid the risk of injury while operating or servicing the machine.

The standard attachments and tools of this machine are designed to carry out all kinds of earthmoving and rehandling operations. If you want to use this machine to handle a load (pipes, culverts, formwork, etc.), make sure that it is designed to carry out this kind of work. For this type of application, the machine must be equipped with safety valves, an overload indicator, a load handling chart corresponding to the type of machine and its attachment and a load fixing point. All legal requirements must also be strictly observed.

Do not use this machine for any application or purpose other than those described in this manual. If the machine is to be used for work involving the use of special attachments, accessories or equipment, consult your CASE CONSTRUCTION Dealer in order to make sure that any adaptations or modifications made are in keeping with the machine's technical specifications and with prevailing safety requirements.

Any modification or adaptation which is not approved by the manufacturer may invalidate the machine's initial conformity with safety requirements.

The machine must undergo regular inspections, the frequency of which varies according to the type of use. Consult your CASE CONSTRUCTION Dealer.

NOTICE: *The engine and fuel system on your machine is designed and built to government emissions standards. Tampering by dealers, customers, operators and users is STRICTLY PROHIBITED BY LAW. Failure to comply could result in government fines, rework charges, invalid warranty, legal action and possible confiscation of the machine until rework to original condition is completed. Engine service and/or repairs must be done by a certified technician only.*

Your CASE CONSTRUCTION Dealer is at your disposal for any further information. He will also provide any after-sales service you may require, and genuine CASE CONSTRUCTION spare parts, your guarantee of quality and match.

You can obtain manuals on the operation, maintenance and repair of your machine from your CASE CONSTRUCTION Dealer. To ensure quick and efficient service, consult your CASE CONSTRUCTION Dealer for assistance in ordering the correct manuals for your machine.

Your CASE CONSTRUCTION Dealer can deal with orders for operator's manuals, parts catalogues and service manuals.

Always give the type and serial number of your machine so that your CASE CONSTRUCTION Dealer can supply you with the right manuals for your machine.

CASE CONSTRUCTION reserves the right to make changes in the specification and design of the machine without prior notice and without incurring any obligation to modify units previously sold.

The description of the models shown in this manual has been made in accordance with the technical specifications known as of the date of design of this document.

All data given in this manual is subject to production variations. Dimensions and weights are provided with approximate values and the machine fitting shown in the illustrations may not correspond with standard models. For precise information on specific machine models and versions, please consult your CASE CONSTRUCTION Dealer.

Intended use

NOTICE: *do not use the excavator for operations which are foreign to its specifications and not included in this manual in order to prevent serious injury to persons or damage to the machine. The manufacturer/dealer is not responsible for damage caused by improper use.*

The excavator has been designed to carry out digging and earth moving operations through the use of a bucket. Operations that involve the use of hydraulic hammers are also possible. Other operations, such as moving suspended loads, are only possible if the specific variant approved by the manufacturer is present.

Using the excavator and its equipment for different operations, such as towing, transporting and lifting people, is considered inappropriate and is prohibited.

Electro-Magnetic Compatibility (EMC)

This machine complies strictly with the European Regulations on electro-magnetic emissions. However, interference may arise as a result of add-on equipment which may not necessarily meet the required standards. As such interference can result in serious malfunction of the unit and/or create unsafe situations, you must observe the following:

- Ensure that each piece of non- CASE CONSTRUCTION equipment fitted to the machine bears the CE mark.
- The maximum power of emission equipment (radio, telephones, etc.) must not exceed the limits imposed by the national authorities of the country where you use the machine.
- The electro-magnetic field generated by the add-on system should not exceed **24 V/m** at any time and at any location in the proximity of electronic components.

Failure to comply with these rules will render the CASE CONSTRUCTION warranty null and void.

Telematics

NOTE: *the CASE CONSTRUCTION**SiteWatch™** website (www.casesitewatch.com) will not be accessible until the CASE CONSTRUCTION**SiteWatch™** subscription for this machine is registred by an authorized CASE CONSTRUCTION dealer. Contact an authorized CASE CONSTRUCTION for details.*

This machine is equipped with a telematics system. This is an asset-monitoring system that combines Internet, cellular, and GPS technologies. A transponder unit is mounted on the equipment that wirelessly communicates with the user interface CASE CONSTRUCTION**SiteWatch™** at www.casesitewatch.com. Using cellular technology, the transponder can send equipment data, including location, on/off status, usage and production metrics, diagnostic data, movement alarms, and unauthorized usage to the interface. The system will help cut costs and keep accurate records. See the furnished guide for operating your telematics system.

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

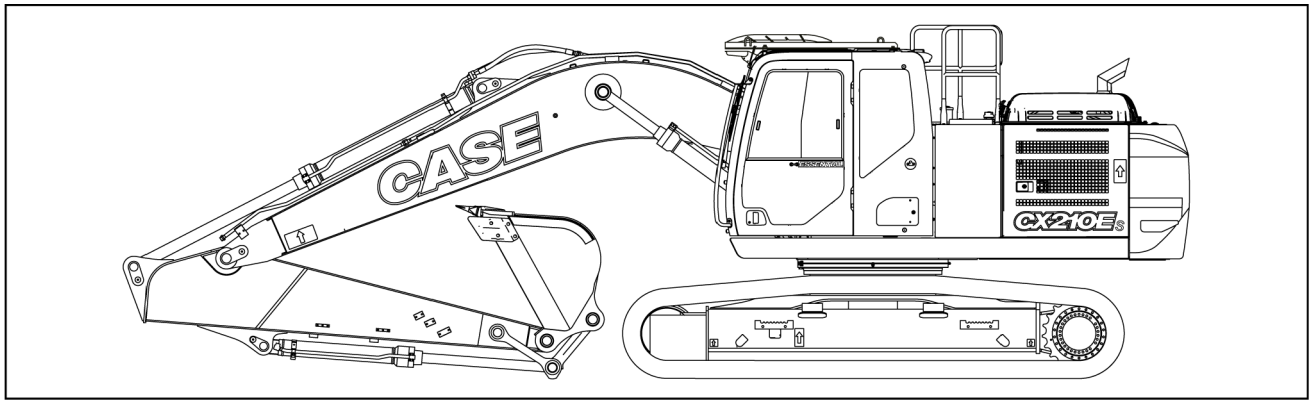
All persons training to operate, or who will operate this CASE CONSTRUCTION machine should be old enough to possess a valid local vehicle operating permit (or meet other applicable local age requirements). These persons must demonstrate the ability to operate and service the CASE CONSTRUCTION machine in a correct and safe manner.

Additional documents

When required, the machine is delivered with an assembly instruction. The assembly instruction shows the packaging depending on the kind of shipment and the related procedure to assemble the received components.

Product identification

The CX210Es is a crawler hydraulic excavator. It consists of an undercarriage fitted with tracks and a turntable bearing which supports the upperstructure frame. The upperstructure frame supports the attachment, at the front end of the machine, plus the engine, hydraulics and cab. When the operator works the controls, the engine-driven pump delivers hydraulic fluid to the control valves. The control valves distribute the hydraulic fluid to the various cylinders and hydraulic motors employed. A cooling system maintains the hydraulic fluid at normal operating temperature.



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When ordering parts, obtaining information or assistance, always supply your CASE CONSTRUCTION Dealer with the type and serial number of your machine or accessories. Write the following in the spaces below: the type, serial number and year of manufacture of your machine, accessories and the serial numbers of the various hydraulic and mechanical components.

Machine

(1) Designation/Model
Hydraulic Excavator CX210Es

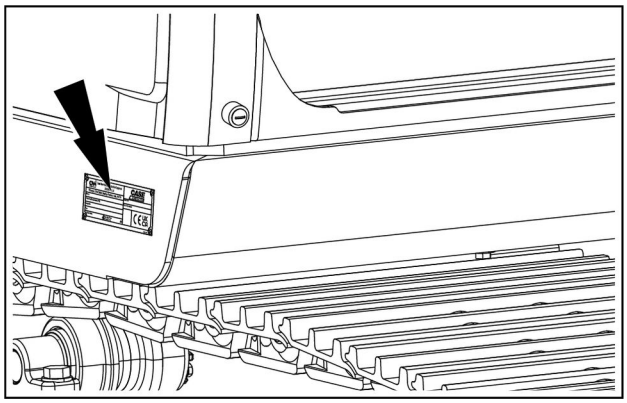
(2) Product Identification Number (PIN)

(3) Year of Construction

(4) Model Year

(5) Maximum operating mass
(the weight shown on the manufacturer's plate is the value using the heaviest configuration and that it does not always correspond to the transport configuration)

(6) Engine power **ISO 14396**



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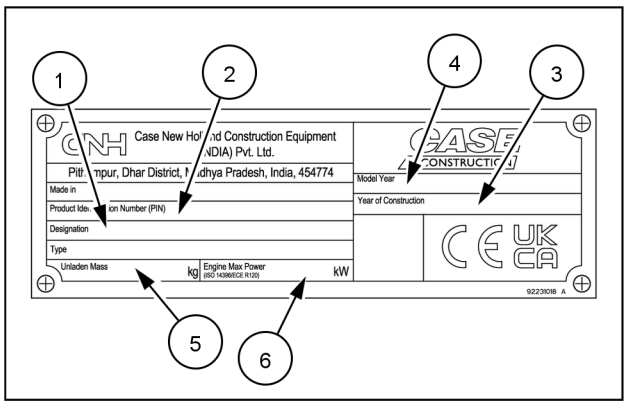

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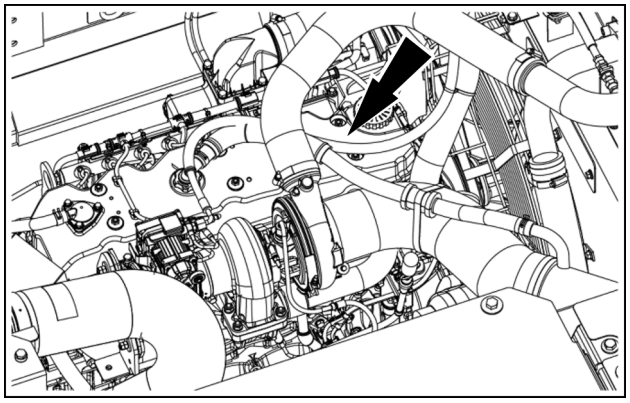
Engine

Manufacturer and model: FPT NEF 6



SMIL21CEX4401AA 4

(A) Engine family

(B) Model

(I) Manufacture date

(L) Displacement

(E) Advertised power

(Q) Power category

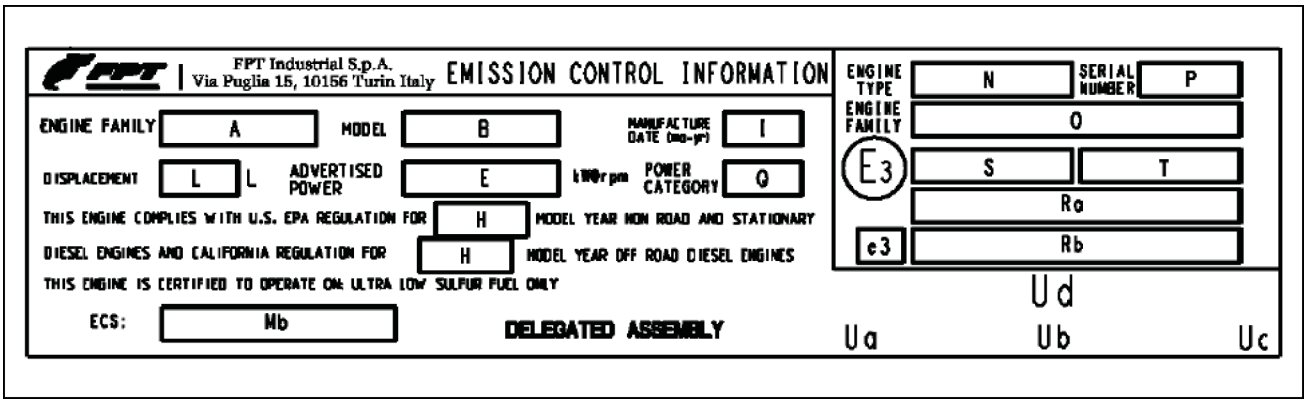
(H) Model year for EPA and California regulations

(Mb) After Treatment System info

(N) Engine type

(P) Serial number

(O) Engine family



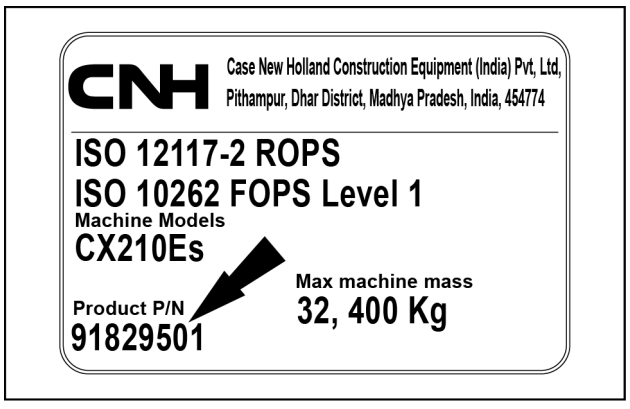
SMIL22CEX1976EA 5

Cab protection ROPS (Roll Over Protective Structure)

Complies with ISO 12117-2.

Complies with ISO 10262 level 1 (cab roof).

Product identification number:



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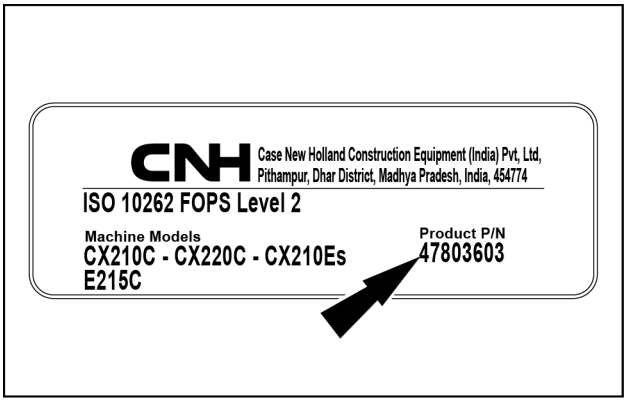
Cab protection FOPS (Falling Objects Protective Structure)

Complies with ISO 10262 level 2 (with optional bolt-on top guard).

Product identification number:



PTIL24CEX0094AB 7

Cab protection FGPS (Front Guard Protective Structure)

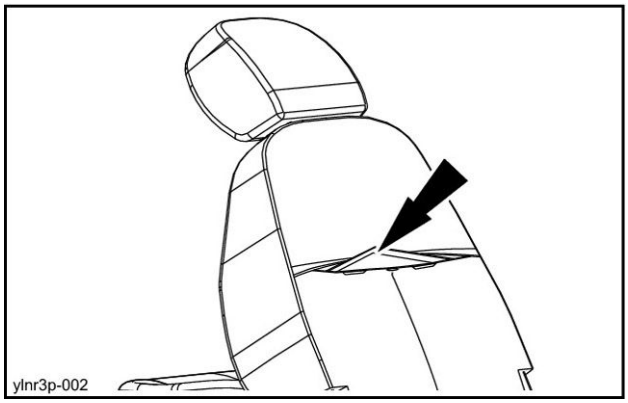
Complies with ISO 10262 level 2 (with optional single frame bolt-on front grid).

Product identification number:

PTIL24CEX0095AB 8

Operator's manual storage on the machine

Always keep the manual in the location provided for that purpose (behind the operator’s seat). Make sure it is always complete and in good condition. If you wish to obtain extra copies, or copies in languages other than that of the country of use, consult your CASE CONSTRUCTION Dealer.



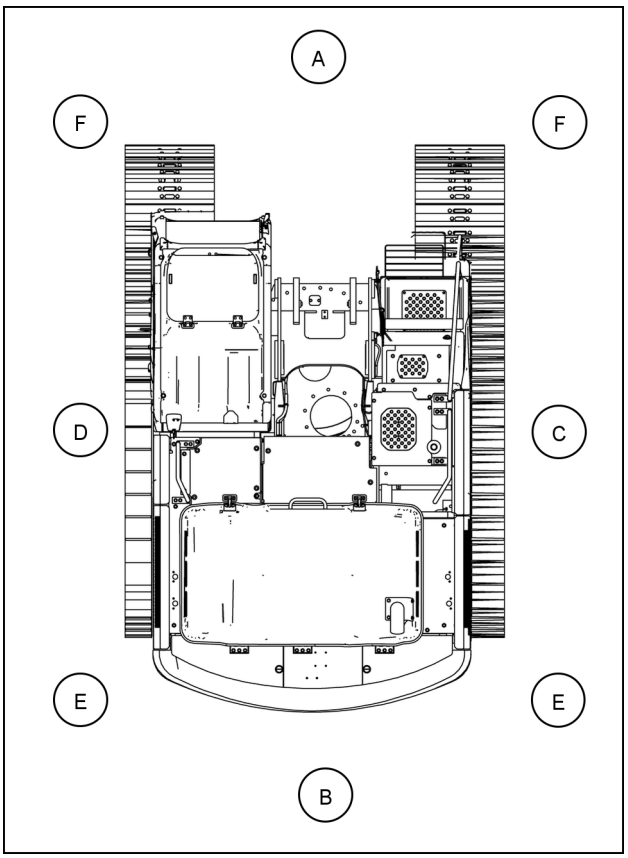
YLNR3P-002 1

Machine orientation

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's seat when the cab is over the idler wheels.

NOTE: *the illustration shows the machine in normal travel position. In normal travel position, the cab is over the idler wheels. The travel reduction gears are at the rear of the upperstructure. This manual uses the terms “right”, “left”, “front” and “rear” to show the side viewed from the operator's seat when the cab is located above the idler wheel.*

A. Front
B. Rear
C. Right-hand side
D. Left-hand side
E. Travel motor
F. Idler wheel



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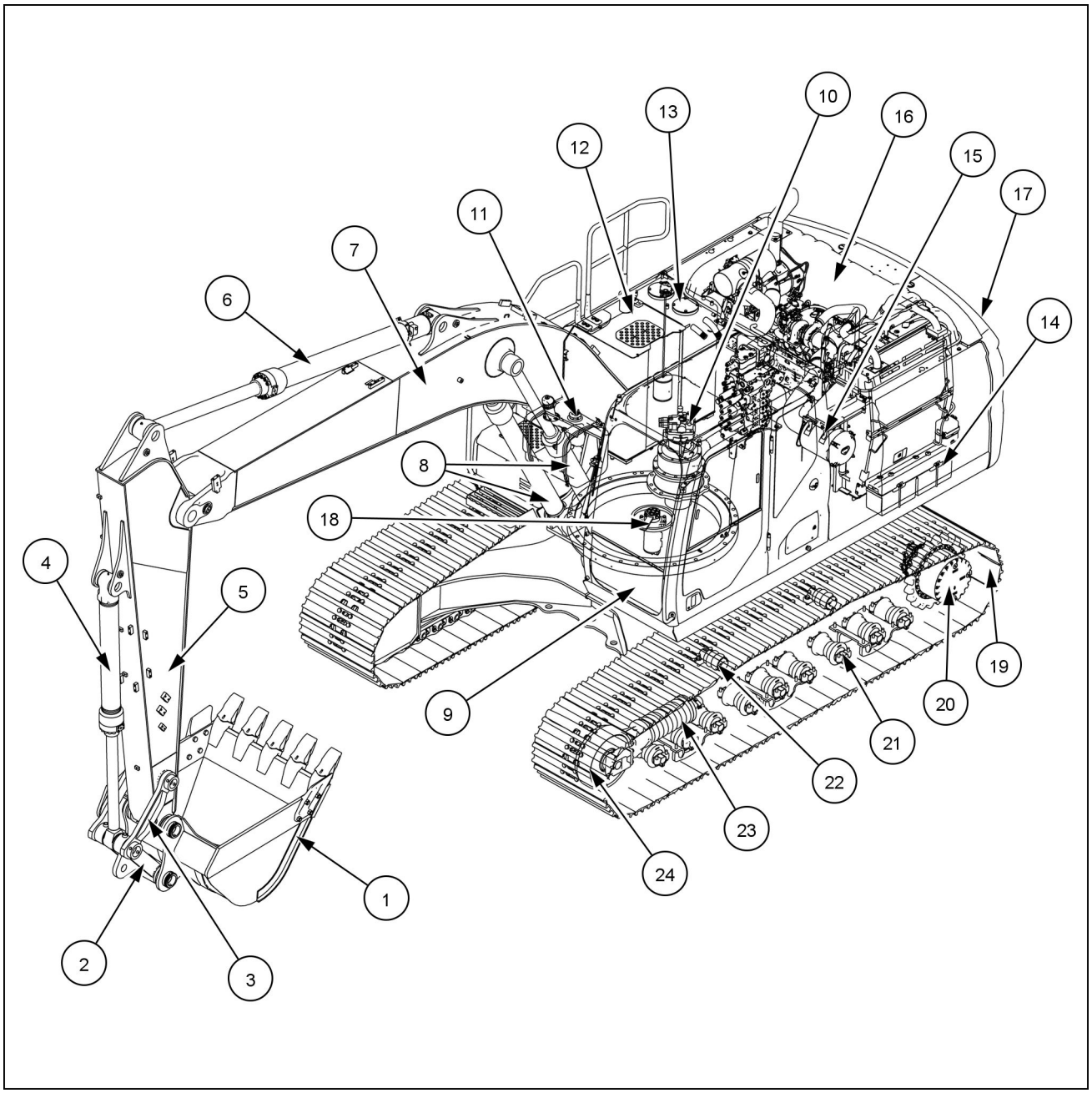
Machine components



SMIL21CEX4323GA 1

1. Bucket
2. Bucket link
3. Arm link
4. Bucket cylinder
5. Arm
6. Arm cylinder
7. Boom
8. Boom cylinders
9. Cab / Operation compartment
10. Swing motor assembly
11. **DEF/ADBLUE®** tank
12. Fuel tank
13. Hydraulic tank
14. Batteries
15. Air filters
16. Engine compartment
17. Counterweight
18. Swing component
19. Shoes
20. Travel reduction gear
21. Lower roller
22. Upper roller
23. Recoil spring
24. Idler wheel

After Treatment System

What is After Treatment System (ATS)?

Your CASE CONSTRUCTION machine is equipped with an After Treatment System (ATS) that is intended to control the pollutant emissions related to the exhaust gases of the engine, so to comply with the specific requirements set by the European Union.

The ATS catalyst includes two modules in which harmful products of the combustion are either trapped or converted to harmless products. The components of each module are designed to allow chemical and physical processes supported by the high temperature of the exhaust gases of the engine, and are intended to address specific harmful products like HC, CO, NOx, PM and PN.

NOTICE: *Prolonged idling of the machine with no load for more than **3.5 h** will cause damage to the ATS modules.*

NOTICE: *During cold engine operation at low engine coolant and ambient air temperatures, water vapor will be visible from the exhaust. This water vapor will resemble steam or light white smoke, and will dissipate as the engine and machine components warm. This water vapor is considered normal.*

The ATS requires the usage of a specific operating fluid named **DEF/ADBLUE®**. The machine is thus equipped with a specific tank for **DEF/ADBLUE®**. Refer to the operating instructions and prescriptions included in Chapter 3 about the refilling of **DEF/ADBLUE®**.

What is Diesel Exhaust Fluid (DEF)/AdBlue®?

DEF/ADBLUE® is a clear, colorless, non-toxic, aqueous urea solution (**32.5%**) with a slight ammonia odor. It is used to chemically reduce NO_X emissions from heavy-duty diesel-powered vehicles. **DEF/ADBLUE®** is neither explosive nor harmful to the environment. **DEF/ADBLUE®** is classified under the minimum-risk category of transportable fluids.

International standard **ISO 22241-1** defines **DEF/ADBLUE®** quality.

NOTICE: *If **DEF/ADBLUE®** comes into contact with your skin, rinse the affected area with ample water. If you notice a visible change in your skin or feel pain, promptly seek medical attention.*

NOTICE: *If **DEF/ADBLUE®** has entered your eyes, immediately rinse your eyes with ample clean water and seek medical attention. Although **DEF/ADBLUE®** itself is a noncombustible liquid, it may generate an irritating odor if heated by fire, etc. Promptly evacuate to a safe place in case fire breaks out.*

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.			

For countries outside of the toll free access area, please use the table below:

Case Construction		
Country	**Toll Number**	**Spoken Language**
Austria (0043)	0049 6951709325	German
Belgium (0032)	0044 2030245588	English
Luxembourg (00352)	0044 2030245588	English
Denmark (0045)	0044 2030245588	English
Netherlands (0031)	0044 2030245588	English
Portugal (00351)	0044 2030245588	English
Poland (0048)	0044 2030245588	English
Norway (0047)	0044 2030245588	English
Sweden (0046)	0044 2030245588	English
Finland (00358)	0044 2030245588	English
Iceland (00354)	0044 2030245588	English
Estonia (00372)	0044 2030245588	English
Latvia (00371)	0044 2030245588	English
Lithuania (00370)	0044 2030245588	English
Czech Republic (00420)	0044 2030245588	Czech
Slovakia (00421)	0044 2030245588	English
Slovenia (00386)	0044 2030245588	English
Croatia (00385)	0044 2030245588	English
Republic of Serbia (00381)	0044 2030245588	English
Bosnia & Herzegovina (00387)	0044 2030245588	English
Albania (00355)	0044 2030245588	English
Macedonia (00389)	0044 2030245588	English
Greece (0030)	0044 2030245588	English
Bulgaria (00359)	0044 2030245588	English
Romania (0040)	0044 2030245588	English
Hungary (0036)	0044 2030245588	English
Cyprus (00357)	0044 2030245588	English
Malta (00356)	0044 2030245588	English
Switzerland (0041)	00800 2273 7373	German, French. Italian

Storage, handling, and transport

NOTICE: *Store **DEF/ADBLUE®** in a sealed container in a well-ventilated indoor area away from direct sunlight and at an ambient temperature of below **25 °C** (**77 °F**). Do not use if frozen or in a slushy state. Do not store **DEF/ADBLUE®** in a place where the temperature drops to **-5 °C** (**23 °F**) or below.*

NOTICE: *Frozen **DEF/ADBLUE®** has approximately a **7%** larger volume than the liquid.*

NOTICE: *Do not store **DEF/ADBLUE®** in a container other than the one specified. If the solution is stored in a steel container, etc., corrosion may occur due to chemical reaction. Refilling such **DEF/ADBLUE®** may damage the SCR catalyst. Use exclusive containers and equipment to store/handle **DEF/ADBLUE®** . If dirty containers or equipment, or containers or equipment used with other solutions are used, the quality of **DEF/ADBLUE®** will drop and lead to the "CHECK AdBlue QUALITY" message.*

DEF/ADBLUE® tends to deteriorate with time. Avoid long-term storage, long-term transport, and storage under high temperatures. Its shelf life depends on storage conditions. Refer to the following table.

Constant ambient storage temperature	Minimum shelf life
≤ **10 °C** (**50 °F**)	36 months
≤ **25 °C** (**77 °F**)	18 months
≤ **30 °C** (**86 °F**)	12 months
≤ **35 °C** (**95 °F**)	6 months
> **35 °C** (**95 °F**)	Significant loss of shelf life: check every batch before use

If the storage temperature exceeds **35 °C** (**95 °F**), the shelf life is reduced significantly. Be sure to conduct a quality test before use. For details, contact the CASE CONSTRUCTION dealer.

NOTICE: *Open the container filled with* ***DEF/ADBLUE®*** *outside in a well-ventilated area. If* ***DEF/ADBLUE®*** *gives off an irritating odor, do not get close to it unless necessary.*

NOTICE: *Do not store* ***DEF/ADBLUE®*** *under high temperatures.* ***DEF/ADBLUE®*** *may generate harmful ammonia at high temperatures.*

In order for **DEF/ADBLUE®** to remain in a usable condition, storage requirements must be met.

- Use only an approved **DEF/ADBLUE®** container. Contact your dealer to obtain proper storage container(s).
- Keep container tightly closed.
- Keep container in a cool, well-ventilated area.
- Keep away from heat and direct sunlight.

If the machine will exceed a four month shut down period:

1. Perform a complete after-run procedure.
2. Drain the **DEF/ADBLUE®** tank.
3. Flush the tank with deionized water.
4. Drain the deionized water.

   NOTICE: *do not disconnect any electrical connections from the ATS.*

Machine start-up after extended shutdown:

1. Fill the **DEF/ADBLUE®** tank.
2. Replace the main filter in the supply module.
3. Start the machine.

Thawing

- Your CASE CONSTRUCTION machine is equipped with an internal tank heater to thaw frozen **DEF/ADBLUE®**. Your machine will still function until the **DEF/ADBLUE®** begins to flow. The ATS will then function normally.

Handling and supply of additives, if any.

- Personal Protective Equipment (PPE) is not required under normal conditions. If splashing is likely, wear eye protection. For prolonged or repeated contact, impervious gloves are recommended. Follow the precautions listed in the SAFETY INFORMATION chapter when handling any service fluid.
- No additives are required.

Disposal

- Dispose of **DEF/ADBLUE®** and any filter accumulations in accordance with all applicable Federal, State, and local laws governing waste disposal.

2 - SAFETY INFORMATION

Signal word definitions

Personal safety

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

⚠ DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

⚠ WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

⚠ CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: *Notice indicates a situation that, if not avoided, could result in machine or property damage.*

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: *Note indicates additional information that clarifies steps, procedures, or other information in this manual.*

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Safety rules

⚠ General safety rules ⚠

Use caution when you operate the machine on slopes. Raised equipment, full tanks and other loads will change the center of gravity of the machine. The machine can tip or roll over when near ditches and embankments or uneven surfaces.

Never permit anyone other than the operator to ride on the machine.

Never operate the machine under the influence of alcohol or drugs, or while you are otherwise impaired.

When digging or using ground-engaging attachments, be aware of buried cables. Contact local utilities to determine the locations of services.

Pay attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety.

Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin, causing serious injury or infection.

- DO NOT use your hand to check for leaks. Use a piece of cardboard or paper.
- Stop the engine, remove the key, and relieve the pressure before you connect or disconnect fluid lines.
- Make sure that all components are in good condition. Tighten all connections before you start the engine or pressurize the system.
- If hydraulic fluid or diesel fuel penetrates the skin, seek medical attention immediately.
- Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.

Keep clear of moving parts. Loose clothing, jewelry, watches, long hair, and other loose or hanging items can become entangled in moving parts.

Wear protective equipment when appropriate.

DO NOT attempt to remove material from any part of the machine while it is being operated or while components are in motion.

Make sure that all guards and shields are in good condition and properly installed before you operate the machine. Never operate the machine with shields removed. Always close access doors or panels before you operate the machine.

Dirty or slippery steps, ladders, walkways, and platforms can cause falls. Make sure these surfaces remain clean and clear of debris.

A person or pet within the operating area of a machine can be struck or crushed by the machine or its equipment. DO NOT allow anyone to enter the work area.

Raised equipment and/or loads can fall unexpectedly and crush persons underneath. Never allow anyone to enter the area underneath raised equipment during operation.

Never operate the engine in enclosed spaces as harmful exhaust gases may build up.

Before you start the machine, be sure that all controls are in neutral or park lock position.

Start the engine only from the operator's seat. If you bypass the safety start switch, the engine can start with the transmission in gear. Do not connect or short across terminals on the starter solenoid. Attach jumper cables as described in the manual. Starting in gear may cause death or serious injury.

Always keep windows, mirrors, all lighting clean to provide the best possible visibility while you operate the machine.

Operate controls only when seated in the operator's seat, except for those controls expressly intended for use from other locations.

Before you leave the machine:

1. Park the machine on a firm, level surface.
2. Lower the attachment to the ground.
3. Put all controls in neutral position.
4. Place the gate lock lever in central position.
5. Turn off the engine and remove the key.

⚠ General maintenance safety ⚠

Keep the area used for servicing the machine clean and dry. Clean up spilled fluids.

Service the machine on a firm, level surface.

Install guards and shields after you service the machine.

Close all access doors and install all panels after servicing the machine.

Do not attempt to clean, lubricate, clear obstructions, or make adjustments to the machine while it is in motion or while the engine is running.

Always make sure that working area is clear of tools, parts, other persons and pets before you start operating the machine.

Unsupported hydraulic cylinders can lose pressure and drop the equipment, causing a crushing hazard. Do not leave equipment in a raised position while parked or during service, unless the equipment is securely supported.

Jack or lift the machine only at jack or lift points indicated in this manual.

Incorrect towing procedures can cause accidents. When you tow a disabled machine follow the procedure in this manual. Use only rigid tow bars.

Stop the engine, remove the key, and relieve pressure before you connect or disconnect fluid lines.

Stop the engine and remove the key before you connect or disconnect electrical connections.

Scalding can result from incorrect removal of coolant caps. Cooling systems operate under pressure. Hot coolant can spray out if you remove a cap while the system is hot. Allow the system to cool before you remove the cap. When you remove the cap, turn it slowly to allow pressure to escape before you completely remove the cap.

Replace damaged or worn tubes, hoses, electrical wiring, etc.

The engine, transmission, exhaust components, and hydraulic lines may become hot during operation. Take care when you service such components. Allow surfaces to cool before you handle or disconnect hot components. Wear protective equipment when appropriate.

When welding, follow the instructions in the manual. Always disconnect the battery before you weld on the machine. Always wash your hands after you handle battery components.

⚠ Fire and explosion prevention ⚠

Fuel or oil that is leaked or spilled on hot surfaces or electrical components can cause a fire.

Crop materials, trash, debris, bird nests, or flammable material can ignite on hot surfaces.

Always have a fire extinguisher on or near the machine.

Make sure that the fire extinguisher(s) is maintained and serviced according to the manufacturer's instructions.

At least once each day and at the end of the day, remove all trash and debris from the machine especially around hot components such as the engine, transmission, exhaust, battery, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

At least once each day, remove debris accumulation around moving components such as bearings, pulleys, belts, gears, cleaning fans, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

Inspect the electrical system for loose connections and frayed insulation. Repair or replace loose or damaged parts.

Do not store oily rags or other flammable material on the machine.

Do not weld or flame cut any items that contain flammable material. Clean items thoroughly with non-flammable solvents before welding or flame-cutting.

Do not expose the machine to flames, burning brush, or explosives.

Promptly investigate any unusual smells or odors that may occur during operation of the machine.

Before performing maintenance for electrical systems or electric welding, always place the key of the battery master switch in "O" (Off) position or disconnect the negative — terminal of the batteries, in order to cut off the electric circuit.

⚠ General battery safety ⚠

Always wear eye protection when you work with batteries.

Do not create sparks or have open flame near a battery.

Ventilate the area when you charge a battery or use a battery in an enclosed area.

Disconnect the negative — terminal first and reconnect the negative — terminal last.

When you weld on the machine, disconnect both terminals of the battery.

Do not weld, grind, or smoke near a battery.

When you use auxiliary batteries or connect jumper cables to start the engine, use the procedure shown in the operator's manual. Do not short across terminals.

Follow the manufacturer's instructions when you store and handle batteries.

Battery post, terminals, and related accessories contain lead and lead compounds. Wash hands after handling.

Battery acid causes burns. Batteries contain sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately.

Antidote (internal) : Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.

Keep out of reach of children and other unauthorized persons.

⚠ 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 than 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.
- Check that bolts are tight on the seat bracket or mounting.
- If the belt is attached to the seat, make sure that the 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 because this can make the belts weak.

⚠ Operator protective structure ⚠

Your machine is equipped with an operator protective structure, such as: a Roll Over Protective Structure (ROPS), Falling Objects Protective Structure (FOPS), or a cab with a ROPS. A ROPS may be a can frame or a two-posted or four-posted structure used for the protection of the operator to minimize the possibility of serious injury. The mounting structure and fasteners forming the mounting connection with the machine are part of the ROPS.

The protective structure is a special safety component of your machine.

DO NOT attach any device to the protective structure for pulling purposes. DO NOT drill holes to the protective structure.

The protective structure and interconnecting components are a certified system. Any damage, fire, corrosion, or modification will weaken the structure and reduce your protection. If this occurs, THE PROTECTIVE STRUCTURE MUST BE REPLACED so that it will provide the same protection as a new protective structure. Contact your dealer for protective structure inspection and replacement.

After an accident, fire, tip over, or roll over, the following MUST be performed by a qualified technician before returning the machine to field or job-site operations:

- The protective structure MUST BE REPLACED.
- The mounting or suspension for the protective structure, operator's seat and suspension, seat belts and mounting components, and wiring within the operator's protective system MUST be carefully inspected for damage.
- All damaged parts MUST BE REPLACED.

DO NOT WELD, DRILL HOLES, ATTEMPT TO STRAIGHTEN, OR REPAIR THE PROTECTIVE STRUCTURE. MODIFICATION IN ANY WAY CAN REDUCE THE STRUCTURAL INTEGRITY OF THE STRUCTURE, WHICH COULD CAUSE DEATH OR SERIOUS INJURY IN THE EVENT OF FIRE, TIP OVER, ROLL OVER, COLLISION, OR ACCIDENT.

Seat belts are part of your protective system and must be worn at all times. The operator must be held to the seat inside the frame in order for the protective system to work.

⚠ Air-conditioning system ⚠

The air-conditioning system is under high pressure. Do not disconnect any lines. The release of high pressure can cause serious injury.

The air-conditioning system contains gases that are harmful to the environment when released into the atmosphere. Do not attempt to service or repair the system.

Only trained service technicians can service, repair, or recharge the air-conditioning system.

⚠ Personal Protective Equipment (PPE) ⚠

Wear Personal Protective Equipment (PPE) such as hard hat, eye protection, heavy gloves, hearing protection, protective clothing, etc.

⚠ Do Not Operate tag ⚠

Before you start servicing the machine, attach a 'Do Not Operate' warning tag to the machine in an area that will be visible.

⚠ Hazardous chemicals ⚠

If you are exposed to or come in contact with hazardous chemicals you can be seriously injured. The fluids, lubricants, paints, adhesives, coolant, etc. required for the function of your machine can be hazardous. They may be attractive and harmful to domestic animals as well as humans.

Material Safety Data Sheets (MSDS) provide information about the chemical substances within a product, safe handling and storage procedures, first aid measures, and procedures to take in the event of a spill or accidental release. MSDS are available from your dealer.

Before you service your machine check the MSDS for each lubricant, fluid, etc. used in this machine. This information indicates the associated risks and will help you service the machine safely. Follow the information in the MSDS, and on manufacturer containers, as well as the information in this manual, when you service the machine.

Dispose of all fluids, filters, and containers in an environmentally safe manner according to local laws and regulations. Check with local environmental and recycling centers or your dealer for correct disposal information.

Store fluids and filters in accordance with local laws and regulations. Use only appropriate containers for the storage of chemicals or petrochemical substances.

Keep out of reach or children or other unauthorized persons.

Applied chemicals require additional precautions. Obtain complete information from the manufacturer or distributor of the chemicals before you use them.

⚠ Utility safety ⚠

When digging or using ground-engaging equipment, be aware of buried cables and other services. Contact your local utilities or authorities, as appropriate, to determine the locations of services.

Make sure that the machine has sufficient clearance to pass in all directions. Pay special attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines.

Retract raised or extended components, if necessary. Remove or lower radio antennas or other accessories. Should a contact between the machine and an electric power source occur, the following precautions must be taken:

- Stop the machine movement immediately.
- Apply the parking brake, stop the engine, and remove the key.
- Check if you can safely leave the cab or your actual position without contact with electrical wires. If not, stay in your position and call for help. If you can leave your position without touching lines, jump clear of the machine to make sure that you do not make contact with the ground and the machine at the same time.
- Do not permit anyone to touch the machine until power has been shut off to the power lines.

⚠ Electrical storm safety ⚠

Do not operate machine during an electrical storm.

If you are on the ground during an electrical storm, stay away from machinery and equipment. Seek shelter in a permanent, protected structure.

If an electrical storm should strike during operation, remain in the cab. Do not leave the cab or operator's platform. Do not make contact with the ground or objects outside the machine.

⚠ Mounting and dismounting ⚠

Mount and dismount the machine only at designated locations that have handholds, steps, and/or or ladders.

Do not jump off of the machine.

Make sure that steps, ladders, and platforms remain clean and clear of debris and foreign substances. Injury may result from slippery surfaces.

Face the machine when you mount and dismount the machine.

Maintain a three-point contact with steps, ladders, and handholds.

Never mount or dismount from a moving machine.

Do not use the controls or accessories as handholds when you enter or exit the cab.

⚠ Working at heights ⚠

When the normal use and maintenance of the machine requires you to work at heights:

- Correctly use installed steps, ladders, and railings.
- Never use ladders, steps, or railings while the machine is moving.
- Do not stand on surfaces that are not designated as steps or platforms.

Do not use the machine as a lift, ladder, or platform for working at heights.

⚠ Lifting and overhead loads ⚠

Never use loader buckets, forks, etc. or other lifting, handling, or digging equipment to lift persons.

Do not use raised equipment as a work platform.

Know the full area of movement of the machine and equipment and do not enter or permit anyone to enter the area of movement while the machine is in operation.

Never enter or permit anyone to enter the area underneath raised equipment. Equipment and/or loads can fall unexpectedly and crush persons underneath it.

Do not leave equipment in raised position while parked or during service, unless securely supported. Hydraulic cylinders must be mechanically locked or supported if they are left in a raised position for service or access.

Loader buckets, forks, etc. or other lifting, handling, or digging equipment and its load will change the center of gravity of the machine. This can cause the machine to tip on slopes or uneven ground.

Load items can fall off the loader bucket or lifting equipment and crush the operator. Care must be taken when lifting a load. Use proper lifting equipment.

Do not lift load higher than necessary. Lower loads to transport. Remember to leave appropriate clearance to the ground and other obstacles.

Equipment and associated loads can block visibility and cause an accident. Do not operate with insufficient visibility.

⚠ Before using the machine⚠

- Avoid loose fitting clothing, loose or uncovered long hair, jewelry or any other items which could get caught up in machinery.
- Different types of job will require different types of protective equipment. Items such as hard hats, safety shoes, heavy gloves, reflector type jackets, respirators, ear protection and eye protection may be required. Before starting a job, determine what protective equipment will be necessary. Use this equipment at all times.
- Do not attempt to operate this machine unless you have first read and perfectly understood the safety messages and instructions appearing in this manual.
- Operating the machine requires full attention and care on the part of the operator can avoid accidents. Get to know the machine's possibilities and limitations and the working space required. There are areas of poor visibility in the working range of the machine. Have someone guide you for all areas where visibility is not perfect.
- Grease, oil, mud or (in winter) ice on the steps and access handles can cause accidents. Make sure they are kept clean at all times.
- Every day, inspect the machine to detect any signs of hydraulic fluid leakage. Tighten the connections or replace any defective components as necessary.
- Remove any obstructions which hinder visibility. Keep the windshield, rear view mirror and windows clean at all times.
- Make sure the windshield wiper works correctly.
- Make sure you are perfectly familiar with hand signals in daily use on the worksite so as to be able to obtain help with tight manoeuvres or when carrying out operations where visibility is poor.
- Before undertaking any travel or working operations during hours of darkness, make sure the lighting and signaling equipment is fully operative.
- Before any travel operation, make sure that the doors and hoods are properly latched.
- Check that no tools or other items have been left on the machine (be it on the undercarriage or the upperstructure) or in the operator's compartment.
- The operator must be alone on the machine at all times. Do not allow anyone to stand on or around the machine.
- To get in or out of the cab, it is imperative that the upperstructure frame is in line with the undercarriage.

- 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.

- The working area of the end attachment that is mounted may interfere with the machine. Interference may be caused due to the type of end attachment or installation of parts such as a cab guard. Always maintain a safe margin of distance. (Be careful of tool swing or accidental operations.)
- To access or exit the operator's compartment, the left-hand control arm must be in the raised position. Never forget this basic requirement.
- Never leave the operator's compartment while the engine is running.
- To get in or out of the cab, it is imperative that the upperstructure frame is in line with the undercarriage.
- Dust, smoke or mist can reduce visibility and cause an accident. Reduce speed or come to a complete halt until visibility has improved.
- Never jump down from the machine. When alighting from the machine or the upperstructure, always face the machine and use the steps and access handles.
- In the event of an operating problem or failure, move the machine to a safe place, lower the attachment to the ground, shut down the engine and remove the ignition key. Locate the problem, report it if necessary and take the necessary steps to warn others not to attempt to operate the machine.
- Before tilting the seat back forward, it is mandatory to raise the armrests to avoid any accidental operation of the control levers.
- Never turn the key of the battery master switch in "O" (Off) position when engine is running, the electrical systems can be damaged.
- When the engine is stopped, always wait three minutes minimum before to place the key of the battery master switch in "O" (Off) position, otherwise the program of the machine controllers will not exit successfully.

⚠ Preventing risks caused by vibrations⚠

The machine's vibration affects the comfort and in some cases the health and safety of the operator. To reduce vibration risks to a minimum:

1. Make sure that the machine, the equipment and the tool are suitable for the work to be carried out.
2. Make sure that the machine is in good condition and that servicing intervals are complied with.
3. Check the track tension adjustment and the play in equipment linkages.
4. Make sure that the operator's seat and is adjustment controls are in good condition and then adjust the seat to suit the operator's size and weight. The operator's seat complies with the ISO 7096, 2000 standard, EM 6 class.

During work:

1. Operate all controls gradually to ensure smooth machine operation.
2. Modify the machine's operation to suit the working conditions.
3. During travel, adjust the machine's speed, reducing it if necessary.
4. Make sure that the machine's operating radius is in good condition, and free of obstacles and holes.

⚠ Quick coupler (optional)⚠

- Never place the control switch in the unlocked position when the machine is working.
- Each time a bucket is installed on the quick coupler, close the bucket and raise the attachment so as to be able to make a visual check that the bucket pin is correctly engaged in the latching hook.
- The quick coupler modifies the working range of the machine. In certain attachment positions the tool may foul the machine. Always leave a safety distance.
- Never carry out load handling using the front or rear anchoring points used to install the tool on the quick coupler.
- Never put your hands inside the quick coupler and never attempt to adjust or repair the quick coupler if the engine is running.

⚠ Parking the machine⚠

When parking the machine, proceed as follows:

1. Position the machine on flat, level ground, away from soft ground, excavations or poorly shored cavities.
2. Place the upperstructure and the attachment in line with the undercarriage, retract the attachment and dig the bucket into the ground.
3. Lower the dozer blade (if equipped) until it rests on the ground.
4. Place the gate lock lever in central position before leaving the operator's compartment.
5. Stop the engine and remove the ignition key.
6. Lock the cab door.

7. Make sure that the hoods and doors are properly latched.
8. Check that no part of the machine is encroaching on the highway. If this cannot be avoided, install the necessary regulation signaling equipment.

⚠ Maintenance and adjustments⚠

- Do not try to service this machine unless you have first read and perfectly understood the safety messages and instructions featuring in this manual.
- When carrying out service work always wear suitable dress. Avoid loose-fitting clothing.
- Release pressure completely in the hydraulic system before disconnecting the hydraulic piping. Hydraulic oil escaping under pressure can cause serious injury.
- Before doing maintenance work on the machine, shut down the engine and allow it to cool down. Otherwise, you could be burned.
- Before commencing any work on the machine, place a "Do not operate" tag on the right-hand control arm.
- Always wear eye protection when using a tool that might project metal particles. Use a hammer with a soft face, such as copper, for installing pins.
- Badly carried out maintenance or adjustments can cause serious injuries. If you do not understand a servicing or adjustment procedure, consult your CASE CONSTRUCTION Dealer.
- If the attachment is raised or if the machine moves without an operator, serious injury can result. Before carrying out maintenance on this machine, proceed as follows:
  Park the machine on flat, level ground.
  Lower the attachment until it is resting on the ground.
  Lower the dozer blade (if equipped) until it rests on the ground.
  Stop the engine and remove the ignition key.
  Lock the tracks to prevent any machine movement.
- Any unauthorized modifications made to this machine can cause serious injury. Do not undertake any modifications without first consulting your CASE CONSTRUCTION Dealer. Any modifications made must be in conformity with the technical specifications of the machine and any current safety legislation requirements.
- Certain components of the machine are subject to type approval. When replacing such components, it is mandatory to make sure that they conform to regulations. For safety's sake, use genuine CASE CONSTRUCTION parts.
- Pressurized hydraulic fluid or grease which penetrates the skin can cause serious injury. Take the necessary safety precautions (safety clothing and protection for face and hands) to avoid such risks. Also, before using these products, read the manufacturer's instructions concerning their use. If hydraulic fluid penetrates the skin, call a doctor immediately.
- Coolant solution is toxic.
  Avoid contact with skin, eyes and clothing.
  Antidote:
  External: rinse thoroughly with water and remove soiled clothes.
  Internal: do not induce vomiting. Rinse the mouth out with water. Seek medical advice.
  Eyes: rinse thoroughly with water and seek medical advice.
- The pressure in the track tension cylinders is high. Follow the procedure described in this manual carefully for increasing or reducing track tension.
- When carrying out a welding operation on the undercarriage or upperstructure carriage as authorized by the manufacturer and in accordance with his instructions, disconnect the batteries, disconnect the alternator B+ and D+ terminal wires and connect the welding apparatus earth cable to the component on which the welding operation is to be performed. Never connect the welding apparatus to the undercarriage when welding on the upperstructure (or vice-versa). Never connect the welding apparatus earth to a component of the hydraulic system.
- When using compressed air, take the necessary precautions to protect your face.
- Clean the machine regularly. Accumulations of grease, dirt and debris can cause injuries or damage the machine.
- Periodically inspect the fastening of the main components, as part of the machine maintenance programme: counterweight, turntable bearing and operator's compartment. In the event of problems, consult your CASE CONSTRUCTION Dealer.
- If the accumulator is not functioning correctly, consult your CASE CONSTRUCTION Dealer. Never try to carry out any servicing operation on the accumulator. If this instruction is not followed serious injury can result.
- The accumulator is charged with nitrogen under high pressure. Do not weld or allow flames to come near to the accumulator.
- There is high pressure fuel in the feed pipe when the engine is running and immediately after it has been shut down. Wait for 2 minutes after engine shut down before you do any maintenance or inspections to allow the pressure to drop in the pipe.
- High-voltage is charged to the controller and/or to the injector while the engine is running and immediately after it has been shut down.
  Do not touch the controller or the injector.
  If it is necessary to touch them for maintenance purposes, consult your CASE CONSTRUCTION Dealer.

⚠ Using an Implement other than a bucket⚠

- When using a special implement (hydraulic breaker, cutter crusher etc.), refer to the operator's manual provided with the implement.

⚠ Implement operation and maintenance ⚠

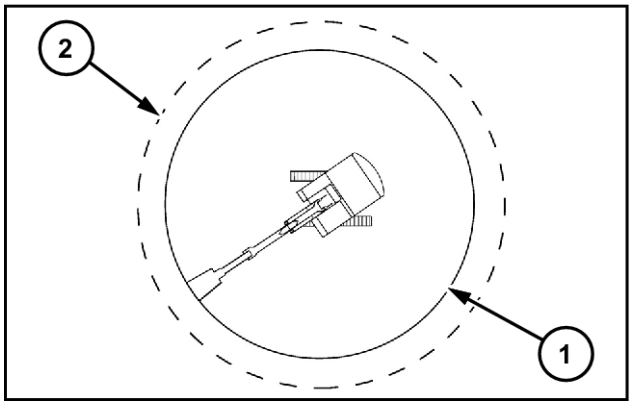
- For the implement operation and maintenance, refer to the operator's manual provided with the implement.

⚠ Safety area ⚠

The safety area is the space necessary for the machine to operate at the maximum range of the tool and at full swing **360°** plus **2 m** (**6.56 ft**).

(1) Working area.

(2) Safety area.



SMIL13CEX2517AB 1

Ecology and the environment

Soil, air, and water quality is important for all industries and life in general. When legislation does not yet rule the treatment of some of the substances that advanced technology requires, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

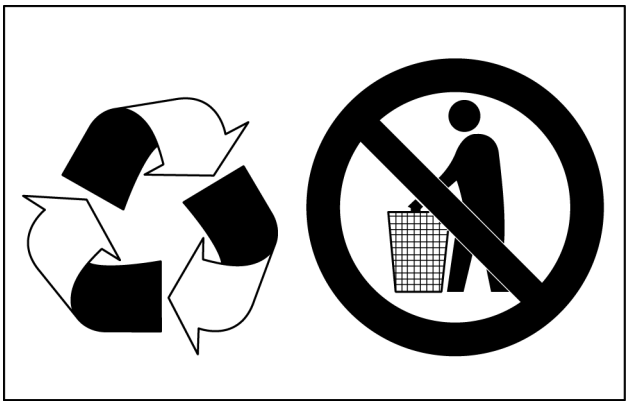
Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these substances on man and nature and how to safely store, use, and dispose of these substances. Your CASE CONSTRUCTION dealer can also provide assistance.

Helpful hints

- Avoid the use of cans or other inappropriate pressurized fuel delivery systems to fill tanks. Such delivery systems may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these products contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when you drain fluids such as used engine coolant mixtures, engine oil, hydraulic fluid, brake fluid, etc. Do not mix drained brake fluids or fuels with lubricants. Store all drained fluids safely until you can dispose of the fluids in a proper way that complies with all local legislation and available resources.
- Do not allow coolant mixtures to get into the soil. Collect and dispose of coolant mixtures properly.
- Do not open the air-conditioning system yourself. It contains gases that should not be released into the atmosphere. Your CASE CONSTRUCTION dealer or air-conditioning specialist has a special extractor for this purpose and can recharge the system properly.
- Repair any leaks or defects in the engine cooling system or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding. Penetrating weld splatter may burn a hole or weaken hoses, allowing the loss of oils, coolant, etc.

Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if the batteries are not properly recycled after use. Improper disposal of batteries can contaminate the soil, groundwater, and waterways. CASE CONSTRUCTION strongly recommends that you return all used batteries to a CASE CONSTRUCTION dealer, who will dispose of the used batteries or recycle the used batteries properly. In some countries, this is a legal requirement.



NHIL14GEN0038AA 1

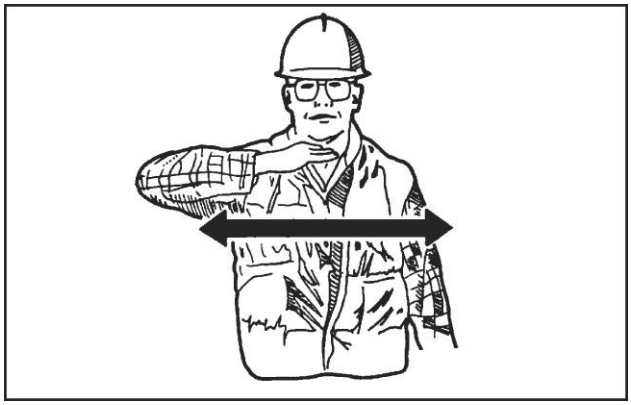
Hand signals

When operating the machine, never attempt to carry out tasks calling for fine control or working in areas where visibility is poor or impaired without seeking the assistance of a signalman. Make perfectly sure that you and the signalman understand the signals to be used.

Start the engine

PDE0002ATBP1 1

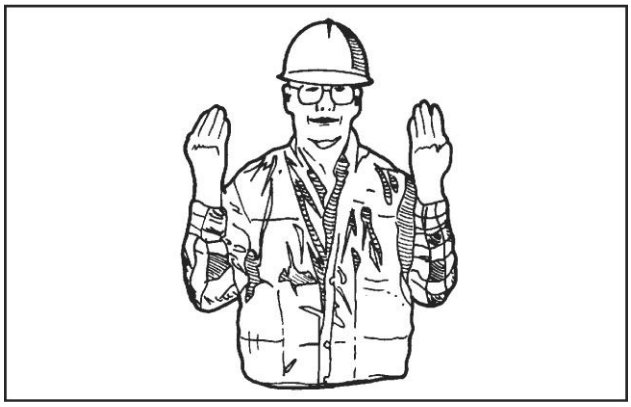
Shut down the engine



PDE0002TBP1 2

Come to me

Wave hands back and forth (palms inwards).



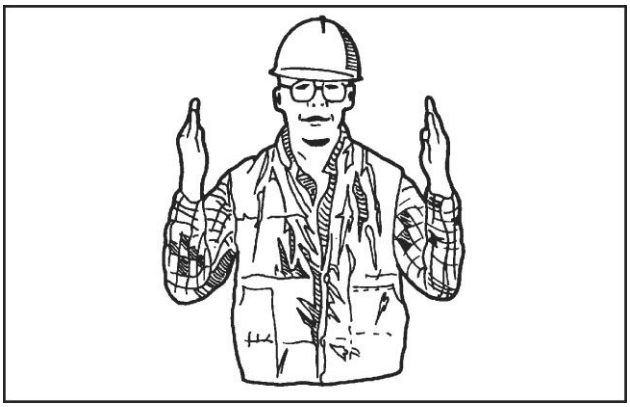
PDE0003ATBP1 3

Move away from me

Wave hands back and forth (palms outwards).

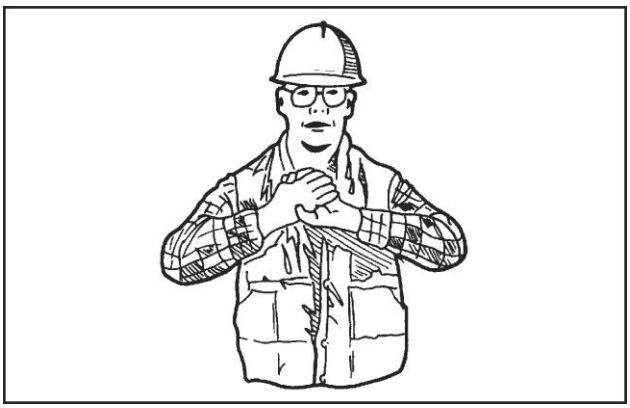
PDE0003TBP1 4

Go this far



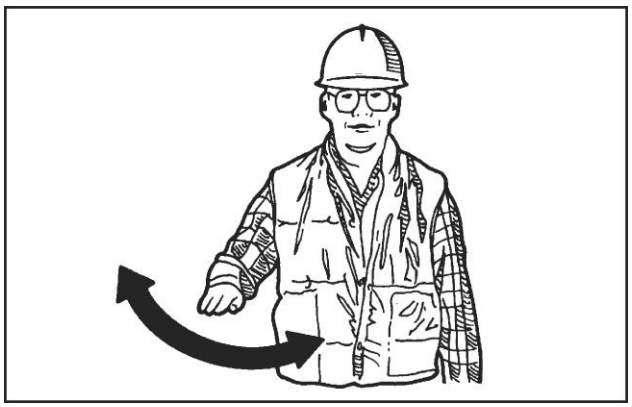
PDE0004ATBP1 5

All stop and hold



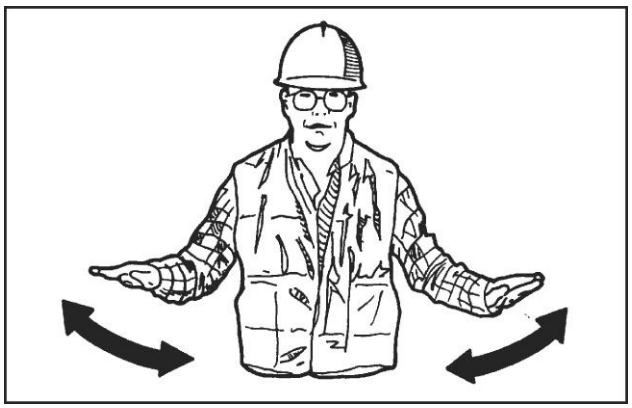
PDE0004TBP1 6

Stop
Wave one hand back and forth.



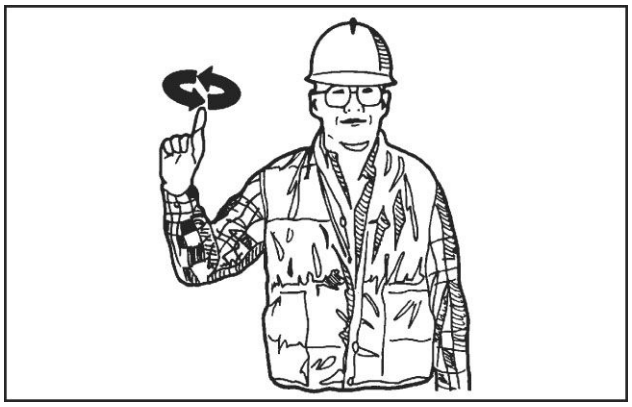
PDE0005ATBP1 7

Emergency stop
Wave hands back and forth.



PDE0005TBP1 8

Raise load or tool

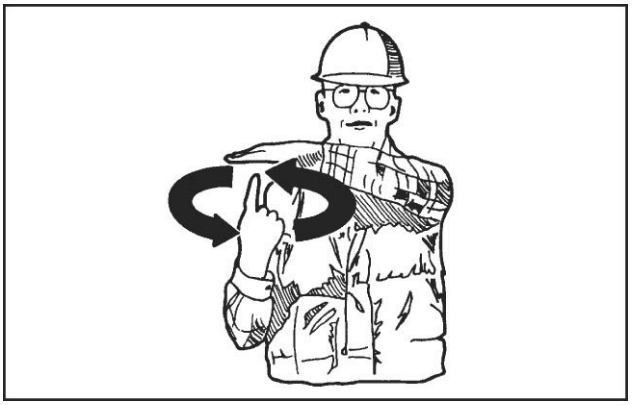


PDE0006ATBP1 9

Lower load or tool

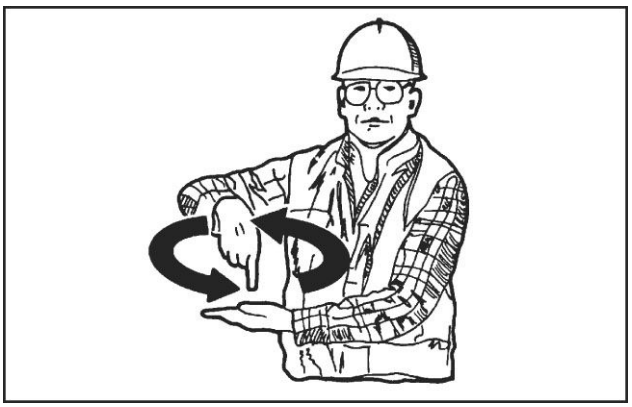
PDE0006TBP1 10

Slowly raise the load or tool



PDE0007ATBP1 11

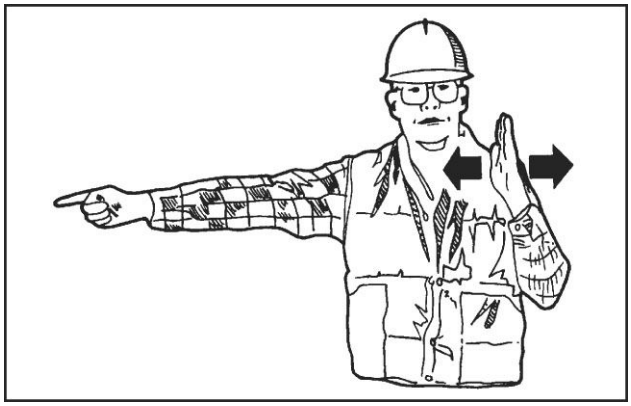
Slowly lower the load or tool



PDE0007TBP1 12

Turn machine left (swing load left)

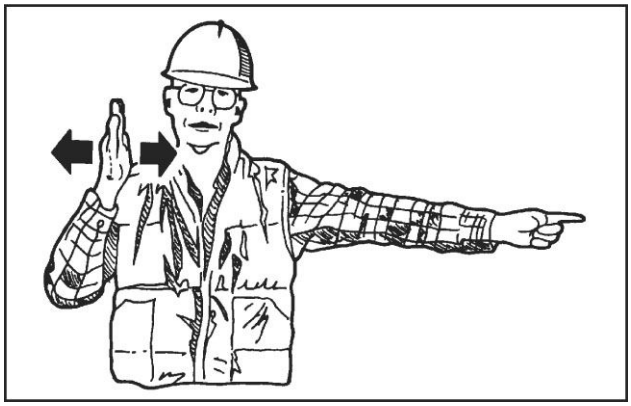
To stop movement, stop moving hand and clench fist.



PDE0008ATBP1 13

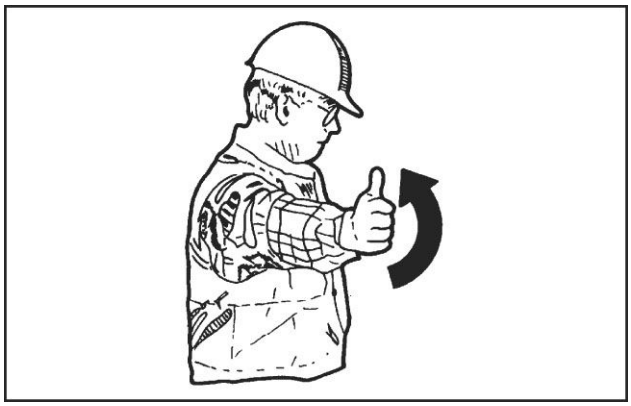
Turn machine right (swing load right)

To stop movement, stop moving hand and clench fist.



PDE0008TBP1 14

Raise tool

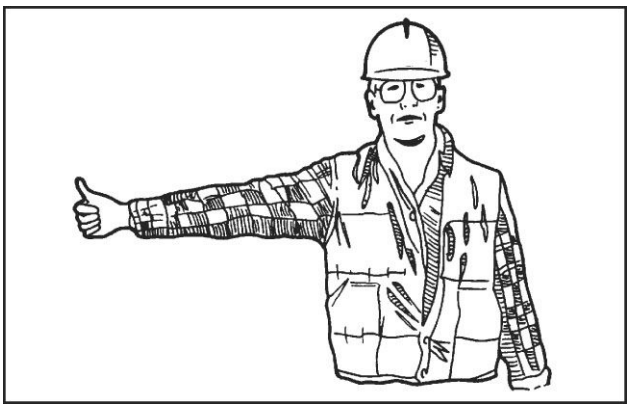


PDE0009ATBP1 15

Lower tool

PDE0009TBP1 16

Lift boom



PDE0010ATBP1 17

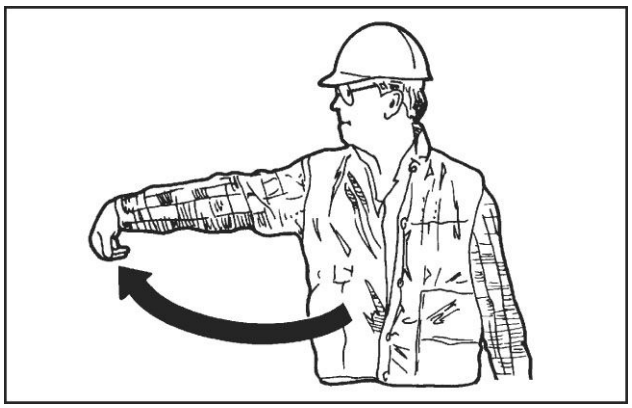
Lower boom

PDE0010TBP1 18

Retract arm

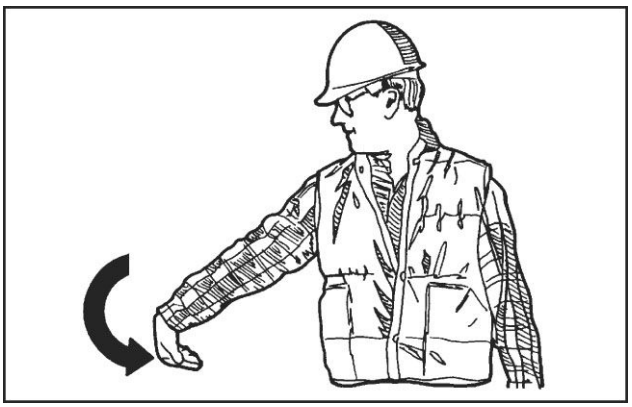
PDE0011ATBP1 19

Extend arm



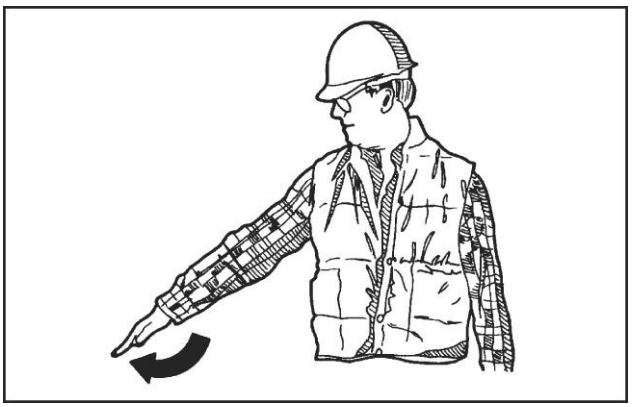
PDE0011TBP1 20

Fill tool



PDE0012ATBP1 21

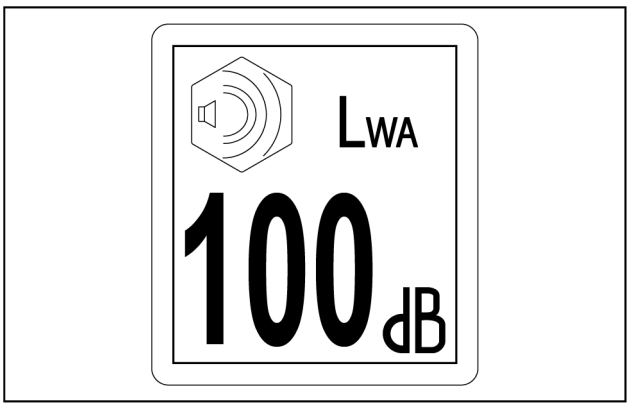
Empty tool



PDE0012TBP1 22

Noise emission

Sound power level



PTIL23CEX1070AB 1

LWA= **100 dB** (A)

Sound power level guaranteed, determined in compliance with the European Directive **2000/14/EC** and the UK Regulations 2001 n.1701.

NOTICE: *in some specific operating conditions of the machine, the actual noise emission may be different from the values determined using the noise test code.*

Sound pressure level at operator's compartment

LpA= **68 dB** (A)

Sound pressure level measured in the cab with door and windows closed and the heating/conditioning fan in operation at mid-range speed, measured on identical machine, in accordance with **ISO 6396:2008**.

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.

Safety signs and operation related labels

⚠ WARNING

Avoid injury!
An illegible or missing decal can have far-reaching consequences. Inspect decals daily.
Failure to comply could result in death or serious injury.

W0228A

⚠ WARNING

Avoid injury!
Make sure decals are perfectly legible. Clean decals regularly. Replace all damaged, missing, painted over, or illegible decals. See your dealer for replacement decals. When replacing parts bearing decals, be sure to put new decals on each new part.
Failure to comply could result in death or serious injury.

W0229A

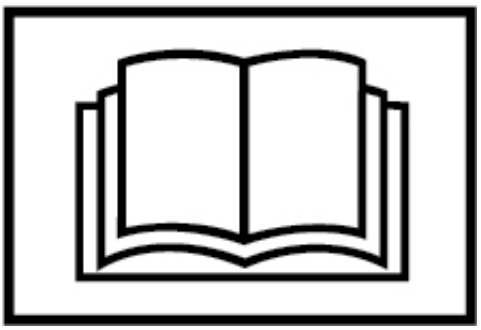
The following safety signs are on your machine as a guide for your safety and for the safety of those working with you. Walk around the machine and note the content and the location of all safety signs before you operate your machine.

Keep all safety signs clean and legible. Clean safety signs with a soft cloth, water, and gentle detergent.

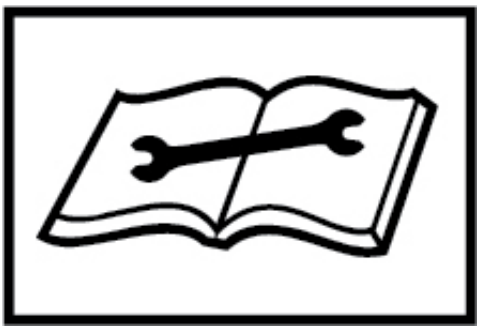
NOTICE: *do not use solvent, gasoline, or other harsh chemicals. Solvents, gasoline, and other harsh chemicals may damage or remove safety signs.*

Replace all safety signs that are damaged, missing, painted over, or illegible. If a safety sign is on a part you or your CASE CONSTRUCTION dealer replaces, make sure that you or your CASE CONSTRUCTION dealer install the safety sign on the new part. See your CASE CONSTRUCTION dealer for replacement safety signs.

Safety signs that display the "Read operator's manual" symbol direct you to the operator's manual for further information regarding maintenance, adjustments, or procedures for particular areas of the machine. When a safety sign displays this symbol, consult the appropriate page of the operator's manual.

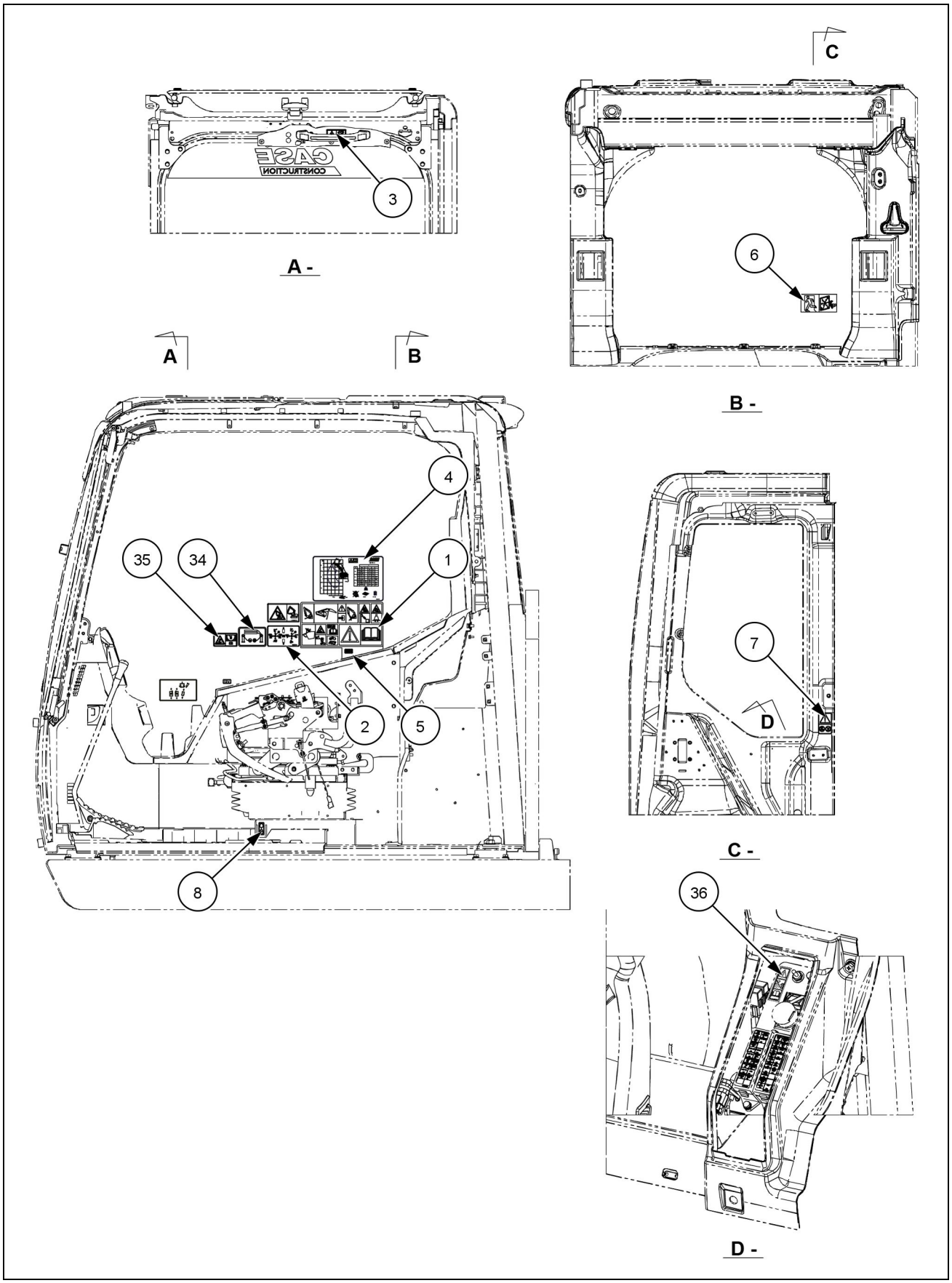


Safety signs that display the "Read service manual" symbol direct you to the service manual. If you doubt your ability to perform service operations, contact your CASE CONSTRUCTION dealer.

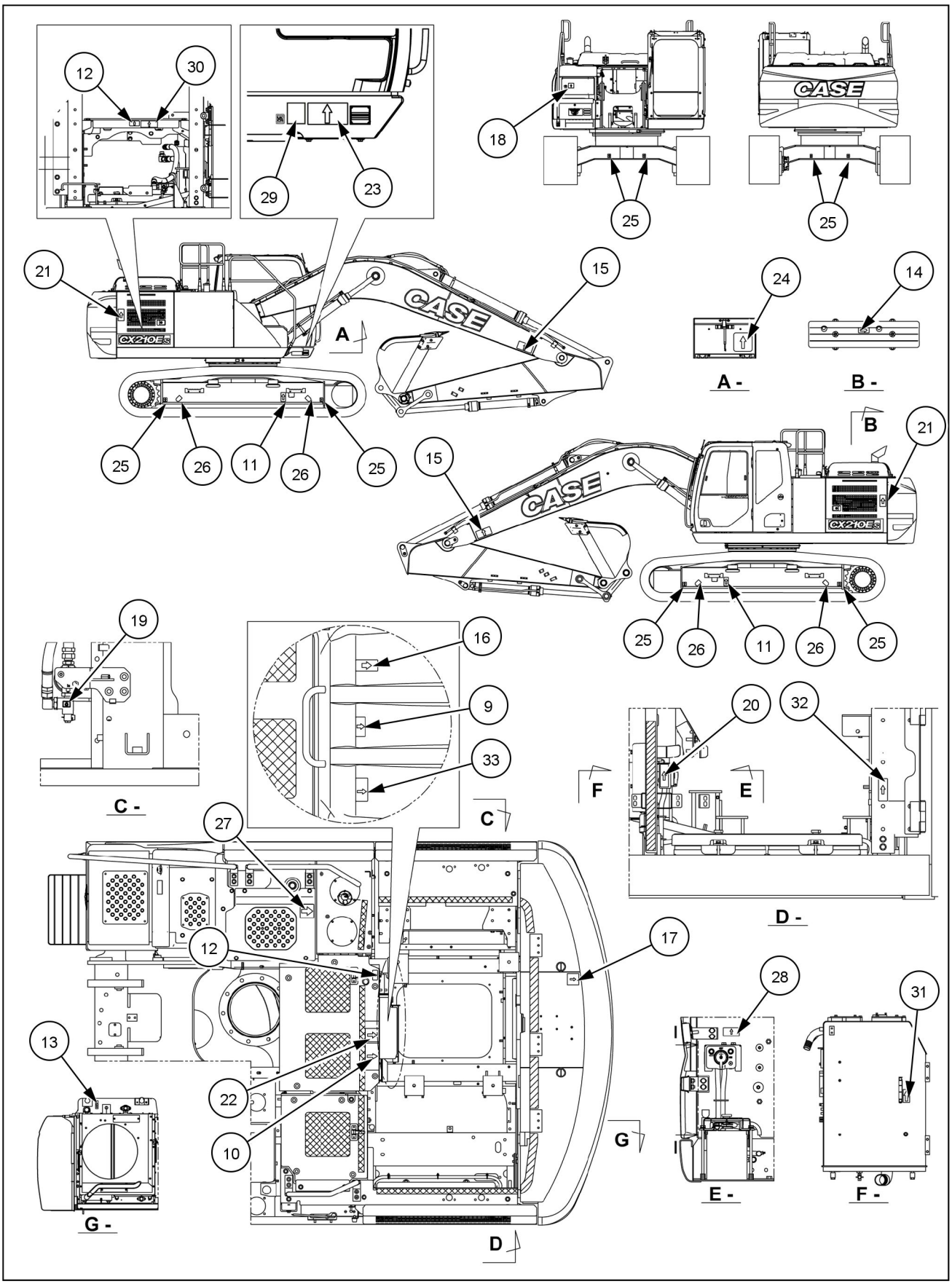


Decal positions

When replacing a decal, make sure it is located as shown below.



SMIL24CEX0315HA 1

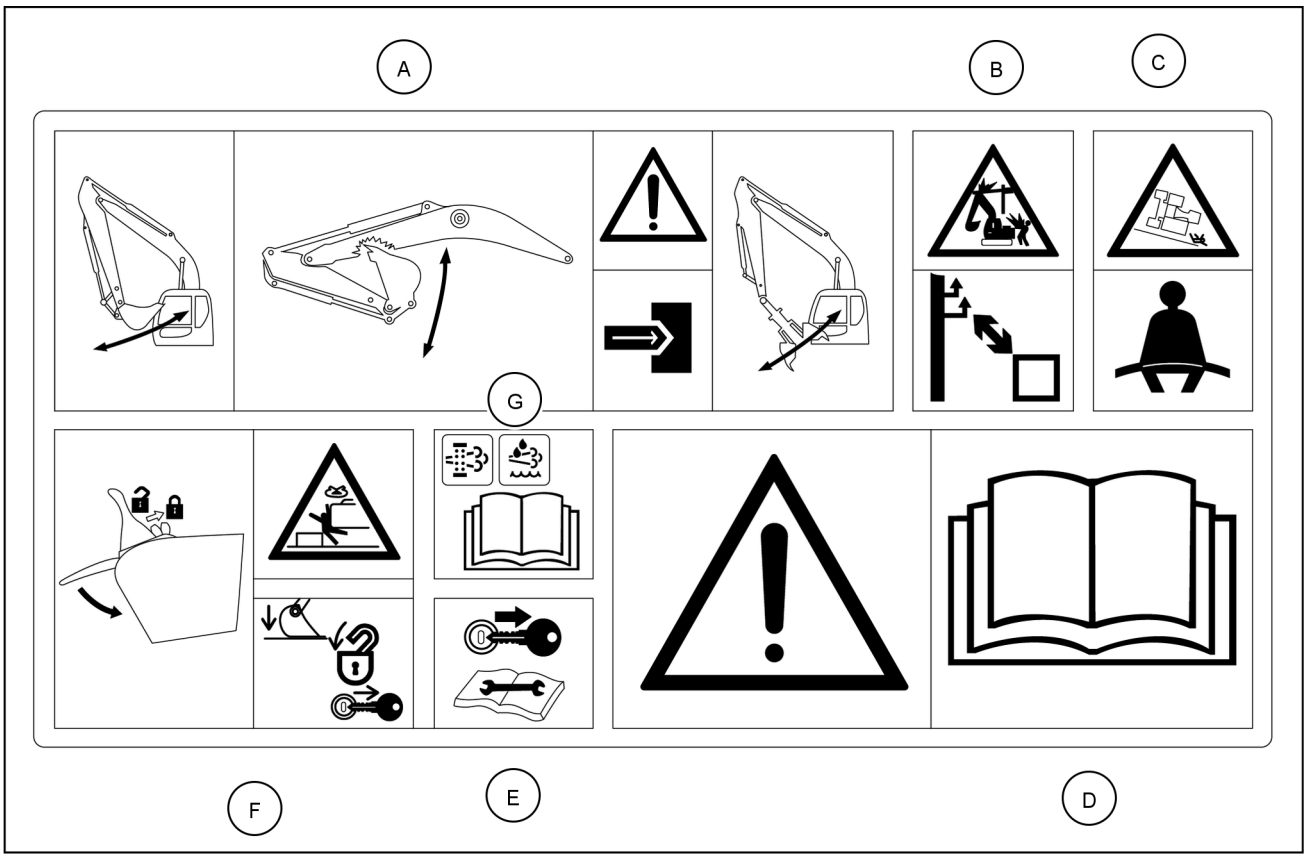


PTIL23CEX1169HB 2

Decal placement diagrams

(1) Table of safety precautions

Part number: 91715355



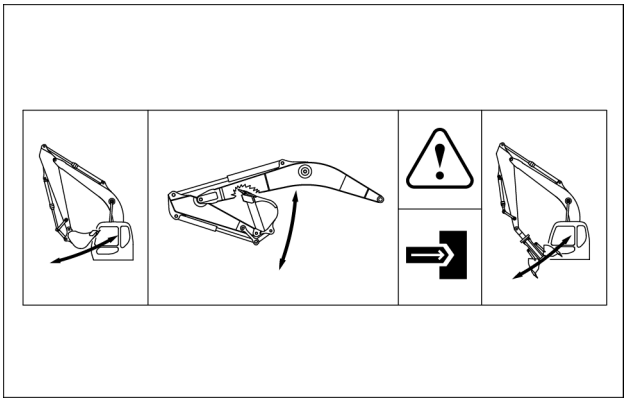
PTIL23CEX1057FB 3

(1A) Interference with attachments

The end attachment used for machine operation (e.g. bucket, hydraulic breaker, clamshell..) may hit the cab and/or the boom depending upon the length of the arm, the size of the bucket or the installation of a quick coupler.

Always check the operating range of the machine with the specific attachment in use. Avoid abrupt operation in order to keep proper clearance between the attachment and the cab or boom or other significant parts of the machine.

Collisions between attachment and cab or boom or other significant parts of the machine can cause serious damages.

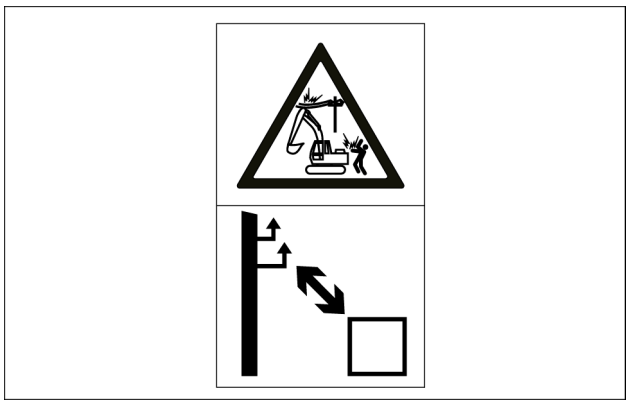


KHP35790_A 4

(1B) Danger electric line

When working near overhead high-voltage electric lines, there is a high risk of electric shocks.

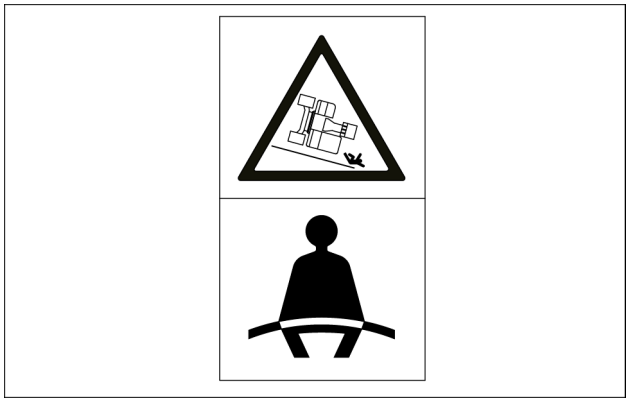
Always keep minimum distances to the electric lines in order to avoid serious damages to the machine, and to avoid serious injuries to the bystanders.



KHP35790_B 5

(1C) Seat belt

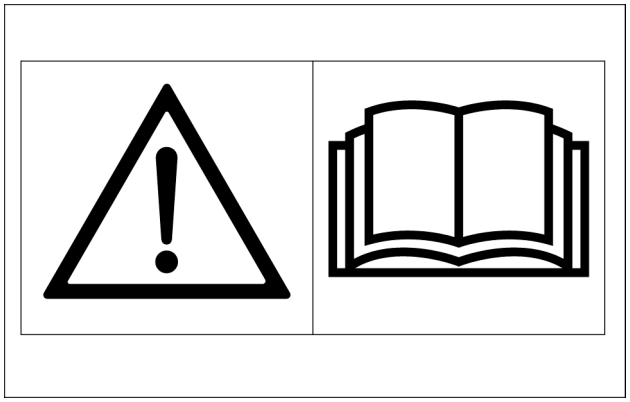
Always fasten the seat belt before starting machine operation.



KHP35790_C 6

(1D) Operator’s manual

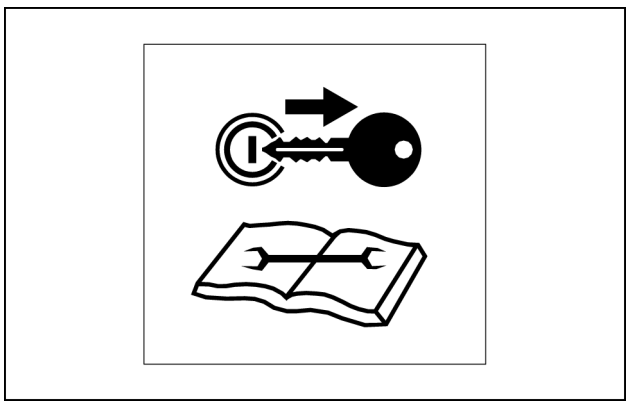
Make sure to read the operator's manual to understand how operate the machine properly and safely.



KHP35790_D 7

(1E) Maintenance or inspection

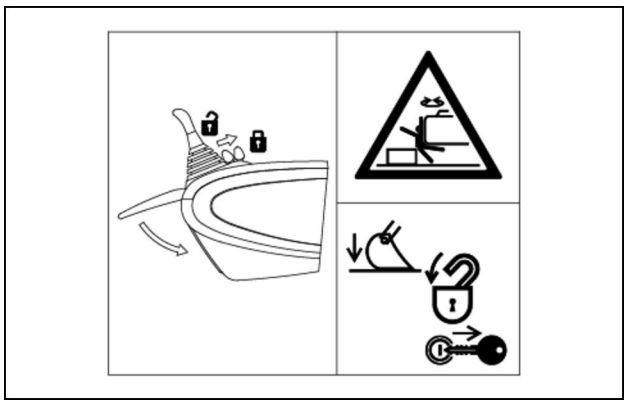
Always stop the engine and remove the starter key before any maintenance operation or inspection of the machine.



2ZZ45 8

(1F) Parking the machine

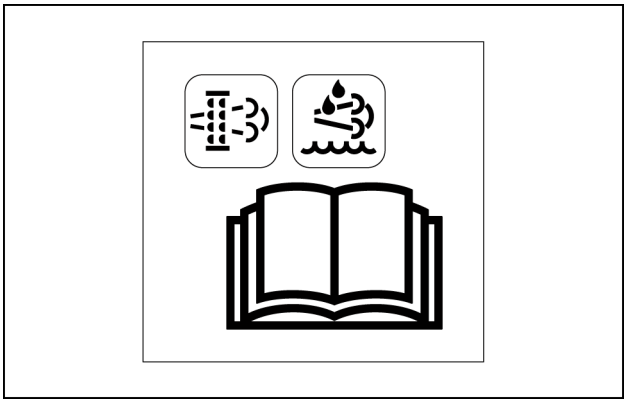
Before leaving the operator's compartment, always lower the bucket to the ground, place the gate lock lever in locked position, stop the engine and remove the starter key in order to prevent any unintended movement of the machine.



KHP36590_F 9

(1G) DEF/AdBlue® Icon, ATS Icon Display

This decal means that the operator must take appropriate measures according to the procedures stated in the operator's manual if these icons are displayed.

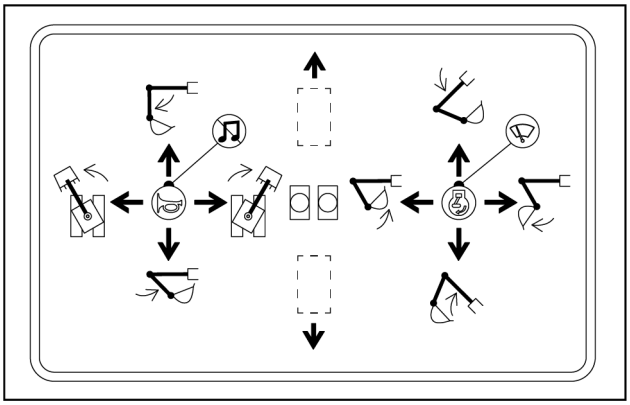


4ZZ45 10

(2) Functions of operation levers

Part number: 47758114

Functions of the left control lever and the right control lever.



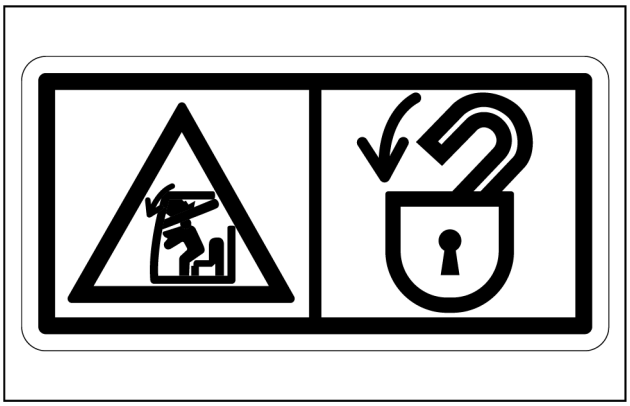
PTIL23CEX1063AB 11

(3) Windshield locking

Part number: 51443444

Always lock the windshield when it is set in open position.

Windshield not locked may fall down and can affect safe and proper operation of the machine, and can even cause injuries.

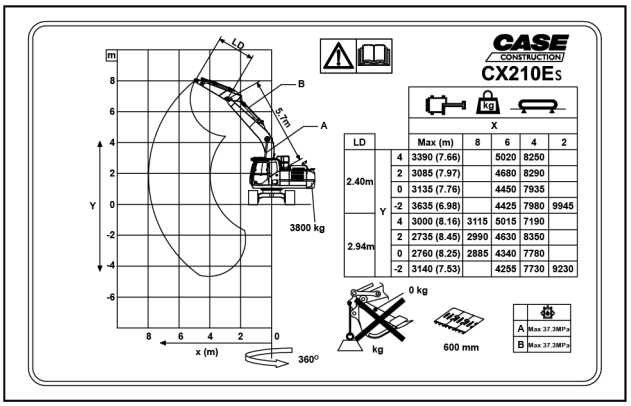


PTIL23CEX1055AB 12

(4) Rated lift capacity table

Always make sure to lift loads not exceeding the maximum values prescribed by the rated lift capacity table.

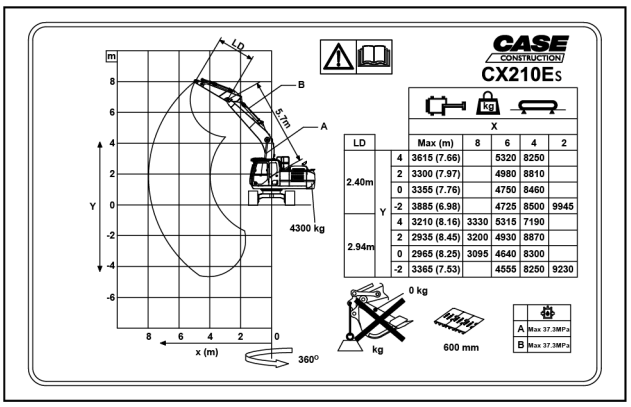
Part number: 92274532 (Standard CW)



LD		Max (m)	8	6	4	2
2.40m	4	3390 (7.66)		5020	8250	
	2	3085 (7.97)		4680	8290	
	0	3135 (7.76)		4450	7935	
	-2	3635 (6.98)		4425	7980	9945
2.94m	4	3000 (8.16)	3115	5015	7190	
	2	2735 (8.45)	2990	4630	8350	
	0	2760 (8.25)	2885	4340	7780	
	-2	3140 (7.53)		4255	7730	9230

PTIL24CEX0088AB 13

Part number: 92280628 (Heavy CW)



LD		Max (m)	8	6	4	2
2.40m	4	3615 (7.66)		5320	8250	
	2	3300 (7.97)		4980	8810	
	0	3355 (7.76)		4750	8460	
	-2	3885 (6.98)		4725	8500	9945
2.94m	4	3210 (8.16)	3330	5315	7190	
	2	2935 (8.45)	3200	4930	8870	
	0	2965 (8.25)	3095	4640	8300	
	-2	3365 (7.53)		4555	8250	9230

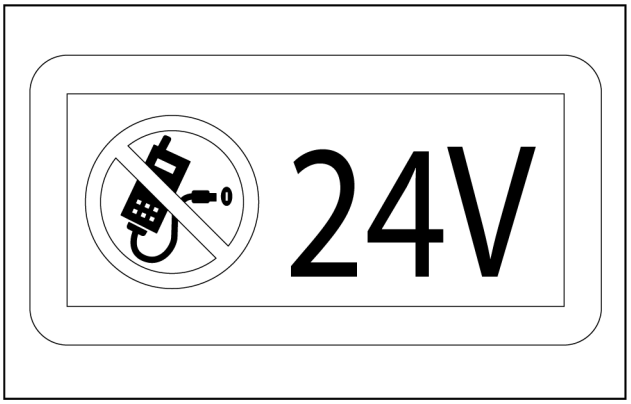
PTIL24CEX0089AB 14

(5) Cigarette lighter socket **24 V**

Part number: 47757665

24 V electric socket. Connect only **24 V** devices to this socket.

Connecting devices functioning at different voltage can cause damages to the device itself and to the electrical system of the machine.

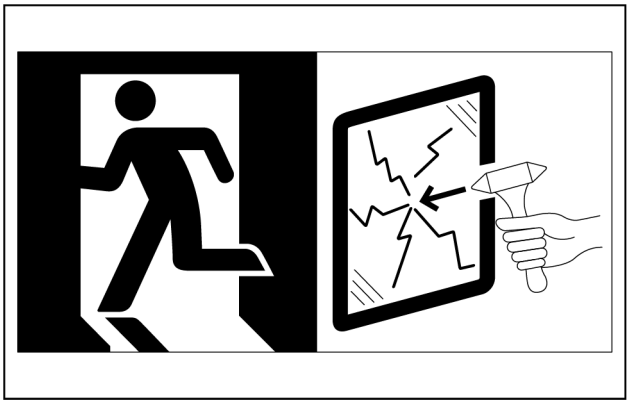


PTIL23CEX1061AB 15

(6) Emergency exit

Part number: 47759398

In case of emergency, use the emergency hammer to break the rear window and get out from the machine.



PTIL23CEX1068AB 16

(7) Handling precautions in operation compartment

Part number: 51449178

Welding or modification to the cab structure is strictly forbidden.

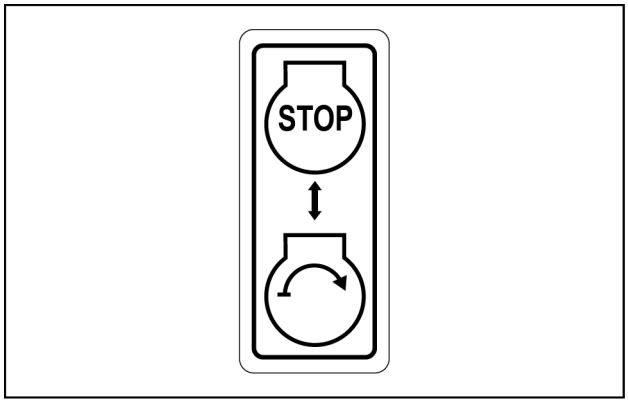
Welding or modification to the cab structure affects cab's strength, and compromises operator's protection.

PTIL23CEX1071AB 17

(8) Emergency Stop Switch operation

Part number: 91716313

Press the top side of the switch only if an emergency stop of the engine is necessary.

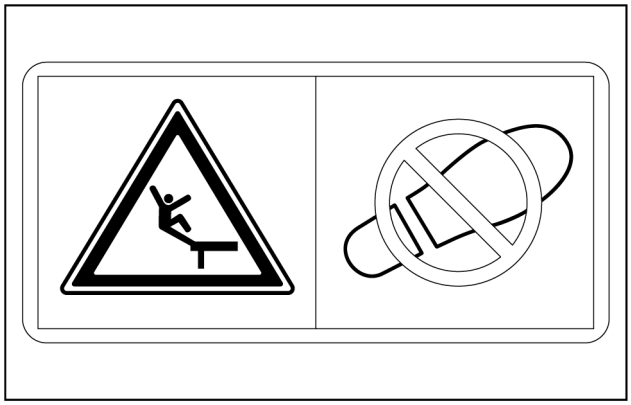


PTIL23CEX1064AB 18

(9) Engine hood

Part number: 47757666

This decal shows that it is prohibited to climb onto the engine hood (risk of falling).



PTIL23CEX1062AB 19

(10) Engine operation general decal

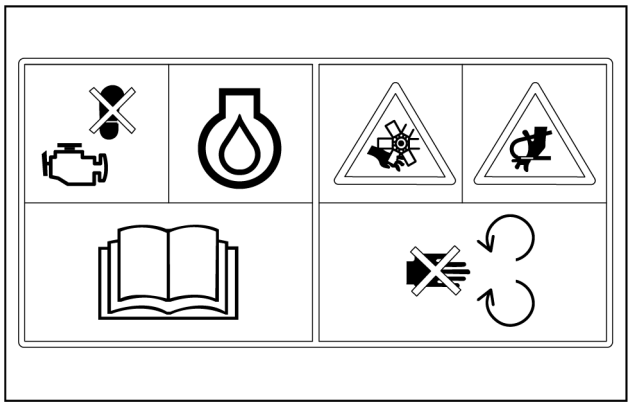
Part number: 51451306

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.

When the engine is running, keep away from the engine cooling fan, from the fan belt and from the other rotating parts of the mechanical fan drive system. Rotating parts can cause serious injuries.

Make sure to read operator's manual to understand proper precautions when working into the engine compartment.



PTIL23CEX1073AB 20

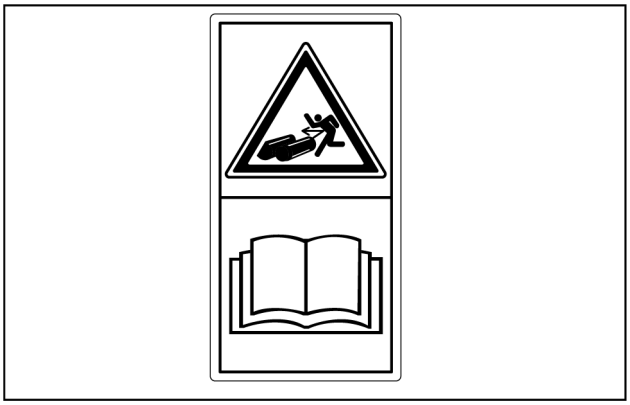
(11) Check valve

Part number: 47758284

Track tensioning cylinder contains pressurized fluid.

During maintenance of the track tensioning cylinder, fluid may spray out from the check valve on the tensioning cylinder and can cause serious injuries.

Always make sure to read operator's manual to understand proper practices and precautions to be tackled for maintenance of the track tensioning system.



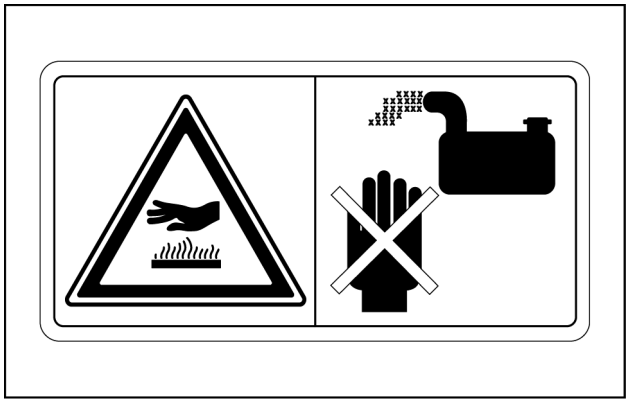
PTIL23CEX1067AB 21

(12) Muffler

Part number: 47757860

Do not touch the muffler right after engine stop.

Muffler surface is hot and touching it can cause serious injuries.



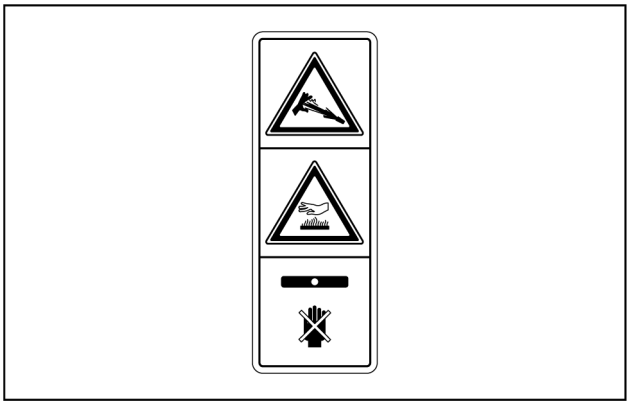
PTIL23CEX1094AB 22

(13) Radiator

Part number: 47759401

Do not loosen or open the radiator cap when coolant is hot and under pressure, it can cause serious injuries.

Cool down the engine before opening the radiator cap, then loosen the radiator cap slowly to relieve pressure in the coolant circuit.



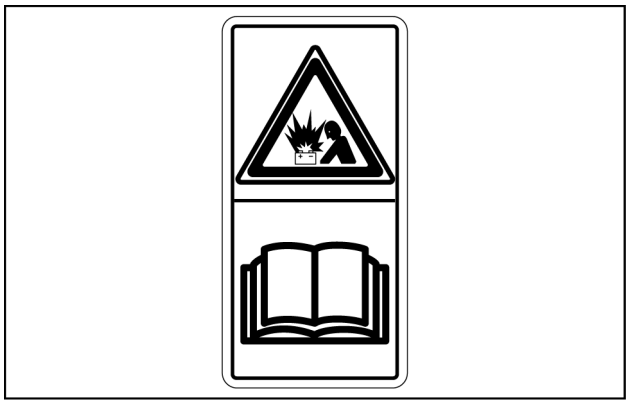
PTIL23CEX1069AB 23

(14) Batteries

Part number: 47757861

Prevent battery explosion by keeping sparks, open flames and cigarettes away from the batteries.

Always make sure to read operator's manual to understand proper practices and precautions to be tackled for maintenance of batteries.



PTIL23CEX1075AB 24

(15) Keep out of work range of attachment

Part number: 47759461

Always make sure to keep the working range of the machine front equipment clear from obstacles and from bystanders.

Always sound the horn before start operating the machine.

The machine front equipment may hit or crush the bystanders causing serious injuries.

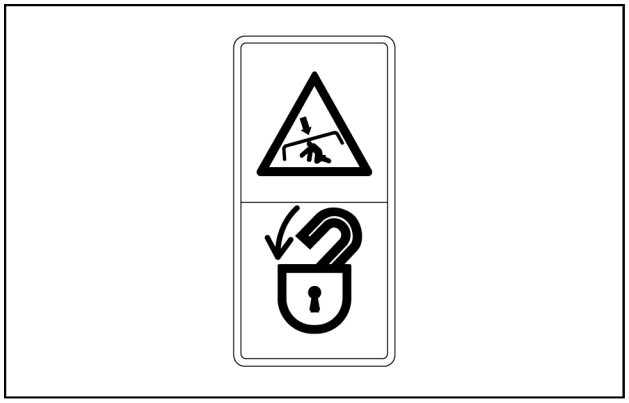
PTIL23CEX1084AB 25

(16) Engine hood

Part number: 51451276

Always lock the engine hood when it is set in open position for maintenance operations.

Engine hood not locked may fall down causing serious injuries.

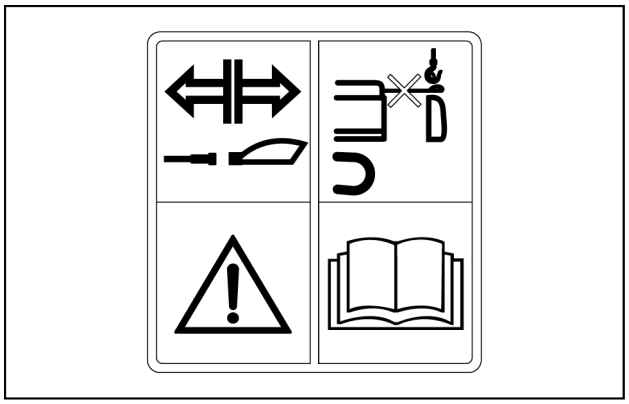


PTIL23CEX1092AB 26

(17) Camera wiring precautions

Part number: 51451297

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



PTIL23CEX1095AB 27

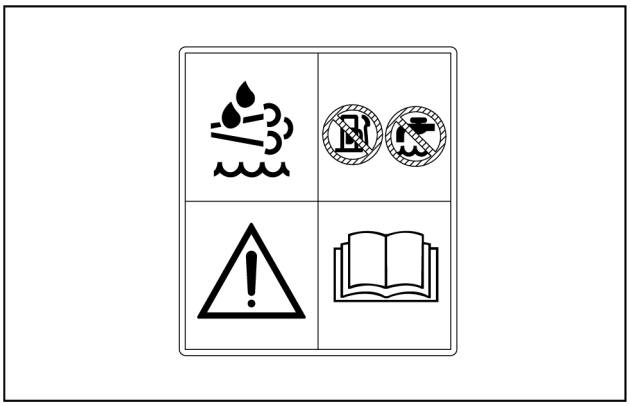
(18) DEF/ADBLUE® tank

Part number: 90448161

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®**.

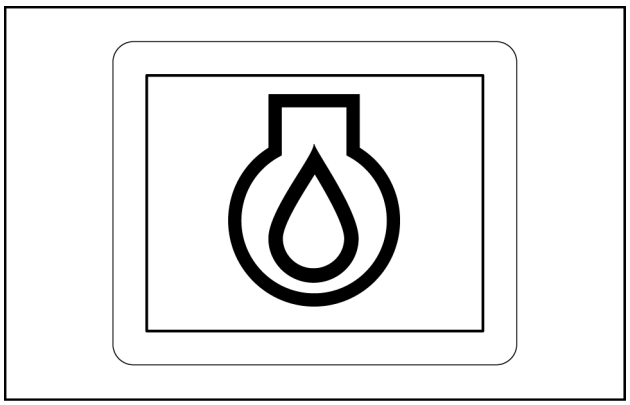


PTIL23CEX1093AB 28

(19) Engine Oil Sampling Port (Optional)

Part number: 47790120

This decal shows the position of the engine oil sampling port.

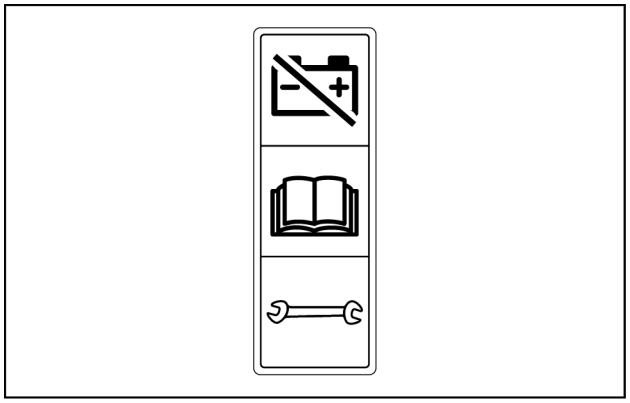


PTIL23CEX1085AB 29

(20) Handling precautions for battery disconnect switch

Part number: 47757866

Make sure to read operator's manual to understand proper procedures for usage of the battery disconnect switch.



PTIL23CEX1076AB 30

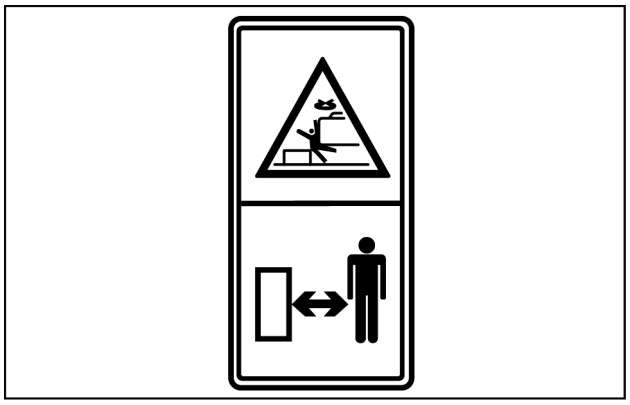
(21) Keep out of work range of upper structure

Part number: 47758285

Always make sure to keep the working range of the machine upper structure clear from obstacles and from bystanders.

Always sound the horn before start operating the machine.

The machine upper structure may hit or crush the bystanders causing serious injuries.



PTIL23CEX1081AB 31

(22) Common rail high pressure decal and Starting the engine

Part number: 47758110

Common rail injection system contains fuel under extreme pressure that can cause fatal injuries. Do not open the common rail pump, or loosen the common rail high pressure lines, or touch any other component of the common rail injection system.

Consult the CASE CONSTRUCTION dealer for service.

Do not try to start the engine by auxiliary tools. Machine may start to move suddenly and unintendedly causing serious injuries to the operator and to the bystanders.

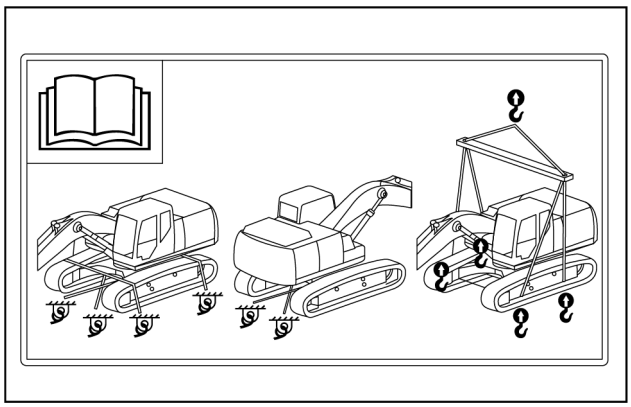
PTIL23CEX1079AB 32

(23) Instruction decal for restraint and lifting

Part number: 47758112

Reference sketches mapping the layout of devices for transport and lifting of the machine.

Make sure to read operator's manual to understand proper procedures for transport and lifting of the machine.



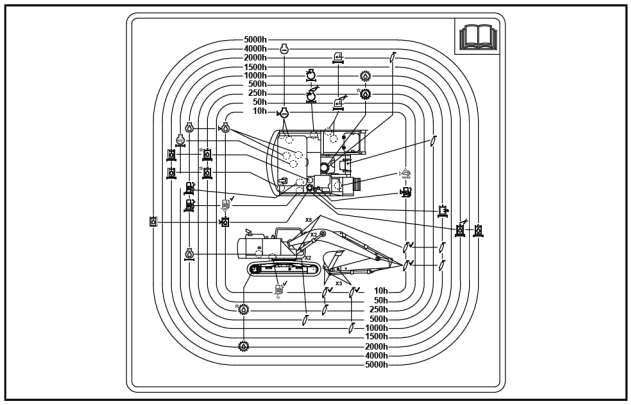
PTIL23CEX1080AB 33

(24) Service table

Part number: 91728282

Reference chart indicating proper timing for machine maintenance.

Make sure to read operator's manual to understand proper procedures for servicing the machine.

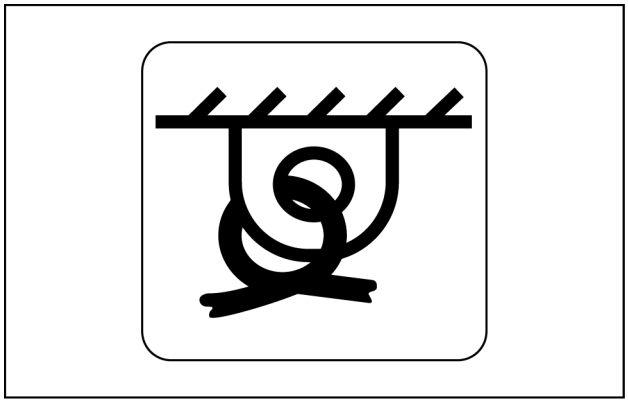


PTIL23CEX1074AB 34

(25) Lashing point decal

Part number: 47758105

Point on machine structure for securing the machine during transport.

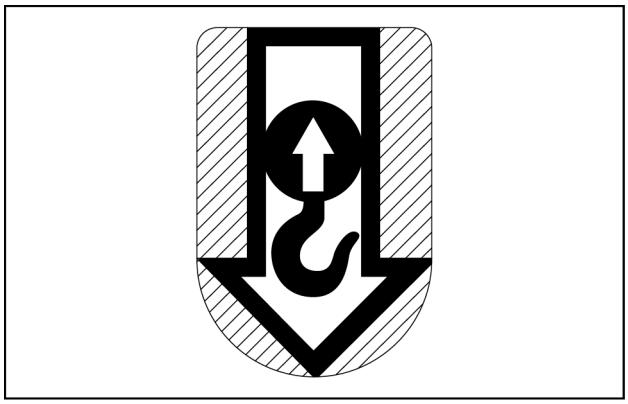


PTIL23CEX1077AB 35

(26) Lifting location

Part number: 47758107

Machine area where the lifting devices should be routed.



PTIL23CEX1078AB 36

(27) Fuel tank

Part number: 51450645

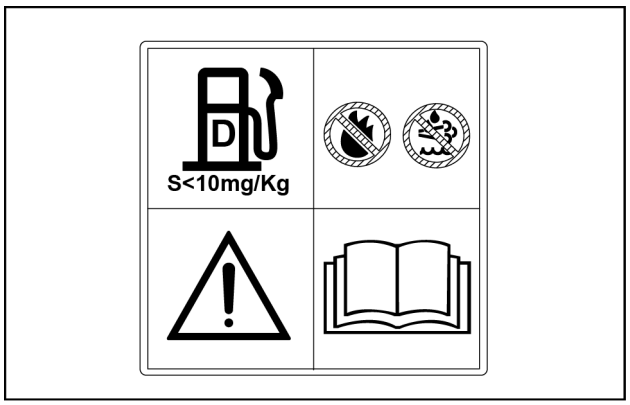
Do not perform welding and avoid any operation generating sparks close to the fuel tank.

Fuel is flammable and flames can cause serious injuries.

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

Using any other kind of fuel 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 Ultra Low Sulfur diesel fuel.



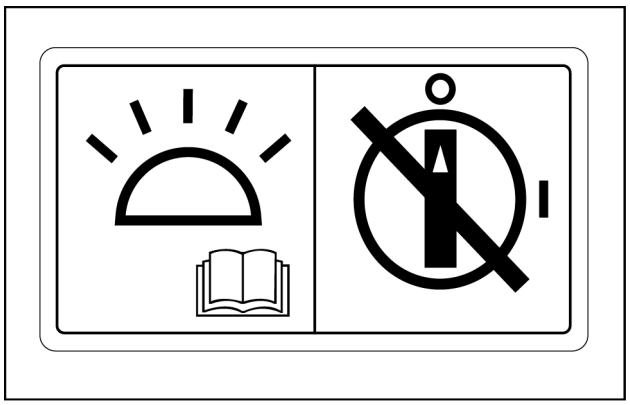
PTIL23CEX1091AB 37

(28) Precautions for Battery Disconnect Switch

Part number: 48004715

Never turn the battery disconnect switch to OFF position when the indicator lamp is lit.

Make sure to read the operator's manual to understand warning signs and icons related to the functioning of the battery disconnect switch.

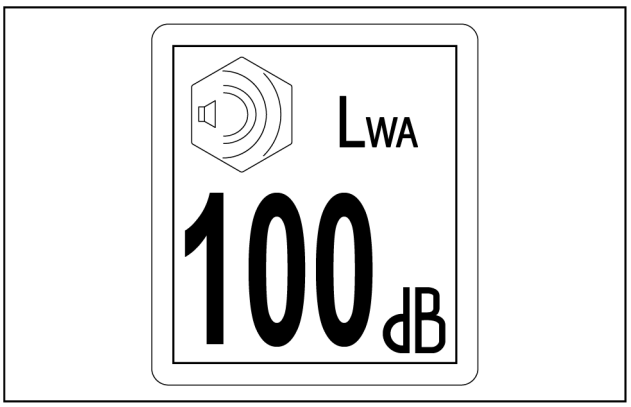


PTIL23CEX1087AB 38

(29) Noise level

Part number: 47875314

Sound power level guaranteed, determined in compliance with the European Directive **2000/14/EC** and the UK Regulations 2001 n.1701.

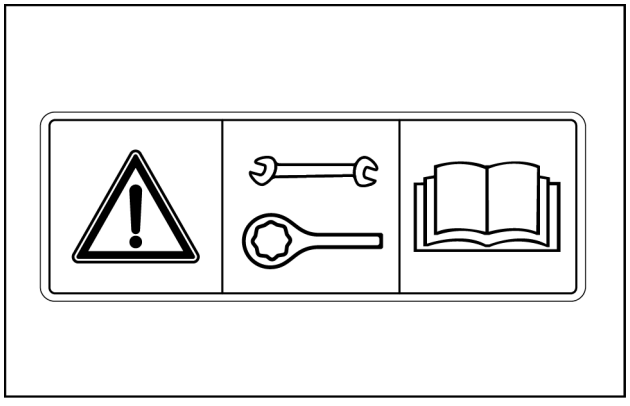


PTIL23CEX1070AB 39

(30) Fuel filter replacement

Part number: 47834292

Always perform the fuel filter replacement after reading the operator's manual.

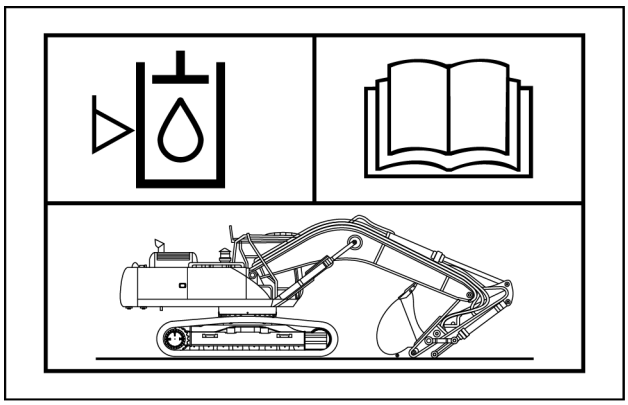


PTIL23CEX1086AB 40

(31) Hydraulic Oil Level Inspection

Part number: 48138728

This decal shows information on hydraulic oil inspection.



PTIL23CEX1090AB 41

(32) Global Warming Potential decal

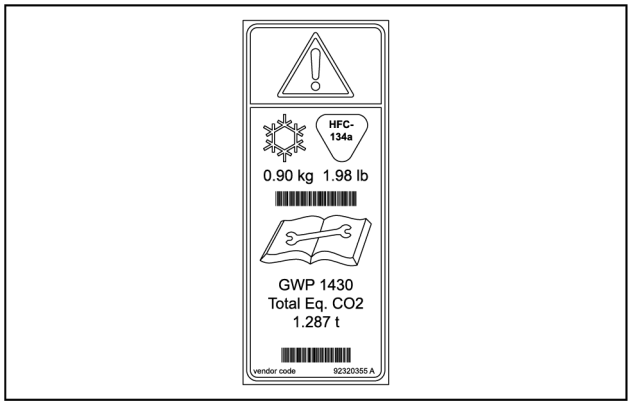
Part number: 92320355

Greenhouse gas: HFC-134a

Quantity (A/C system charge): **0.90 kg** (**1.98 lb**)

Global Warming Potential (GWP): 1430
Total Equivalent CO2: **1.287 ton**

Service, repair, or recharging must be performed only by trained service technician. Always contact your local authorized dealer. Failure to comply could result in death or serious injury.



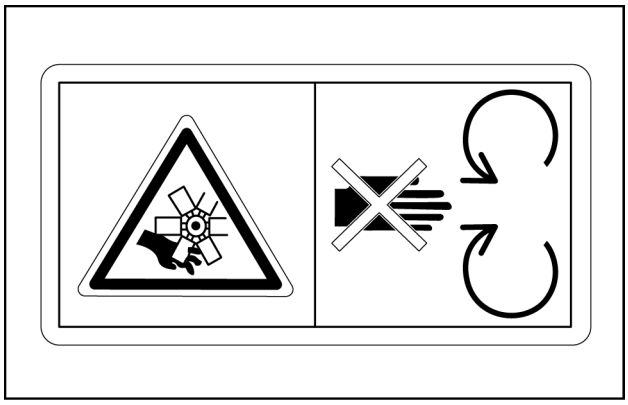
PTIL24CEX0101AB 42

(33) Fan

Part number: 47759403

When the engine is running, keep away from the engine cooling fan, from the fan belt and from the other rotating parts of the mechanical fan drive system.

The engine cooling fan and other rotating parts can cause serious injuries.

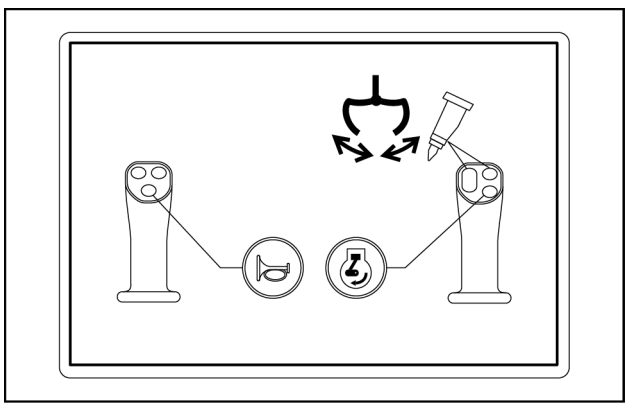


PTIL23CEX1058AB 43

(34A) Functions of operation levers (Optional)

Part number: 47758296

Functions of the right control lever.

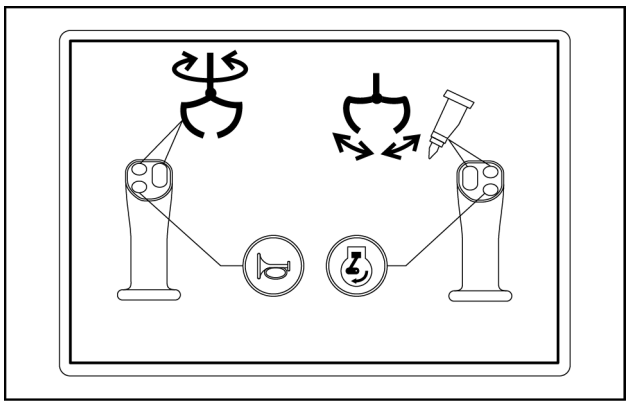


PTIL23CEX1082AB 44

(34B) Functions of operation levers (Optional)

Part number: 47758298

Functions of the left control lever and the right control lever.



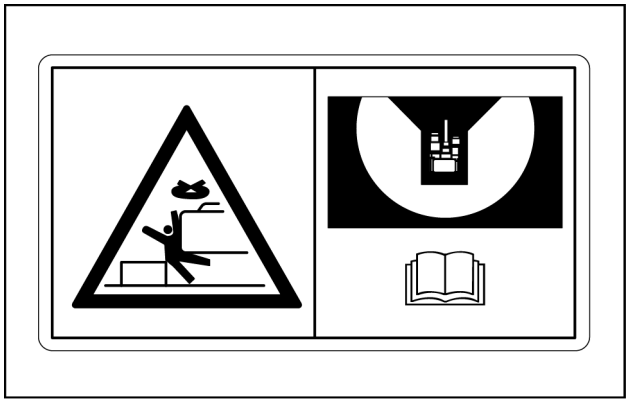
PTIL23CEX1083AB 45

(35) Blind spot of Field View Monitor (Optional)

Part number: 48061562

The Field View Monitor system does not ensure visibility on the closest area around the machine.

Make sure to read the operator's manual to understand proper practices and precautions to be tackled for machine operation with the Field View Monitor system (Optional).



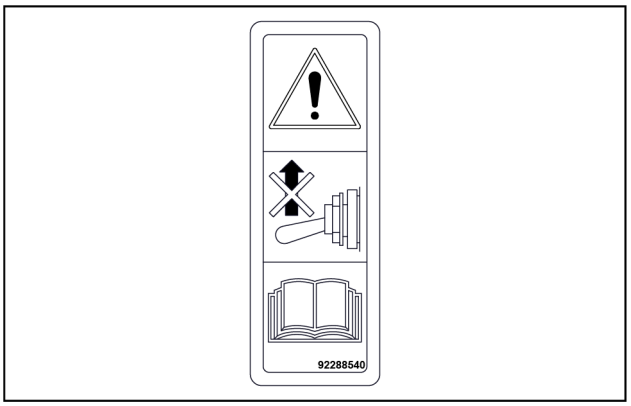
PTIL23CEX1089AB 46

(36) Main Controller Unit switch

Part number: 92288540

Never leave the switch up to the ON position when the update of the Main Controller Unit software is completed.

Always set the switch down to the OFF position (NORMAL RUNNING MODE) when the update of Main Controller Unit software is completed.



PTIL24CEX0090AB 47

3 - CONTROLS AND INSTRUMENTS

Access to operator's platform

Door and steps

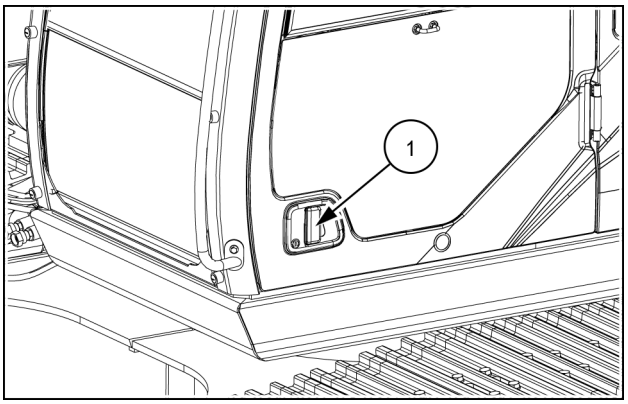
⚠ CAUTION

Pinch hazard!
Be careful not to get your hand, clothes, etc. caught in the door when closing it.
Failure to comply could result in minor or moderate injury.

C0046A

Cab door

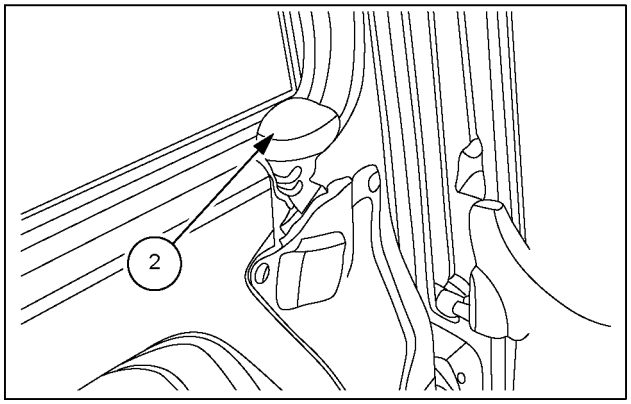
Use the handle **(1)** to open the cab door from the outside.



SMIL21CEX3220AA 1

Use the handle **(2)** to open the cab door from the inside.

NOTICE: *Before opening the cab door from the inside, make sure to place the gate lock lever in central position. The left-hand control lever might be touched inadvertently when opening the cab door, and the machine may thus move suddenly and inadvertently causing severe incidents.*

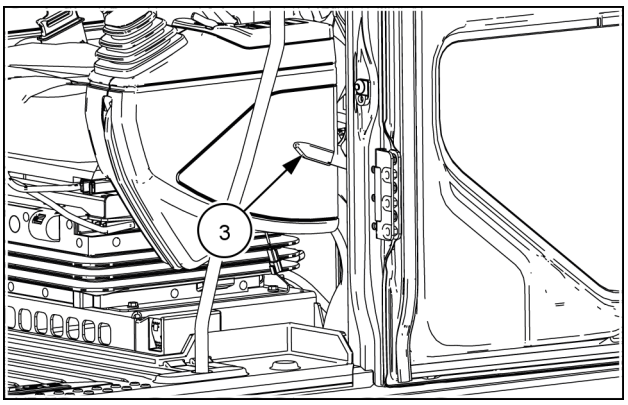


SMIL14CEX1650AB 2

The cab door can be latched in completely open position.

NOTICE: *Never work leaving the cab door ajar. Before performing any work with the cab door open, make sure to lock it in the completely open position.*

To unlatch the cab door, stop machine operation, set the gate lock lever to central position, and tilt the lever **(3)** downward.



SMIL22CEX3144AA 3

Steps and access handles

⚠ WARNING

Fall hazard!
In order to enter or exit the cab, the upper structure frame must be in line with the undercarriage.
Failure to comply could result in death or serious injury.

W0225A

⚠ WARNING

Fall hazard!
Clean the steps and access handles to remove all traces of grease, oil, mud, and ice (in winter).
Failure to comply could result in death or serious injury.

W0139A

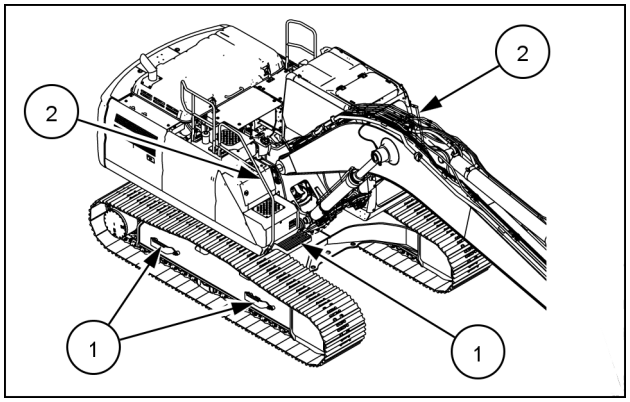
⚠ WARNING

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.

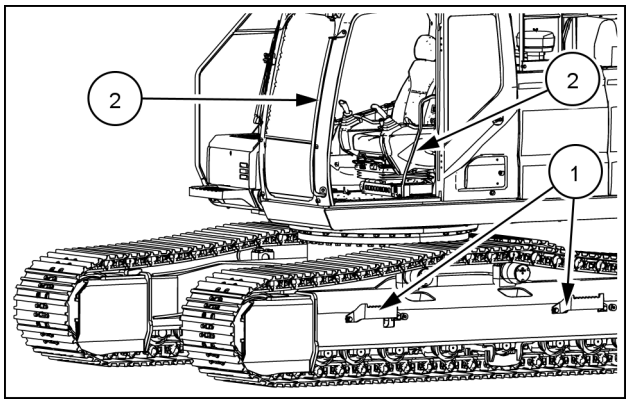
W0141A

To get in or out of the machine use the steps **(1)**, the tracks and the access handles **(2)**.

NOTICE: *never use the left console, the left-hand control lever or the gate lock lever in place of the handles when getting on or off the operator's compartment.*

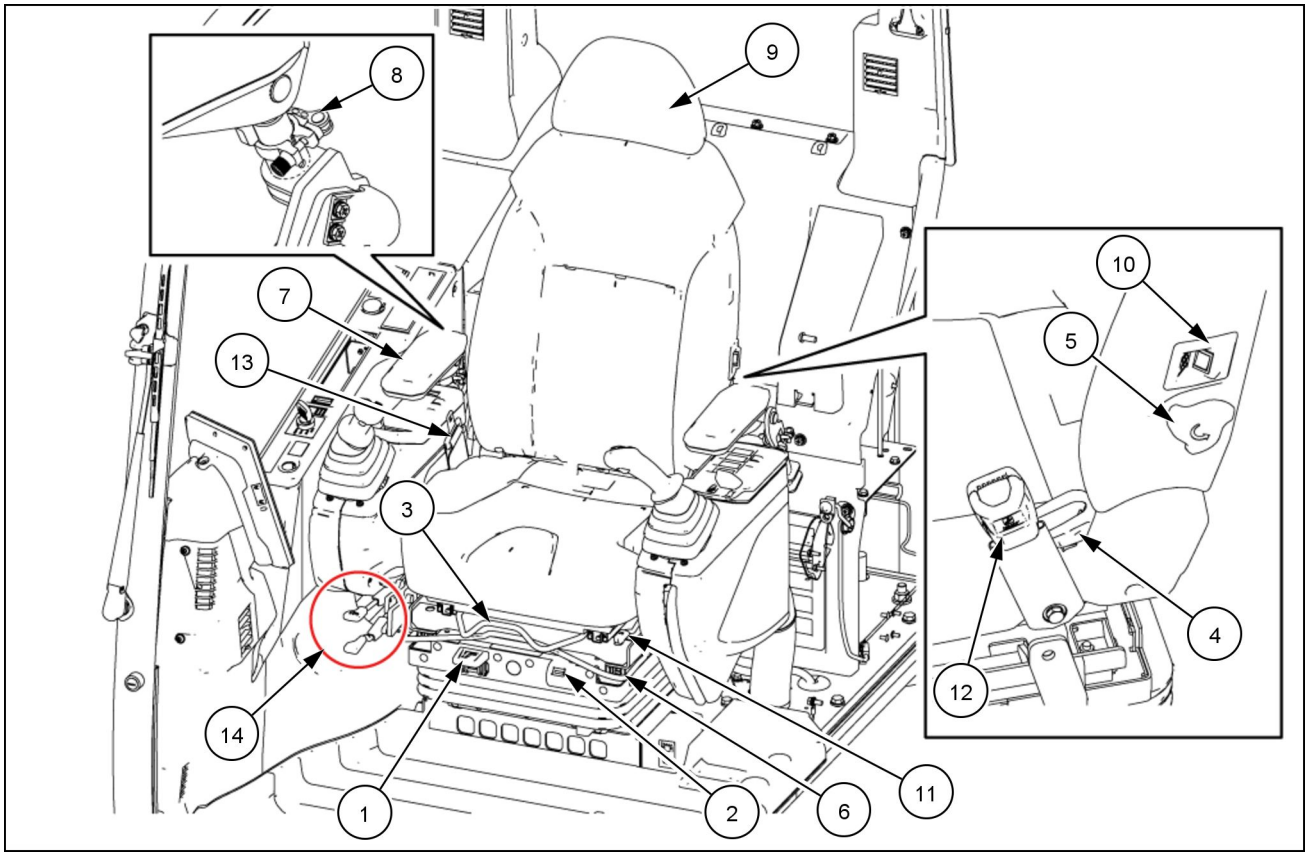


SMIL21CEX4357AA 4



SMIL21CEX1373AA 5

Operator's seat



SMIL21CEX5534FA 1

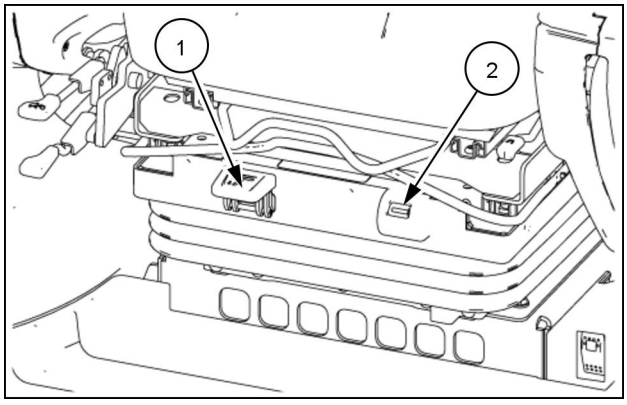
1. Combined height and weight adjustment
2. Weight adjustment indicator
3. Fore and aft adjustment
4. Seat back angle adjustment
5. Lumbar support adjustment
6. Seat and control arm assembly fore and aft adjustment
7. Armrest angle adjustment
8. Adjustment Section
9. Headrest adjustment
10. Seat heater
11. Seat angle adjustment
12. Seat belt buckle
13. Seat belt
14. Left-hand side console and right-hand side console tilt adjustment

In order to operate the machine correctly and with maximum efficiency and comfort, adjust the seat to suit the weight and size of the operator.

Combined height and weight adjustment

- Lower the handle **(1)** to decrease the rigidity of the suspension.
- Raise the handle **(1)** to obtain harder suspension.

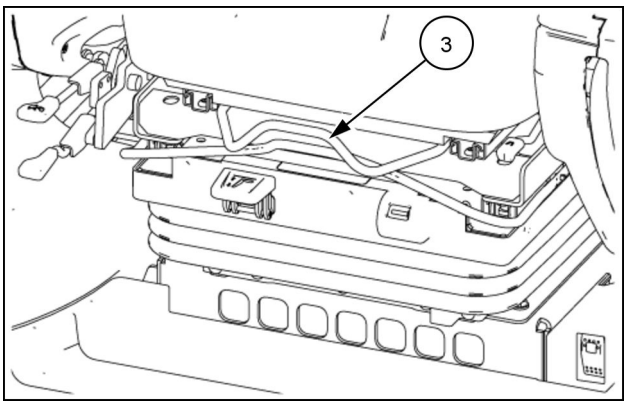
NOTICE: *the indicator* ***(2)*** *must be green when the operator is sitting on the seat.*



SMIL21CEX5535AA 2

Fore and aft adjustment

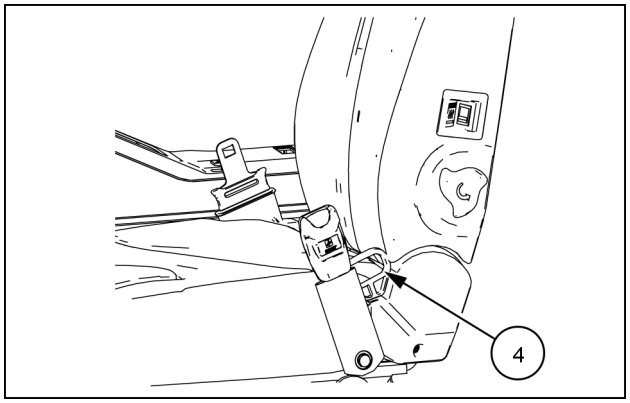
- Hold the control **(3)** in the raised position.
- Slide the seat to the required position.
- Release the control **(3)**.



SMIL21CEX5535AA 3

Seat back angle adjustment

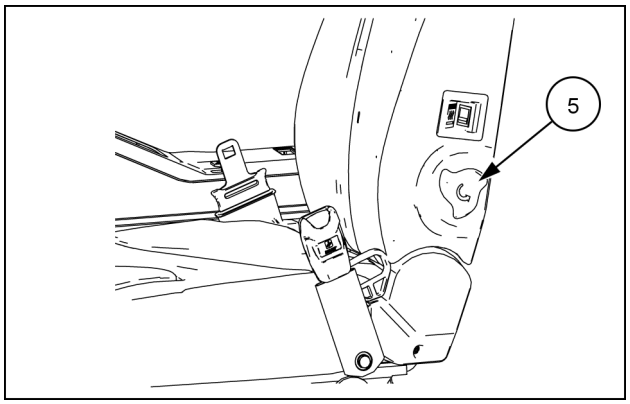
- Hold the lever **(4)** in the raised position.
- Move with the seat-back to the desired position.
- Release the lever **(4)**.



SMIL21CEX1377AA 4

Lumbar support adjustment

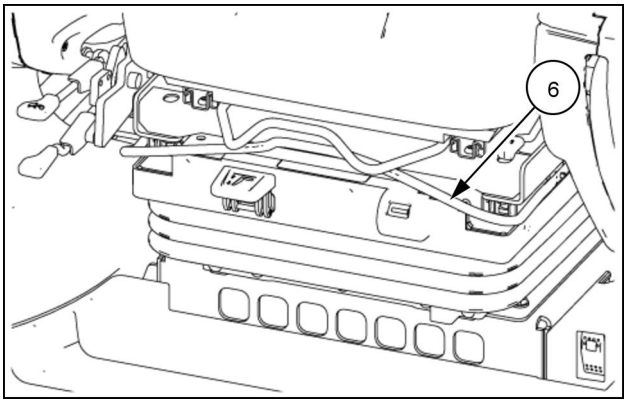
- Turn the dial **(5)** to adjust the bulge of the lumbar area in four levels.



SMIL21CEX1377AA 5

Seat and control arm assembly fore and aft adjustment

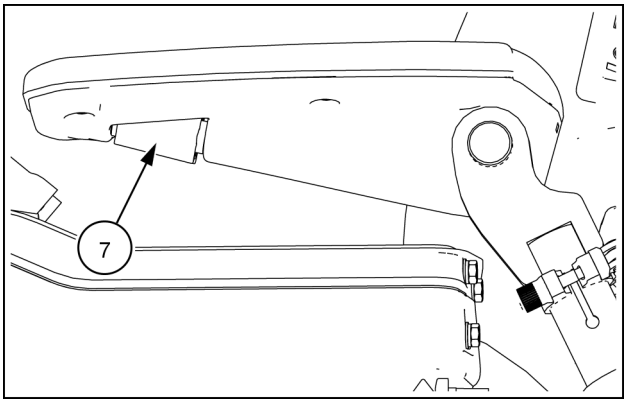
- Pull the control **(6)** upwards.
- Slide the seat and control arm assembly to the desired position.
- Release the control **(6)**.



SMIL21CEX5535AA 6

Armrest angle adjustment

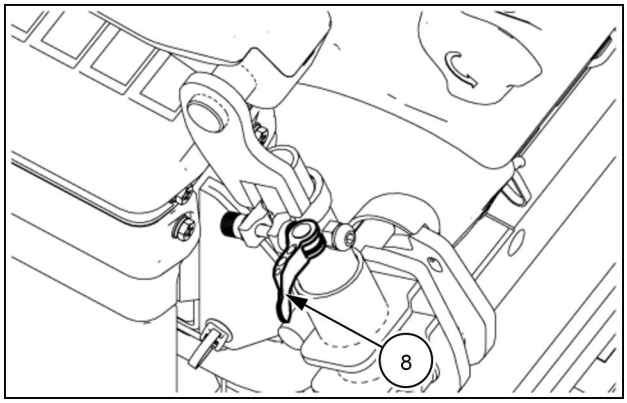
- Raise the armrest.
- Adjust the armrest to the desired angle using the knob **(7)**.
- Lower the armrest.



SMIL22CEX1277AA 7

Adjustment Section

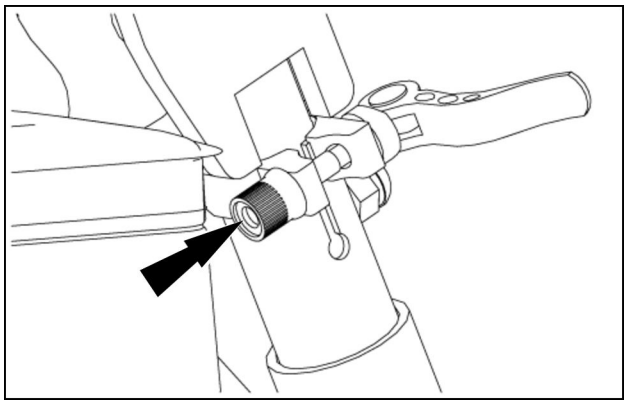
- With the height adjustment lever **(8)** open, adjust the height.
- After the adjustment, close the adjustment lever **(8)** to lock the armrest in place.



SMIL21CEX5536AA 8

- If the armrest is not firmly locked in place, tighten the bolt to adjust.

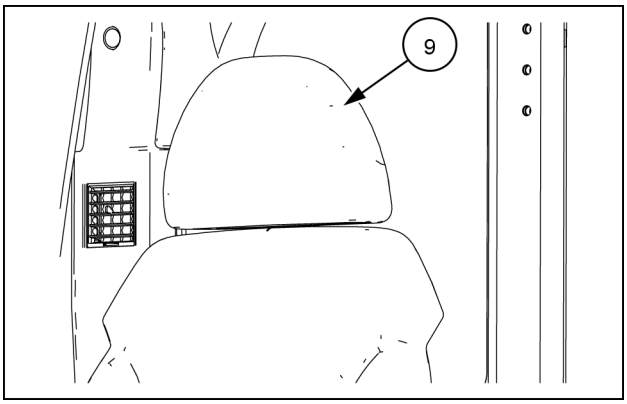
  NOTE: *Close the adjustment lever to lock the armrest in place. Do not lock the armrest in place by turning the adjustment lever.*



SMIL21CEX5537AA 9

Headrest adjustment

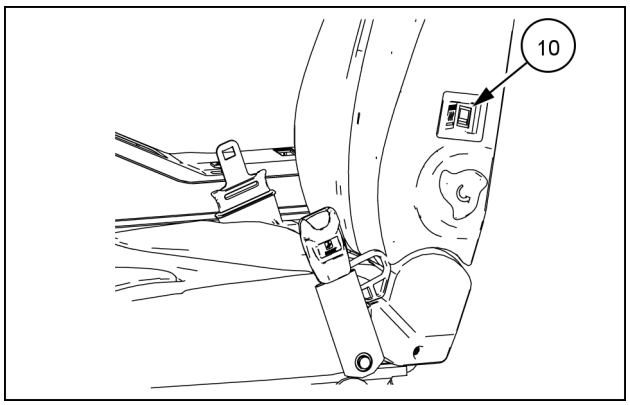
- The headrest **(9)** can be adjusted upwards and downwards.



SMIL21CEX1380AA 10

Seat heater (If equipped)

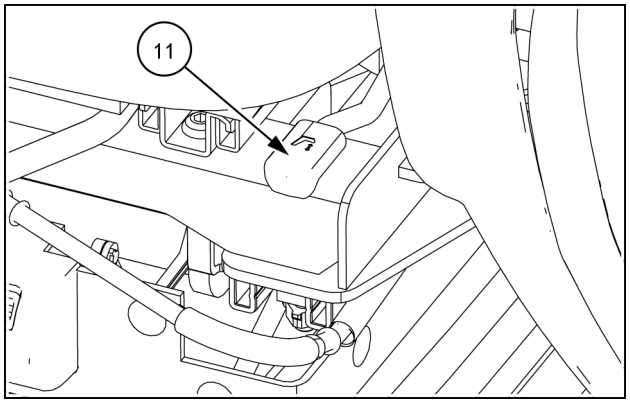
- When the switch **(10)** is turned on, both the backrest and the seat area will be warmed.



SMIL21CEX1377AA 11

Seat angle adjustment section (If equipped)

- The seat angle can be adjusted in 3 levels pulling the lever **(11)** up.
- When the seat reaches the proper angle, release the lever **(11)**.



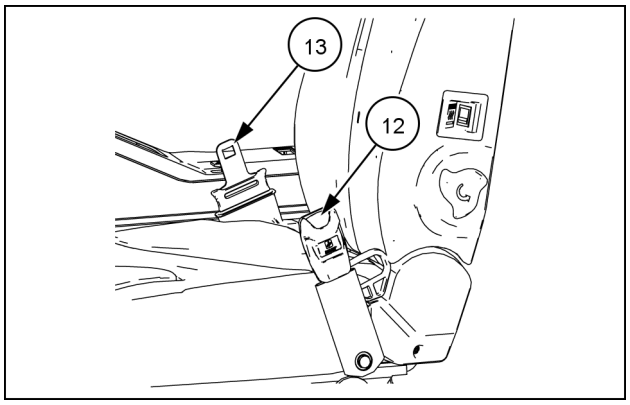
SMIL21CEX1382AA 12

Seat belt

⚠ WARNING

Equipment failure could cause accident or injury!
Always fasten the seat belt securely before you operate the machine. Inspect seat belt parts for wear and damage. Replace any and all worn or damaged parts of the seat belt prior to operation.
Failure to comply could result in death or serious injury.

W0046C



SMIL21CEX1377AA 13

- Sit comfortably on the operator's seat.
- Pull out a long section of belt **(13)**.
- Engage the belt in the buckle **(12)**.

NOTE: *if the section of belt pulled out is not long enough, release it, so it rolls up and then pull it out again.*

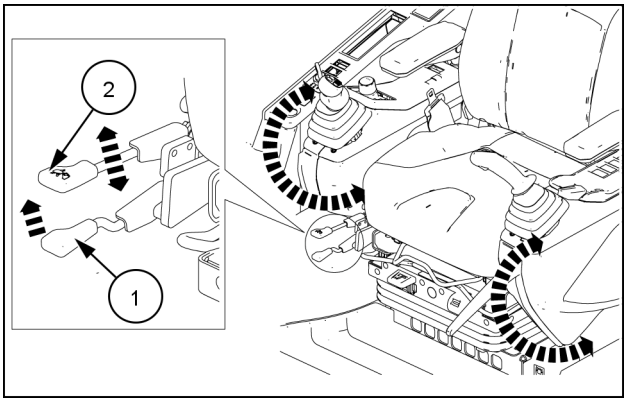
To release the seat belt press down the releasing lever of the buckle **(12)**.

NOTICE: *the seat belt must be kept clean. Use only soap and water to clean the belt, do not use bleach or dyes.*

Left-hand side console and right-hand side console tilt adjustment

The left-hand side console and right-hand side console can be tilted to the following angles: **-5°**, **0°**, **5°** and **10°**.

- Pull upwards the gate release lever **(1)** to release the lock.
- Adjust the angle of the consoles using the tilt adjustment lever **(2)**.
- Pull downwards the gate release lever **(1)** to lock the consoles in position.



SMIL22CEX1269AA 14

Forward controls

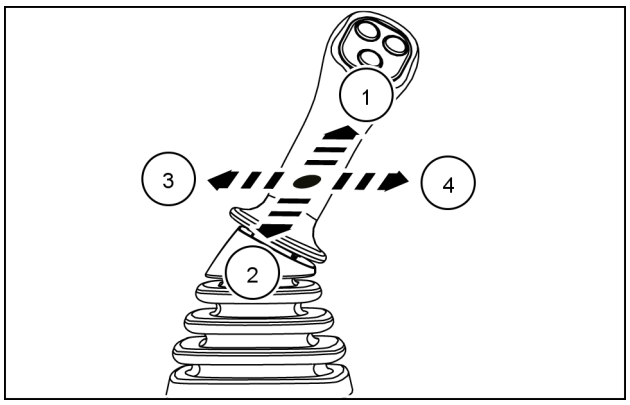
Control levers

Left-hand control lever:

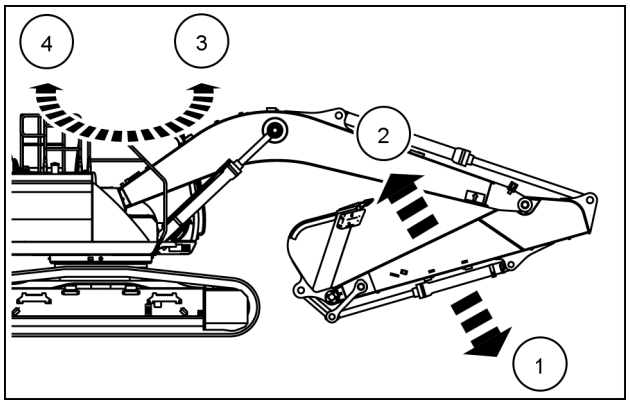
1. The arm extends.
2. The arm retracts.
3. The upper structure swings to the left.
4. The upper structure swings to the right.

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.*



SMIL22CEX1941AA 1

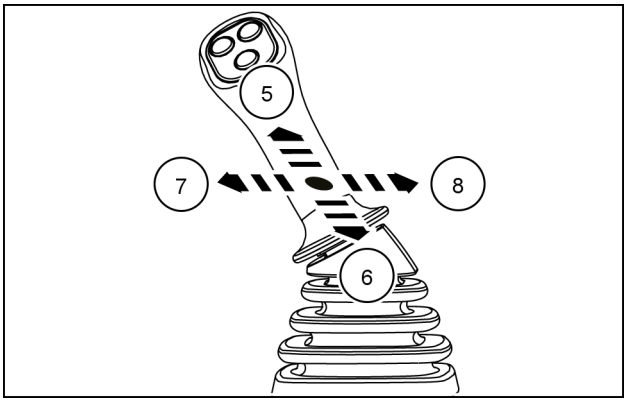


SMIL21CEX1384AA 2

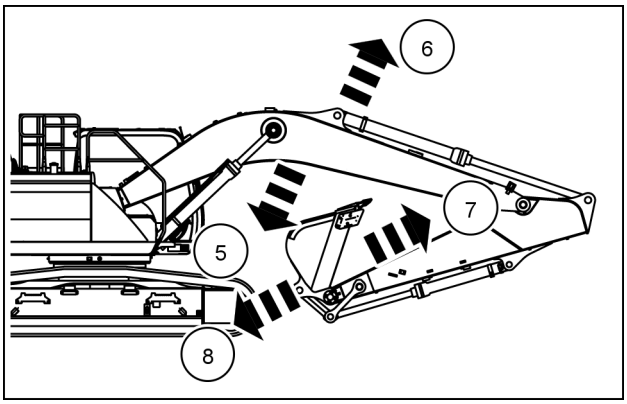
Right-hand control lever:

5. The boom lowers.
6. The boom raises.
7. The bucket retracts (filling).
8. The bucket extends (dumping).

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



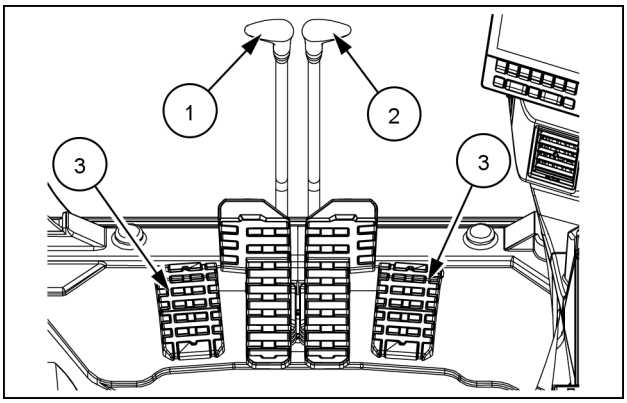
SMIL22CEX1942AA 3



SMIL21CEX1385AA 4

Travel controls

1. Left-hand travel control lever and pedal
2. Right-hand travel control lever and pedal
3. Footrest



SMIL21CEX1386AA 5

The travel control levers and pedals are used to move the machine.

(N): neutral

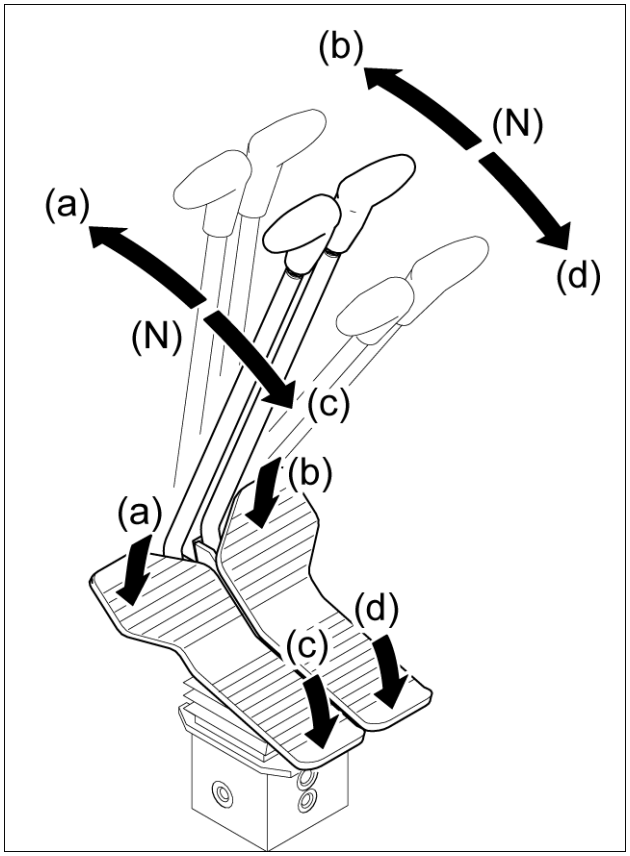
(a) + **(b)**: machine moves forward.

(c) + **(d)**: machine moves backward.

(b) + **(c)**: opposite simultaneous rotation of the tracks with consequent counterclockwise rotation of the machine around its centre axis.

(a) + **(d)**: opposite simultaneous rotation of the tracks with consequent clockwise rotation of the machine around its centre axis.

(a), **(b)**, **(c)**, **(d)**: positions to move one track only. Consequently the machine steers pivoting on the stationary track.



NH0159 6

Windshield

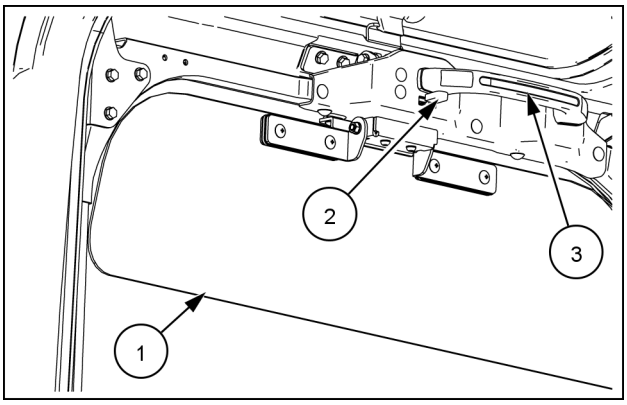
⚠ CAUTION

Pinch hazard!
Make sure you correctly follow the instructions in this manual when handling the windshield. If you do not handle the windshield correctly, it could slip and injure your fingers or hands.
Failure to comply could result in minor or moderate injury.

C0045A

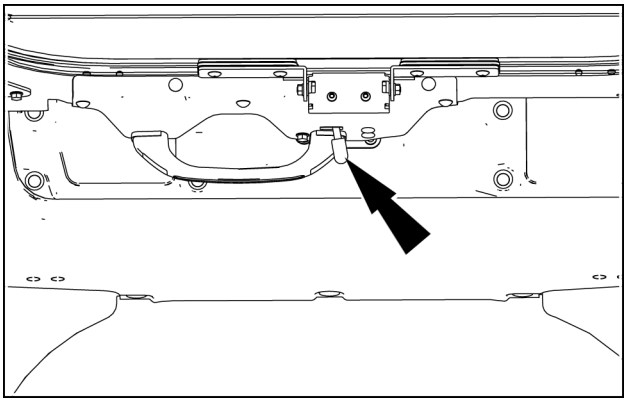
Opening

1. If the sun shield **(1)** is equipped, fold it back against the windshield and operate the lever **(2)**.
2. Hold the lower and upper handles **(3)** and carefully raise the windshield.



SMIL21CEX1413AA 1

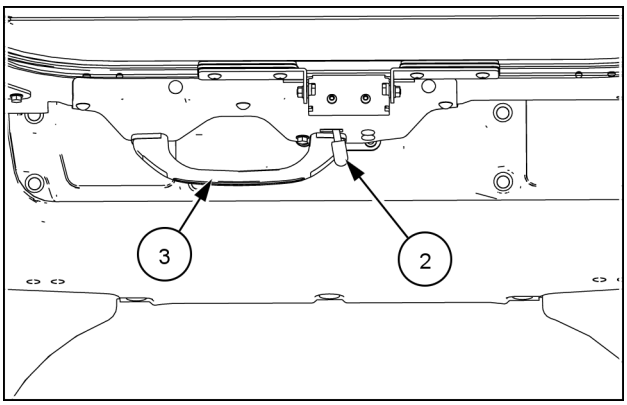
3. Pull the windshield to the rear until it engages perfectly behind the cab.



SMIL21CEX1414AA 2

Closing

1. Use the lever **(2)** to release the windshield.
2. Hold both handles **(3)** and carefully lower the windshield. Make sure the window is completely down.
3. Make sure the top of the windshield is correctly latched.

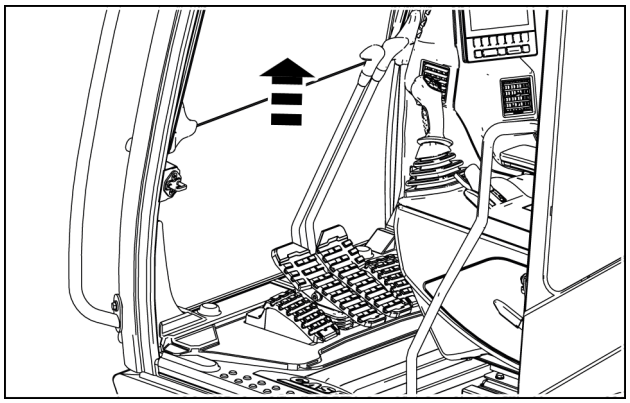


SMIL21CEX1414AA 3

Front lower window

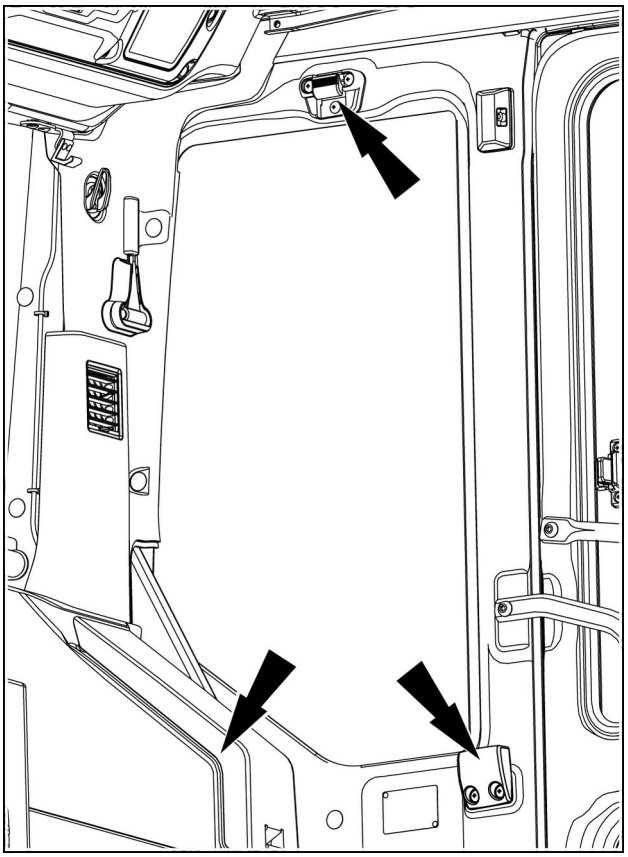
The front lower window may only be removed when the windshield is open.

1. Remove the front lower window from its housing by sliding it upward.



SMIL22CEX1934AA 1

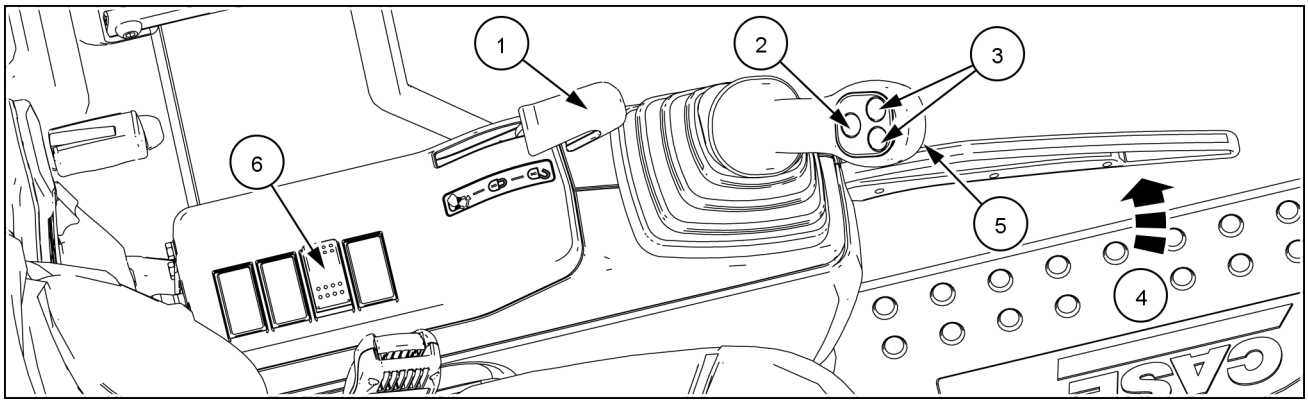
2. Place the front lower window in the storage position provided to the left of the operator's seat and then engage it correctly with the three glass holders.



SMIL22CEX1932BA 2

Left-hand side controls

Left-hand side controls



SMIL22CEX1982EA 1

(1) Gate lock lever.

(2) Horn button.

NOTICE: *make sure to sound the horn before starting the engine and resuming machine operation.*

(3) Not active.

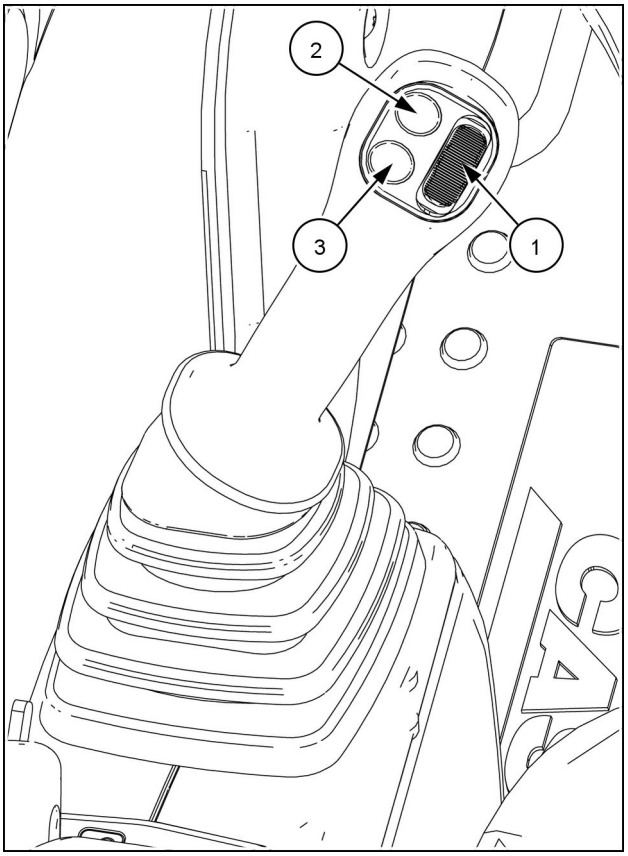
(4) Safety bar.

(5) Radio mute button: the radio mute button is located underneath the control lever. Push the button to mute the volume. Push it again to resume the volume.

(6) Fan reverse switch (Optional). This switch is used to reverse the fan in order to remove debris clogging the radiator and oil cooler fins.

When the machine is equipped with the auxiliary low-flow hydraulic circuit, the left-hand control lever includes:

1. Proportional switch to operate double-acting hydraulic attachments.
2. ON/OFF button to operate the preferred operating direction of the double-acting hydraulic attachment
3. Horn button.



SMIL22CEX1296AA 2

Gate lock lever and safety bar

⚠ WARNING

Unexpected machine movement!
Before you leave the operator's compartment, the gate lock lever must be in the central position and the safety bar must be in the inward position.
Failure to comply could result in death or serious injury.

W1384A

The gate lock lever **(1)** allows to cancel the functioning of the control levers and pedals and operates the safety bar **(2)**.

The safety bar prevents the operator from leaving the cab without previously operating the gate lock lever **(1)** to cancel the functioning of the control levers and pedals.

The gate lock lever operates on three positions:

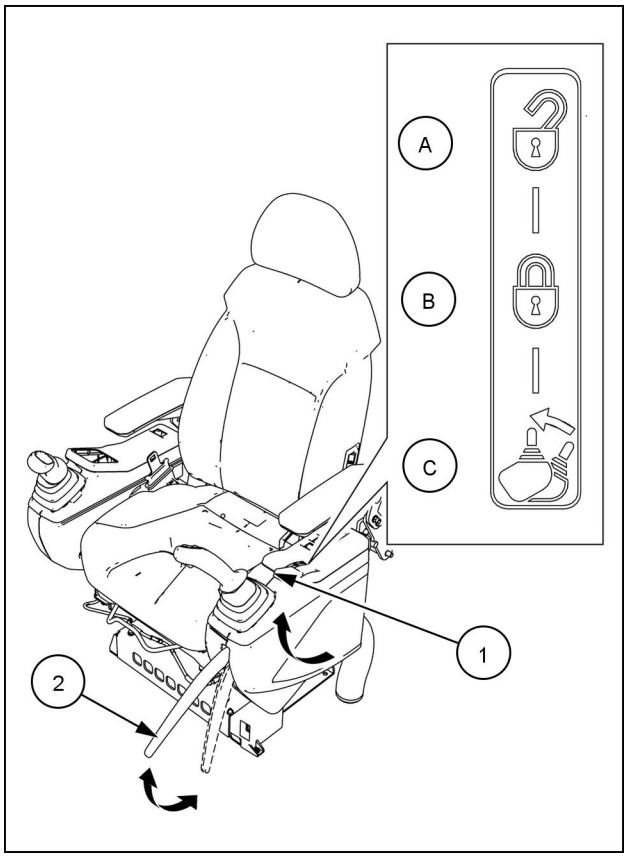
A. Forward position: when the gate lock lever **(1)** is in forward position, the safety bar **(2)** is in outward position. The attachment, the travel functions and the swing functions can be operated and the safety bar does not allow the operator to leave the cab.

B. Central position: when the gate lock lever **(1)** is in central position, the safety bar **(2)** is in inward position inside the console. The attachment, the travel functions and the swing functions cannot be operated even if the engine is running. The operator may leave the cab if needed.

C. Backward position: when the gate lock lever **(1)** is in backward position, the safety bar **(2)** is in inward position, all the functions are disabled and the left hand console is fully raised. The operator can thus easily get off the cab.

NOTE: *set the gate lock lever to central position if just stopping machine operation without leaving the cab. Set the gate lock lever to backward position when ending machine operation and leaving the machine.*

NOTE: *the engine must be started with the gate lock lever in central position. If the gate lock lever in forward position, the engine does not start.*

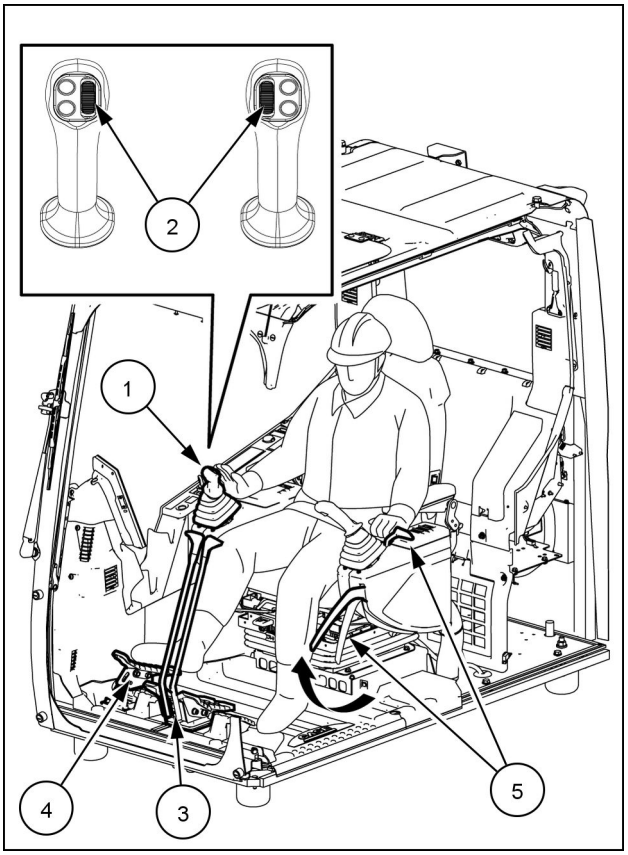


SMIL21CEX1390BA 1

Auto Operation Lever Lock Function

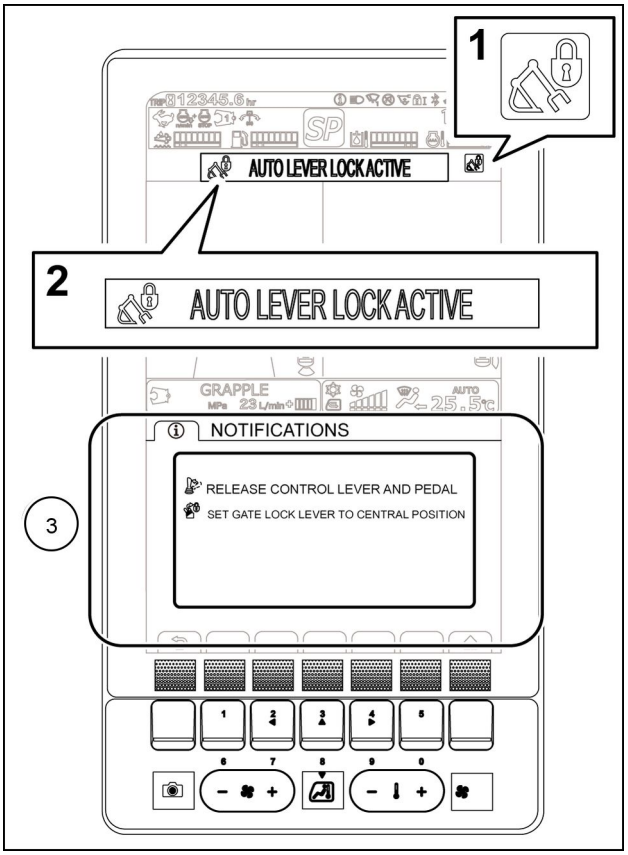
If the operator unintentionally released the gate lock **(5)** when the control levers 1, proportional switches **(2)** , travel control levers and pedals **(3)** , or special attachment operation pedal **(4)** is in operation, the pilot pressure supply is cut off to lock machine operations in order to prevent unexpected movements of the machine.

NOTICE: *The purpose of the auto operation lever lock function is to reduce accidental damage by preventing the operator from performing any unintended operations. Regardless of whether it is intentional or not, this function is activated if any operations are performed before the gate lock is released. Ensure that the gate lock is released before operating the machine. In some cases, even when this function is activated, the machine may not stop immediately and move a little before it stops. Note that this function may not be activated under the following conditions. A machine failure has occurred. The hydraulic oil temperature is low. (Always warm up the engine before operating the machine.) The viscosity of the hydraulic oil in use is higher than that of the recommended genuine hydraulic oil. (Use a hydraulic oil with the correct viscosity.)*



SMIL21CEX4351BA 2

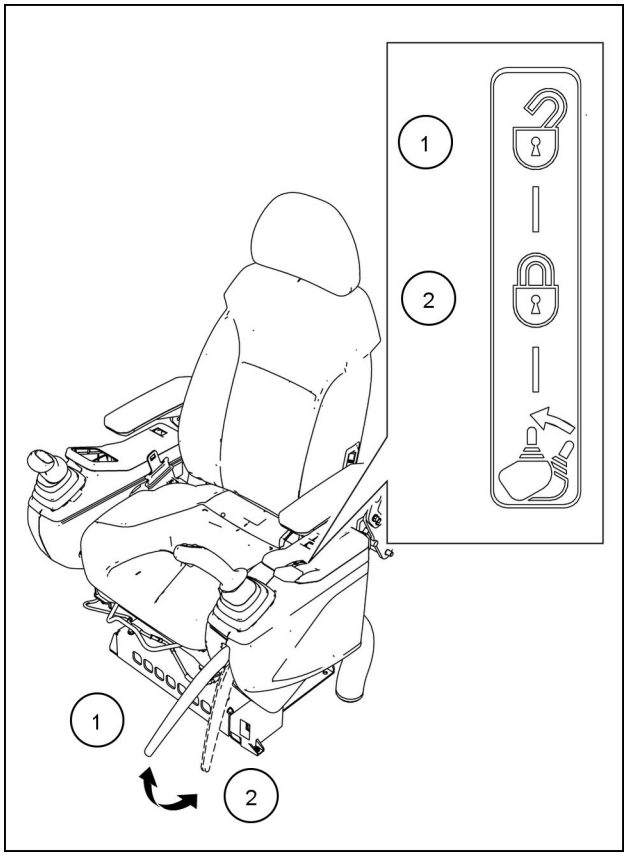
When the auto operation lever lock function is activated, an alarm sounds and the icon **(1)** and text message "AUTO LEVER LOCK ACTIVE" **(2)** are displayed. Also, the messages "RELEASE CONTROL LEVER AND PEDAL" and "SET GATE LOCK LEVER TO CENTRAL POSITION" are displayed on the NOTIFICATIONS screen **(3)** . These remain displayed until this function is deactivated.



SMIL21CEX4352BA 3

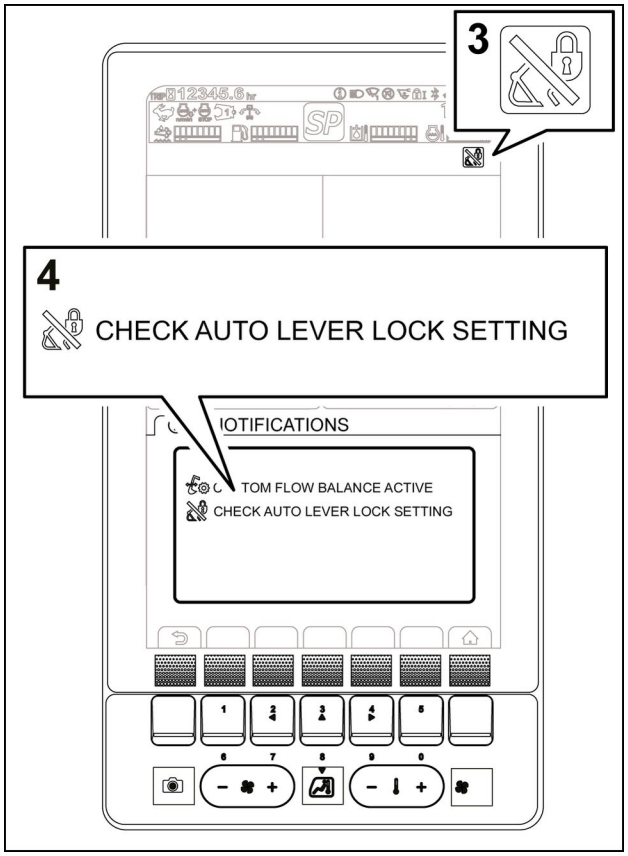
While this function is activated, the machine does not move even when the gate lock lever is in the normal operating position **(1)** (with the safety bar raised) and the control lever or operation pedal is operated. To enable the attachment, travel, and swing operation functions again, return the gate lock lever to the nonoperation position **(2)** (with the safety bar stored in the console) and check that the control levers and operation pedals are in the neutral position, then move the gate lock lever to the normal operating position **(1)** (with the safety bar raised) again. Also, if the machine is subjected to strong vibrations during operation, in rare cases, this function may be activated and the machine can stop suddenly. If that happens, return the gate lock lever to the non-operation position **(2)** (with the safety bar stored in the console) and check that the control levers and operation pedals are in the neutral position, then move the gate lock lever to the normal operating position **(1)** (with the safety bar raised) again.

NOTE: *Before setting the gate lock lever to the normal operating position **(1)** (with the safety bar raised), check that all operation levers and operation pedals are in the neutral position. If any one of them is not in the neutral position, the machine may move suddenly, causing death or serious injury.*



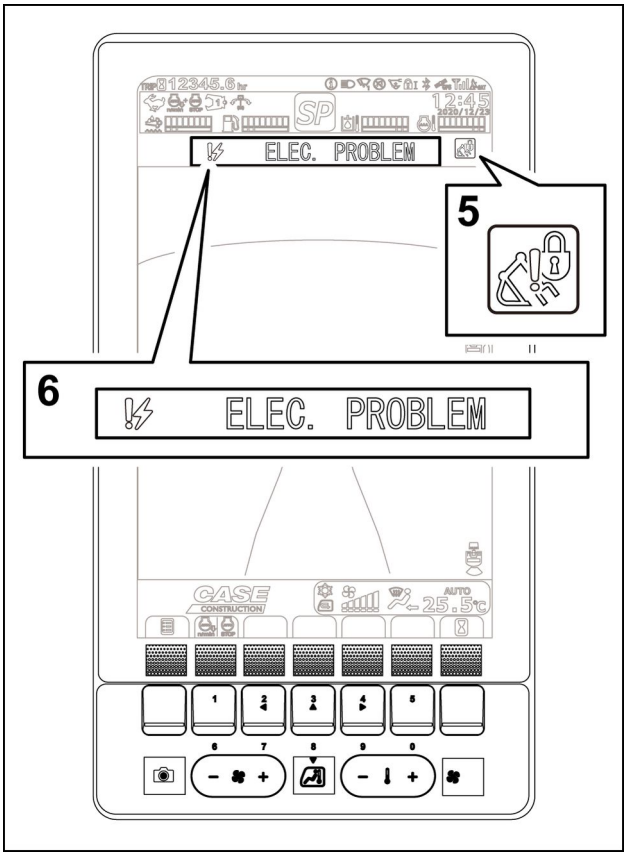
SMIL21CEX1390BA 4

NOTE: *When the icon **(3)** and text message "CHECK AUTO LEVER LOCK SETTING" **(4)** are displayed, the auto operation lever lock function is temporary disabled. Our service engineer can disable the function. If this is displayed, contact your local dealer or the certified service plant.*



SMIL22CEX4548BA 5

NOTE: *When the icon* ***(5)*** *and text message "ELEC. PROBLEM"* ***(6)*** *are displayed, the auto operation lever lock function is not working properly. If this is displayed, contact your local dealer or the certified service plant.*



SMIL21CEX4354BA 6

Cab internal lighting

The room lamp allows to have internal lighting inside the cab. The room lamp has a control switch with three operating positions:

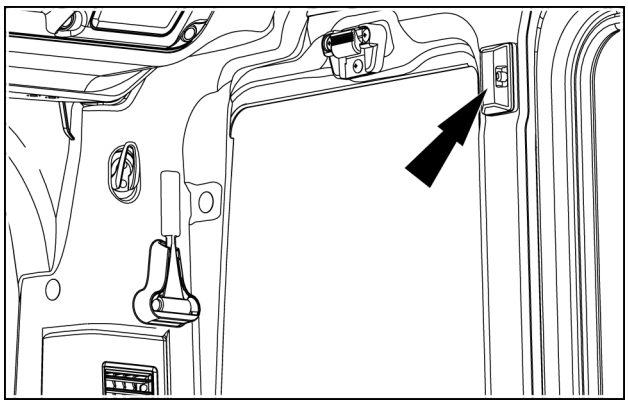
- OFF
- DOOR
- ON

When the switch is set in DOOR position, the room lamp turns on automatically when the door is opened, and turns off automatically when the door is closed.

NOTE: *If the door is left open for more than* ***30 s****, the lamp is forcedly turned off in order to prevent drain of the battery charge.*

The ON position of the switch allows to turn on the room lamp only if the starter key is set in ACC or ON position.

NOTICE: *Never leave the room lamp switch in ON position. The battery charge may be drained out. As the need for lighting ends, set the switch to OFF or DOOR position.*



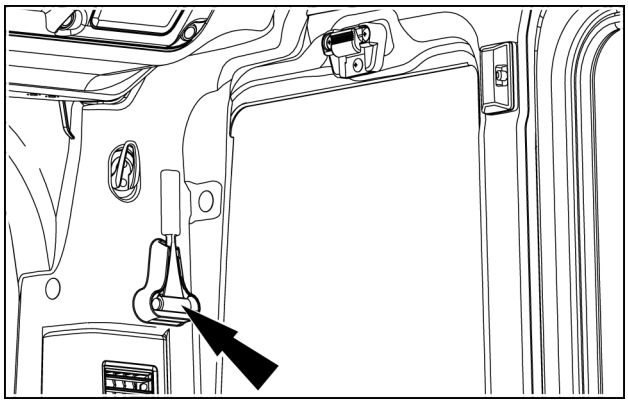
SMIL22CEX1282AA 1

Emergency exit hammer

Located on the left-hand cab, use the hammer to break the rear window, and then push the window strongly and escape outside.
Consult your CASE CONSTRUCTION dealer for window installation.

NOTICE: *Do not break the rear window except when it is absolutely necessary, such as to escape in an emergency.*

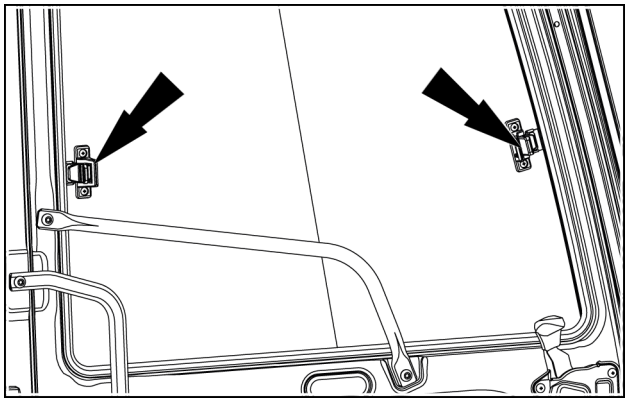
NOTICE: *Do not place anything in front of the window. Doing so may obstruct an emergency escape.*



SMIL22CEX1282AA 1

Sliding windows on door

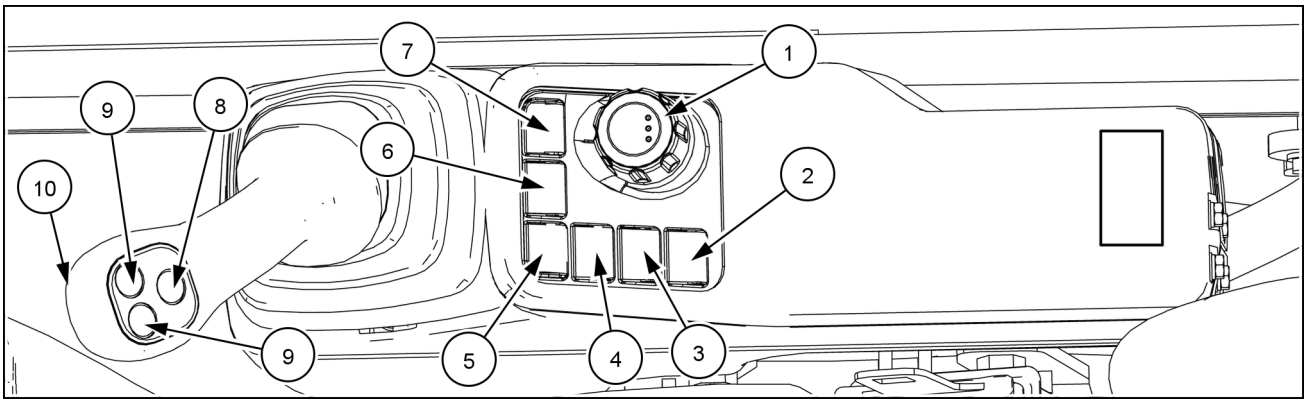
The two windows on the cab door can be opened singularly or simultaneously. Release the lock and slide each window in order to open it.



SMIL22CEX1933AA 1

Right-hand side controls

Right-hand side controls



SMIL21CEX1390EA 1

(1) Engine speed throttle and work mode selector (refer to "Instrument cluster" section).

(2) Windshield washer button (refer to "Instrument cluster" section).

(3) Wiper button (refer to "Instrument cluster" section).

(4) Working lights button (refer to "Instrument cluster" section).

(5) Travel mode button (refer to "Instrument cluster" section).

(6) Attachment select button (optional function, refer to Chapter 9).

(7) Lifting mode button (optional function, refer to Chapter 9).

(8) Engine low idle speed button: the engine low idle speed button enables to set the engine speed to low idle at a touch without moving the engine speed throttle. If operating at engine speed different from low idle, press and release the engine low idle speed button to get down the engine speed to low idle. Press and release the button again to resume the engine speed set by the engine speed throttle.

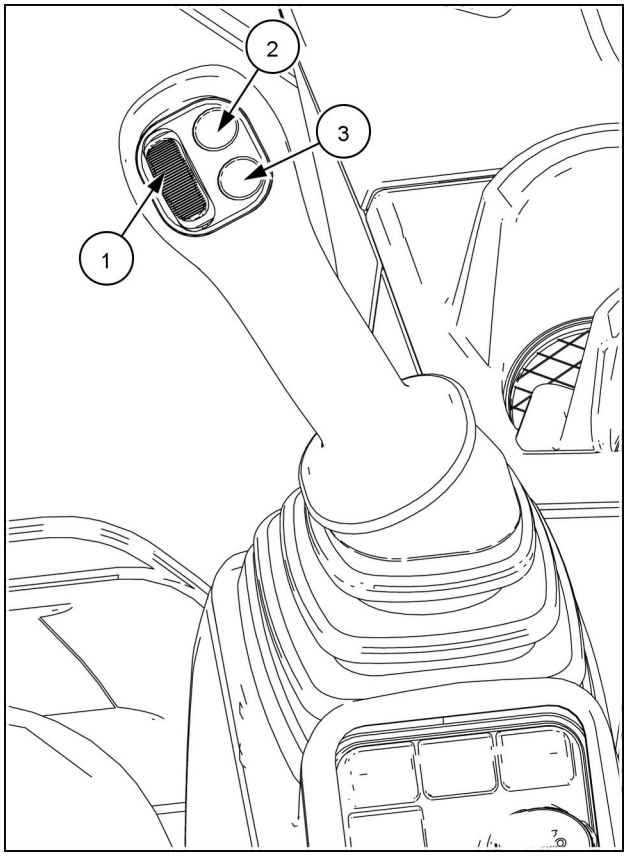
(9) Not active.

(10) One-touch wiper button: press and hold down the button to operate the wiper.

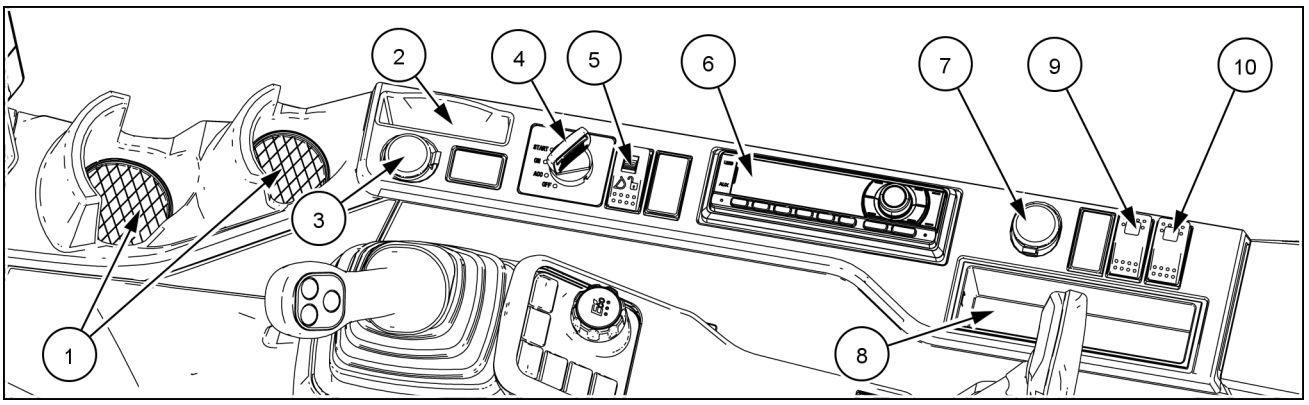
When the machine is equipped with an auxiliary high-flow hydraulic circuit, the right-hand control lever includes:

1. Proportional switch to operate double-acting hydraulic attachments.
2. ON/OFF button to operate single-acting hydraulic attachments.
3. Engine low idle speed button.

NOTICE: *Do not operate controls for auxiliary high-flow hydraulic circuit without setting any flow rate/pressure combination. The circuit would work by default at maximum pressure, and this may lead to severe damages to the attachment. For the setting procedure of auxiliary high-flow hydraulic circuit, refer to Chapter 9.*



SMIL22CEX1295AA 2



SMIL22CEX1935EA 3

(1) Cup holder

(2) Smartphone holder

(3) 12 V power supply socket: the device is active with the starter key in ON position, or while the engine is running.

NOTICE: *connect only **12 V** devices to the socket. Connecting devices functioning at different voltage can cause damages to the device itself and to the electrical system.*

(4) Starter switch (4 positions): ON (contact), START (engine ignition), OFF (engine shut-down) and ACC (accessory current supply).

NOTICE: *when the starter key is in ON position, if the anti-theft protection has been programmed, it will be necessary to enter the password. Refer to page **4-1**.*

NOTE: *the starter key is also used to lock the cab door, the **DEF/ADBLUE®** tank cover, the engine hood, the front storage box, the side doors and the fuel tank cap.*

(5) Hydraulic quick coupling system activation switch (optional, refer to Chapter 9).

(6) Radio.

(7) 24 V power supply socket: the device is active with the starter key in ON position, or while the engine is running.

NOTICE: *connect only **24 V** devices to the socket. Connecting devices functioning at different voltage can cause damages to the device itself and to the electrical system.*

(8) Storage tray.

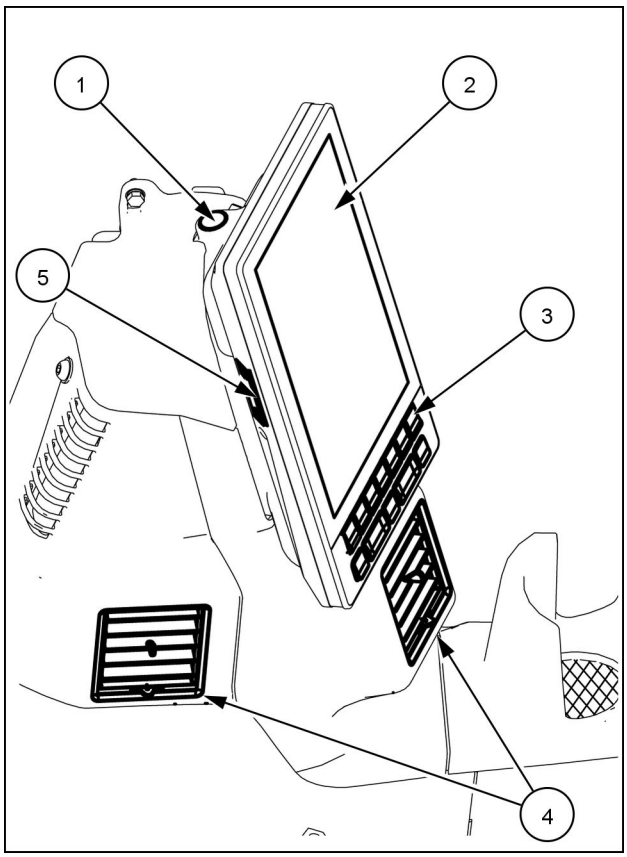
(9) Around lighting switch (optional): the around lighting switch allows to activate the around lighting system installed on the cameras. Press the back side of the switch to activate the lighting. Press the front side of the switch to deactivate the lighting.

NOTE: *the around lighting system activates as the working lights are turned on.*

(10) Rotary light switch: Press the ON side of the switch to activate the rotary light (not supplied). Press the OFF side of the switch to stop the rotary light (not supplied).

NOTE: *The machine has a specific provision to connect a **24 V** rotary light (not supplied).*

Instrument cluster



SMIL21CEX3489BA 1

(1) Solar radiation sensor

If you place anything on the solar radiation sensor (on the console at the front right of the operator's seat), accurate measurement of the temperature inside the operator cab becomes impossible. Do not place anything on the solar radiation sensor.

(2) Monitor display

Displays the clock, fuel gauge, coolant temperature gauge, and oil pressure/temperature gauge. Displays the function selection status. Displays the status of the machine. Displays camera images. Displays the service status of the machine.

(3) Monitor switches

Used to select the machine status. Used to switch the monitor display. Used to operate the air conditioner.

(4) Air conditioner vent

The air conditioner vents control the air flow circulation and direction. The air conditioner vents are opened/closed and their direction controlled manually.

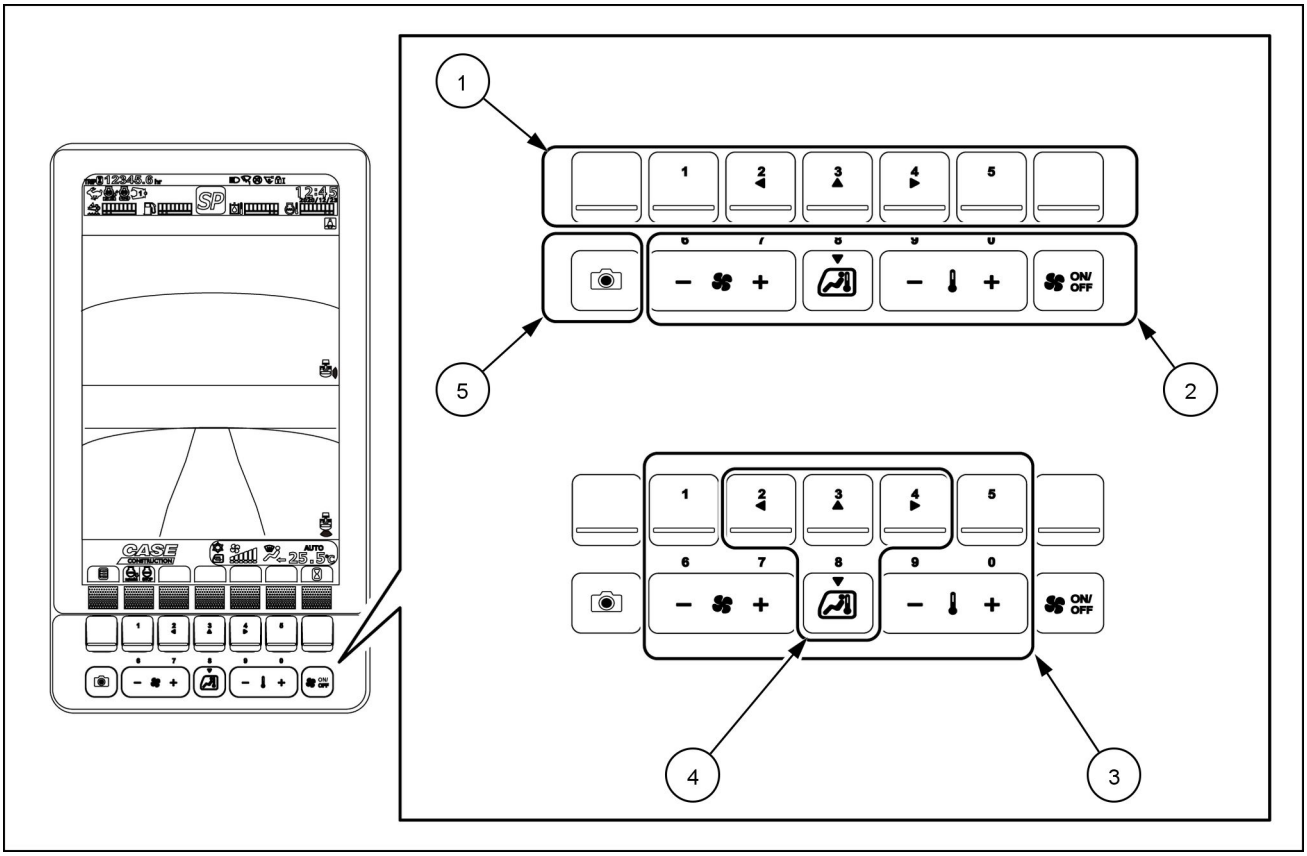
NOTICE: *While the air conditioner is being used, the air vents must be left open.*

(5) USB external input

Used by service engineers for maintenance. Do not connect a commercially available USB flash drive.

NOTICE: *If the USB port cover is not securely fastened, water may enter the inside of the monitor and cause damage*

Monitor switches



SMIL21CEX3490FA 2

The monitor switches are used to operate or select the machine devices and monitor display or to operate the air conditioner.

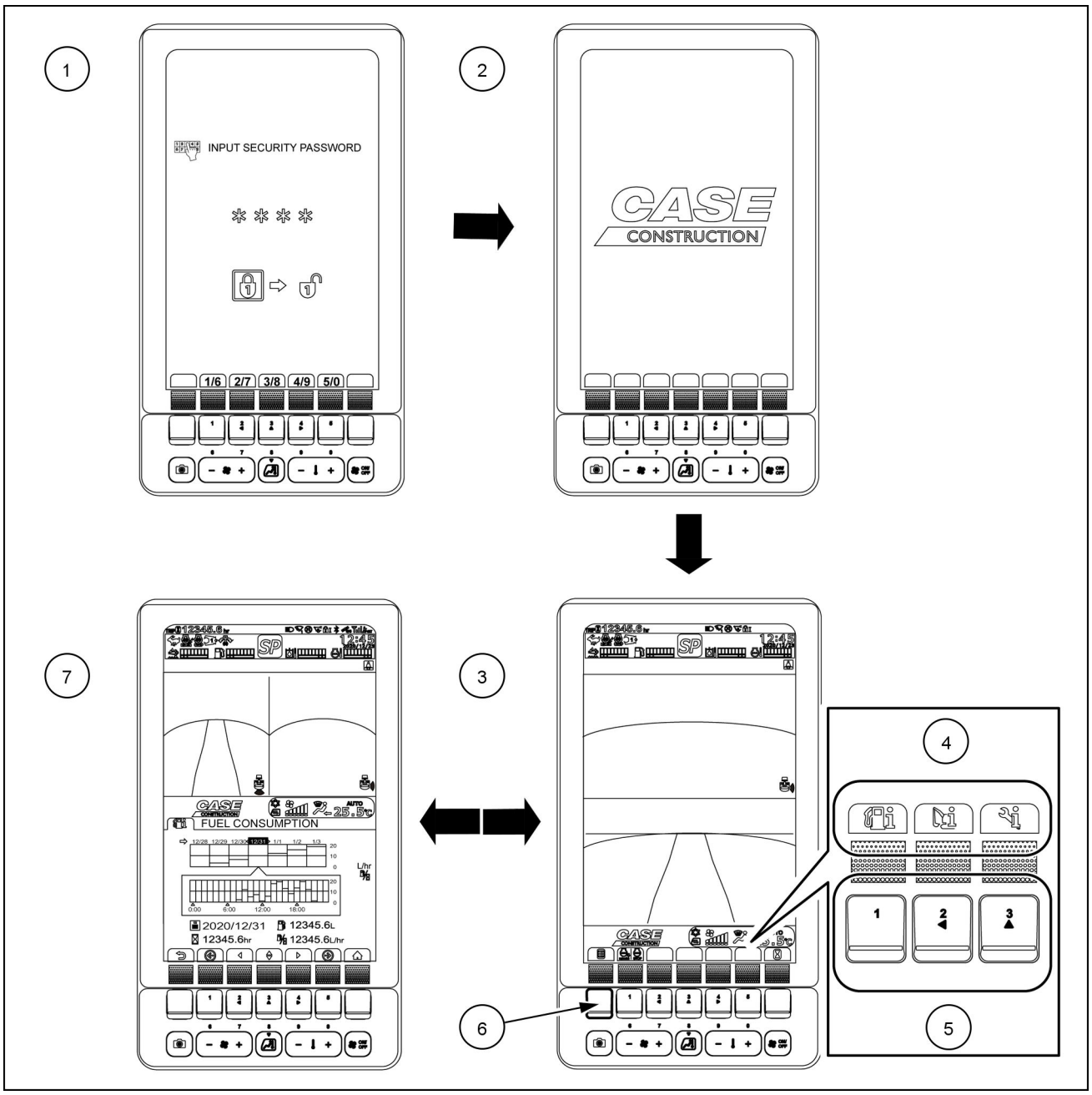
1. Area used when operating function keys (Switch icons are displayed on the monitor.)
2. Area used when operating the air conditioner
3. Area used when operating the numeric keys
4. Area used when operating the cursor keys
5. Camera select switch

Monitor display

There are 2 modes for monitor display:

Normal display mode: Displays the machine status and camera images during operation.

User information mode: Allows you to view machine information and to configure various settings.



SMIL21CEX3491GA 3

NOTE: *The monitor displays the status of the machine during operation. If any abnormality occurs, it notifies the operator immediately with a message and the buzzer. It is not used in start-up inspections and service.*

Screen transitions: If security is set up, the security password entry screen **(1)** is displayed.

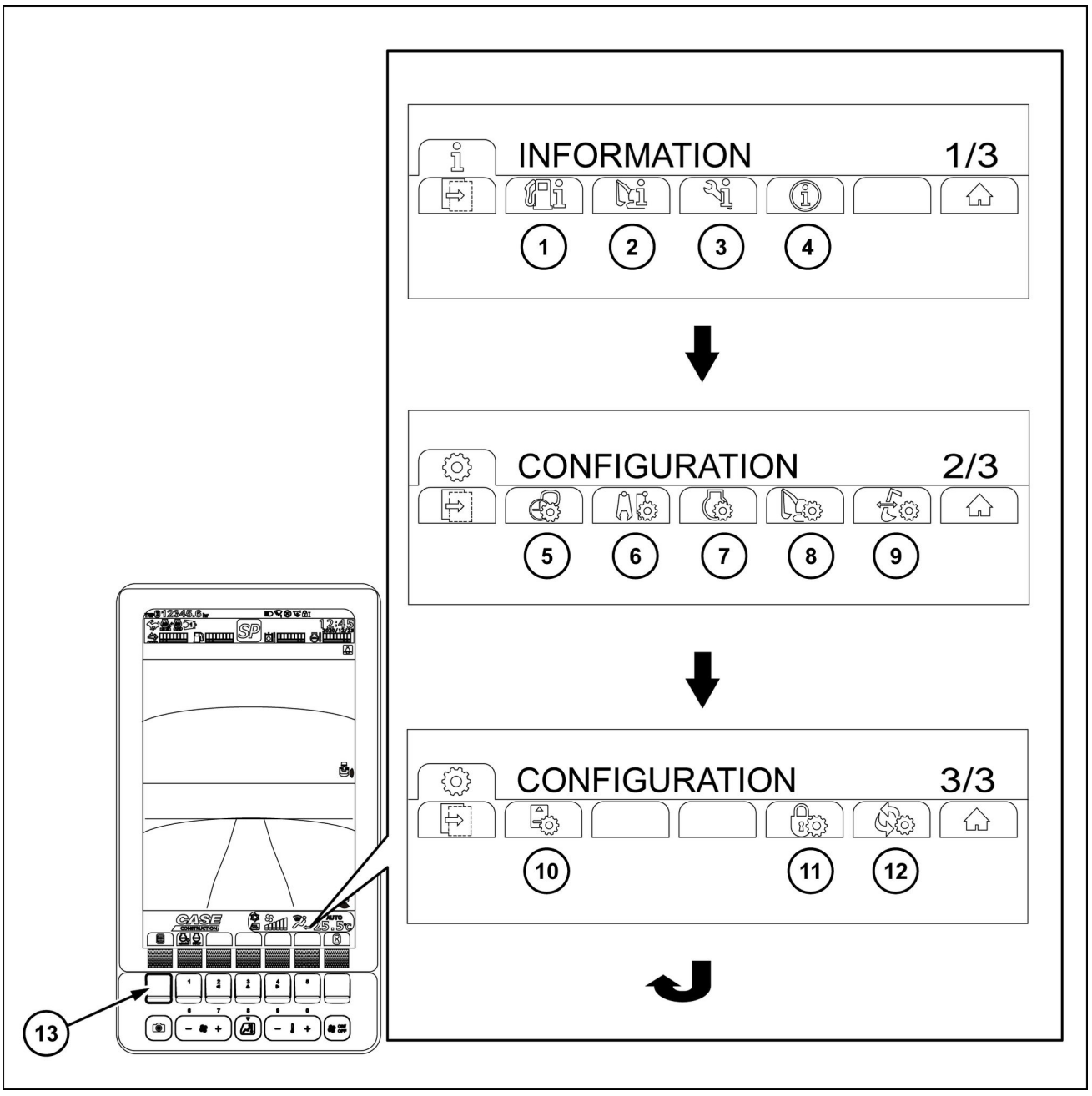
NOTE: *For information on setting up security, consult your CASE CONSTRUCTION dealer.*

When the security password is entered correctly, the initial screen **(2)** is displayed, then the system enters the normal display mode **(3)** .

For details on how to enter the security password, refer to "Using Security Function". When you press the function switch **(6)** for displaying the menu items, menu items are displayed on the function switch tabs **(4)**. Press the function switch **(5)** under the menu item you want to display to switch to the user information mode **(7)**.

User information mode

Switching screens in user information mode: press the function switch **(13)** to change the icons displayed on the function switch tabs. When you press user information mode function switches **(1)** - **(12)** for the information you want to view or set, their respective information screen is displayed.

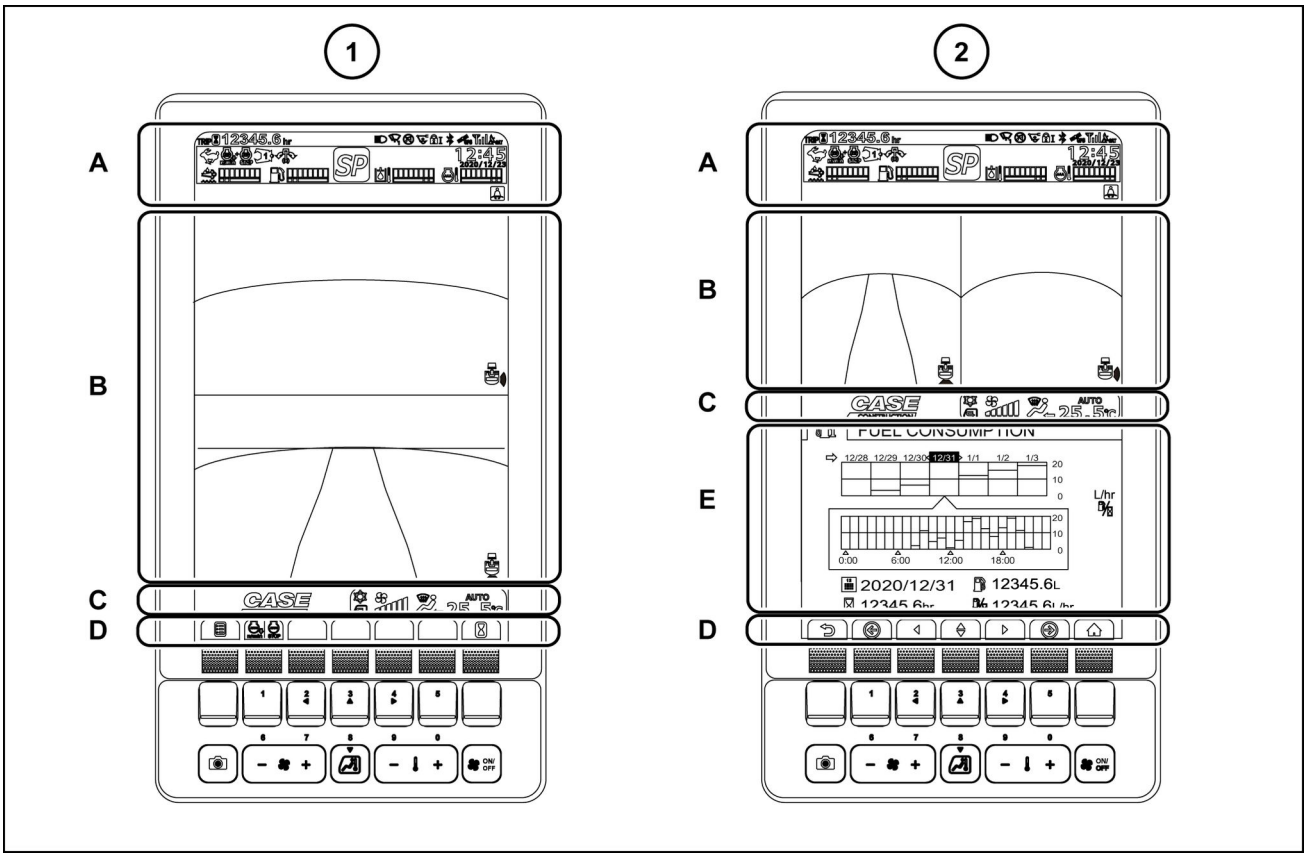


SMIL21CEX3491GB 4

1	FUEL CONSUMPTION	Enables you to view the fuel economy for the past 7 days.
2	MACHINE INFORMATION	Enables you to view the machine status in detail.
3	TIME UNTIL REPLACEMENT	Enables you to view the information on the time for replacing the periodic replacement parts.
4	NOTIFICATIONS	Enables you to view the information that the operator needs to know.
5	DISPLAY CONFIGURATION	Enables you to configure the screen brightness, camera, and date/time settings.
6	AUXILIARY HYDRAULICS	Enables you to switch between Breaker and Crusher, manage operations according to the model, and set the pressure and flow rate. (Refer to Chapter 9)
7	ATS CONFIGURATION	Enables you to view and change the ATS settings
8	FUNCTION CONFIGURATION	Enables you to configure settings for functions related to energy-saving and safety.
9	CUSTOM FLOW BALANCE	Enables you to adjust the flow balance according to the end attachment to be used.
10	MONITOR SWITCHES LAYOUT	Enables you to create shortcuts for frequently used menu screen items on the function switch tab in normal display mode.
11	PASSCODE SETTING	Enables you to change the passcode.
12	FACTORY SETTING	Enables you to reset the settings on the menu screen to the factory settings all at once.

Display area

There are 4 display areas in the [Normal display mode] **(1)** and 5 display areas in the [User information mode] **(2)**.



SMIL21CEX3492FB 5

(A) Icon display area

(B) Camera display area

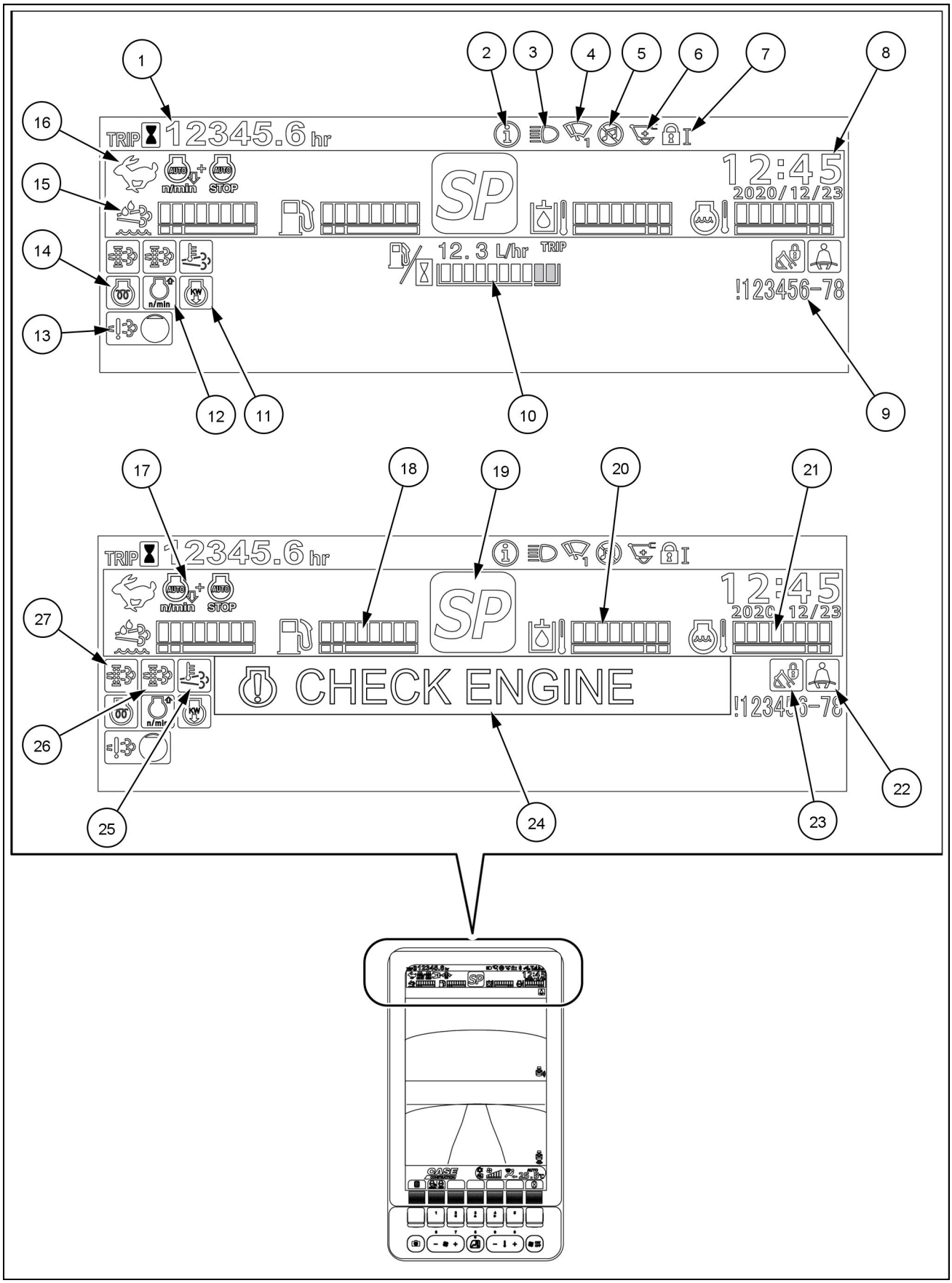
(C) Information display area

(D) Function switch tab display area

1. Displays operation switch icons
2. Displays user information modes. The function switch layout in normal display mode can be changed in MONITOR SWITCHES LAYOUT.

(E) User information screen display area

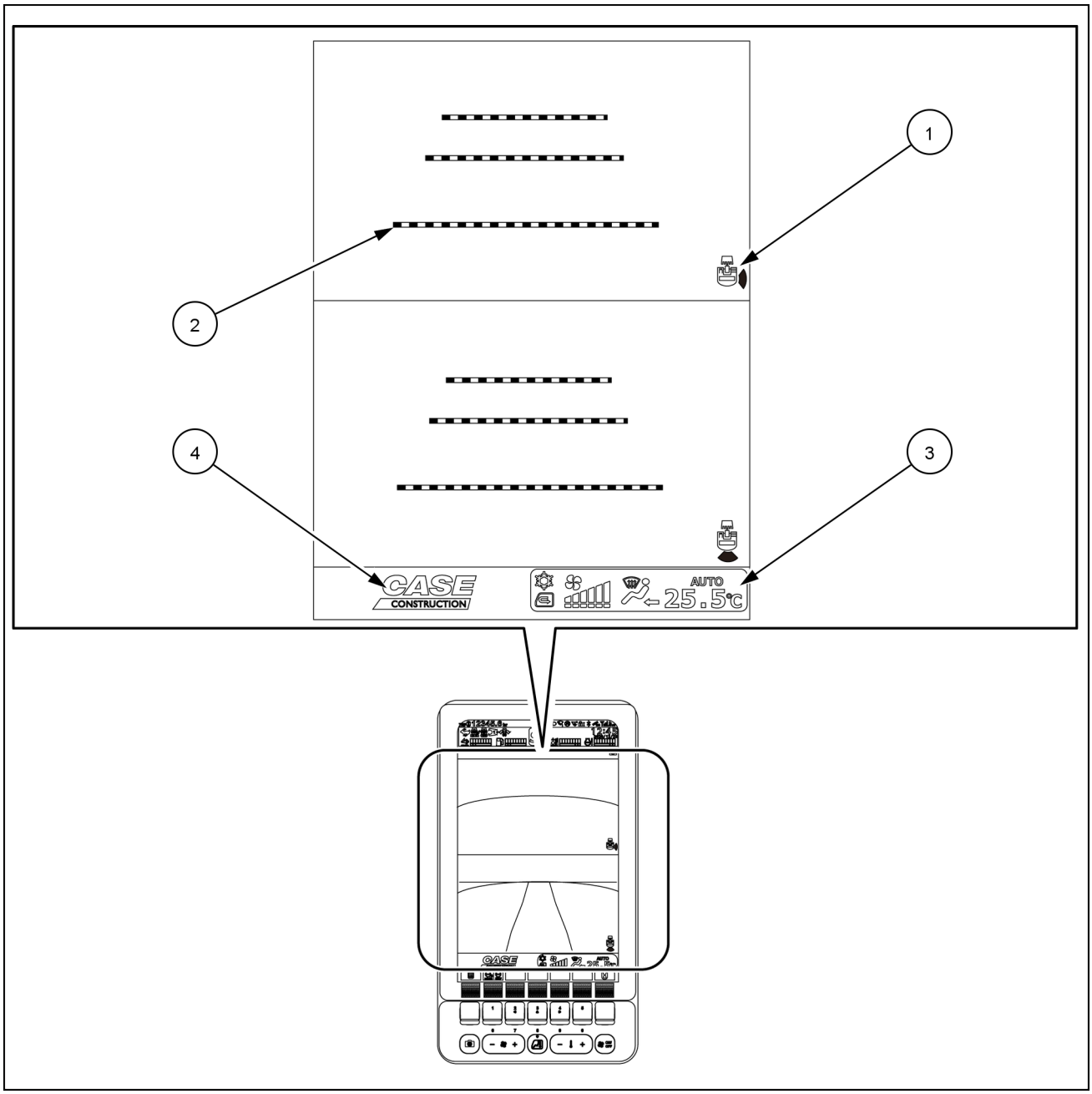
Icon display area



SMIL21CEX3493HA 6

1	Hour meter/trip meter
2	Notification
3	Working light
4	Front wiper
5	Radio mute
6	Auto pressure boost
7	Security function
8	Date and time
9	Diagnostic trouble code
10	Fuel consumption indicator/fuel economy gauge
11	Engine output low
12	Low idle speed increase
13	Hydrocarbon (HC) accumulation
14	Engine preheat
15	**DEF/ADBLUE®** level gauge
16	Travel mode
17	Idle mode
18	Fuel gauge
19	Work mode
20	Hydraulic oil temperature gauge
21	Engine coolant temperature gauge
22	Not wearing seat belt
23	Auto operation lever lock function
24	Message screen
25	Hot exhaust
26	Manual ATS cleaning
27	Automatic ATS cleaning

Camera display area/information display area

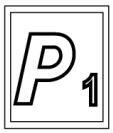


SMIL21CEX3494GA 7

(1)	Camera angle
(2)	Camera screen guide lines
(3)	Air conditioner information display
(4)	Brand logo/optional setting information

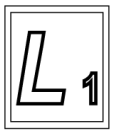
Work Mode

Super Power: displayed when the mode that prioritizes machine output is selected.



Power: displayed when the high-load work mode is selected. Select from levels 1 - 10 for this mode. P1: Low speed - P10: High speed

Eco: displayed when the mode that prioritizes fuel economy is selected. Select from levels 1 - 10 for this mode. E1: Low speed - E10: High speed

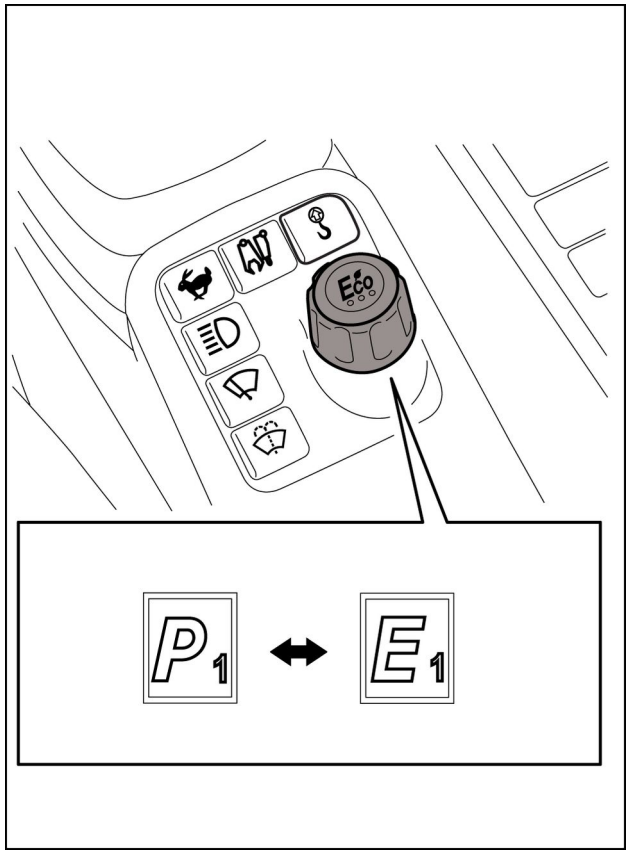


Lifting: displayed when the mode that prioritizes lifting operability is selected. Select from levels 1 - 6 for this mode. L1: Low speed - L6: High speed This mode can be selected only for machines with HBCV. With machines without HBCV, if the switch is pressed, the message "LIFTING MODE NOT ACTIVE" is displayed and this mode cannot be selected.

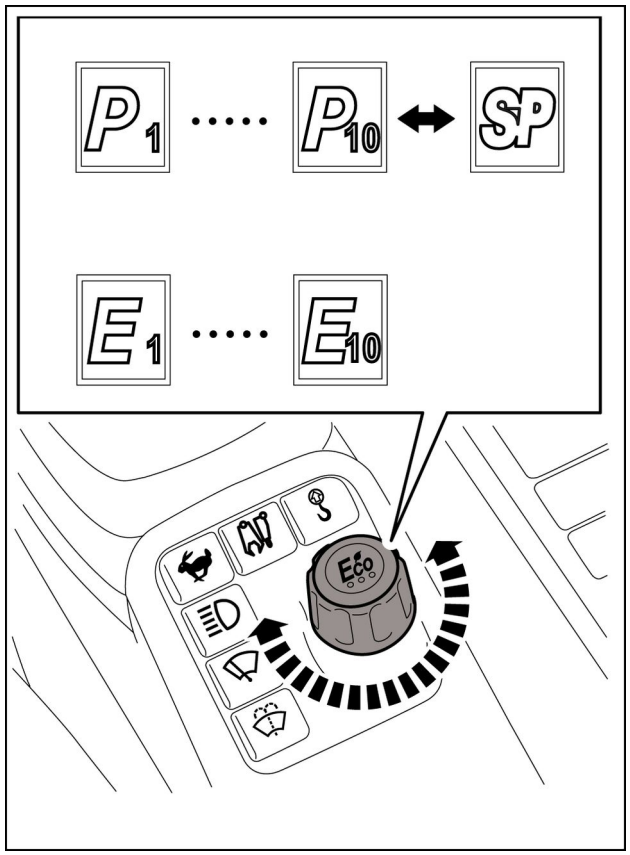
Machine administrators can set a limitation so that the operator does not perform operations in an inappropriate work mode or a limitation on the maximum engine speed.

Each time the engine throttle switch on the right console is pressed, the mode switches between "P" and "E".

Turn the engine throttle switch to change the engine speed. When you turn the engine throttle switch in "P" mode to increase the engine speed to the maximum, the mode switches to "SP".



SMIL21CEX3495BA 8



SMIL21CEX3496BA 9

Each time the lifting mode switch is pressed, the lifting mode turns ON or OFF.

The overload warning device operates when the lifting mode turns ON.

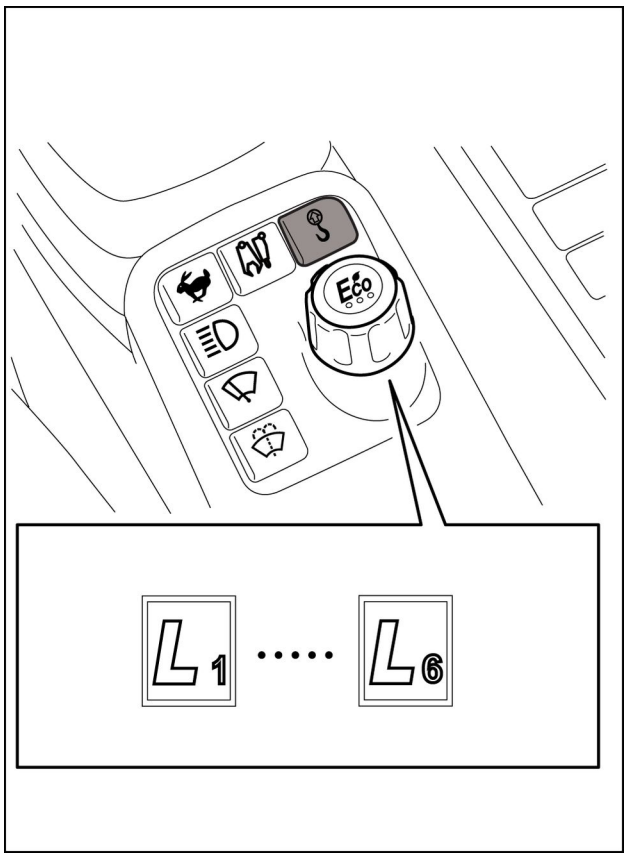
Turn the engine throttle switch to change the engine speed.

When the suspended load is excessive, the operator is notified by a warning message and alarm sound.

When performing lifting work, ensure that the machine is in lifting mode.

The lifting mode can be selected only for machines with HBCV.

With machines without HBCV, if the switch is pressed, the message "LIFTING MODE NOT ACTIVE" is displayed and the lifting mode cannot be selected.



SMIL21CEX3497BA 10

Travel mode

Each time the "Travel mode select switch" on the switch panel is pressed, the speed switches between low speed and high speed.

Displayed when the low-speed travel mode is selected.

Displayed when the high-speed travel mode is selected.

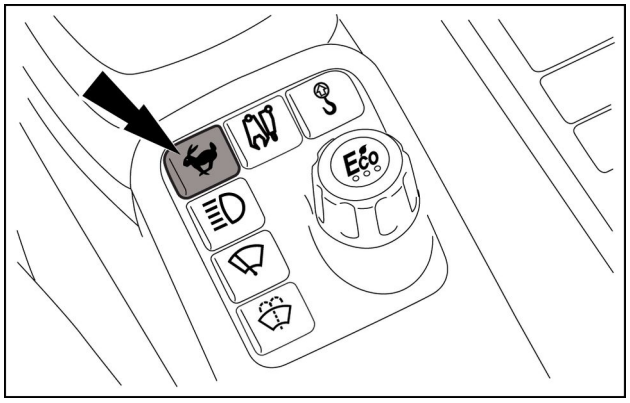
Low speed "Turtle": Use this mode when traveling on sloped, uneven, or soft ground.

High speed "Rabbit": Use this mode when traveling on hard, level, maintained ground.

NOTE: *When the engine is started, low speed is selected automatically.*

NOTE: *When high speed is selected on the machine, if the load increases, for example when going uphill, the machine switches to low speed automatically and when the load drops, it returns to high speed automatically.*

NOTE: *Traveling direction may be shifted if the travel mode is changed while traveling. Stop traveling before switching the travel mode.*



SMIL21CEX3498AA 11

Idle Mode

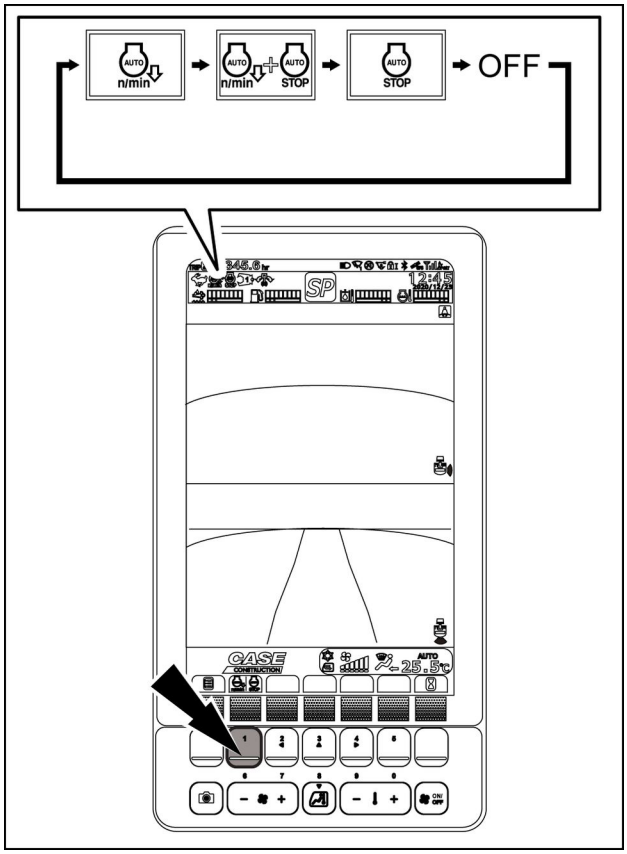
This indicates the selection status of auto idle and idle shutdown.

Displayed when auto idle is selected.

Displayed when auto idle and idle shutdown are selected.

Displayed when idle shutdown is selected.

The idle mode changes as follows each time the idle mode switch (function switch) is pressed. The image provided shows the factory settings.



SMIL21CEX3500BA 12

Auto idle: changes the engine speed to idle when the machine has been left unoperated for **5 s**. To return to the engine speed required by the throttle, either operate the machine or turn the engine throttle volume.

Idle shut down: with the gate lock lever in the non-operation position (locked), if the engine speed is 1200 rpm or less and the throttle is not operated for **3 min**, the message "IDLE SHUT DOWN" is displayed on the screen and an alarm sounds, then the engine stops in **10 s**.

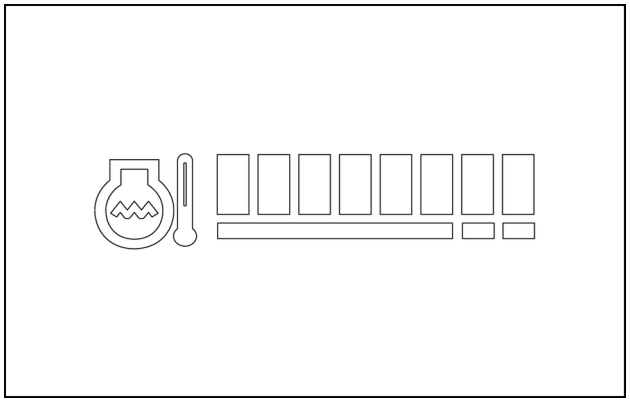
[Auto idle + idle shutdown] When this is selected, both the auto idle and idle shutdown modes are set. Changes the engine speed to idle when the machine has been left unoperated for **5 s**, then after another **3 min**, stops the engine. (The operation conditions are the same as the 2 items above.)

NOTE: *To restart the engine after it has been stopped in an idle shutdown, first turn the starter switch key to "OFF", then start the engine.*

NOTE: *The idle mode settings can be changed on the "FUNCTION CONFIGURATION"*

Engine coolant temperature gauge

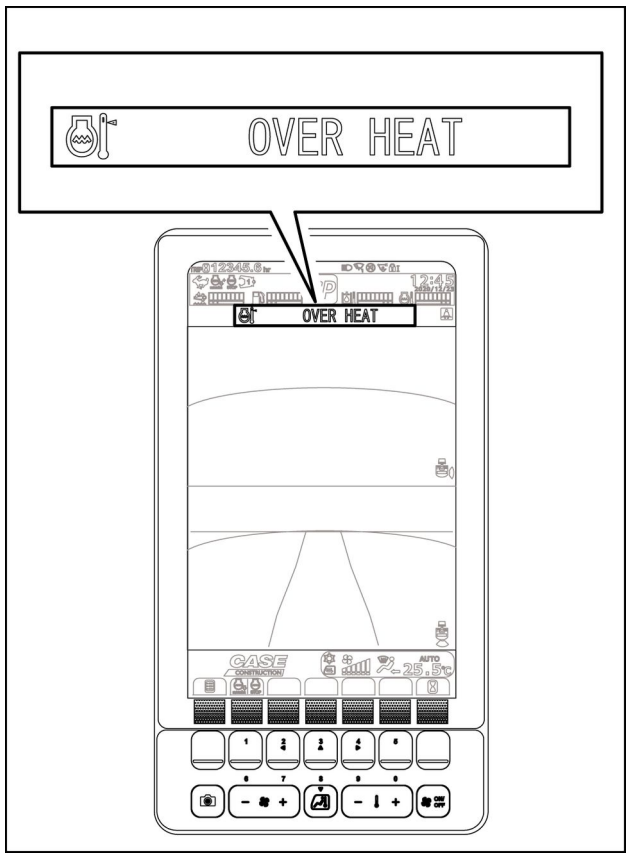
The number of lit segments indicates the temperature of the engine coolant. The greater the number of lit segments, the higher the coolant temperature is.



SMIL21CEX3601AA 13

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

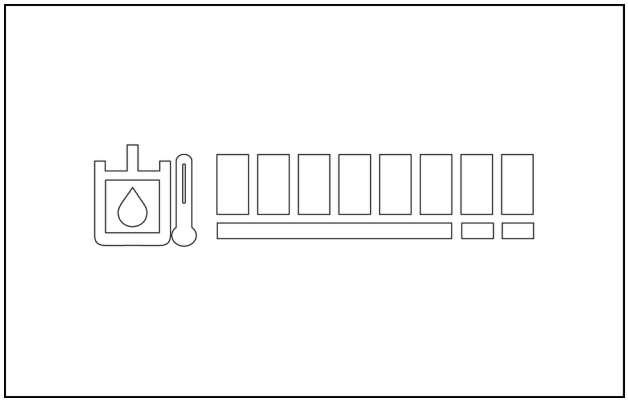
If the OVER HEAT message appears, lower the engine speed. If the temperature does not drop, stop the engine, remove the starter key, and call the CASE CONSTRUCTION dealer for machine inspection.



SMIL21CEX3602BA 14

Hydraulic oil temperature gauge

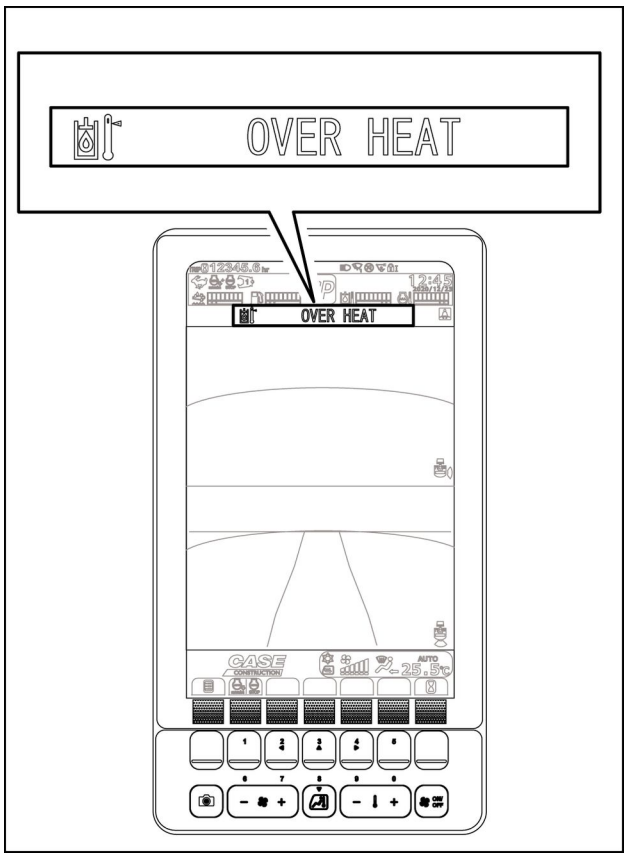
The number of lit segments indicates the temperature of the hydraulic oil. The greater the number of lit segments, the higher the hydraulic oil temperature is.



SMIL21CEX3603AA 15

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.



SMIL21CEX3604BA 16

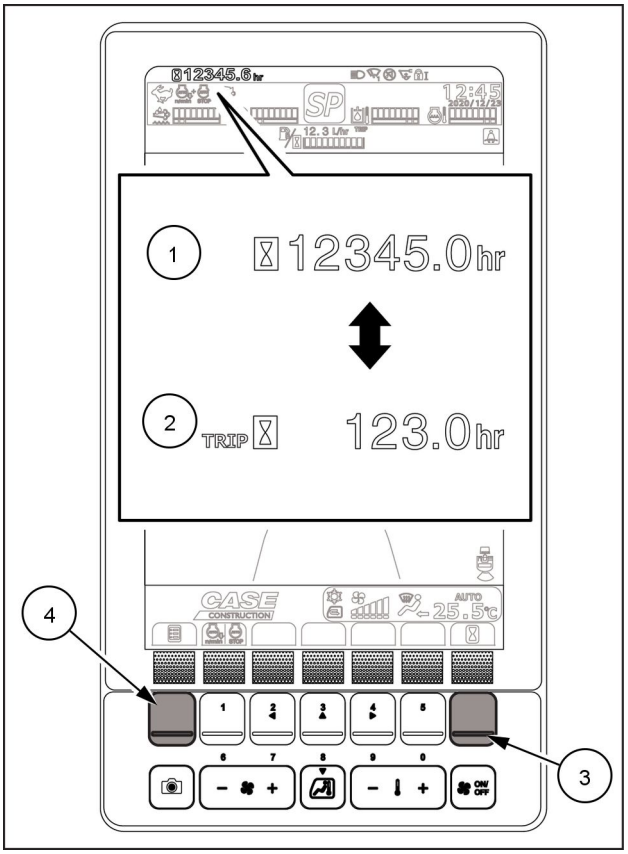
Hour meter/trip meter

Hour meter **(1)**: the hour meter displays the duration that the engine has operated in **0.1 h** (**6 min**) increments. The hour meter cannot be reset. The hourglass flashes while the engine is running.

Trip meter **(2)**: the trip meter can be reset to " **0 h**" as desired. It displays the accumulated operating hours from the time of reset in **0.1 h** (**6 min**) increments.

If you press the hour meter switch **(3)** while the hour meter **(1)** is displayed, the display changes to the trip meter **(2)**. If the trip meter **(2)** is left as is, it switches back to the hour meter **(1)** after about **1 min**.

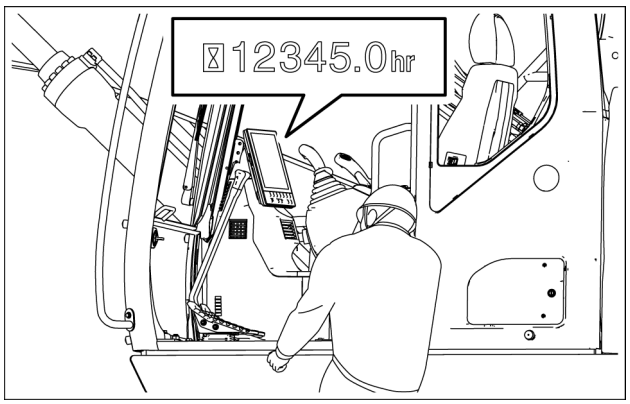
NOTE: *Turning the starter switch key to the "OFF" position ends the hour meter **(1)** count. If the camera switch **(4)** is pressed after the key is turned to the "OFF" position, the hour meter **(1)** and clock are displayed for **30 s**.*



SMIL21CEX3605BA 17

Even when the key is turned to the OFF position, the hour meter **(1)** is displayed on the monitor for **30 s** if a cab door is opened. The hour meter disappears when the door is closed.

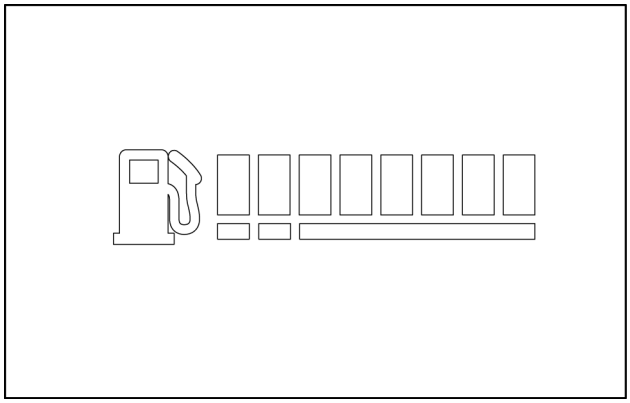
Press and hold the hour meter switch **(3)** while the trip meter **(2)** is displayed to reset the engine operating hours on the trip meter to " **0 h**".



SMIL21CEX3606AA 18

Fuel gauge

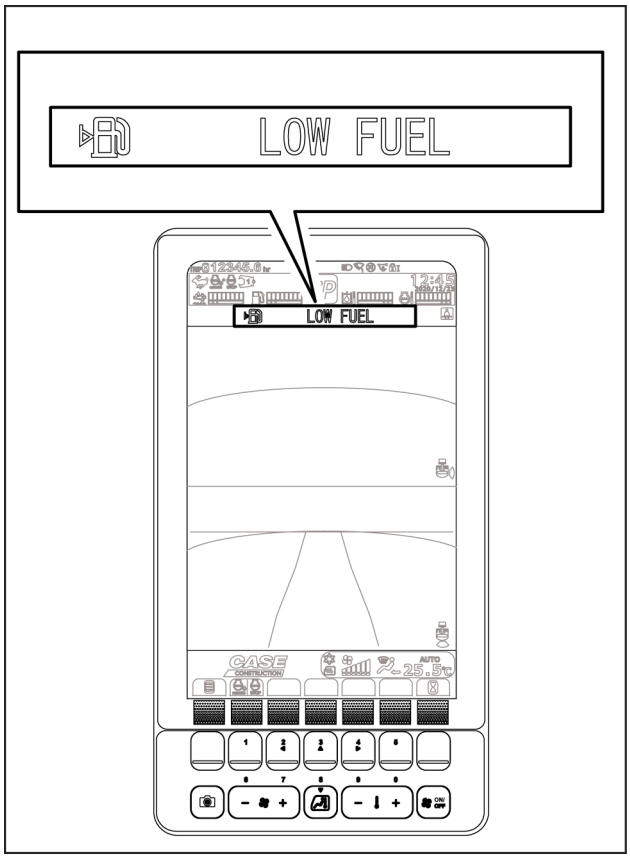
The number of lit segments indicates the remaining level of fuel. If all segments are lit, the fuel tank is full.



SMIL21CEX3607AA 19

If only one segment is lit, an alarm sounds and the LOW FUEL message is displayed.

If the LOW FUEL message appears, stop machine operation, stop the engine, and add fuel to the fuel tank.

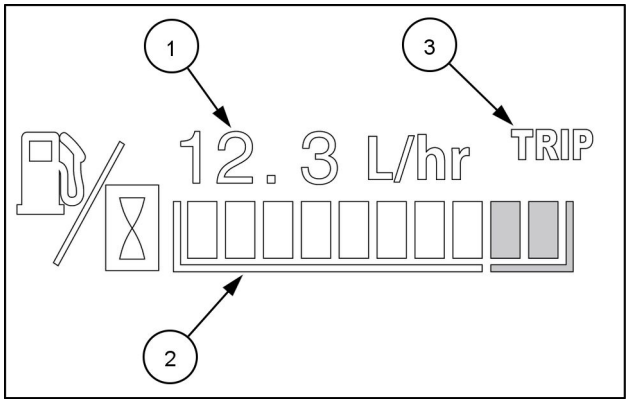


SMIL21CEX3608BA 20

Fuel consumption Indicator/Fuel economy gauge

Fuel consumption indicator: the display of the fuel consumption indicator **(1)** changes depending on the selection of the hour meter or trip meter **(3)**. Normally, it displays the fuel consumption for the accumulated time. When the trip meter is selected, it displays the fuel consumption for the time displayed on the trip meter.

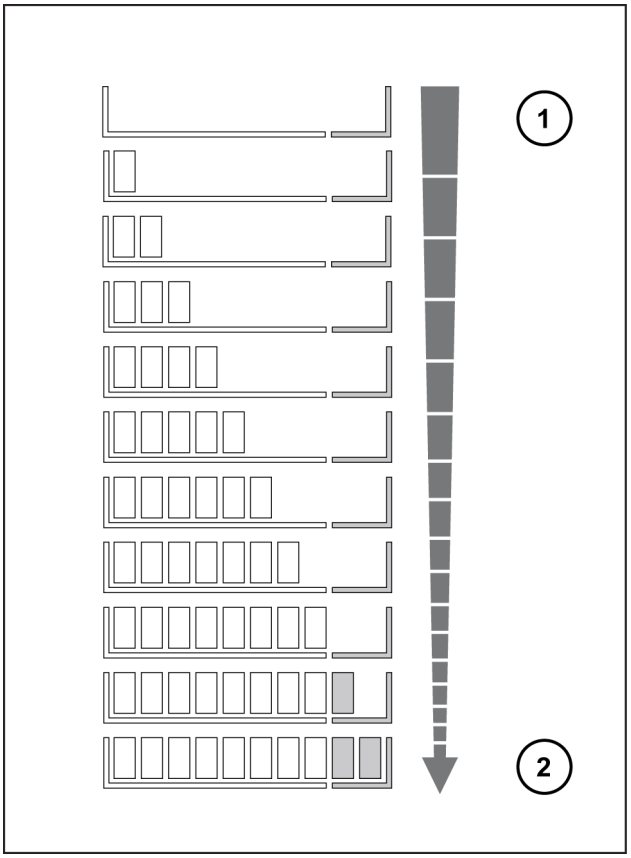
Fuel economy gauge: the gauge shows the energy saving operation status. When the operation status is energy saving, the number of indicators on the gauge **(2)** decreases. For high-load operation, the number of indicators on the gauge **(2)** increases.



SMIL21CEX3609AA 21

(1) Good fuel economy

(2) Bad fuel economy



SMIL21CEX3610BB 22

Even if the number of indicators on the gauge decreases, this does not cause a machine failure. However, as long as energy saving operations do not interfere with work, use energy saving operation to protect the environment. Also, referring to the fuel consumption helps achieve energy saving operation.

- Use P mode or E mode instead of SP mode.
- Do not move the lever too abruptly.
- Do not operate the machine or relieve the pressure with high loads.
- Use auto idle and one-touch idle.

Also, use idle shutdown to stop unnecessary idling.

NOTE: *Ask your local dealer or the certified service plant how to switch the fuel economy gauge display on and off.*

Camera angle display

The camera angle display shows the angle of the camera images displayed on the monitor.

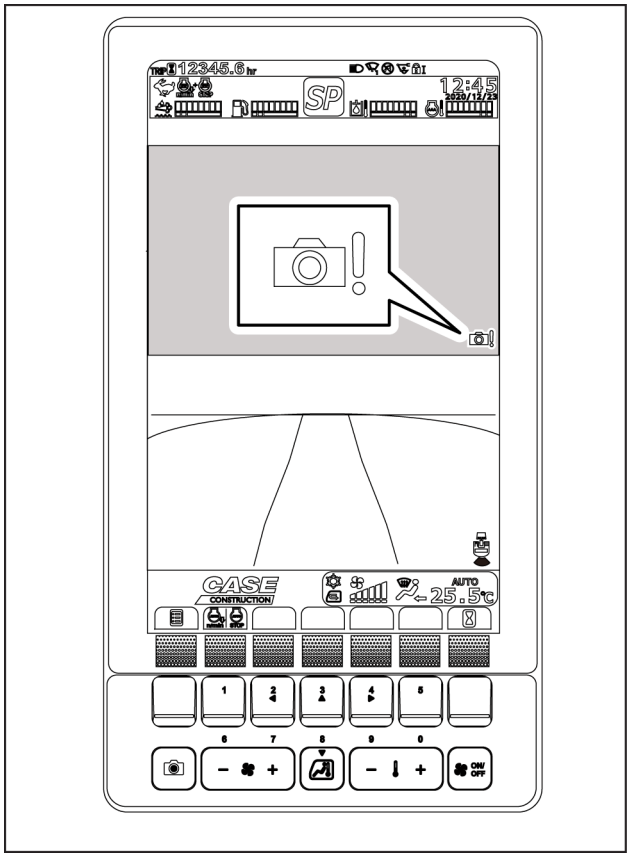
Indicates that the images from the rear view camera are displayed on the monitor.

Indicates that the images from the side camera (right) are displayed on the monitor.

Indicates that the images from the side camera (left) are displayed on the monitor. (If equipped)

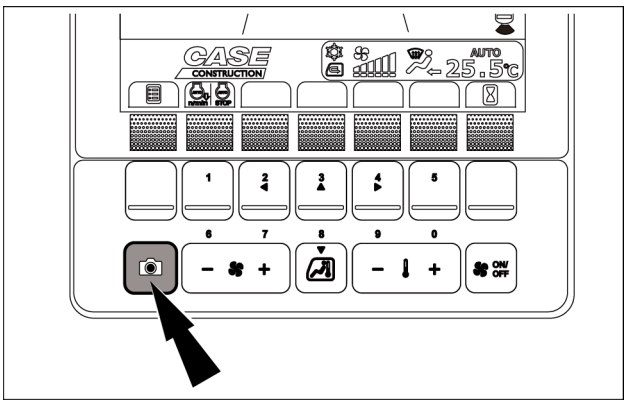
Displayed so that the operator can see if a position or angle of any of the cameras, which are facing 3 different directions, has shifted. (If equipped with Field View Monitor)

Indicates that there is a problem in the monitor camera connections, such as short or disconnection.



SMIL21CEX3612BA 23

Press the camera select switch on the monitor to change the camera image. (If equipped with FVM)

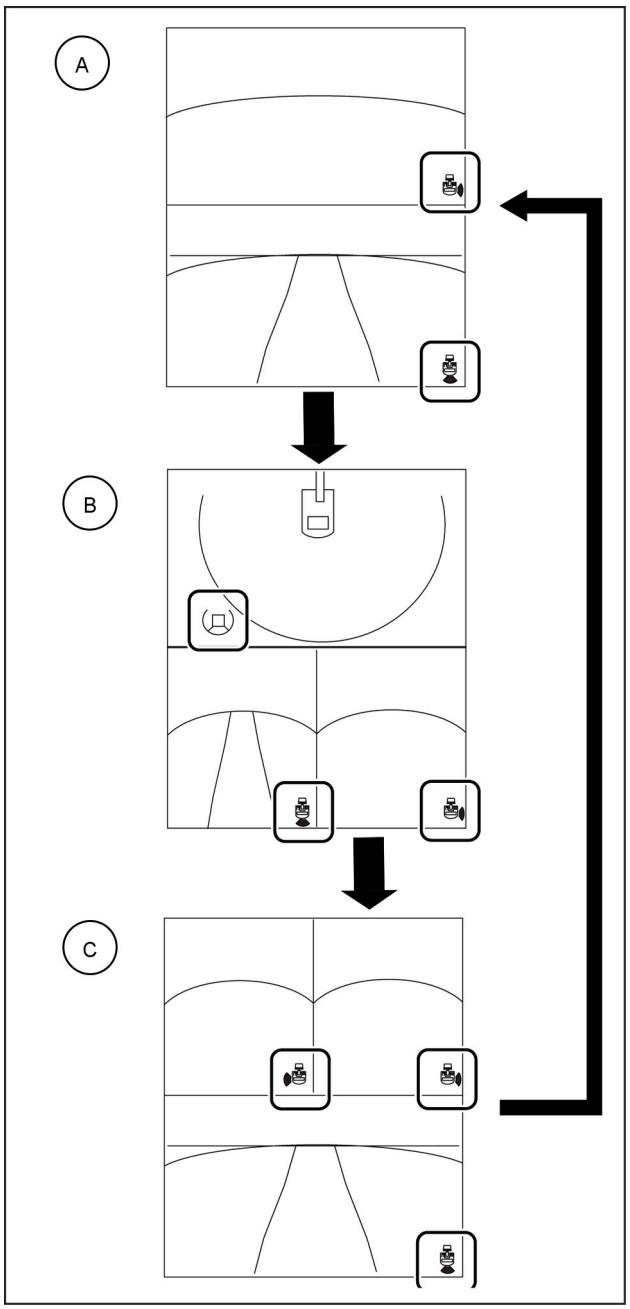


SMIL21CEX3613AA 24

A. Rear view camera screen (lower) + right camera screen (upper)

B. Rear view camera screen (lower left) + right camera screen (lower right) + FVM screen (upper) (if equipped)

C. Rear view camera screen (lower) + right camera screen (upper right) + left camera screen (upper left) (if equipped)



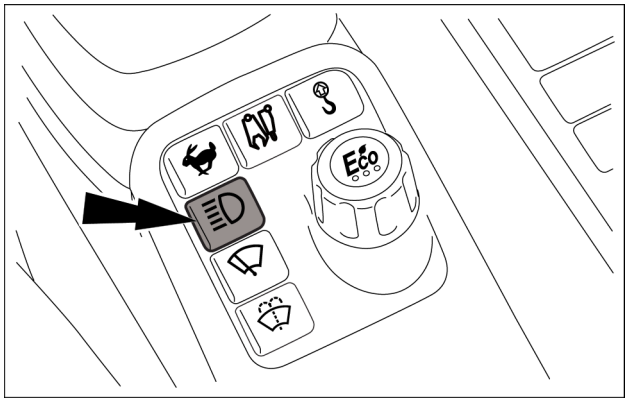
SMIL21CEX3614CA 25

Working lights

Displayed when the working lights are ON.

Press the working light switch on the switch panel to turn the working light "ON" or "OFF". When you press the switch, the icon on the monitor display and the working light l up. When you press this switch again, they go out. When you turn the key to the "OFF" position with the working light ON, the light goes out in about **30 s**. The time until the light goes out can be changed in the settings.

When the key switch is turned "ON", the working light is "OFF".
When the working light is turned "ON", the monitor brightness is automatically adjusted.



SMIL21CEX3615AA 26

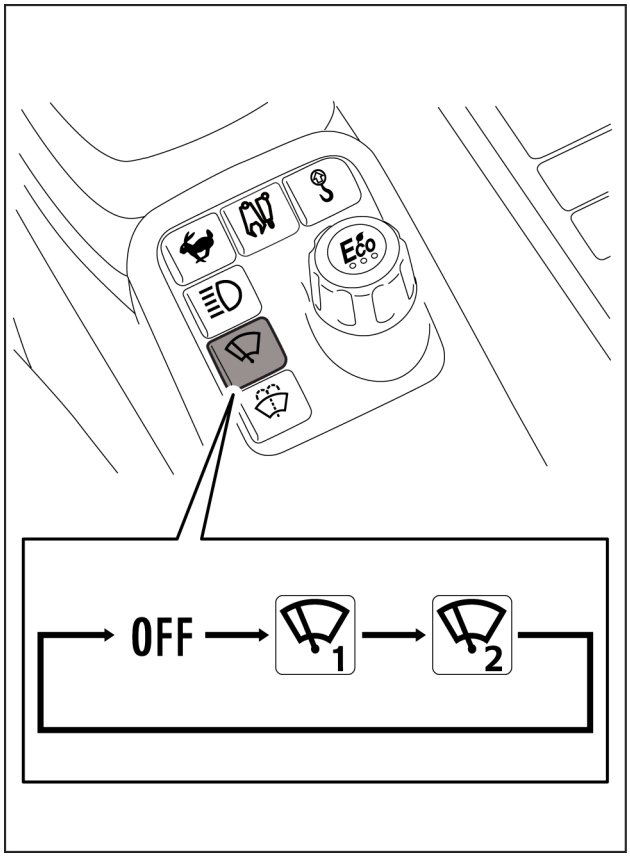
Front wiper

This indicates the operation status of the front wiper.

Displayed when the wiper is operating intermittently.

Displayed when the wiper is operating continuously.

The operation status changes as follows each time the front wiper switch on the switch panel is pressed.



SMIL21CEX3616BA 27

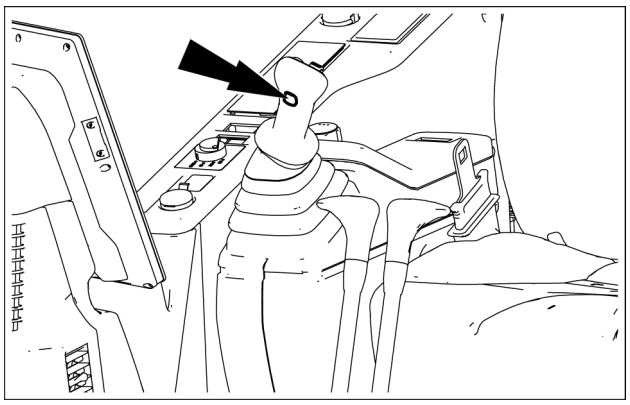
If visibility is compromised by water droplets during operation, press the one-time wiper switch on the right operation lever to activate the wiper.

One time wiper is a function that moves the wiper blade back and forth while the switch is held down.

The wiper icon is not displayed on the monitor while one-time wiper is activated.

NOTICE: *Do not operate the wipers when the windshield is dry. Doing so could cause cracks in wiper blades.*

NOTICE: *Working with mud or snow on the front wipers can damage them.*



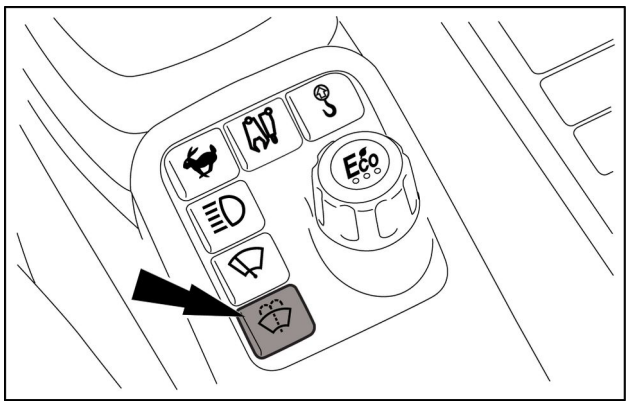
SMIL21CEX3617AA 28

Windshield washer

Washer and wipers operate while the windshield washer switch on the switch panel is held down. When you let go of the switch, they stop.

NOTICE: *Do not press the washer switch and wiper switch at the same time. Also, do not turn the ignition key to the OFF position while holding down the washer switch. Doing so could result in failures.*

NOTICE: *Do not operate the washer if the reservoir tank is empty. This could break the electric pump.*



SMIL21CEX3618AA 29

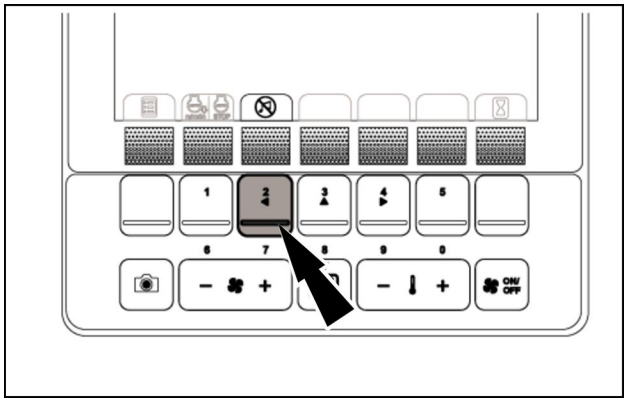
Radio mute

Indicates that the radio volume is muted.

On the monitor

Press the radio mute control switch (function switch) to mute the radio volume.

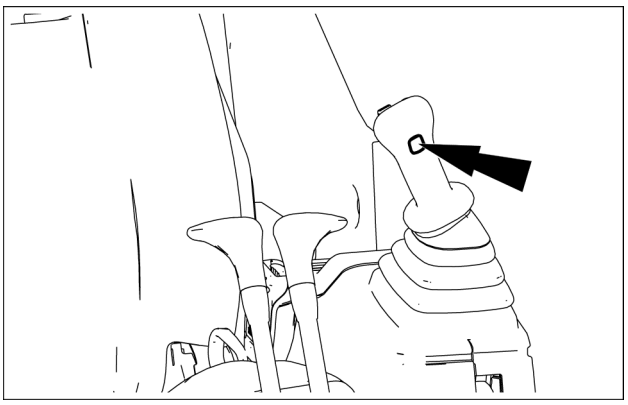
The illustration provided shows the factory settings.



SMIL22CEX1241AA 30

On the left-hand control lever

Press the radio mute control switch to mute the radio volume.



SMIL21CEX3619AA 31

Auto pressure boost

Indicates that the pressure in the hydraulic circuits is boosted.

To increase the digging force during attachment operations, hydraulic drive force is increased automatically to improve operability and work efficiency.
The icon stays lit while the auto pressure boost system is ON.

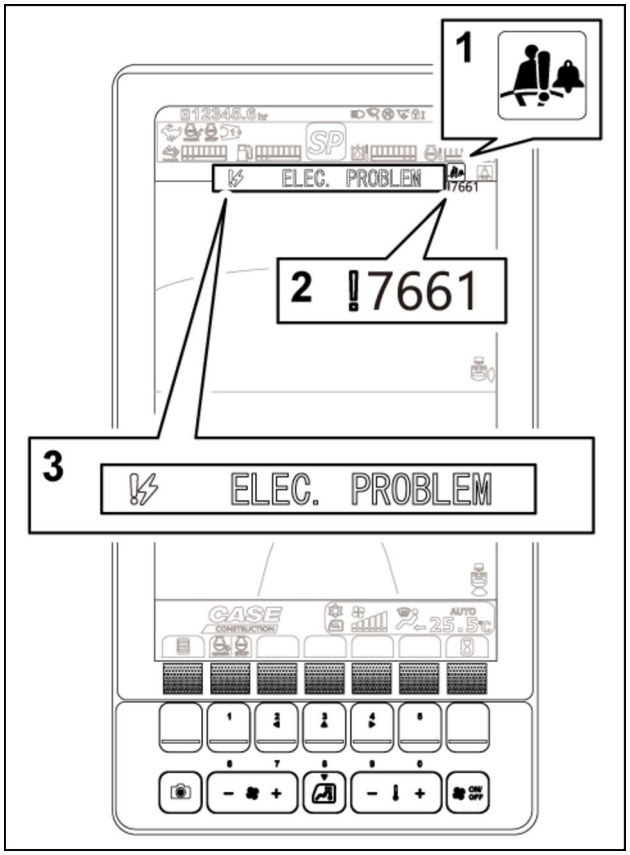
Seat belt

Lights up when the seat belt is not fastened. Turns off after the seat belt is fastened.

If there is a problem in the system, the icon indicating a failure lights up.

If the icon lights up, consult your local dealer and the certified service plant.

1	"Seat belt alarm disabled" icon lights up
2	Diagnostic trouble code 7661
3	"ELEC. PROBLEM" lights up



SMIL22CEX1242BA 32

Security device

Indicates that the security function is enabled.

The security function is available to prevent the machine from being stolen. If this function is enabled, you need to enter the security passcode to operate the machine. (Refer to Chapter 4)

ATS cleaning

This indicates that ATS cleaning is underway or stopped.

Green: Displayed during automatic ATS cleaning.
Orange: Displayed during manual ATS cleaning.
Orange (flashing): Displayed when manual ATS cleaning can be performed.
Red (flashing): Displayed when manual ATS cleaning can be performed.

Green: Displayed when "AUTO ATS CLEANING STOP" is set to ON. "ATS Configuration"
Orange: Displayed when manual ATS cleaning cannot be operated or paused.
Orange (flashing): Displayed when manual ATS cleaning is required (when the gate lock lever is released).
Red: Displayed when manual ATS cleaning cannot be operated or paused.
Red (flashing): Displayed when manual ATS cleaning is required (when the gate lock lever is released).

Urea solution thawing and heat insulating

Device/engine preheating/cooling down/ high temperature exhaust gas

Urea solution thawing and heat insulating device

This icon is displayed when the urea solution is being thawed or kept warm.

ENG. PRE HEAT

This icon is displayed when the engine is preheating *.

* When using this machine in winter or when cold, turn the key switch to the "ON" position, and the engine preheat icon will be displayed and the engine will be preheated automatically. Wait for the icon to disappear, and then start the engine.

Cooling down

This icon is displayed when the cooling down of turbocharger is completed (even there is no problem if the engine is stopped). Check that this icon is displayed and then stop the engine.

High-temperature exhaust gas

Displayed during ATS CLEANING. When this icon is displayed, exhaust temperature is high.

These 4 icons are displayed when the respective functions have activated.

Auto operation lever lock function

Indicates that the auto operation lever lock function is activated.

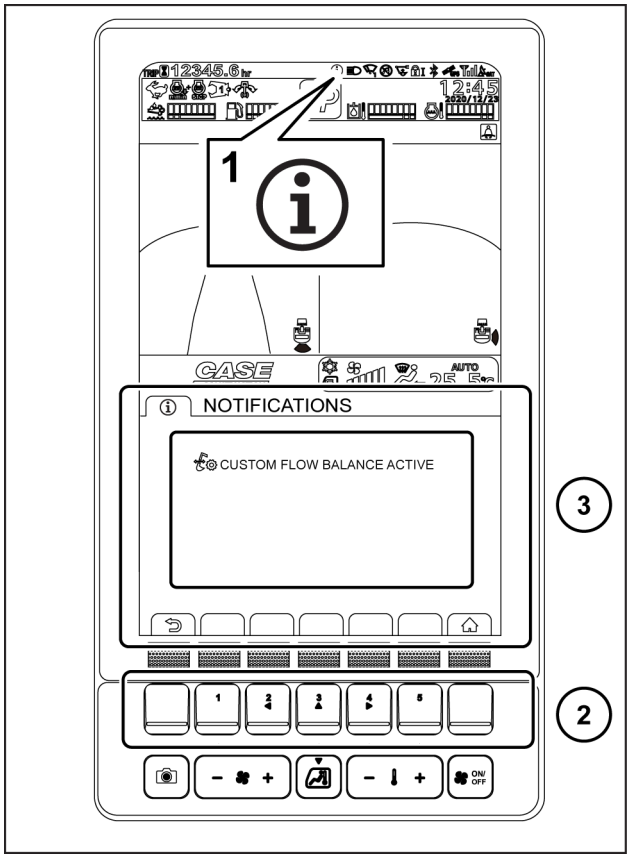
Indicates that the auto operation lever lock function is limited. Contact your local dealer or the certified service plant.

Indicates that the auto operation lever lock function is disabled. Only a service engineer can configure the setting to disable this function. If this icon is displayed, contact your local dealer or the certified service plant.

Information notification

This indicates that there is information that the operator needs to know.

When there is information the operator needs to know, the information notification icon **(1)** is displayed. Press the applicable function switch **(2)** to display the NOTIFICATIONS screen **(3)**.



SMIL21CEX3620BB 33

Hydrocarbon (HC) accumulation/low idle speed increase

Running the engine at low idle continuously causes hydrocarbons to accumulate. To burn the hydrocarbons, the engine speed needs to be increased. With this machine, the system detects the amount of hydrocarbon accumulation and increases the low idle speed to burn the hydrocarbons. Low idle speed increase

Displayed when the low idle speed increase function is activated.

Displayed when the low idle speed needs to be increased. (Displayed if the gate lock lever is in the center position (with the safety bar facing inside) when the function is activated.)

Hydrocarbon (HC) accumulation

Displayed when the amount of hydrocarbon accumulation increases. The low idle speed increase function is activated when this icon is displayed.

Message icon descriptions

The message screen displays **(1)** information icons and **(2)** messages. Some message icons convey messages by itself and others convey messages by displaying multiple messages repeatedly. When there are multiple messages, they are displayed from the newest message to the oldest repeatedly. Some messages cause an alarm to sound when they are displayed. This section explains icons, messages, and actions to take.

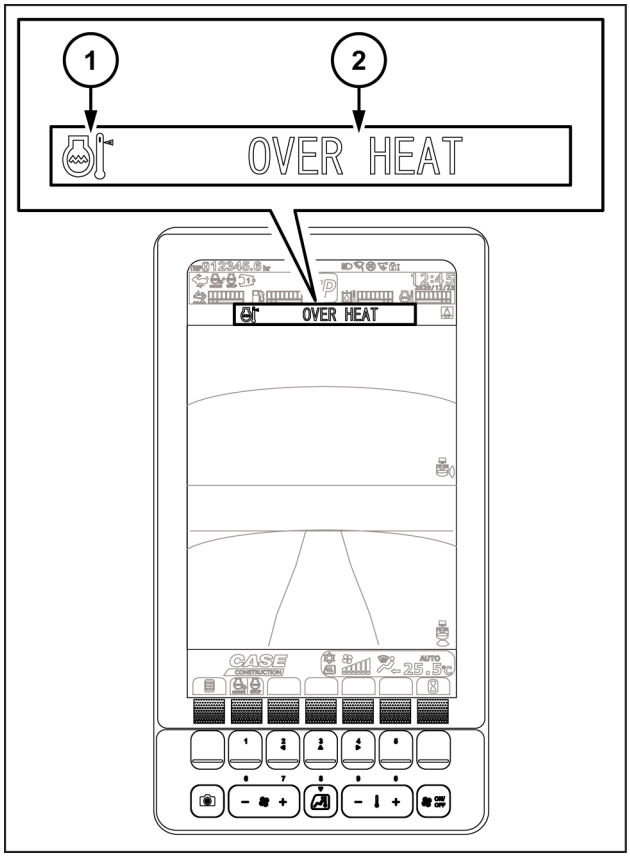
NOTICE: *The message area is color coded in red, orange, and green according to the emergency and importance levels.*

Red	Warning	Warning for a failure or for a dangerous condition.
Orange	Caution	Caution for an operation.
Green	Check	Operation checks.

When a red or orange message area is displayed, take the following actions to solve the problem.

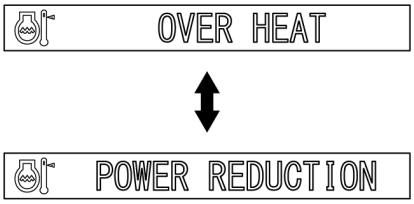
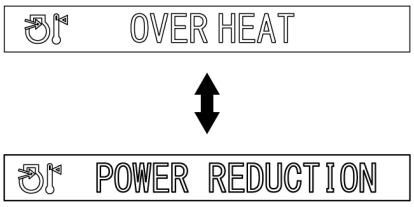
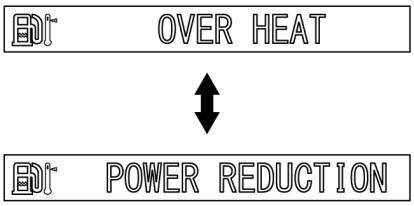
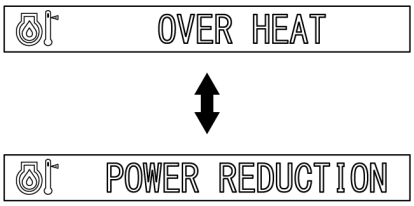
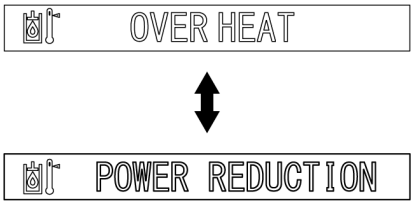
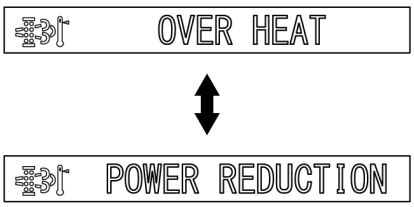
NOTE: *If the message is still displayed after the actions are taken, consult the CASE CONSTRUCTION dealer or the certified service plant.*

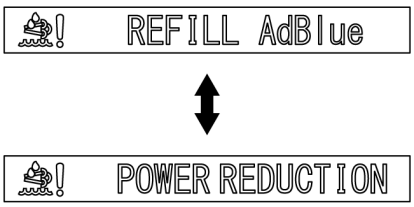
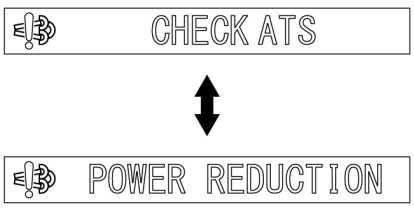
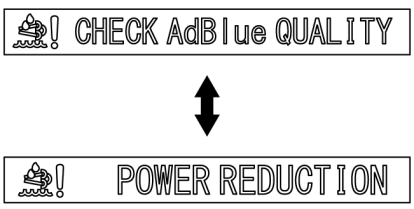
NOTE: *The language of the messages can be changed. To change the message language, consult the CASE CONSTRUCTION dealer.*



SMIL21CEX3621BB 34

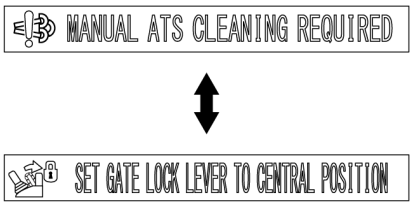
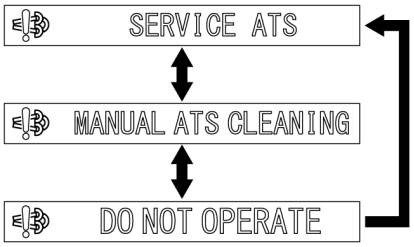
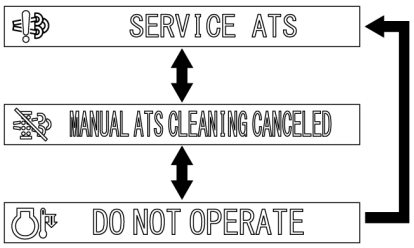
Messages with red background

Icon and text	Explanation	Action
	LOW OIL PRESSURE: Indicates that the engine oil pressure is low. When this message is displayed, the engine stops automatically.	When the engine oil level is low, add the correct amount of engine oil. If the engine oil level is correct and oil is not leaking, there may be a hydraulic system failure. Stop the engine, and contact the CASE CONSTRUCTION dealer immediately.
	OVER HEAT: The temperature of the engine coolant is too high.	Idle the engine to lower the coolant temperature. If the coolant level in the reservoir tank is too low, add more coolant. Check for coolant leaks. Stop the engine if coolant is leaking. If the message remains displayed, contact CASE CONSTRUCTION dealer immediately.
	OVER HEAT: Indicates that the temperature of the air fed to the engine by the turbocharger is abnormally high.	Idle the engine and stop the operation to lower the turbocharger temperature. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	OVER HEAT: Indicates that the fuel temperature is too high. When this message is displayed and no action is taken, the engine runs at low idle automatically.	Stop the engine and check the fuel level in the fuel tank. If the fuel level is too low, add more fuel. If the message remains displayed after the fuel is added and the starter switch key is turned to the "ON" position, contact the CASE CONSTRUCTION dealer immediately.
	OVER HEAT: Indicates that the engine oil temperature is too high.	Idle the engine to lower the engine oil temperature. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	OVER HEAT: Indicates that the hydraulic oil temperature is too high.	Idle the engine to lower the hydraulic oil temperature. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	OVER HEAT: Indicates that the temperature of the after-treatment system is too high.	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.
	ALTERNATOR: Indicates that there is a problem with the battery or the alternator.	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.
	CHECK ENGINE: Indicates that there is a problem in the engine system, such as a short or disconnection.	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.

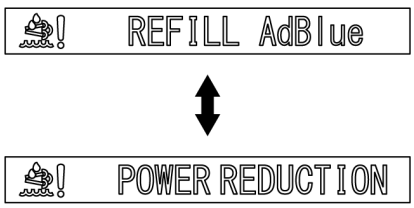
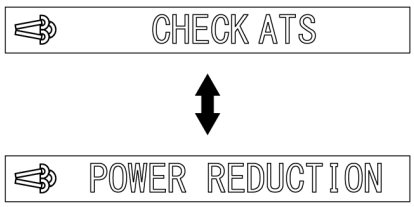
Icon and text	Explanation	Action
	ELEC. PROBLEM: Indicates that there is a problem in the electrical system.	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.
	CHECK CAMERA: Indicates that there is a problem with the camera or camera wiring.	Contact the CASE CONSTRUCTION dealer immediately.
	LOW COOLANT: Indicates that the coolant level is too low.	Idle the engine and refill the reservoir tank with coolant. Check for coolant leaks. Stop the engine if coolant is leaking. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	AIR FILTER: Indicates that the air filter element is clogged. When this message is displayed and no action is taken, the engine can no longer deliver proper output.	Stop the engine and clean or replace the air filter element. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	HYD.OIL FILTER: Indicates that the return filter in the hydraulic tank is clogged.	Stop the engine and check the return filter. If it is clogged, replace it. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	REFILL AdBlue: Indicates that the **DEF/ADBLUE®** level is too low.	Stop the engine and add **DEF/ADBLUE®** into the urea tank.
	CHECK ATS: Indicates that there is an output restriction because the ATS has detected that the exhaust emission standards are not satisfied (The engine torque is restricted and the engine can only run at idle).	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.
	CHECK AdBlue QUALITY: Indicates that there is an output restriction because the ATS has detected a quality abnormality of **DEF/ADBLUE®** (The engine torque is restricted and the engine can only run at idle).	Stop the engine and replace the solution in the urea tank with **DEF/ADBLUE®** that satisfies quality requirements. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	INCREASE ENGINE SPEED: Indicates that hydrocarbons have accumulated.	Increase the low idle speed. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	CHECK AIR CONDITIONER: Indicates that the air conditioner is broken.	Contact the CASE CONSTRUCTION dealer immediately.
	SERVICE ATS: This indicates that there is a problem in the ATS.	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.

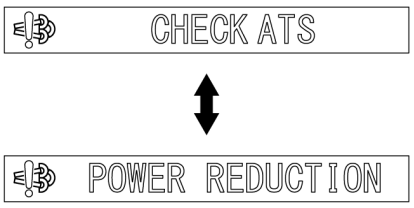
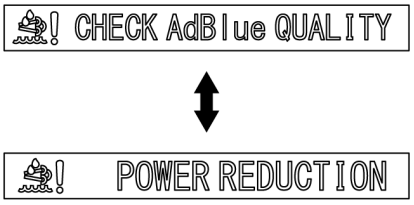
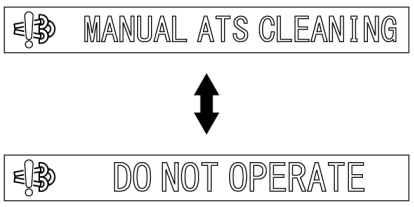
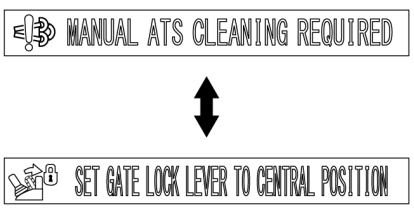
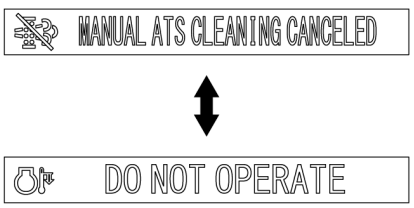
Icon and text	Explanation	Action
	ENGINE OIL FILTER: Indicates that the engine oil filter is clogged. When this message is displayed and no action is taken, the engine can no longer deliver proper output and in the worst case scenario, an engine failure may occur.	Stop the engine and replace the oil element. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	STOP ENGINE: Indicates that there is a problem in the engine system.	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.

Messages with orange and red background

Icon and text	Explanation	Action
	MANUAL ATS CLEANING REQUIRED: Displayed when manual ATS cleaning is required during operation.	Set the gate lock lever to the center position (with the safety bar facing inside) and start ATS cleaning.
	SERVICE ATS: Indicates that a problem has occurred in the ATS during ATS cleaning.	When the text message "DO NOT OPERATE" disappears, stop the engine and contact the CASE CONSTRUCTION dealer immediately.
	SERVICE ATS: Indicates that a problem has occurred in the ATS and ATS cleaning is stopped.	When the text message "DO NOT OPERATE" disappears, stop the engine and contact the CASE CONSTRUCTION dealer immediately.

Messages with orange background

Icon and text	Explanation	Action
	ENGINE STOP: Indicates that the emergency stop switch on the lower left of the seat was pressed and the emergency engine stop function is activated.	The engine cannot be started with the switch held down. Check your surroundings carefully and release the emergency stop switch, then start the engine.
	IMPROPER SHUT DOWN: Displayed if the engine is stopped when the engine needs to be cooled down.	Start the engine again and run it at low idle at least for **5 min**.
	FAN IS REVERSED: Indicates that the hydraulic fan is in reverse mode. (If equipped)	—
	OVER LOAD: Indicates that the suspended load exceeds the permitted limit.	The machine can fall over. Reduce the suspended load or change the attachment position to prevent the machine from falling over.
	LOW FUEL: Indicates that the fuel in the fuel tank is too low.	Stop the engine and refill the fuel tank.
	AUXILIARY SET-UP REQUIRED: Displayed when a crusher or breaker operation is performed without selecting the corresponding mode.	Check the type of the end attachment in use and select the correct option line mode.
	SERVICE DUE: Displayed when the time for replacing the periodic replacement parts has been reached. (These parts are displayed on the TIME UNTIL REPLACEMENT screen).	Replace the periodic replacement parts in a timely manner.
	IDLE SHUT DOWN: Displayed just before the engine is stopped automatically with the idle shutdown selected.	—
	CHECK CALIBRATION: A message for service engineers.	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.
	REFILL AdBlue: Indicates that the **DEF/ADBLUE®** level is too low.	Stop the engine and add **DEF/ADBLUE®** into the urea tank.
	REFILL AdBlue: Indicates that there is an output restriction due to a low **DEF/ADBLUE®** level.	Stop the engine and add **DEF/ADBLUE®** into the urea tank
	CHECK ATS: Indicates that there is an output restriction because the ATS has detected that the exhaust emission standards are not satisfied.	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.

Icon and text	Explanation	Action
	CHECK ATS: Indicates that there is an output restriction because the ATS has detected that the exhaust emission standards are not satisfied.	Stop the engine and contact the CASE CONSTRUCTION dealer immediately.
	CHECK AdBlue QUALITY: Indicates that the ATS has detected a quality abnormality of **DEF/ADBLUE®**.	Stop the engine and replace the solution in the urea solution tank with **DEF/ADBLUE®** that satisfies quality requirements. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	CHECK AdBlue QUALITY: Indicates that there is an output restriction because the ATS has detected a quality abnormality of **DEF/ADBLUE®**.	Stop the engine and replace the solution in the urea tank with **DEF/ADBLUE®** that satisfies quality requirements. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	DRAIN WATER IN FUEL FILTER: Indicates that there is water accumulation in the fuel prefilter.	Drain water out of the fuel prefilter.
	MANUAL ATS CLEANING: This message is displayed during manual ATS cleaning. Stop the machine operation. (If cleaning is started after ATS cleaning is requested, an alarm sounds for about **2 s**)	—
	INCREASE ENGINE SPEED: Indicates that hydrocarbons have accumulated.	Increase the low idle speed. If the message remains displayed, contact the CASE CONSTRUCTION dealer immediately.
	MANUAL ATS CLEANING REQUIRED: Displayed when manual ATS cleaning is required during operation.	Set the gate lock lever to the center position (with the safety bar facing inside) and start ATS cleaning.
	PUSH ATS SWITCH TO ACTIVATE: Displayed when automatic/ manual ATS cleaning is stopped or when manual cleaning is requested.	Press the ATS switch and resume the ATS cleaning.
	MANUAL ATS CLEANING CANCELED: Indicates that a problem has occurred in the ATS and ATS cleaning is stopped (An error code that determines the cause of the problem may be displayed).	Stop the engine and contact the CASE CONSTRUCTION dealer immediately. (If an error code is displayed, write it down).
	AUTO LEVER LOCK ACTIVE: Indicates that the auto lever lock function is enabled.	For details, refer to "Auto Operation Lever Lock Function".

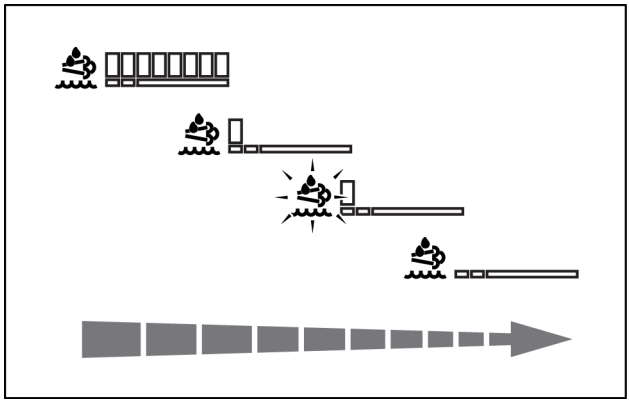
Messages with green background

	AUTO WARM UP: Indicates that auto warm-up is underway.	
	AUTO ATS CLEANING REQUIRED: Displayed when automatic ATS cleaning is stopped or when automatic ATS cleaning is requested.	
	THROTTLE LIMITATION ACTIVE: Indicates that throttle restrictions are activated.	
	LIFTING MODE NOT ACTIVE: Indicates that the lifting mode cannot be selected.	
	WORK MODE LIMITATION ACTIVE: Indicates that the WORK MODE LIMITATION setting is enabled (work mode restrictions are activated).	

DEF/ADBLUE® level gauge

The number of segments lit up indicates the amount of **DEF/ADBLUE®** remaining. When all the segments are lit up, the urea solution tank is full. The segments light up as shown below according to the remaining amount.

DEF/ ADBLUE® level	**10%** or more	Less than **10%**	Less than **5%**	**0%**
Color	White	Orange	Orange (flashing)	Red
Segments	8 - 2	1	1	0



SMIL21CEX3622AA 35

Monitor the level and add **DEF/ADBLUE®** in advance, before the **DEF/ADBLUE®** level becomes lower than **10%**.

We recommend adding **DEF/ADBLUE®** at the same time when adding fuel. For details on the engine output restriction due to the low **DEF/ADBLUE®** level contact the CASE CONSTRUCTION dealer.

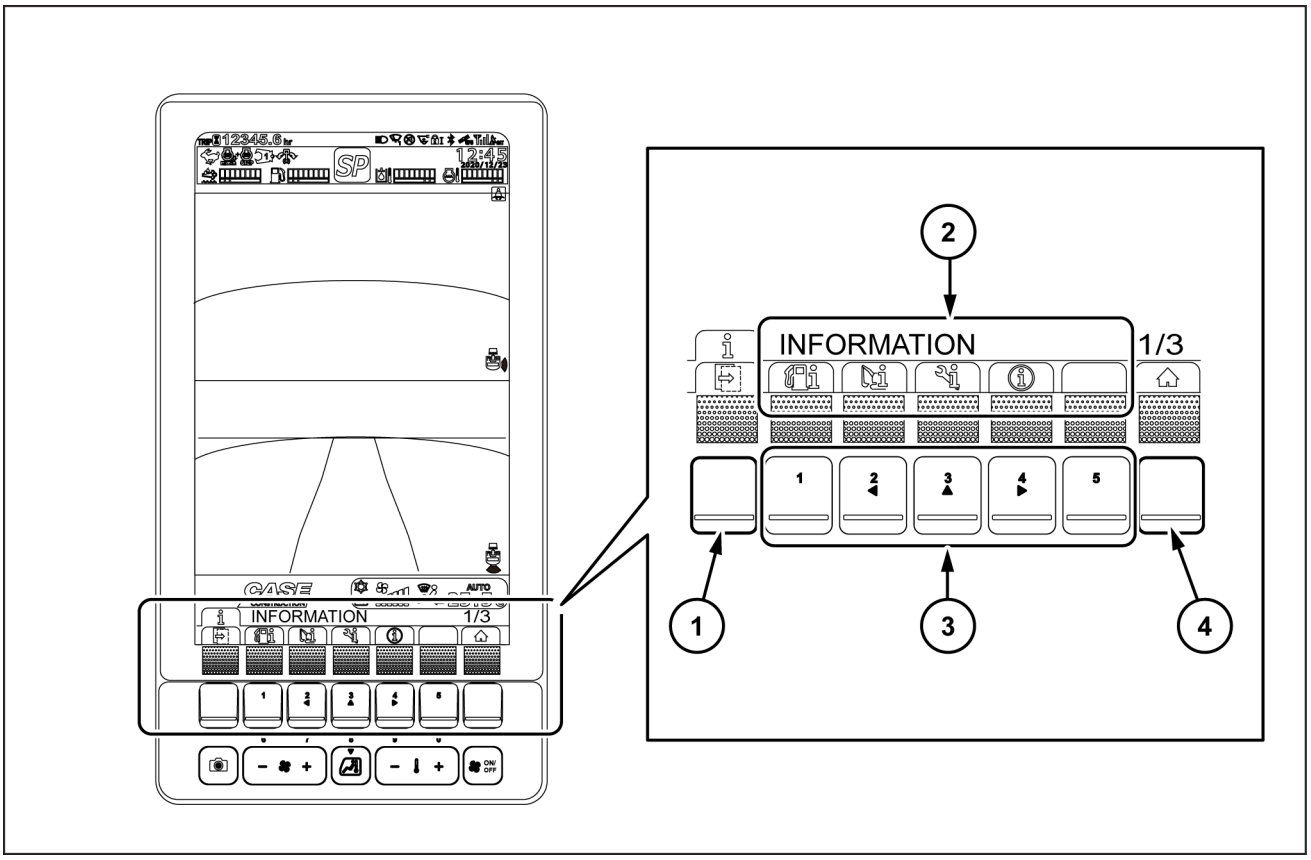
Inducement icon

This icon indicates that restriction is applied on the engine output.

If this icon is displayed, refill **DEF/ADBLUE®**. If the icon persists after refilling **DEF/ADBLUE®** , contact our dealer or authorized service shop.

User information mode

In user information mode, the following information can be viewed and display settings can be configured.

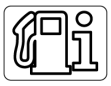


SMIL21CEX3625FB 36

Press the function switch **(1)** to navigate between pages. Information icons are displayed on the function switch tab **(2)**. Press the corresponding function switch **(3)** to move to the selected information page. Use the function switch **(4)** to return to the normal screen. The following items can be viewed.

Icon	Icon name	Description
	FUEL CONSUMPTION	Enables you to view the fuel economy for the past 7 days.
	MACHINE INFORMATION	Enables you to view the vehicle status in detail.
	TIME UNTIL REPLACEMENT	Enables you to view the information on the time for replacing the periodic replacement parts.
	INFORMATION NOTIFICATION	Enables you to view the information that the operator needs to know.
	DISPLAY CONFIGURATION	Enables you to configure the screen brightness, camera, and date/time settings.
	AUXILIARY HYDRAULICS (Refer to Chapter 9)	Enables you to switch between Breaker and Crusher, manage operations according to the model, and set the pressure and flow rate.
	ATS CONFIGURATION	Enables you to view and change the ATS configuration.
	FUNCTION CONFIGURATION	Enables you to configure settings for functions related to energy-saving and safety.
	CUSTOM FLOW BALANCE	Enables you to adjust the operation balance according to the end attachment to be used.
	MONITOR SWITCHES LAYOUT	Enables you to create shortcuts for frequently used menu screen items on the function switch tab in the normal display mode.
	PASSCODE SETTING	Enables you to change the passcode.
	FACTORY SETTING	The settings on the menu screen can be reset to the factory settings all at once.

FUEL CONSUMPTION



The fuel economy for the past 7 days can be viewed.

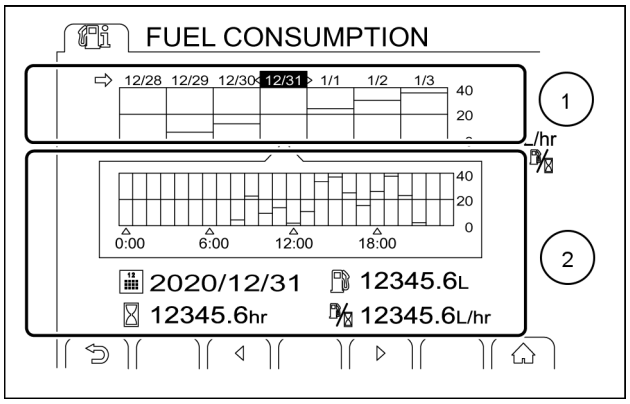
The average fuel economy for the past 7 days can be viewed by date with a simple graph in **(1)**. If you select a date in **(1)**, detailed information on the fuel consumption, operation hours, and average fuel economy of the date selected in **(2)** can be viewed in numeric values.

NOTE: *When the unit is changed on the DISPLAY CONFIGURATION screen, the value is displayed in the specified unit and the date is displayed in the specified format.*

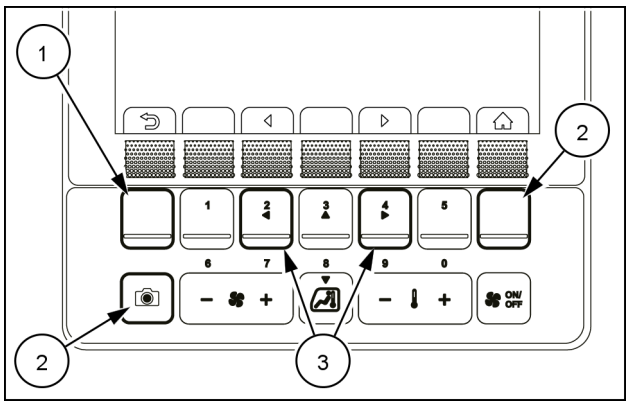
Descriptions of icons on the FUEL CONSUMPTION screen:

- Year/month/day of cursor specified date is displayed.
- Fuel consumption of cursor specified date is displayed.
- Operating hour of cursor specified date is displayed.
- Fuel cost (fuel consumption / operating hour) of cursor specified date is displayed.

Press **(1)** to return to the menu selection screen. (If the function switch on the normal screen was used to open the FUEL CONSUMPTION screen, the screen returns to the normal screen.) Press **(2)** to return to the normal screen. Press **(3)** to move the cursor to the left or right to select the date.



SMIL21CEX3118AA 37



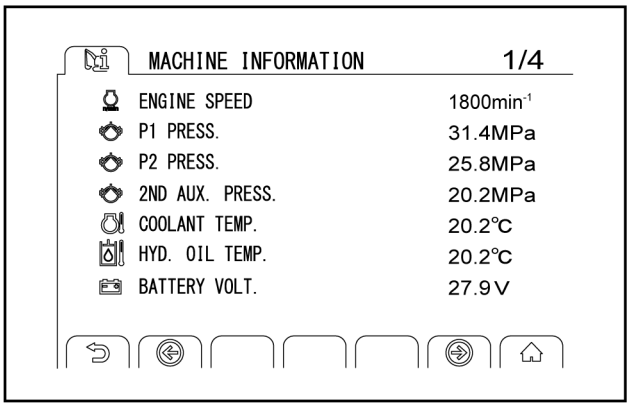
SMIL21CEX3120AA-01 38

MACHINE INFORMATION

Detailed machine conditions can be checked.

The items displayed on page 1 show various machine information. View this page when you need to tell a service engineer the machine condition.

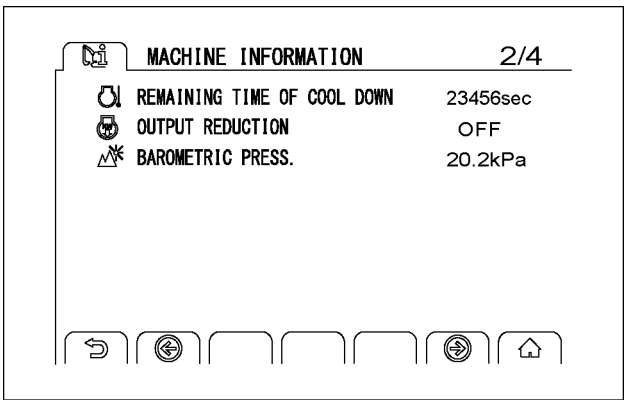
- ENGINE SPEED (min-1)
  Shows the engine speed.
- P1 PRESS. (MPa, psi, kgf/cm2)
  Shows the pump P1 pressure value.
- P2 PRESS. (MPa, psi, kgf/cm2)
  Shows the pump P2 pressure value.
- 2ND AUX. PRESS. (MPa, psi, kgf/cm2)
  Shows the 2nd option pump pressure value.
  This is displayed only when "2nd option" is selected in the settings. Contact the CASE CONSTRUCTION dealer or the certified service plant to set "2nd option".
- COOLANT TEMP. (°C/°F)
  Shows the coolant temperature.
- HYD. OIL TEMP. (°C/°F)
  Shows the hydraulic oil temperature.
- BATTERY VOLT. (V)
  Shows the battery voltage.



SMIL21CEX3119AA 39

The items displayed on page 2 show the information related to the engine.

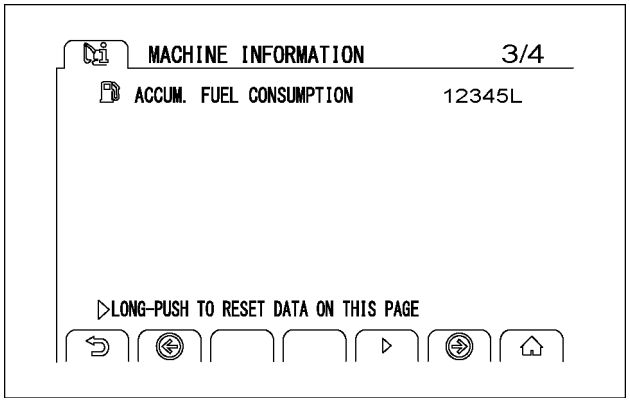
- REMAINING TIME OF COOL DOWN (sec)
  Shows the time remaining until the turbocharger cools down.
- OUTPUT REDUCTION (ON/OFF)
  Shows the status of output restriction.
- BAROMETRIC PRESS. (kPa, psi, kgf/cm2)
  Shows the barometric pressure value.



SMIL21CEX3255AA 40

The items displayed on page 3 show the fuel economy of the machine.

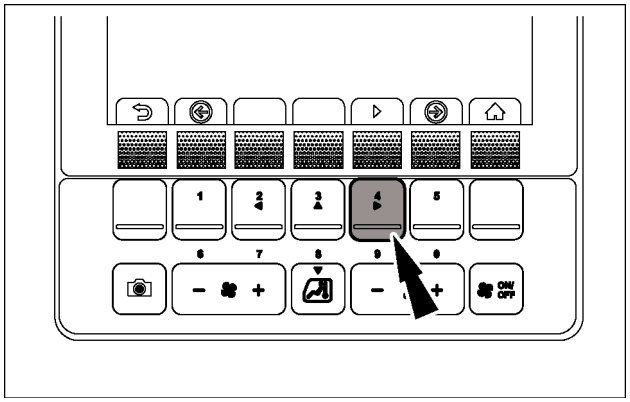
- ACCUM. FUEL CONSUMPTION (L/gal): shows the cumulative fuel consumption.



SMIL21CEX3256AA 41

Press and hold the right function switch for **3 s**.

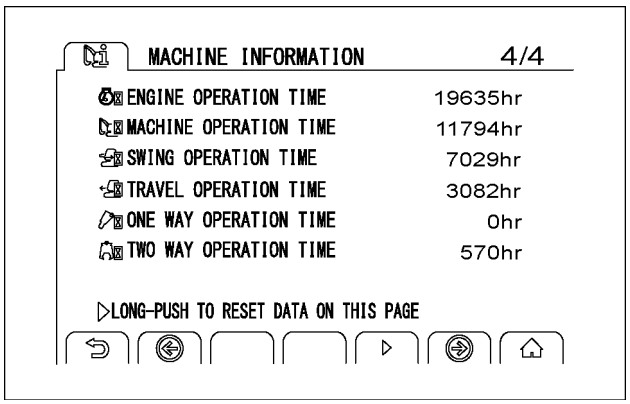
An alarm sounds and the information on this page is reset all at once.



SMIL21CEX3257AA 42

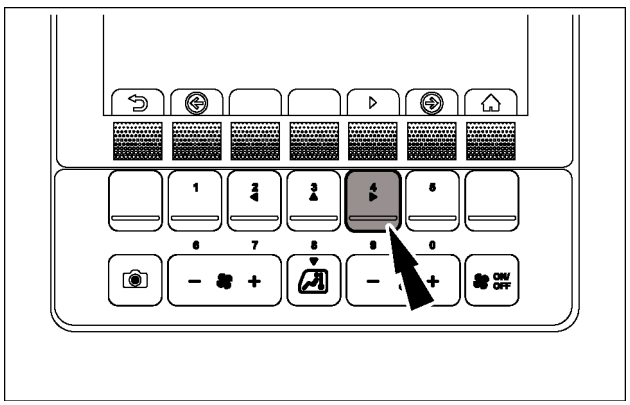
The items displayed on page 4 show the machine usage log.

- ENGINE OPERATION TIME (hr): shows the engine hours.
- MACHINE OPERATION TIME (hr): shows the machine operating hours.
- SWING OPERATION TIME (hr): shows the swing operation hours.
- TRAVEL OPERATION TIME (hr): shows the travel operation hours.
- ONE WAY OPERATION TIME (hr): shows the hours the machine was operated in ONE WAY mode.
- TWO WAY OPERATION TIME (hr): shows the hours the machine was operated in TWO WAY mode.



SMIL21CEX3258AA 43

Press and hold the right function switch for **3 s**. An alarm sounds and the information on this page is reset all at once.



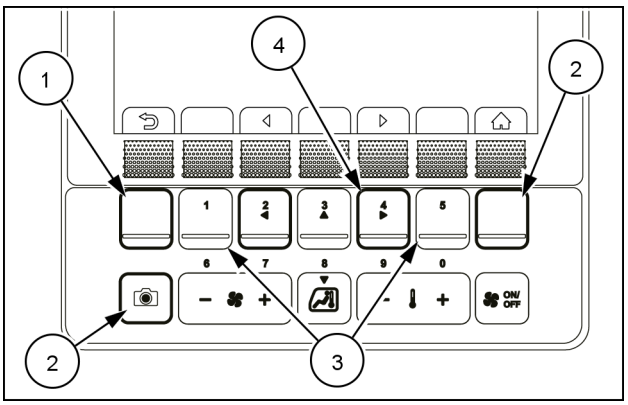
SMIL21CEX3259AA 44

Press **(1)** to return to the menu selection screen. (If the function switch on the normal screen was used to open the MACHINE INFORMATION screen, the screen returns to the normal screen.)

Press **(2)** to return to the normal screen. Press **(3)** to go forward or back 1 page.

Press and hold **(4)** for **3 s** to reset the information on the page all at once.

NOTE: *When the screen lock is ON, the information on the page cannot be reset all at once.*

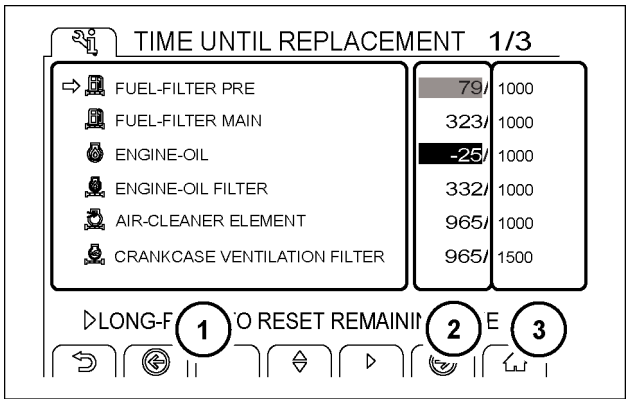


SMIL21CEX3120AA 45

TIME UNTIL REPLACEMENT

Enables you to view the information on the time for replacing the periodic replacement parts.

On the TIME UNTIL REPLACEMENT screen, each page has consumable part items **(1)** displayed. A replacement cycle **(3)** is set for each consumable part. The time remaining until replacement is displayed at **(2)**.

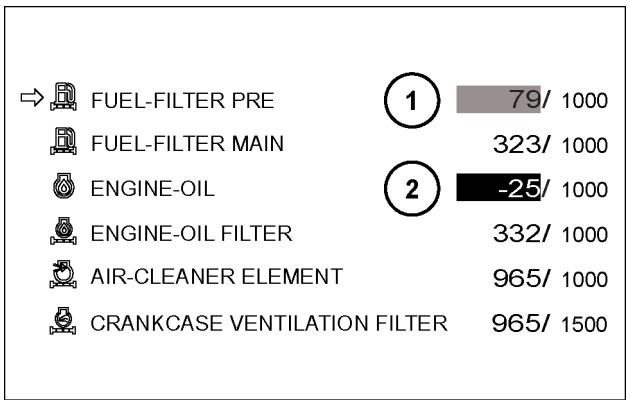


SMIL21CEX3260AA 46

When the time remaining has become **100 h** or less, it is displayed in yellow **(1)**.

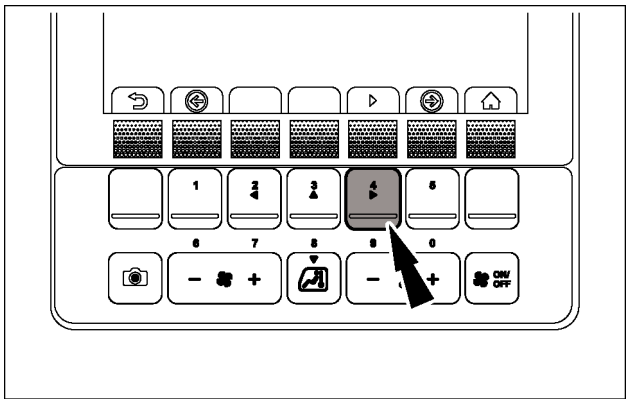
When the time remaining has passed **0 h**, it is displayed in red **(2)**.

If this happens, perform service immediately.



SMIL21CEX3261AA 47

Replace the parts, lubricants, etc. To reset the remaining time, select an item, then press and hold the function switch on the right for **3 s**. An alarm sounds and the time is reset.



SMIL21CEX3259AA 48

You can check the following consumable part items:

Page	Machine information
1/3	FUEL-FILTER PRE
	FUEL-FILTER MAIN
	ENGINE-OIL
	ENGINE-OIL FILTER
	AIR-CLEANER ELEMENT
	CRANKCASE VENTILATION FILTER
2/3	AIR-BREATHER ELEMENT
	PILOT-OIL FILTER
	RETURN FILTER
	SUCTION FILTER
	HYDRAULIC OIL
3/3	SWING REDUCTION GEAR OIL
	TRAVEL REDUCTION GEAR OIL
	AIR CONDITIONER FILTER

Press **(1)** to return to the menu selection screen. (If the function switch on the normal screen was used to open the TIME UNTIL REPLACEMENT screen, the screen returns to the normal screen.)

Press **(3)** to go forward or back 1 page.

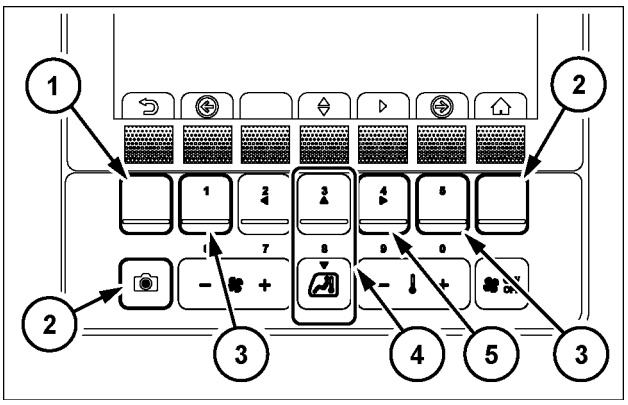
Press **(4)** to move the cursor up or down to select an item.

Press and hold **(5)** for **3 s**. An alarm sounds and the replacement time for the selected item is reset.

Press **(2)** to return to the normal screen.

NOTE: *When the screen lock is ON, the cursor cannot be moved up or down to select an item for which you want to reset the remaining time.*

NOTE: *When the screen lock is ON, the function switch tabs related to **(4)** and **(5)** are not displayed.*

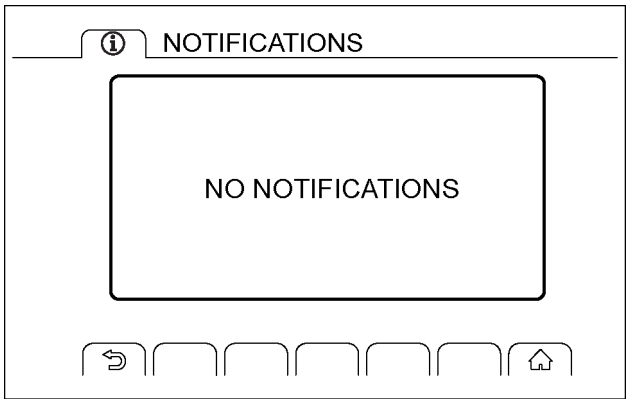


SMIL21CEX3262AA 49

NOTIFICATIONS

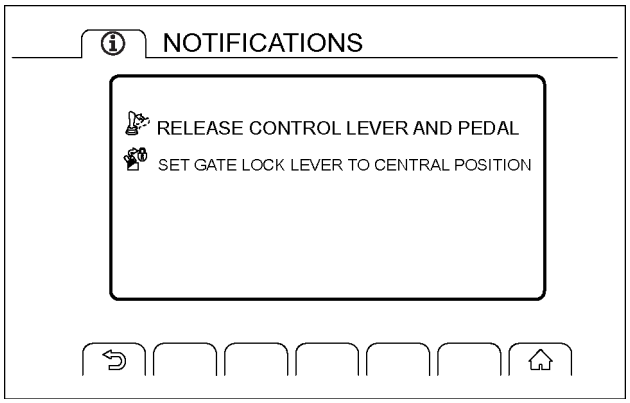
Enables you to view the information that the operator needs to know.

When there is no information to be notified: when there is no information the operator needs to know, the message "NO NOTIFICATIONS" is displayed.



SMIL21CEX3263AA 50

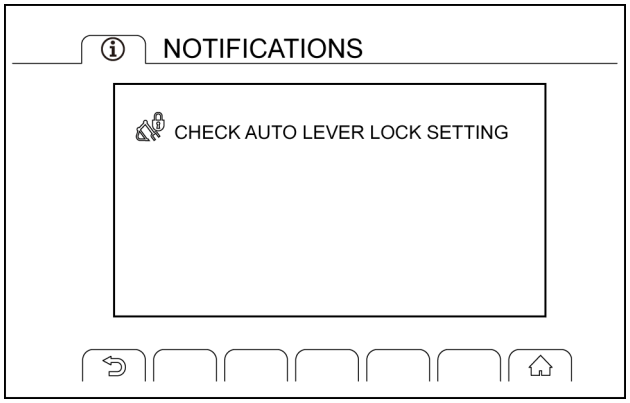
When there is information to be notified: the messages "RELEASE CONTROL LEVER AND PEDAL" and "SET GATE LOCK LEVER TO CENTRAL POSITION" are displayed when the auto operation lever lock is activated. These messages remain displayed until the auto operation lever lock is released.



SMIL21CEX3264AA 51

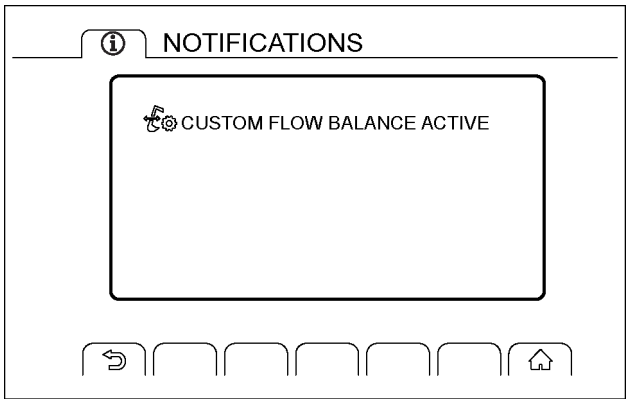
When the auto operation lever lock function setting is OFF, the message "CHECK AUTO LEVER LOCK SETTING" is displayed.

Only a service engineer can turn this setting OFF. If this message is displayed, contact your local dealer or the certified service plant.



SMIL22CEX1243AA 52

If any flow balance settings have been changed from the standard setting positions (factory settings) with the flow balance customization function, the message "CUSTOM FLOW BALANCE ACTIVE" is displayed when the system is started.



SMIL21CEX3266AA 53

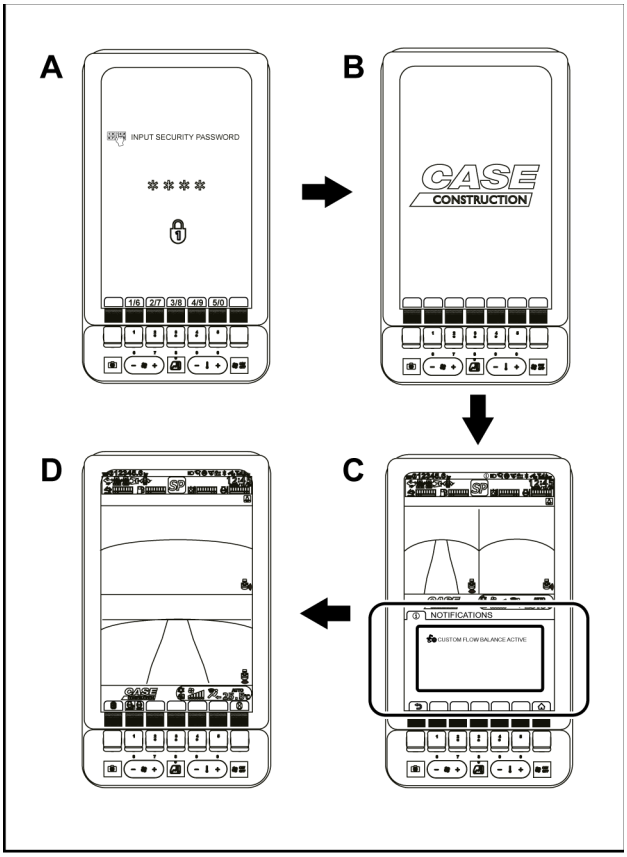
As an example, this section explains the case in which the flow balance customization function is enabled.

A. Password screen (when manual lock is set up)

B. Start screen

C. Notification screen (displayed for **10 s**)

D. Normal screen



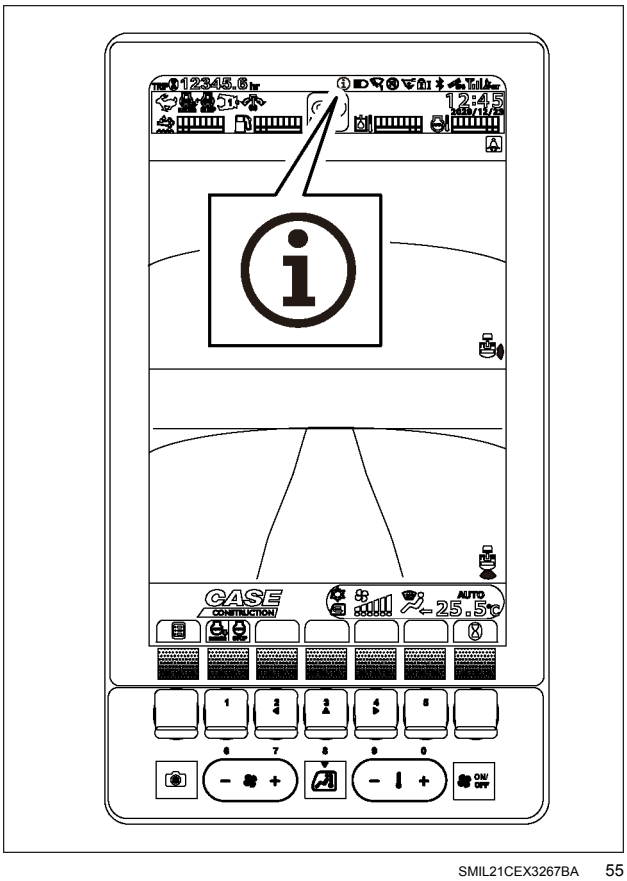
SMIL21CEX3129BA 54

If the flow balance setting has been changed with the flow balance customization function, a buzzer sounds and the notification screen is displayed for **10 s** every time the system is started.

NOTE: *The notification screen displays the event that last occurred. If the auto operation lever lock is activated while the flow balance customization function notification is displayed on the screen, the auto operation lever lock notification is displayed on the screen.*

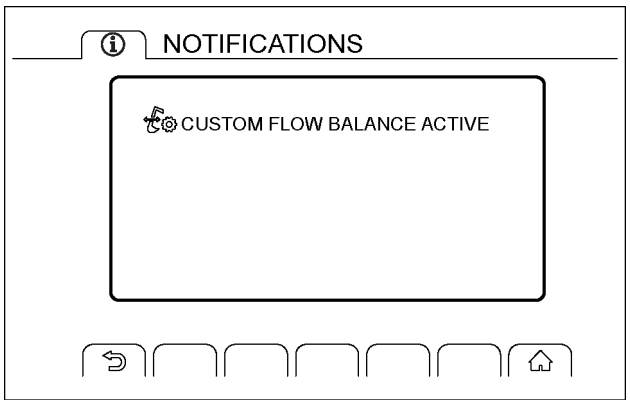
In normal screen mode, an icon is displayed at the top of the monitor screen to indicate that there is information that the operator needs to know.

NOTE: *The icon remains displayed even after the message is viewed on the NOTIFICATIONS screen.*



SMIL21CEX3267BA 55

The message "CUSTOM FLOW BALANCE ACTIVE" is displayed on the NOTIFICATIONS screen, which indicates that the flow balance customization function is enabled.

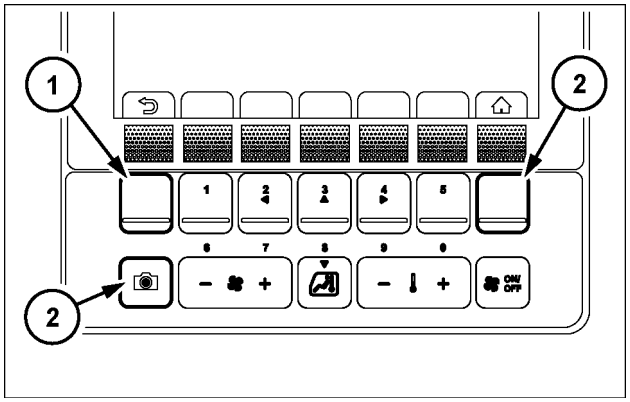


SMIL21CEX3266AA 56

Operating the function switches when the NOTIFICATIONS screen is displayed

Press **(1)** to return to the original screen.

Press **(2)** to return to the normal screen.



SMIL21CEX3268AA 57

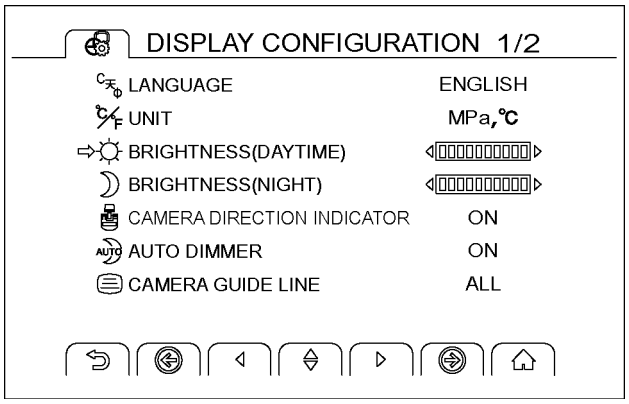
DISPLAY CONFIGURATION

Enables you to configure the screen brightness, camera, and date/time settings.

Items displayed on page 1:

- LANGUAGE: the language displayed on the monitor can be changed. Select from the following languages (in selection order): English, Japanese, German, French, Italian, Spanish, Portuguese, Dutch, Danish, Norwegian, Swedish, Finnish, Russian, Canadian French, Polish, Latin American Spanish, Romanian, Czech, Serbian, Croatian, Arabic, Hebrew, Pictographs only
- UNIT (MPa, °C/psi, °F/kgf/cm2, °C): The unit displayed on the monitor can be changed.
- BRIGHTNESS (DAYTIME) (11 levels): The monitor brightness during the daytime can be adjusted in 11 levels from 0 to 10.
- BRIGHTNESS (NIGHT) (11 levels) : The monitor brightness during night time can be adjusted in 11 levels from 0 to 10.
- CAMERA DIRECTION INDICATOR (ON/OFF): Whether or not the camera angle on the monitor is displayed can be selected.
- AUTO DIMMER (ON/OFF): When this is set to ON, the solar radiation sensor detects the ambient light and if it is bright, the monitor brightness is controlled not to decrease even when the working light is turned ON.
- CAMERA GUIDE LINE (ALL/REAR/OFF): Whether or not the camera guide lines are displayed on camera images can be selected.

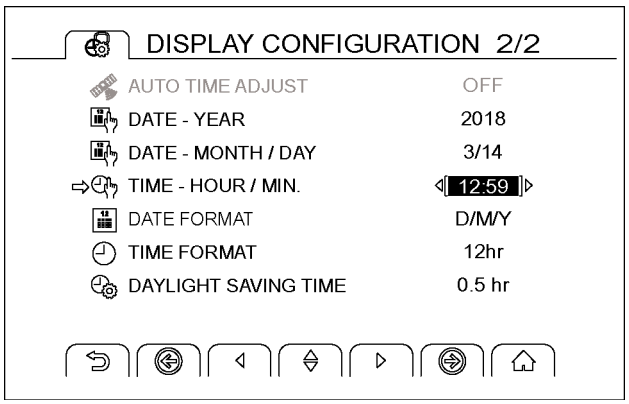
NOTE: *Camera guide lines are not displayed on FVM (if equipped) camera images.*



SMIL21CEX3269AA 58

Items displayed on page 2:

- AUTO TIME ADJUST (OFF)
  With this model, this item is grayed out and cannot be selected.
- DATE - YEAR
  Enter the year.
- DATE - MONTH/DAY
  Enter the month and day.
- TIME - HOUR/MIN.
  Enter the time.
- DATE FORMAT (Y/M/D, M/D/Y, D/M/Y)
  The date display format can be changed. Select from the following formats. Year/Month/Date – Month/Date/Year – Date/Month/Year
- TIME FORMAT (12hr, 24hr)
  The time display format can be changed. Select from the following formats. 12-hour format – 24-hour format
- DAYLIGHT SAVING TIME (ON/OFF)
  When this is set to ON, daylight-saving time is used.



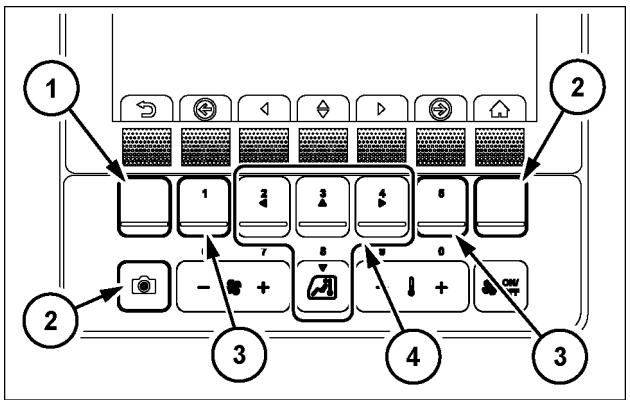
SMIL21CEX3270AA 59

Press **(1)** to return to the menu selection screen. (If the function switch on the normal screen was used to open the DISPLAY CONFIGURATION screen, the screen returns to the normal screen.)

Press **(2)** to return to the normal screen.

Press **(3)** to go forward or back 1 page.

Use the switches ▲▼ **(4)** to move the cursor up and down to select an item, then use the switches ◄►to change the setting.



SMIL21CEX3271AA 60

ATS CONFIGURATION

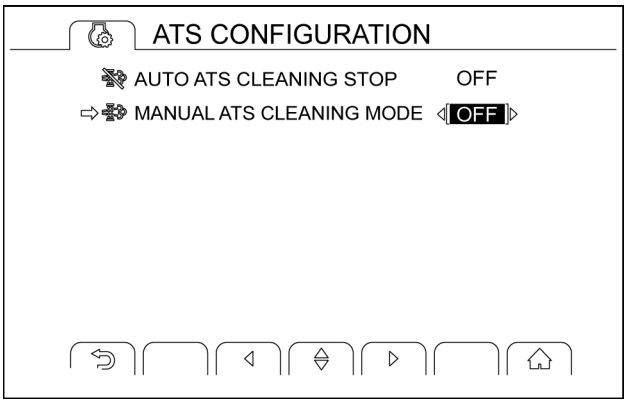
Enables you to view and change the ATS settings.

The following items can be configured or viewed.

- AUTO ATS CLEANING STOP (ON/OFF): the temperature of the exhaust gas produced during automatic ATS cleaning is high, therefore it is dangerous to perform automatic ATS cleaning inside a building (including tunnels) or other locations with fire and explosion risks. If you want to pause ATS cleaning that has already started, change this item to "ON".

NOTE: *"AUTO ATS CLEANING STOP" can be changed to ON only while automatic cleaning is in progress. "AUTO ATS CLEANING STOP" cannot be turned ON before automatic cleaning starts.*

- MANUAL ATS CLEANING MODE (ON/OFF): set this to ON to perform manual ATS cleaning.

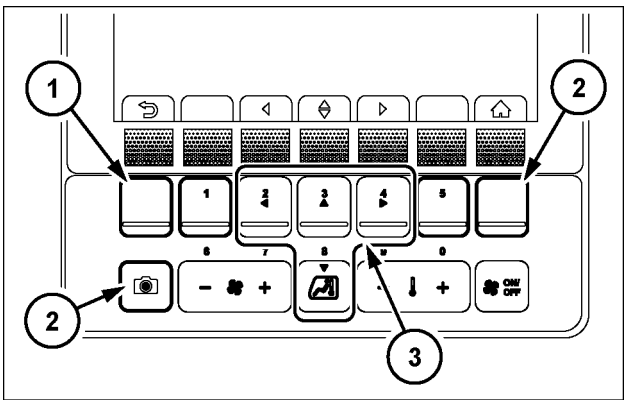


SMIL21CEX3136AA 61

Press **(1)** to return to the menu selection screen.

Press **(2)** to return to the normal screen

Use the switches ▲▼ **(3)** to move the cursor up and down to select an item, then use the switches ◄► to change the setting.



SMIL21CEX3292AA 62

FUNCTION CONFIGURATION

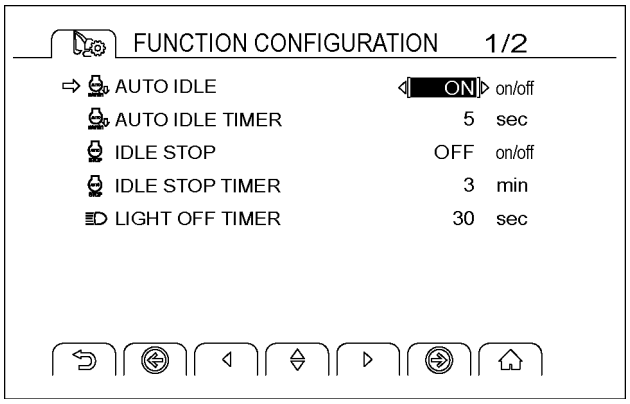
Enables you to configure settings for functions related to energy-saving and safety.

Items displayed on page 1:

- AUTO IDLE (ON/OFF): reduces the engine speed when the machine has been left unoperated longer than the set time in seconds. Allows you to turn ON or OFF this function.
- AUTO IDLE TIMER (**5 s**/ **10 s**/ **15 s**/ **30 s**): allows you to set the time in seconds until the system enters the auto idle mode.
- IDLE STOP (ON/OFF): non-operation position (with the safety bar stored in the console) The engine speed is **1200 RPM** or less. The throttle operation has not been performed longer than the set time in minutes. When the above conditions are met, the message "IDLE SHUT DOWN" is displayed on the screen and an alarm sounds, then the engine stops in **10 s**.. Allows you to turn ON or OFF this function.
- IDLE STOP TIMER (**3 min**/ **5 min**/ **7 min**/ **10 min**) Allows you to set the time in minutes until idle shutdown occurs.
- LIGHT OFF TIMER (**0 s**/ **15 s**/ **30 s**/ **60 s**/ **90 s**/ **120 s**/ **150 s**/ **180 s**) Allows you to set the time until the lights go out after the working light is turned OFF.

NOTE: *When AUTO IDLE is set to OFF, AUTO IDLE TIMER cannot be set.*

NOTE: *When IDLE STOP is set to OFF, IDLE STOP TIMER cannot be set.*



SMIL21CEX3293AA 63

Items displayed on page 2:

NOTE: *Page 2 is for machine administrators and the settings can be locked with a passcode.*

- TRAVEL ALARM TIME (if equipped) (**10 s**/ **20 s**/ **30 s**/ **60 s**/ ∞ **s**): allows you to set how long the warning buzzer sounds in seconds during travel operation.
- WORK MODE LIMITATION (SP P E/P E/E): allows you to set a limitation so that the operator does not perform operations in an inappropriate work mode.

Descriptions of icons for WORK MODE LIMITATION

Allows you to use all work modes. When this mode is selected, the maximum speed setting cannot be changed with "THROTTLE LIMITATION".

Prevents you from using the SP mode. When this mode is selected, the maximum speed settings for the P mode and E mode can be changed with "THROTTLE LIMITATION".

NOTE: *When the SP mode is selected, a buzzer sounds and the text message "WORK MODE LIMITATION ACTIVE" is displayed for* ***3 s****.*

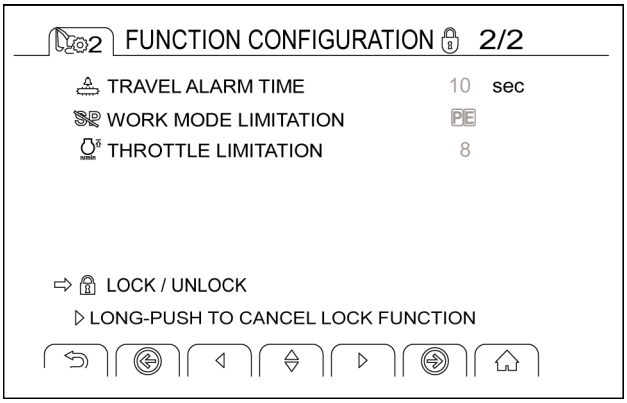
Allows you to use all work modes. When this mode is selected, the maximum speed setting cannot be changed with "THROTTLE LIMITATION".

NOTE: *When the SP mode or P mode is selected, a buzzer sounds and the text message "WORK MODE LIMITATION ACTIVE" is displayed for* ***3 s****.*

- THROTTLE LIMITATION (6/7/8/9/10): allows you to change the maximum speed setting for the work mode.

NOTE: *If you attempt to increase the speed with the engine throttle volume beyond the set maximum speed, a buzzer sounds and the message "THROTTLE LIMITATION ACTIVE" is displayed for* ***3 s****.*

NOTE: *When "SP P E" is selected for "WORK MODE LIMITATION", this item cannot be selected.*



SMIL21CEX3134AA 64

Locking/unlocking with a passcode:

Select "LOCK/UNLOCK" **(1)** displayed on page 2, then press and hold the right function switch for **3 s**.

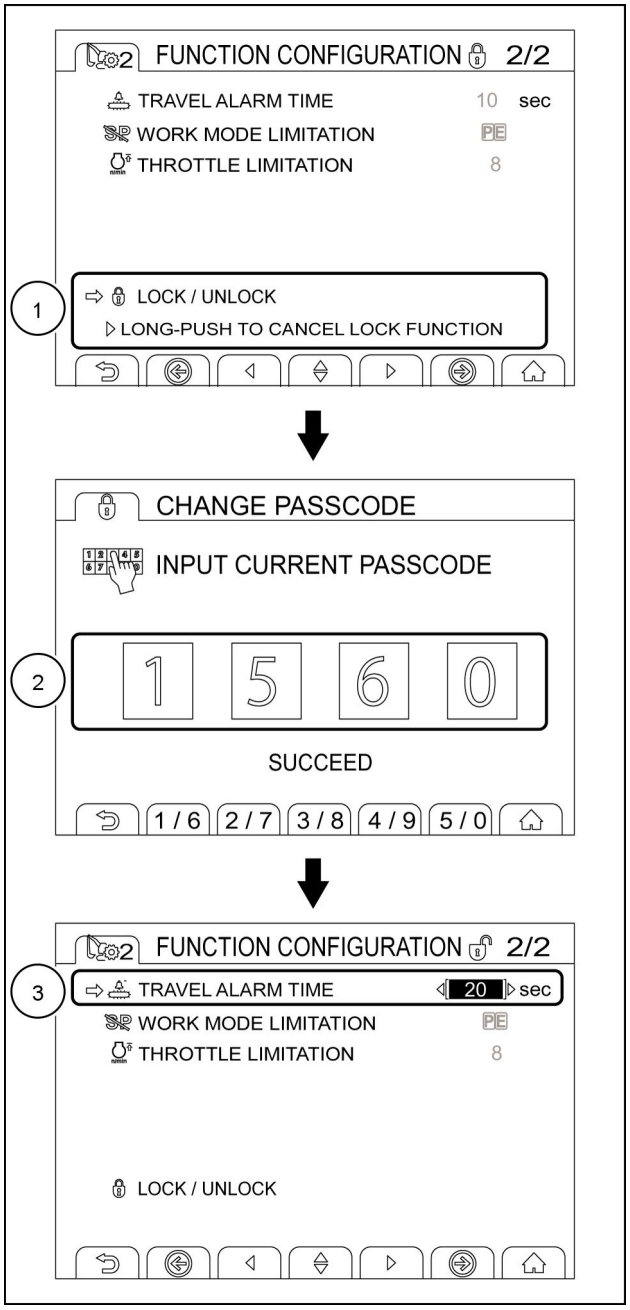
An alarm sounds and the passcode entry screen opens.

After the passcode **(2)** is successfully entered, you can set whether to lock or unlock items.

Use the switches ▲▼ to move the cursor up and down to select the item **(3)** you want to change the setting for, then use the switches ◄► to change the setting.

NOTICE: *The factory setting for the passcode is "1560".*

NOTICE: *If you forgot the set passcode, consult your local dealer or the certified service plant.*



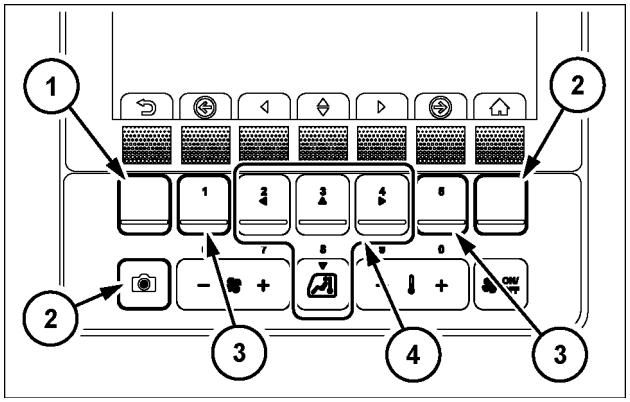
SMIL22CEX1244CA 65

Press **(1)** to return to the menu selection screen. (If the function switch on the normal screen was used to open the FUNCTION CONFIGURATION screen, the screen returns to the normal screen.)

Press **(2)** to return to the normal screen.

Press **(3)** to go forward or back 1 page.

Use the switches ▲▼ **(4)** to move the cursor up and down to select an item, then use the switches ◄► to change the setting.



SMIL21CEX3271AA 66

CUSTOM FLOW BALANCE

Enables you to adjust the flow balance according to the end attachment to be used. Adjusting the flow balance can contribute to smoother operation and improved operability for leveling work.

When you select CUSTOM FLOW BALANCE, the message "HYDRAULIC FLOW BALANCE WILL BE CUSTOMIZED IN THIS MENU" is displayed on the screen. Select "CONTINUE" to change the settings.

NOTICE: *The flow balance changes when the settings are changed. Perform operational checks before operating the machine after changing the setting.*

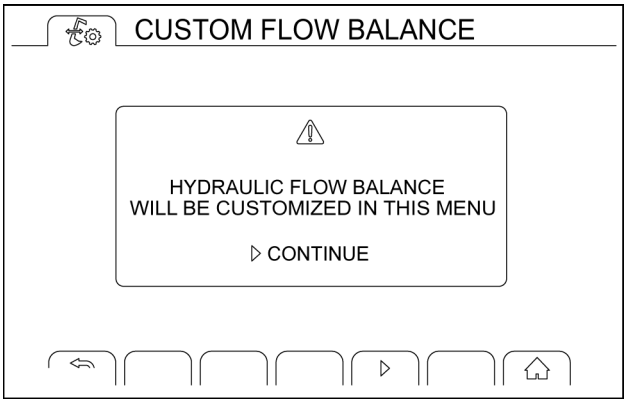
The following items can be configured:

Page 1/2: ARM IN AND BOOM UP COMBINATION LEVELING (11 levels)

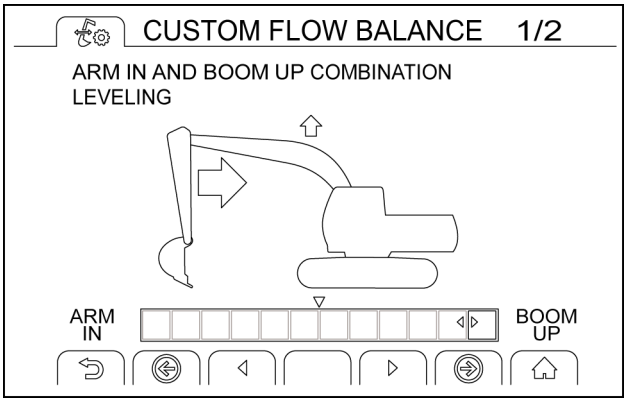
Page 2/2: ARM IN AND SWING COMBINATION (11 levels)

ARM IN AND BOOM UP COMBINATION LEVELING

Adjusting the flow balance changes the pump flow balance between arm-in and boom-up operations, which allows you to select your desired flow balance.



SMIL21CEX3132AA 67

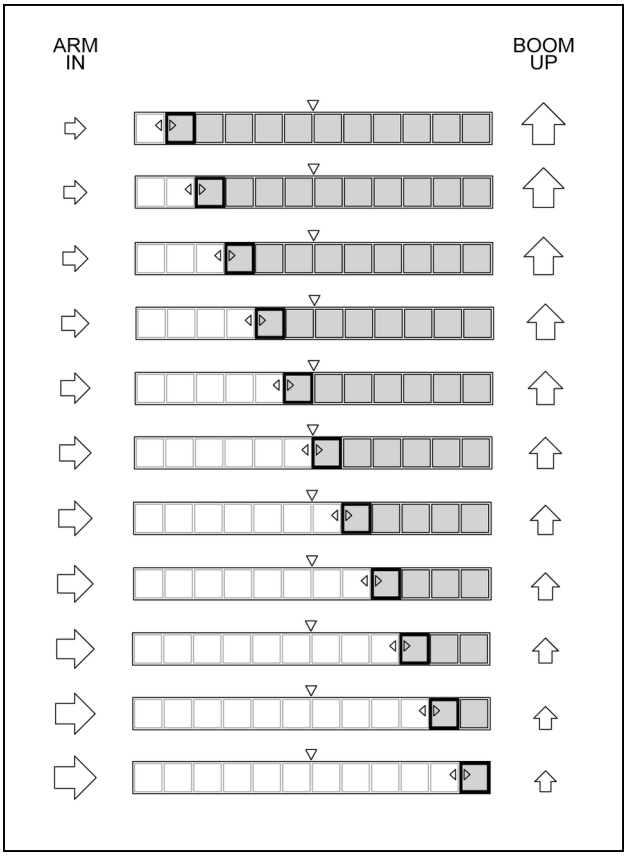


SMIL22CEX1996AA 68

Flow balance gauge

The size of the arrow icon displayed changes as the flow balance gauge increases or decreases.

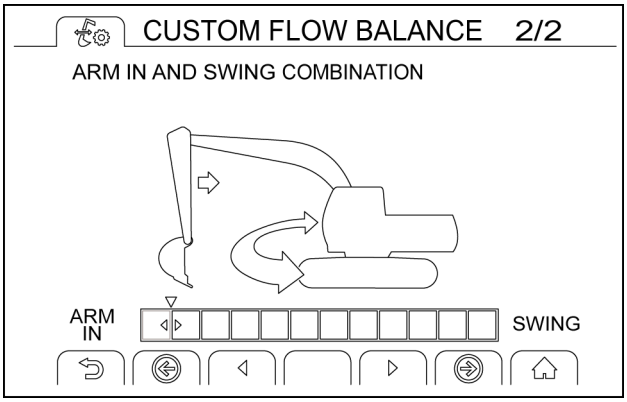
NOTICE: *The white ▽ mark at the top of the flow balance gauge shows the standard setting position (factory setting). The flow balance changes when the setting is changed to a position significantly away from the standard setting position. Perform operational checks before operating the machine after changing the setting.*



SMIL22CEX1997BA 69

ARM IN AND SWING COMBINATION

Adjusting the flow balance changes the pump flow balance between arm-in and swing operations, which allows you to select your desired flow balance.

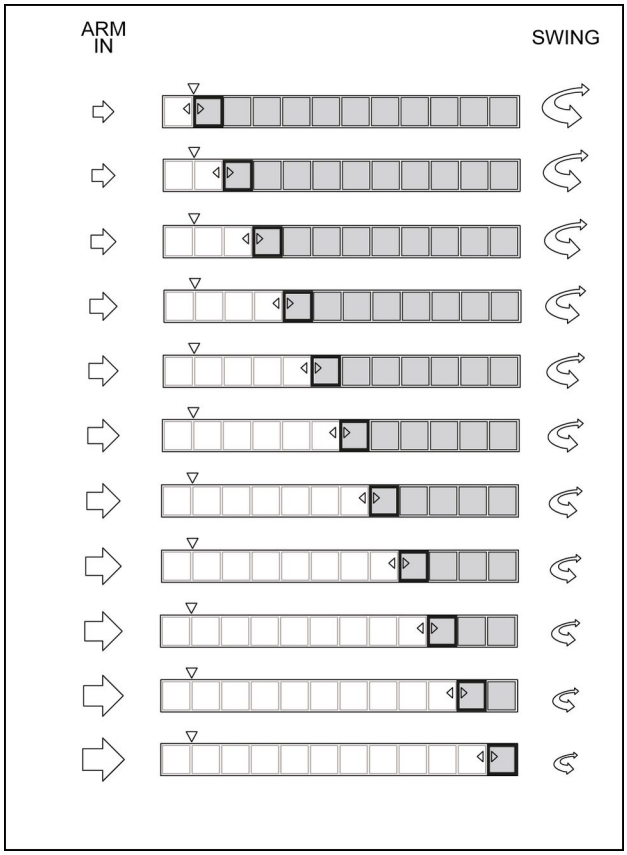


SMIL22CEX1998AA 70

Flow balance gauge

The size of the arrow icon displayed changes as the flow balance gauge increases or decreases.

NOTICE: *The white ▽ mark at the top of the flow balance gauge shows the standard setting position (factory setting). The flow balance changes when the setting is changed to a position significantly away from the standard setting position. Perform operational checks before operating the machine after changing the setting.*



SMIL21CEX3130BA 71

After changing the setting, the notification screen is displayed every time the system is started.

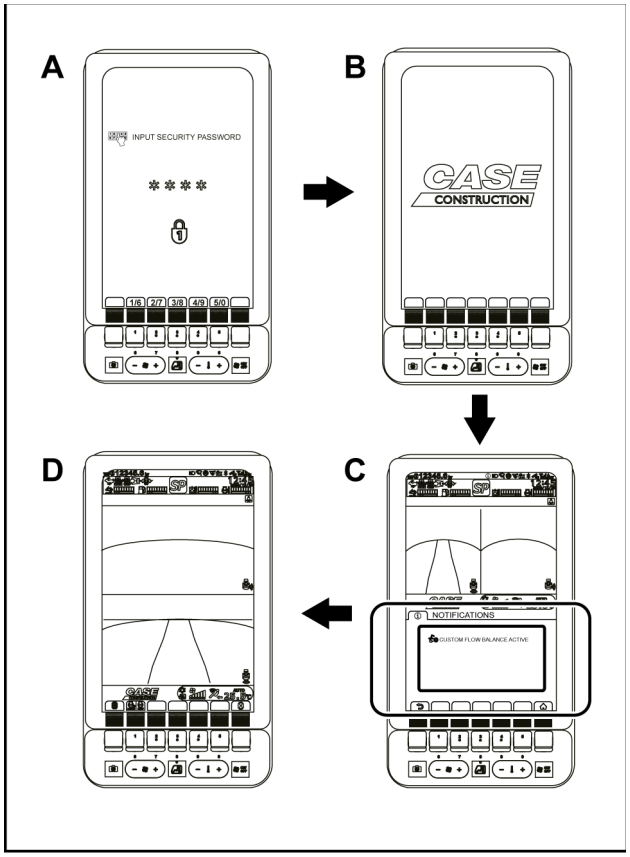
A. Passcode screen (when manual lock is set up)

B. Start screen

C. Notification screen (displayed for **10 s**)

D. Normal screen

If the flow balance setting has been changed with the flow balance customization function, the notification screen is displayed for **10 s** every time the system is started.



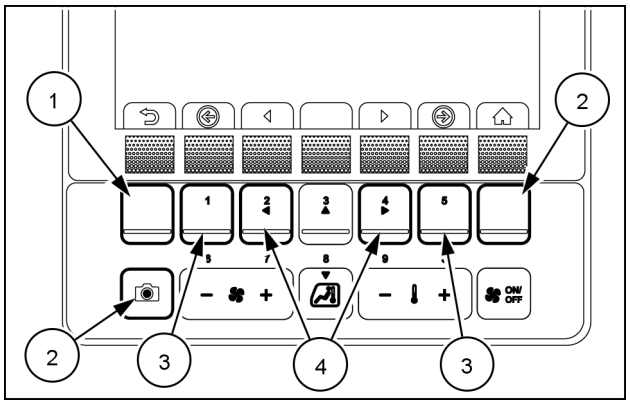
SMIL21CEX3129BA 72

Press **(1)** to return to the menu selection screen. (If the function switch on the normal screen was used to open the DISPLAY CONFIGURATION screen, the screen returns to the normal screen).

Press **(2)** to return to the normal screen.

Press **(3)** to return to go forward or back 1 page.

Press **(4)** to move the cursor to change the setting.



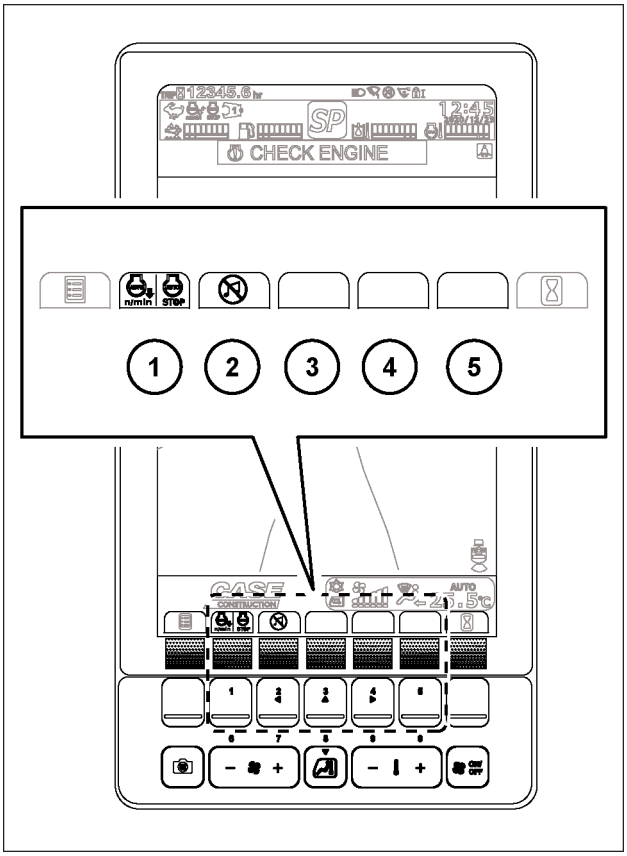
SMIL21CEX4355AA 73

MONITOR SWITCHES LAYOUT

Enables you to create shortcuts for frequently used menu screen items on the function switch tab in normal display mode.

NOTE: *The illustration provided shows the factory settings.*

No.	Name
1	IDLE MODE SETTING
2	RADIO MUTE
3 - 4	BLANK

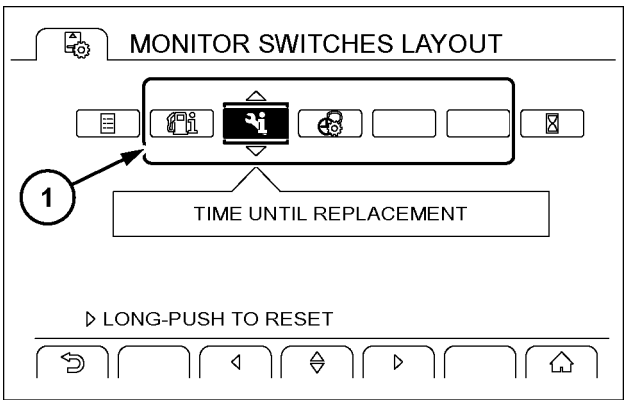


SMIL21CEX3296BA 74

In user information mode, select Monitor Switches Layout and follow the steps below to change the settings.

Use the function switches ◄► to select the tab **(1)** you want to change, then use the function switches ▲▼ to select an icon.

NOTE: *The settings for the function switch tabs on both ends are fixed and cannot be changed.*

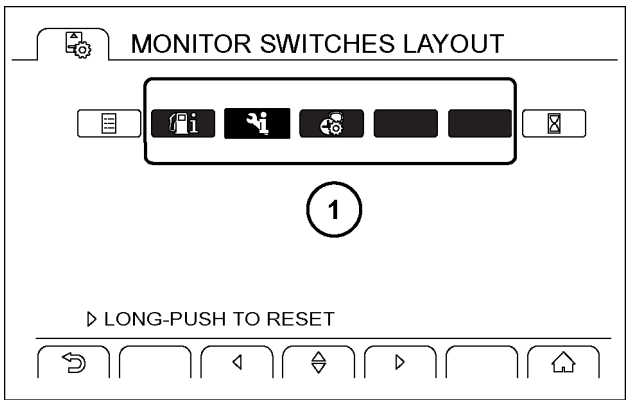


SMIL21CEX3297AA 75

Resetting the settings

When you press the function switch ▶, the tab **(1)** to be reset is highlighted in yellow and then the callout disappears.

Then, press and hold the function switch ▶ for **3 s**. An alarm sounds to complete the reset. The settings are reset to the factory settings.



SMIL21CEX3298AA 76

Descriptions of icons for MONITOR SWITCHES LAY-OUT

FUEL CONSUMPTION: Enables you to view the fuel economy for the past 7 days.

MACHINE INFORMATION: Enables you to view the machine status in detail.

TIME UNTIL REPLACEMENT: Enables you to view the information on the time for replacing the periodic replacement parts.

NOTIFICATION: Enables you to view the information that the operator needs to know.

DISPLAY CONFIGURATION: Enables you to configure the screen brightness, camera, and date/time settings.

AUXILIARY HYDRAULICS: Enables you to switch between Breaker and Crusher, manage operations according to the model, and set the pressure and flow rate.

ATS CONFIGURATION: Enables you to view and change the ATS settings.

FUNCTION CONFIGURATION Enables you to configure settings for functions related to energy-saving and safety.

CUSTOM FLOW BALANCE Enables you to adjust the flow balance according to the end attachment to be used.

MONITOR SWITCHES LAYOUT: Enables you to create shortcuts for frequently used menu screen items on the function switch tab in normal display mode.

FACTORY SETTINGS: Enables you to reset the settings on the menu screen to the factory settings all at once.

PASSCODE SETTING
Enables you to change the passcode.

IDLE MODE SETTING: Switches the idle mode settings.

RADIO MUTE: Turns ON or OFF the radio audio output.

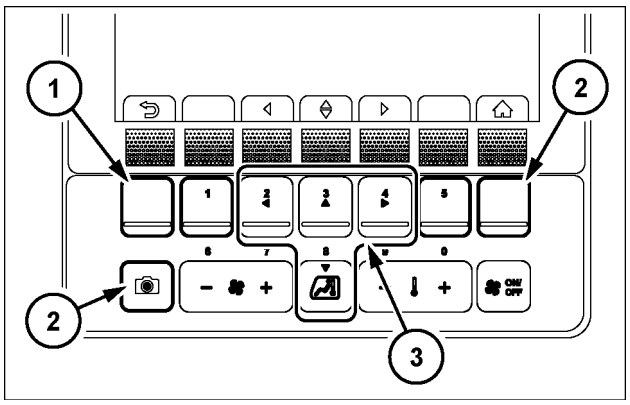
BLANK: Leaves a tab blank.

Press **(1)** to return to the menu selection screen. (If the function switch on the normal screen was used to open the DISPLAY CONFIGURATION screen, the screen returns to the normal screen.)

Press **(2)** to return to the normal screen.

Use the switches ▲▼ **(3)** to move the cursor up and down to select an item, then use the switches ◄► to change the setting.

Press and hold the switch ◄► for **3 s** to reset the settings.



SMIL21CEX3292AA 77

PASSCODE SETTING

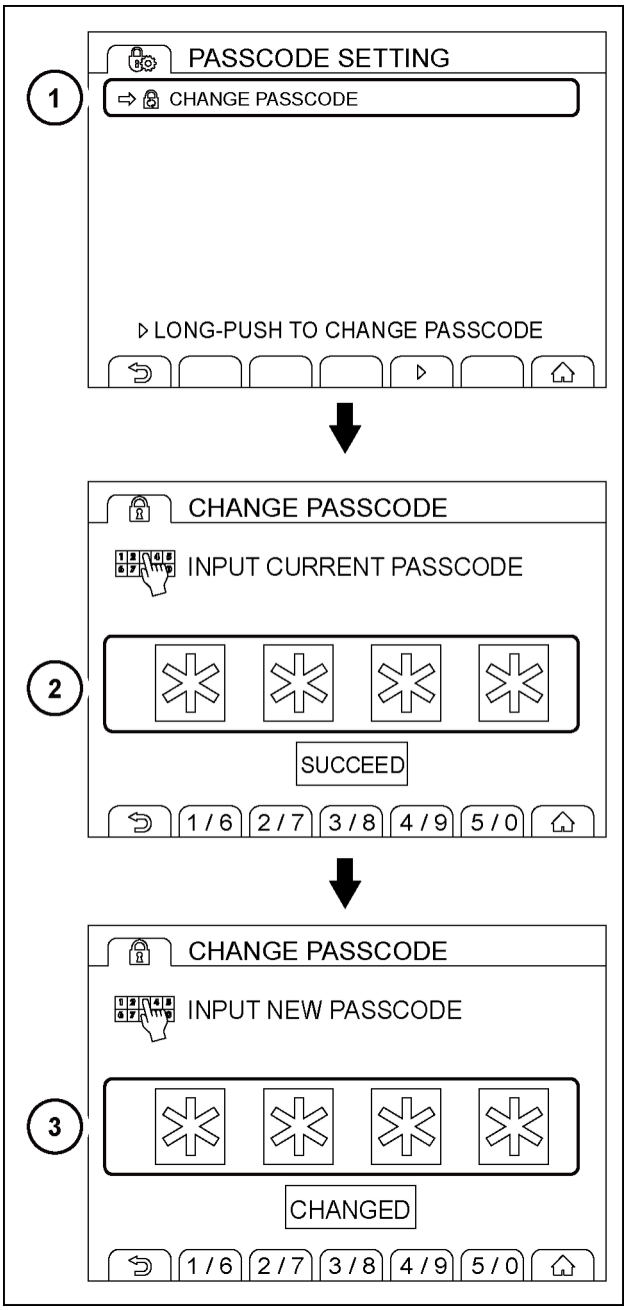
Enables you to change the passcode.

- Change the passcode.
  Select "CHANGE PASSCODE" **(1)**, then press and hold the switch on the right for **3 s** to open the passcode entry screen.
  Use the function switch to enter the passcode on the entry screen **(2)**. When the correct passcode is entered, "SUCCEED" is displayed and the CHANGE PASSCODE screen is displayed.

If the passcode is incorrect, "FAILED" is displayed for **1 s** and the screen returns to the passcode entry screen.
Use the function switch to enter a new passcode on the entry screen **(3)**. "CHANGED" is displayed for **1 s** and the screen returns to the PASSCODE SETTING screen. This completes the passcode change.

NOTICE: *The factory setting for the passcode is "1560".*

NOTICE: *If you forgot the set passcode, consult your local dealer or the certified service plant.*



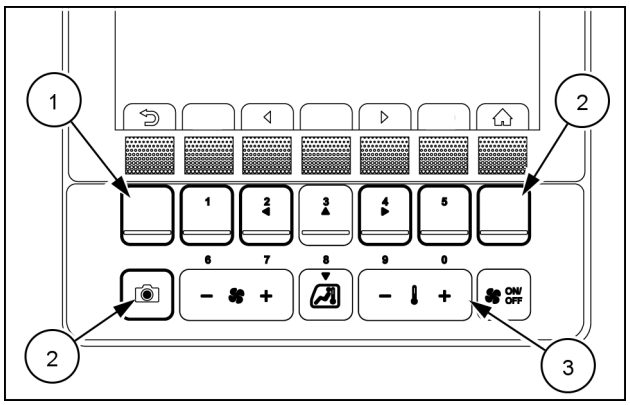
SMIL21CEX3299CA 78

Use the function switches to enter a new passcode on the entry screen **(3)**. This completes the passcode change. To enter numeric values, use the function switches as numeric keys.

Press **(1)** to return to the menu selection screen. (If it is pressed during passcode entry, the passcode entered is discarded and the screen returns to the menu screen.)

Press **(2)** to return to the normal screen. (If it is pressed during passcode entry, the passcode entered is discarded and the screen returns to the normal screen.)

Press **(3)** to enter the passcode. (Press and hold the No.4 key on the PASSCODE SETTING screen for **3 s**. The CHANGE PASSCODE screen is displayed.)



SMIL21CEX4355AA 79

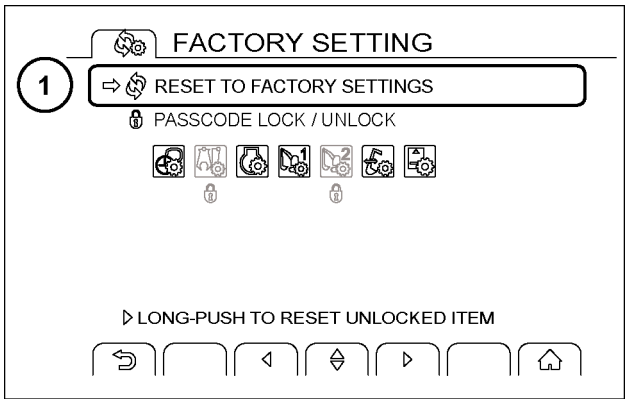
FACTORY SETTING

The settings on the menu screen can be reset all at once.

- Reset the settings

Use the up or down switch to select "RESET TO FACTORY SETTINGS" **(1)**, then press and hold the switch on the right for **3 s**. An alarm sounds and the settings are reset.

NOTE: *When the screen is locked, the icon is grayed out and reset cannot be performed.*

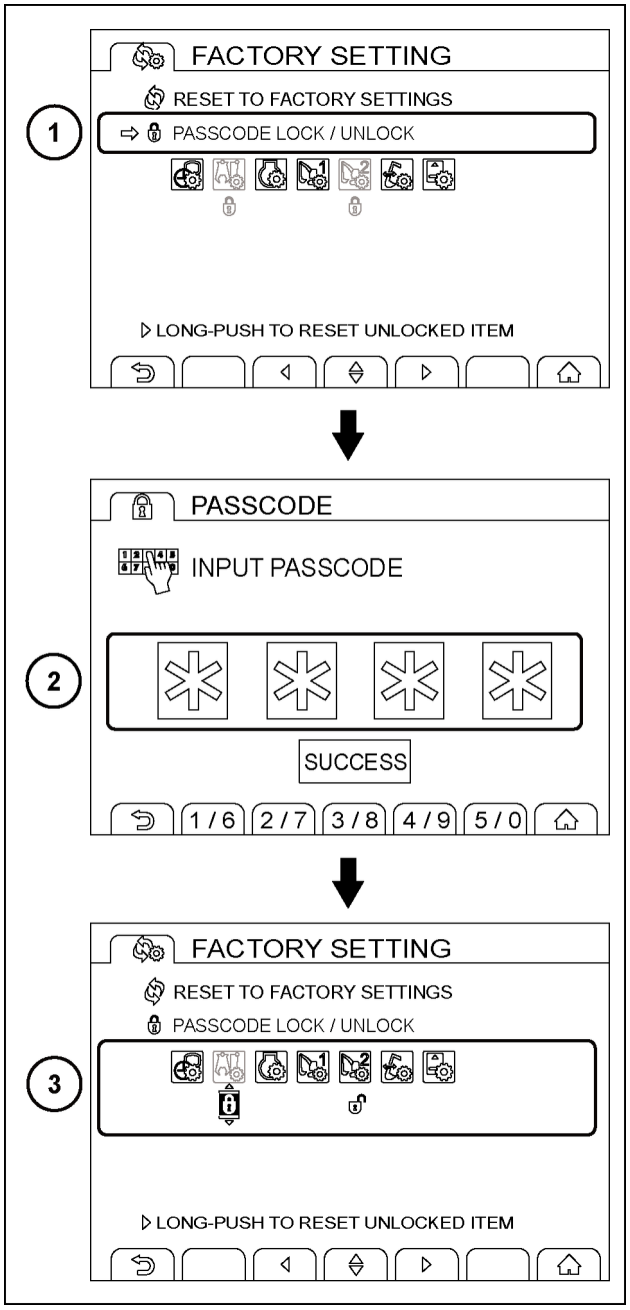


SMIL21CEX3300AA 80

- Lock/unlock the passcode

Use the up or down switch to select "PASSCODE LOCK/ UNLOCK" **(1)**, then press and hold the switch on the right for **3 s**. An alarm sounds and the passcode entry screen is displayed. When the correct passcode is entered, a screen opens where you can lock or unlock the settings. Use the left or right switch to select an item and use the up or down switch to change the lock icon between lock and unlock **(3)**.
Press the return switch to return to the first page of the FACTORY SETTING screen.

NOTE: *When the screen is locked, the icon is grayed out and reset cannot be performed.*



SMIL21CEX4301CA 81

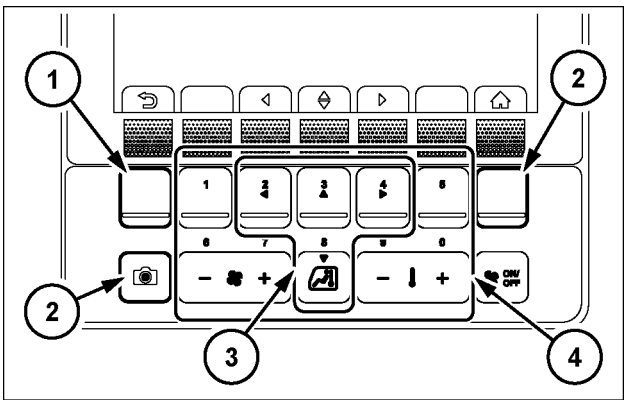
Press **(1)** to return to the menu selection screen. (If the function switch on the normal screen was used to open the FACTORY SETTING screen, the screen returns to the normal screen.)

Press **(2)** to return to the normal screen.

Press **(3)** to select an item or change settings.

Press **(4)** to enter the passcode.

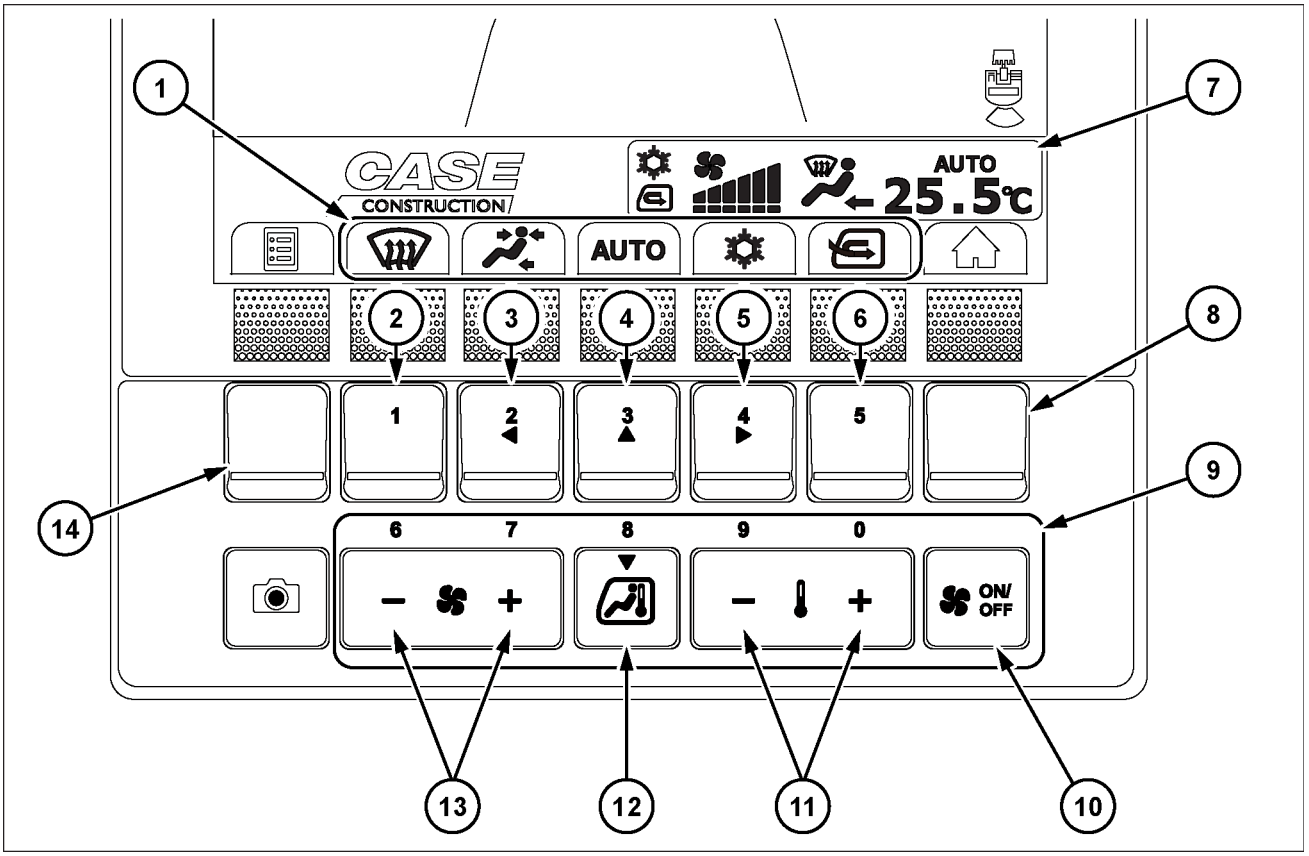
NOTE: *When the screen is locked, the up and down function switches and left function switch cannot be used.*



SMIL21CEX4302AA 82

Heating, ventilation or air-conditioning control

Air conditioner control



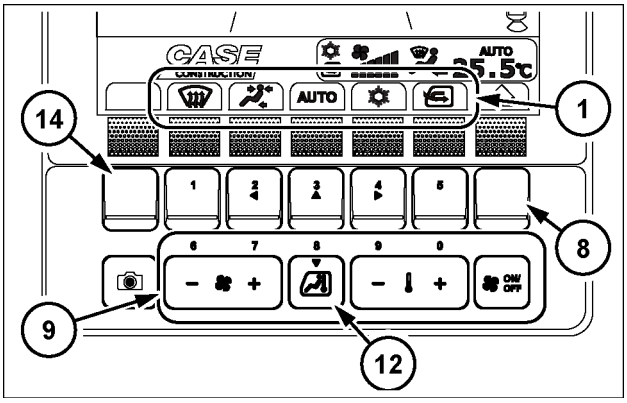
SMIL21CEX4303FA 1

1. Function switch tab for operating the air conditioner
2. Windshield defroster
3. Air flow direction
4. Auto
5. Air conditioner
6. Air circulation
7. Display screen
8. Home
9. Switches for the air conditioner
10. Blower ON/OFF
11. Temperature
12. Air conditioner mode
13. Blower air flow
14. Menu

Air conditioner operation mode

When you press one of the air conditioner switches **(9)**, the system enters the air conditioner operation mode and the blue function switch tab **(1)** for air conditioner operations is displayed.
When the air conditioner mode switch **(12)** or function switches **(8)** and **(14)** are pressed or **10 s** have passed without any operations performed, the air conditioner operation mode is canceled.

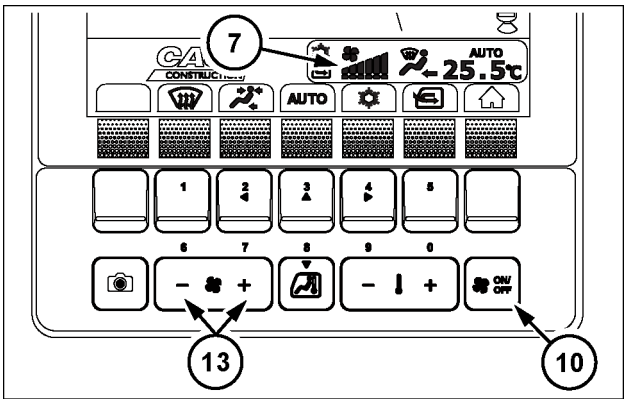
- When the system is turned "ON", it operates with the same setting as the one selected previously.
- When a menu screen or menu selection bar is displayed, the function switch tabs for air conditioner operations are not displayed.



SMIL21CEX4304AA 2

Air flow

Press the blower switch **(10)** to turn the blower ON or OFF.
Press the 2 switches **(13)** to adjust the strength of the air flow.
Press the right switch to increase the air flow.
Press the left switch to decrease the air flow.
The selected air flow is shown on the display screen **(7)**.

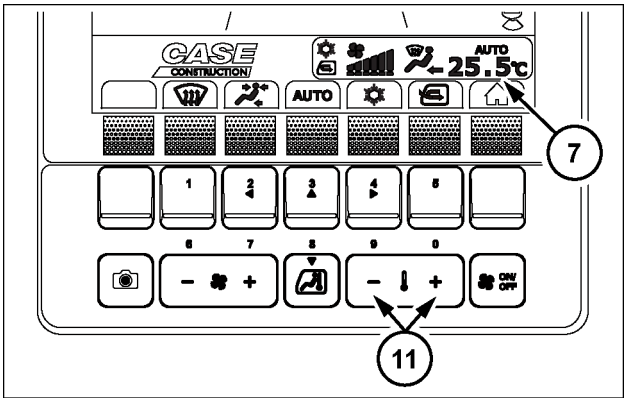


SMIL21CEX4305AA 3

Temperature

The temperature can be set from **18.5 – 31.5 °C** (**65.3 – 88.7 °F**) by using the 2 switches **(11)**.
Press the right switch to increase the set temperature.
Press the left switch to decrease the set temperature.
The set temperature is shown on the display screen **(7)**.

NOTICE: *The temperature can be displayed in Celsius or Fahrenheit. The display can be changed in the monitor display settings.*



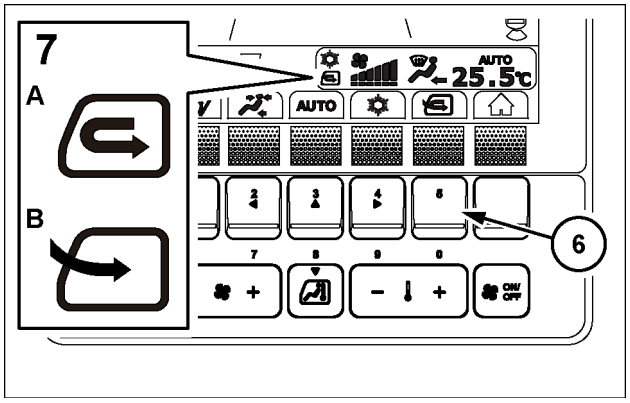
SMIL21CEX4306AA 4

Air circulation

Press the function switch **(6)** to select either of 2 types of air circulation, refresh or recirculate.
The air circulation type changes each time this switch is pressed.
The selected air circulation type is shown on the display screen **(7)**.

A. Recirculate

B. Refresh



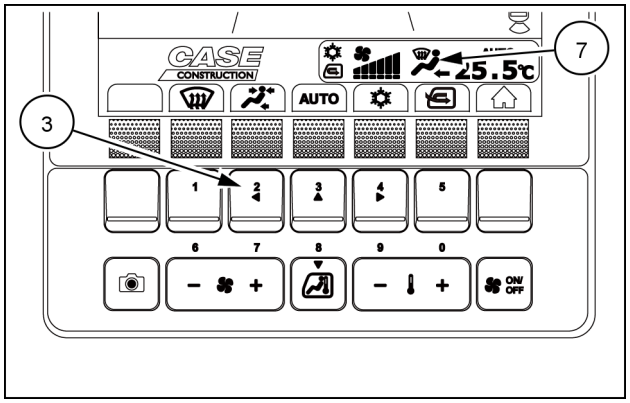
SMIL21CEX4307AA 5

Air flow direction

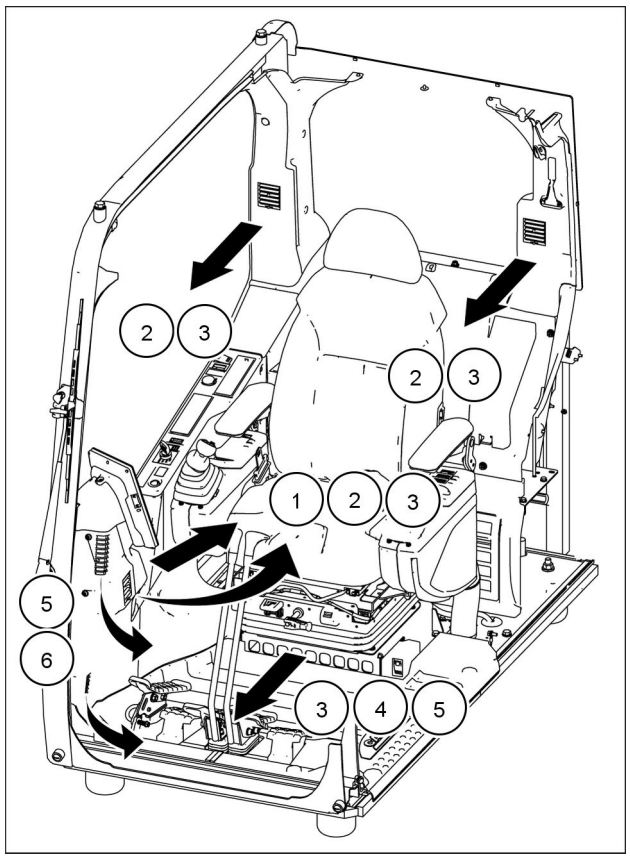
Press the function switch **(3)** to select an air flow direction from ① to ⑤ in the table.

The air flow direction type changes each time the switch is pressed.

The selected direction type is shown on the display screen **(7)**.



SMIL21CEX4356AA 6



SMIL21CEX3122BA 7

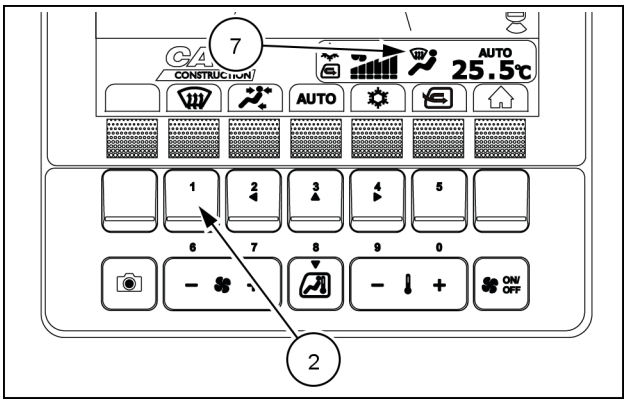
	LCD display	Air vent	Air vent direction
①		Face 1	Front of upper half of body
②		Face 2	Front and rear of upper half of body
③		Bi-level	Front and rear of upper half of body Feet
④		Foot	Feet
⑤		Foot/defroster	Windshield Feet
⑥		Defroster	Windshield

Windshield defroster

Press the function switch **(2)** to activate the defroster to clear fogging from the windshield.

When the defroster is activated, the icon appears on the display screen **(7)**.

Press the function switch **(2)** again to cancel the defroster and return to the blower mode.

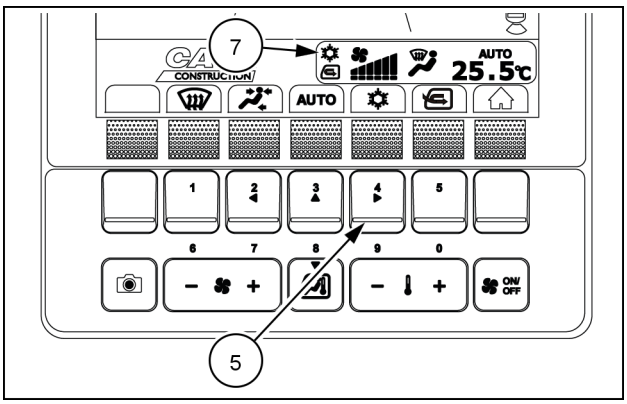


SMIL23CEX2565AA 8

Air conditioner (cooling and dehumidification functions) switch

Each time the function switch **(5)** is pressed, the air conditioner (cooling and dehumidification functions) is switched ON and OFF.

When the air conditioner (cooling and dehumidification functions) is running, the icon appears on the display screen **(7)**.



SMIL23CEX2565AA 9

Air conditioning

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.

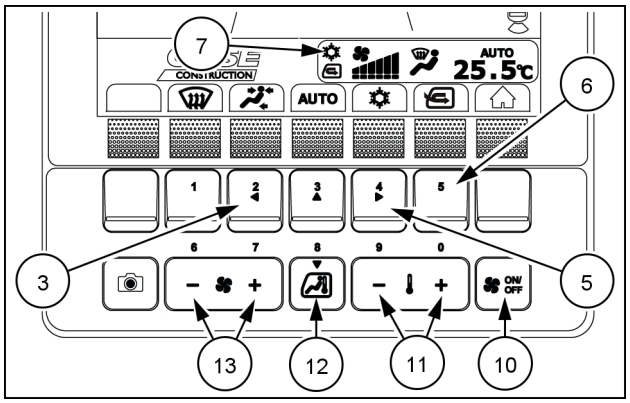
Manual:

Press the A/C power switch **(10)** to turn ON or OFF the air conditioner.

When the air conditioner is operating, its operating state is displayed on the display screen **(7)**.

Press the function switch **(12)**, the function switch tab will change to the air conditioner operation mode.

For manual operation, use function switches **(11)** and **(13)**, or function switches **(3)**, **(5)**, **(6)** in the air conditioner operation mode to adjust the air conditioner.



SMIL23CEX2565AA 10

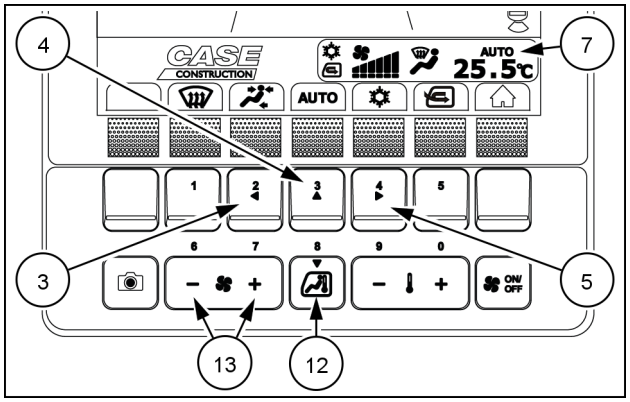
Automatic

Press and hold the air conditioner mode switch **(12)** or press the function switch **(4)** in air conditioner operating mode to adjust the air flow and air flow direction or turn the air conditioner ON or OFF automatically. "AUTO" is shown on the display screen **(7)**.

Even when in automatic mode, the air conditioner can be adjusted with function switches **(3)**, **(5)**, **(13)**.

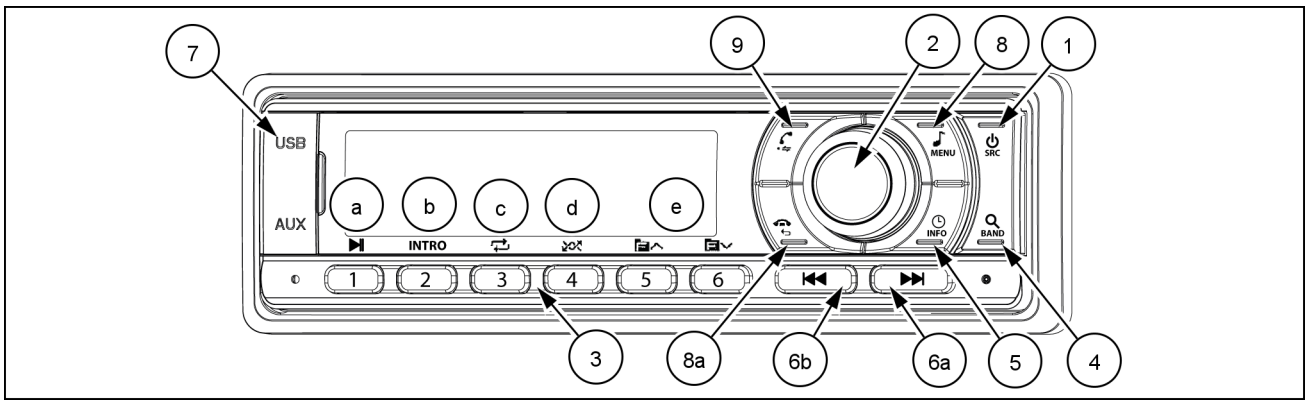
When you do so, the auto mode is canceled and the "AUTO" on the display screen **(7)** disappears.

NOTE: *For the air conditioner system to operate correctly and function adequately, it needs to be operated at least once a week, even for a short period of time.*



SMIL23CEX2565AA 11

Radio



SMIL21CEX5496EA 1

Power button / SRC button **(1)**.

Use the power button to turn on the radio.

Short-press to power on.

Long-press to power off.

When the radio is turned on, the WELCOME screen will be shown for a few seconds.

Prior to powering off completely, the radio will save all current settings such as volume level while the GOODBYE screen is shown.

SRC button

Short-press the SRC button to cycle through audio sources.

Available sources are: AM/FM, USB PLAY, AUDIO IN, BT AUDIO. BT AUDIO is accessible only when a Bluetooth device is connected to the radio.

Rotary Dial **(2)**

The rotary dial controls the volume. It is also a button. Pushing it in will mute the radio. Push it again or turning it will unmute.

When navigating the menus or when searching audio track names, turn the rotary dial to browse items on the screen, and push it in to enter the item.

When browsing the phonebook on Bluetooth-equipped models, turning the rotary dial at a faster speed allows the user to quickly pick the first letter A - Z. After the start letter is selected the phone contacts starting with that letter will be displayed. Rotate the rotary dial slowly to get to the exact entry.

Preset buttons **(3)**

The six preset buttons are provided to store favourite stations. For example, long-press the preset button 2. The display shows FM1-P2. When the users wishes to return to this radio station, they do not need to seek through all stations but can go to it directly by short-pressing the preset button 2.

During USB playback, the preset buttons have alternative functions. Many of these functions also apply to audio streaming if the radio has bluetooth.

(a) Toggle between play and pause

(b) Play only the beginning **10 s** of each track. When the desired track is playing, press this button again to cancel INTRO, and audio will continue playing the current track.

(c) Repeat (cycle selection): Repeat playing after finishing playing all tracks. Options are RPT ALL, RPT FOLDER, RPT TRACK.

(d) Random shuffle (cycle selection): RDM OFF, RDM ALL, RDM FOLDER.

(e) Folder buttons: switch to the next or previous folder. Play the first song in it.

BAND button **(4)**

Short-press the BAND button to cycle through the available frequency band: FM1, FM2, FM3, MW (medium wave AM, LW (long wave AM).

Each band has 6 presets. Overall the FM band has 18 presets.

Long-pressing the BAND button executes the auto store. The first six radio stations it finds will be stored to the six preset buttons. This may take some time to complete. If we are in one of the FM bands, this scan will look up 18 stations and place them in all presets across FM1, FM2 and FM3.

Time button **(5)**

The radio has an internal clock to keep time. The time can be displayed by long pressing the button

Time is displayed on the lower left on the LCD screen accompanied by the clock symbol. The time updates automatically from the network when:

Listening to an FM radio station.

The radio station has RDS signal.

The RDS signal embeds time.

Time can be set manually via the radio MENU.

AM/FM tuning **(6)**

To tune the radio station:

(6a) Short-press to seek up

(6b) Short press to seek down

The seek action will stop at the next listenable frequency.

Long pressing the buttons **(6a)** or **(6b)** puts the radio tuner into manual tuning mode. When the two buttons are left without inputs for **2 s**, manual tuning mode will exit and return to seek mode.

USB port **(7)**

The radio can decode and playback audio files from a USB device.

To find a particular song title, the folder-file method can be used. Short-press the BAND button **(4)**. The lens icon will be shown on the screen. Turn the rotary dial to find the desired folder. Push the rotary dial to enter the folder. Turn the rotary dial to find the desired audio file. Push the rotary dial to play the file.

Menu button **(8)**

Functions and features can be configured by accessing the configuration menus.

Short-press the MENU button.

Turn the rotary dial to select tone, balance and fader.

Push the rotary dial to confirm the selected item.

Short-press the button **(8a)** to go back one level.

To exit the menu, long press the rotary dial **(2)**.

If the controls are left without input the menu will be dismissed automatically after a time.

Bluetooth pairing

Bluetooth models can connect to Bluetooth devices such as a mobile phone for making hands-free calls and streaming music.

The Bluetooth icon in the display will blink to indicate the readiness to "pair" when the radio is turned on or no other device is connected.

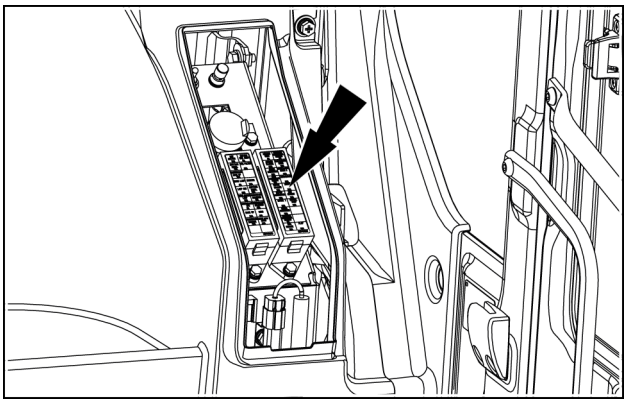
On the mobile phone settings, search for Bluetooth device "BT RADIO" and "pair" it. The radio will briefly display "CONNECTED". The Bluetooth icon will stop blinking. This indicates that the mobile phone is connected. Once the phone has been paired, the next time it is in the range it will connect automatically.

When receiving a call, short press the button **(9)** to answer or short press the button **(8a)** to reject. During a call, short press the button **(9)** to mute the microphone when privacy is needed. Press again to unmute.

Rearward controls

Fuse box

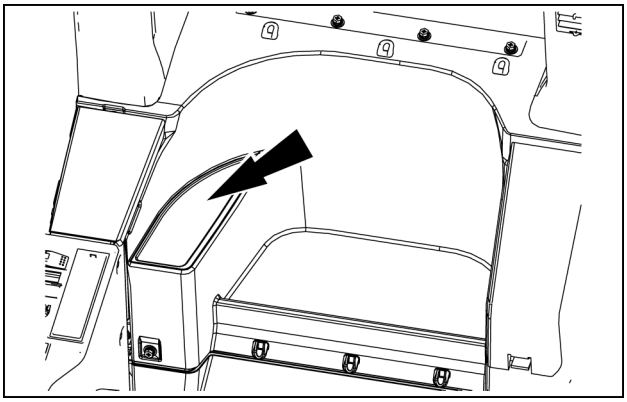
Located on the left-hand side, behind the operator's seat. The fuse boxes can be readily accessed by opening the protective cover.



SMIL22CEX1300AA 1

Magazine rack

Located on the right-hand side, behind the operator’s seat.

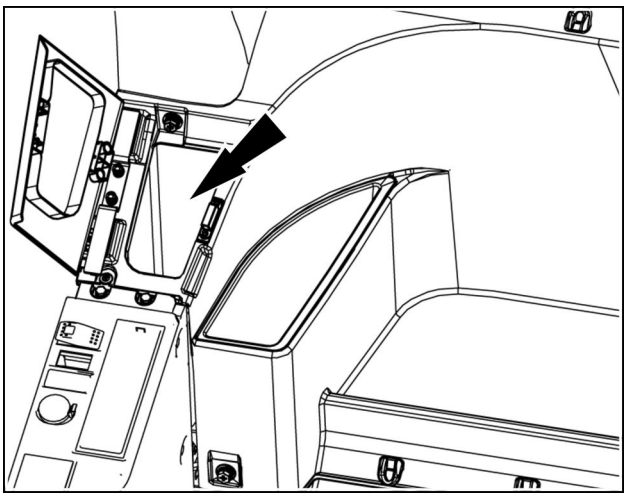


SMIL21CEX1393AA 1

Refrigerated/heated compartment

Located on the right-hand side, behind the operator's seat.
This compartment, associated with the air conditioning system, is designed to store different cold or hot products, drinks, etc.

NOTE: *This is an insulated compartment. The compartment may not cool or heat depending on the conditions.*

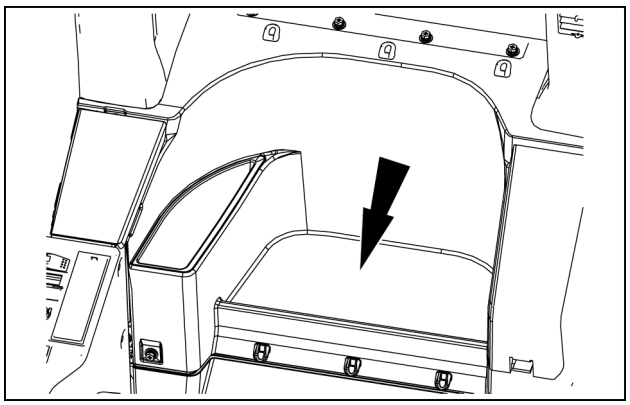


SMIL21CEX1395AA 1

Storage compartment

Located behind the operator's seat, this compartment is used to store various objects.

NOTICE: *Make sure that the weight of the stored objects is less than* ***10 kg*** *(****22.0 lb****).*

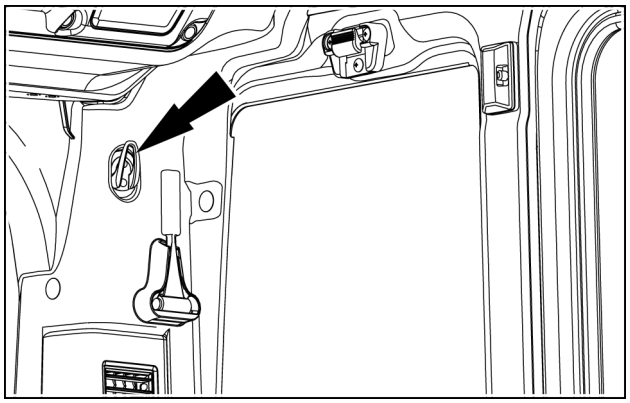


SMIL21CEX1393AA 1

Coat hanger hook

The hook is on the rear left-hand cab upright.

NOTICE: *Take care not to obscure the view with clothes that are too bulky.*

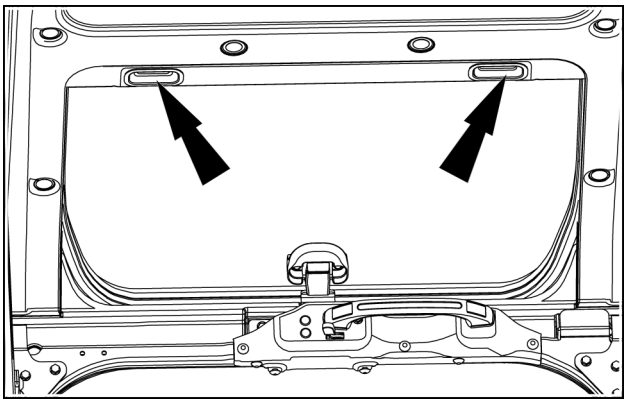


SMIL22CEX1282AA 1

Overhead controls

Roof curtain

To open the roof curtain, slide it toward the rear using the handles. To close the curtain slide it toward the front.



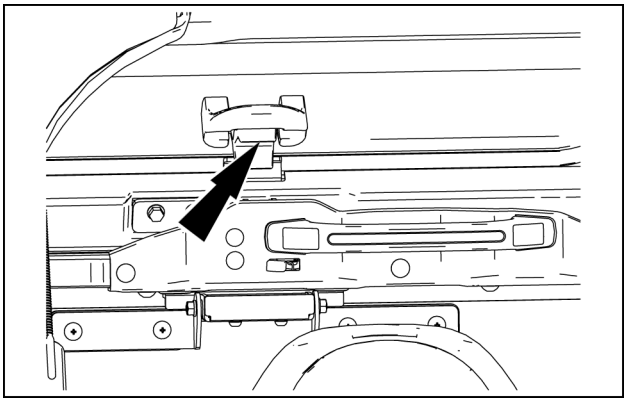
SMIL22CEX1956AA 1

Roof hatch

To open the roof hatch, operate the handle and push the handle.

To close the roof hatch, pull the handle until engagement.

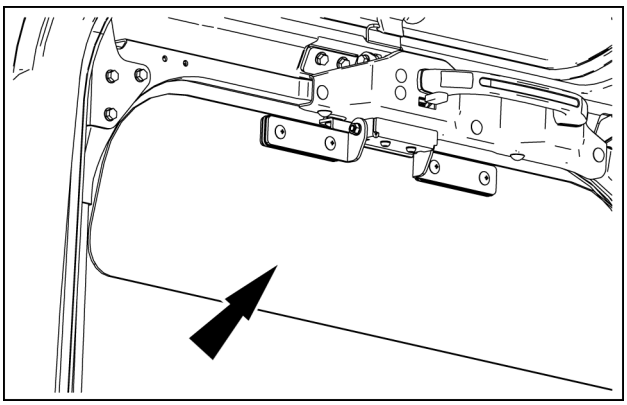
NOTICE: *Since roof hatch opening is assisted by two gas struts, simply follow through the closing movement without pulling or trying to hold it back.*



SMIL21CEX1416AA 1

Sunshield

The sun shield is fixed to the windshield and can easily be positioned as required.



SMIL21CEX1417AA 1

Exterior controls

Cab protection (ROPS and FOPS)

⚠ DANGER

Crushing hazard!
Do not change the Roll Over Protective Structure (ROPS) in any way. Unauthorized changes such as welding, drilling, or cutting will weaken the ROPS and decrease your protection. Have an authorized dealer replace the ROPS if damage of any kind occurs. DO NOT TRY TO REPAIR THE ROPS.
Failure to comply will result in death or serious injury.

D0037A

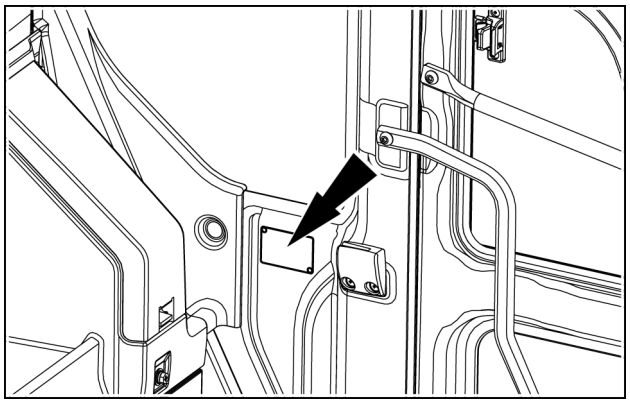
⚠ WARNING

Roll-over hazard!
After an accident, fire, tip over, or roll over, a qualified technician MUST replace the Roll-Over Protective Structure (ROPS) before returning the machine to the field or job site operation.
Failure to comply could result in death or serious injury.

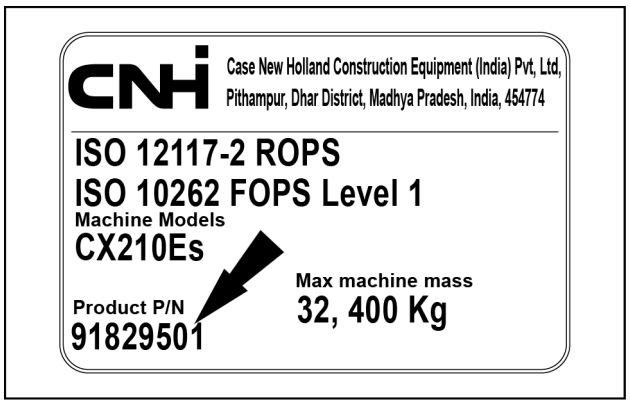
W0134A

This machine is equipped with a cab Roll-Over Protective Structure (ROPS).

NOTICE: *If the cab's ROPS (guaranteed high-strength member) is damaged, replace the cab. When replacing the cab, check the parts list for the part number of the cab appropriate for the model. If the wrong cab is mounted, the cab could be damaged when the machine rolls over, which could result in the death or serious injury to the operator or damage to the machine.*



SMIL22CEX1239AA 1



PTIL23CEX1163AB 2

This machine is equipped with a cab Falling Object Protective Structure (FOPS) compliant to Level 2 as defined by ISO 10262.

Level 2 is intended for protection from large objects, e.g. large rocks, large debris and other large objects encountered in applications such as construction and demolition.

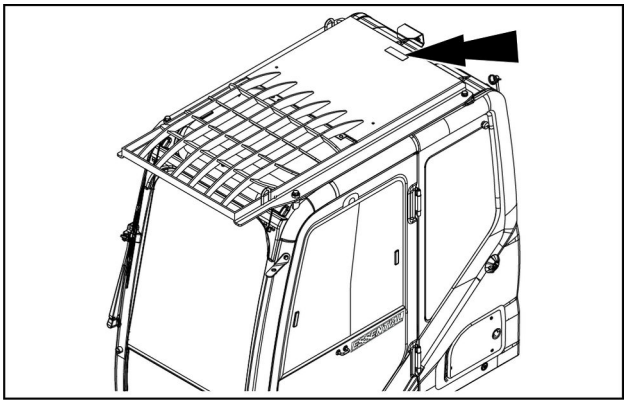
The protective structure, the fitting supports and fastening elements on the machine are an integral part of the structure.

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

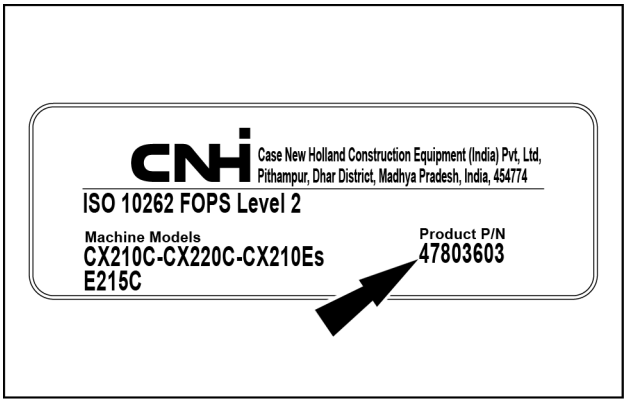
In any case, all damaged parts must be replaced with genuine spare parts, in order to return the machine to its original conditions.

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.



PTIL23CEX1172AB 3

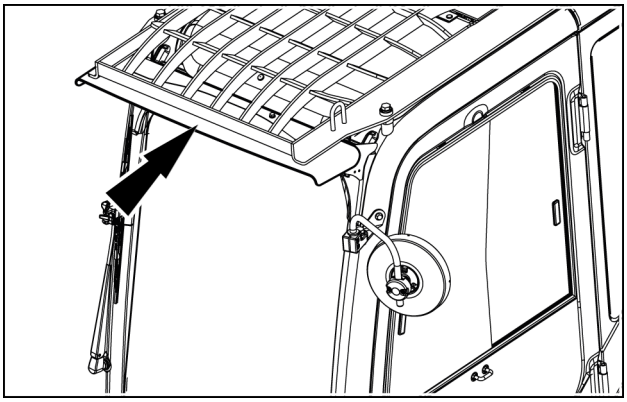


PTIL23CEX1161AB 4

Rain deflector

The rain deflector reduces the amount of rain on the upper part of the windshield and protects the cab lights.

NOTICE: *The rain deflector is not compatible with Front Guard Protective Structure.*



SMIL22CEX1260AA 1

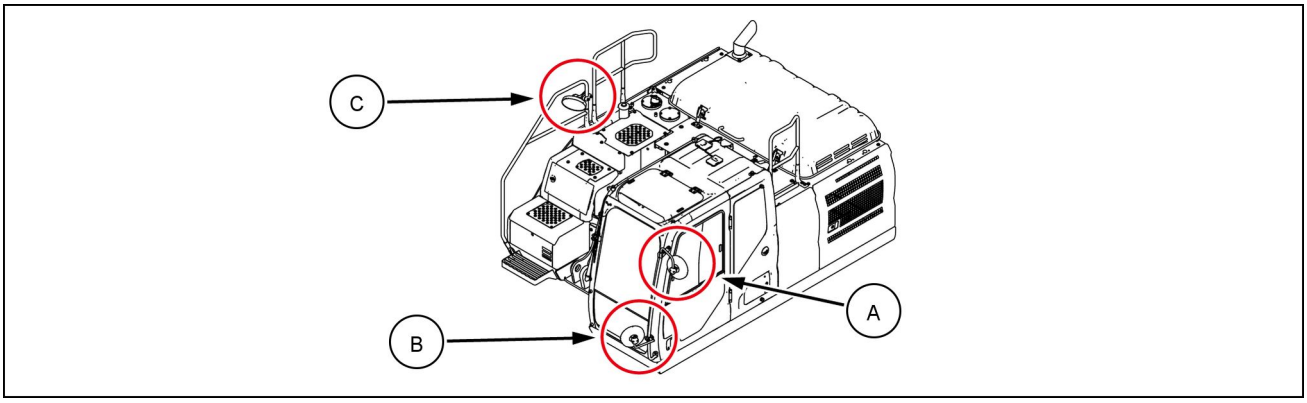
Mirrors

Installation and positioning of the mirrors (CX210E LC)

⚠ WARNING

Avoid injury and/or machine damage!
Keep the mirrors clean and properly adjusted.
Failure to comply could result in death or serious injury.

W1078A

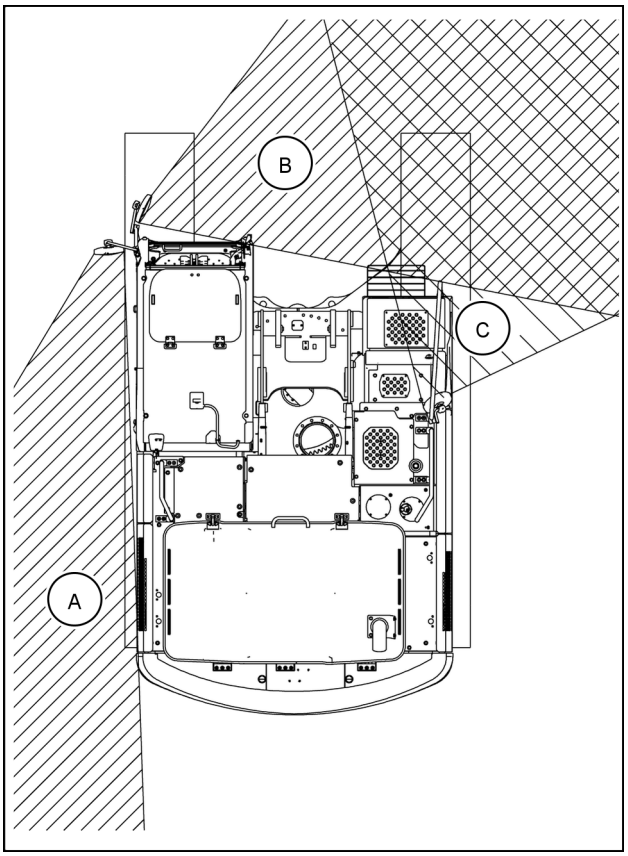


SMIL24CEX0282EA 1

(A) Cab upper mirror — (B) — Cab lower mirror — (C) Right-front mirror

The external mirrors, along with the external cameras, ensure proper visibility around the machine during operation.

The hatched areas in the pictures indicate the zones that can be viewed by each mirror.



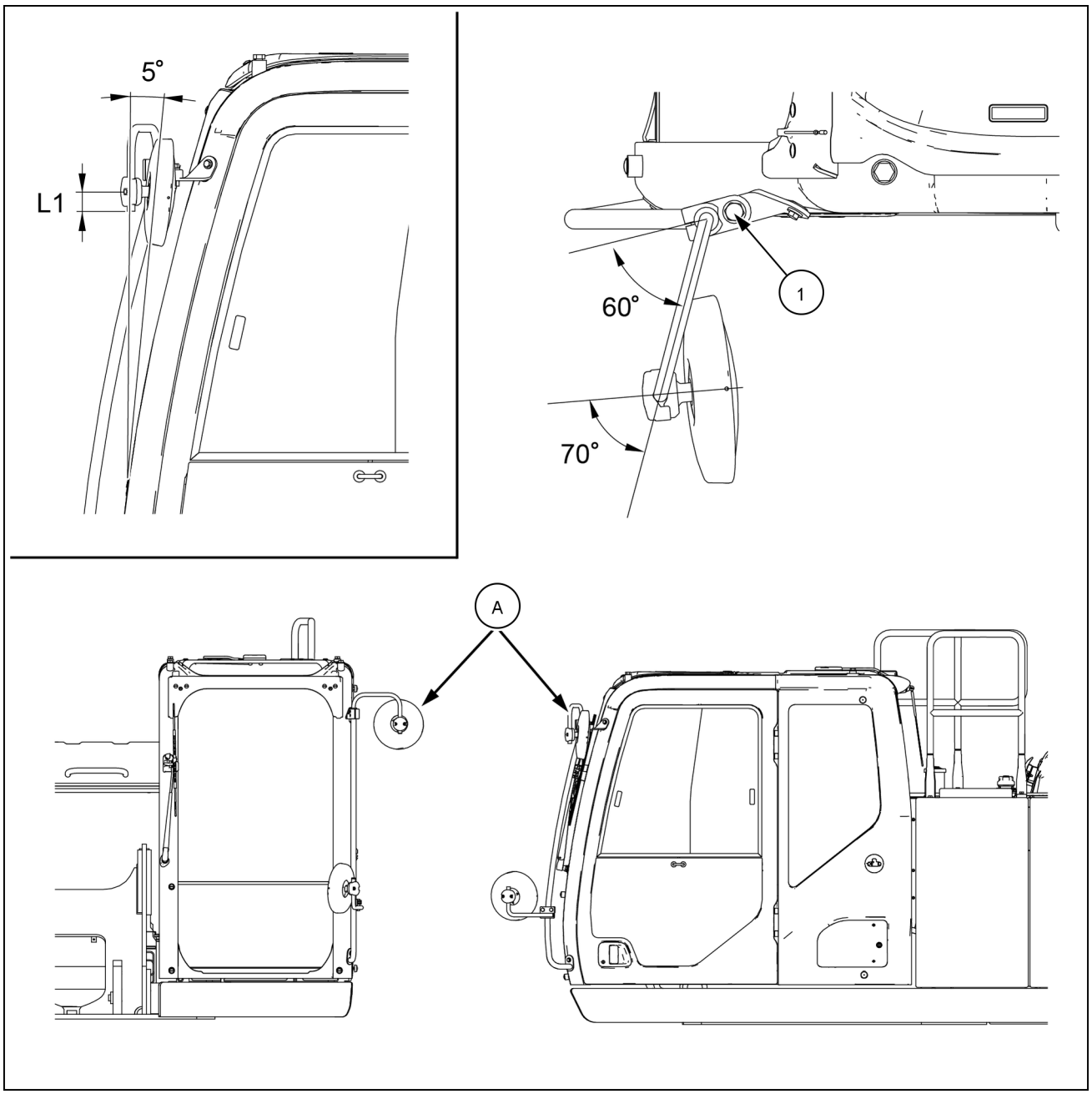
SMIL24CEX0283BA 2

Cab upper mirror (A)

The mirror shall be installed as shown in the picture.

The dimension **(L1)** is **50 mm** (**2.0 in**).

The tightening torque of the bolt **(1)** is **71.6 – 91.2 N·m** (**52.8 – 67.3 lb ft**).

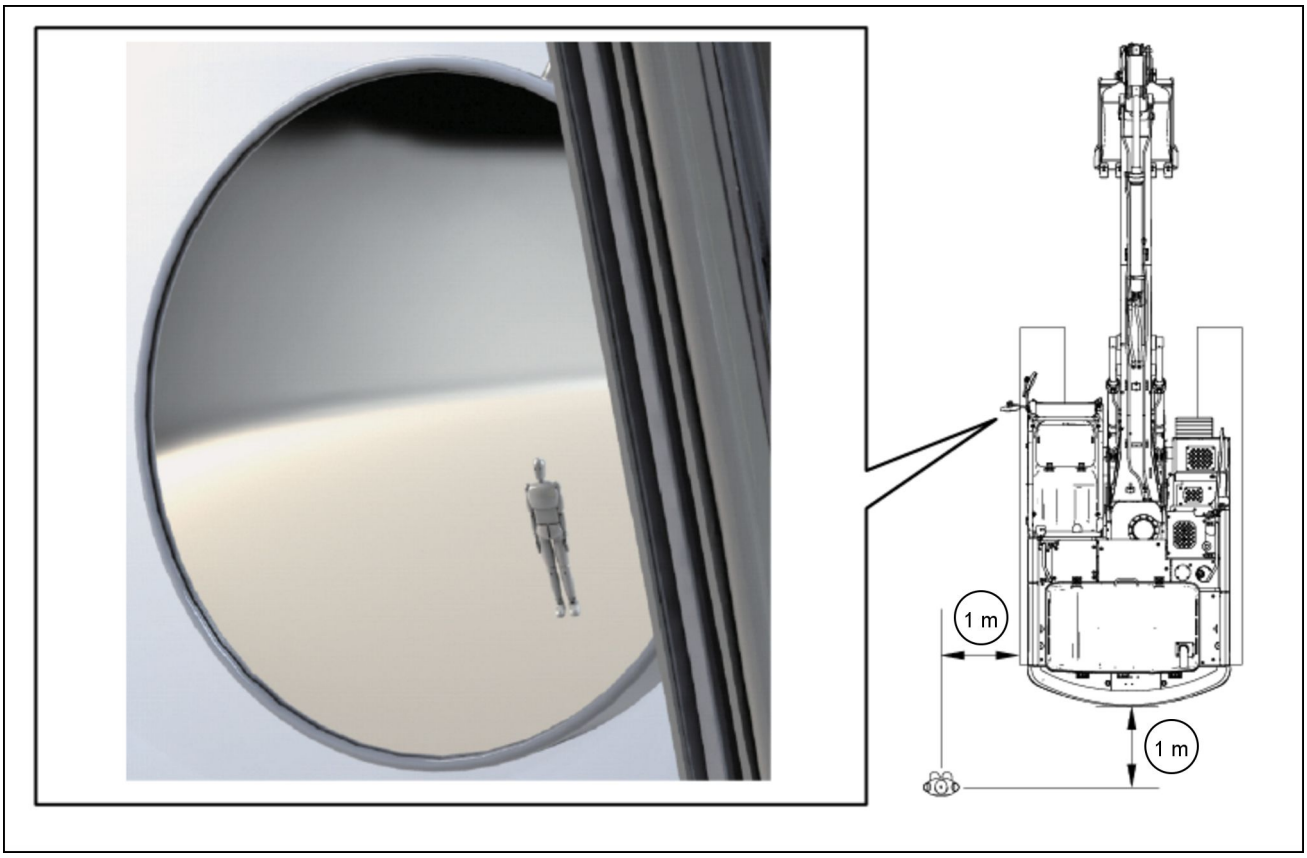


SMIL24CEX0284GA 3

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.



SMIL24CEX0285FA 4

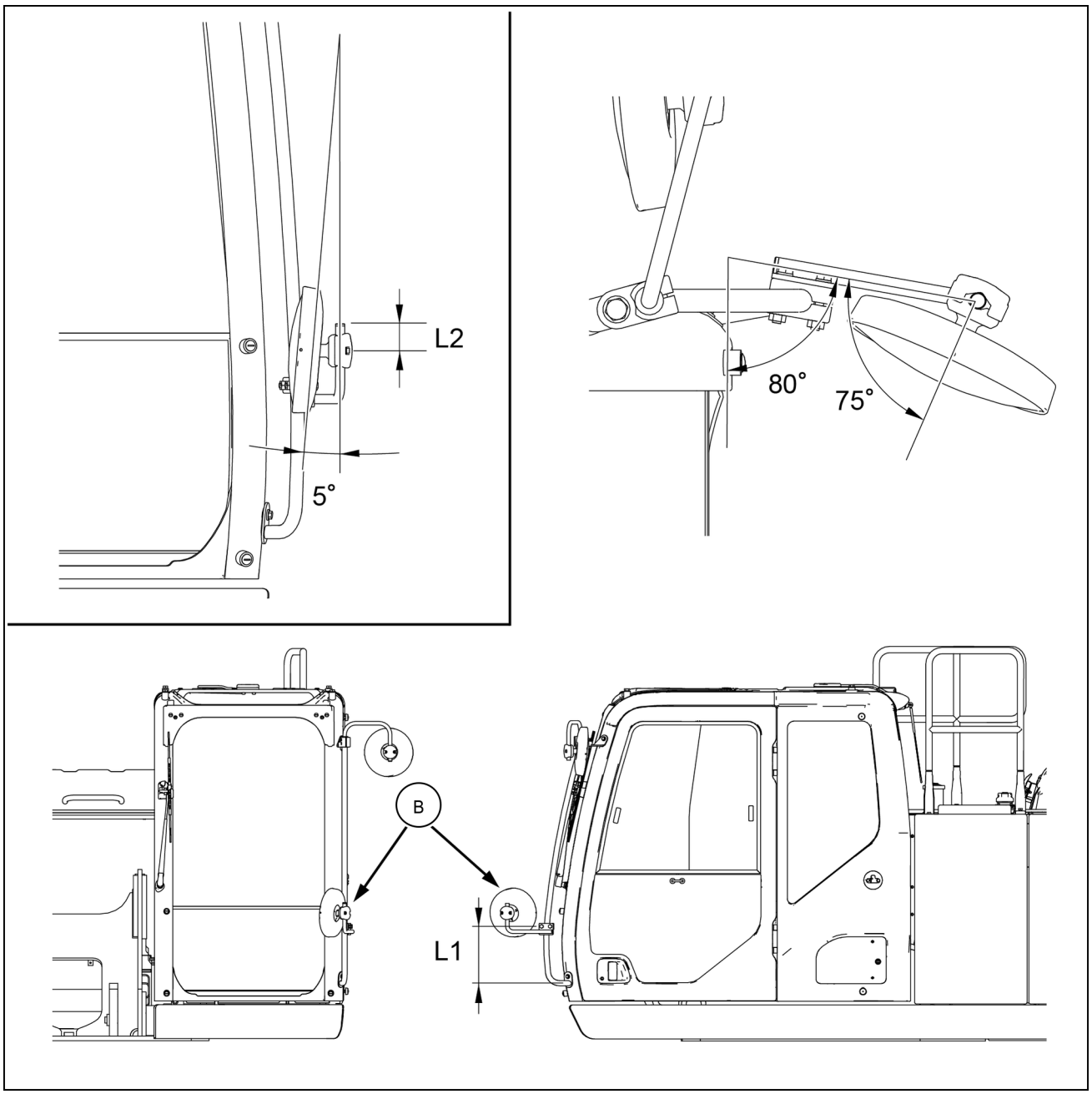
NOTICE: *After installing and positioning all the mirrors, the visibility around the machine shall be checked from the operator's seat. Set the seat into the desired position, and make sure to confirm all the reference views in the mirrors. If necessary, fine tune the positioning of the mirrors in order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

Cab lower mirror (B)

The mirror shall be installed as shown in the picture.

The dimension **(L1)** is **300 mm** (**11.8 in**).

The dimension **(L2)** is **55 mm** (**2.2 in**).

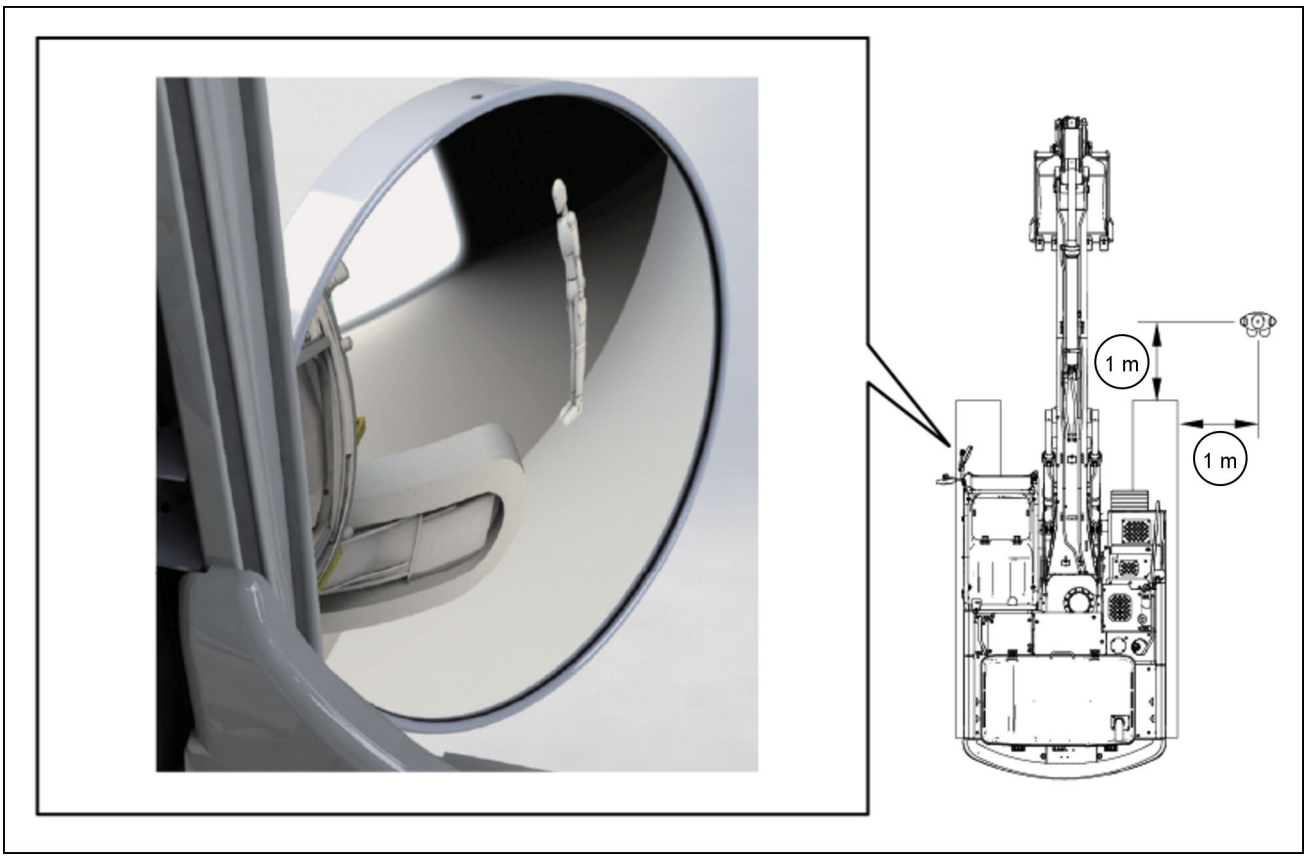


SMIL24CEX0288GA 5

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

The side on the front right of the machine shall be visible.

The area around a reference body positioned **1 m** (**39.4 in**) back from the edge of the right track and **1 m** (**39.4 in**) rightward the machine shall be visible.



SMIL24CEX0289FA 6

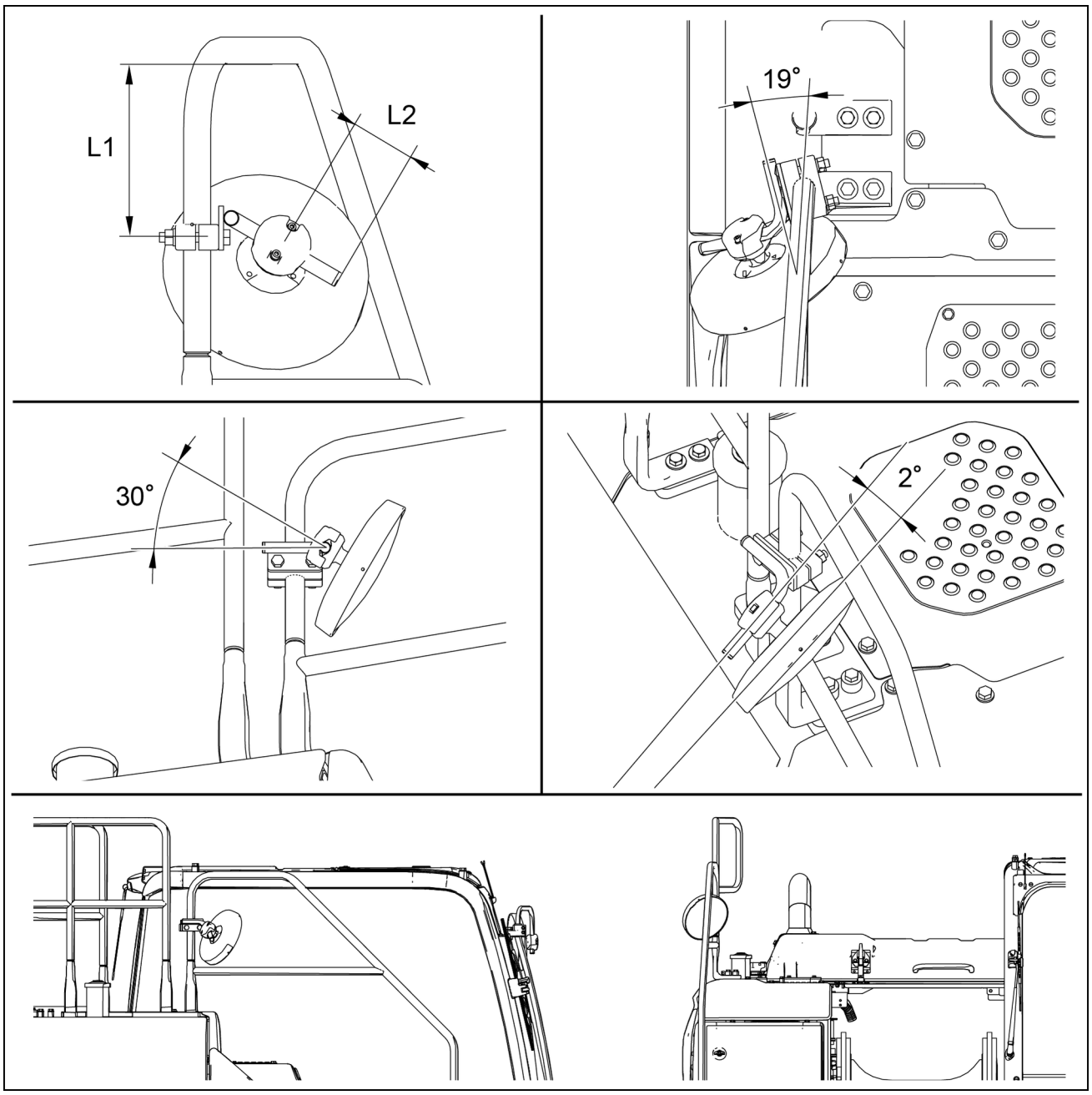
NOTICE: *After installing and positioning all the mirrors, the visibility around the machine shall be checked from the operator's seat. Set the seat into the desired position, and make sure to confirm all the reference views in the mirrors. If necessary, fine tune the positioning of the mirrors in order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

Right-front mirror (C)

The mirror shall be installed as shown in the picture.

The dimension **(L1)** is **233 mm** (**9.2 in**).

The dimension **(L2)** is **83 mm** (**3.3 in**).

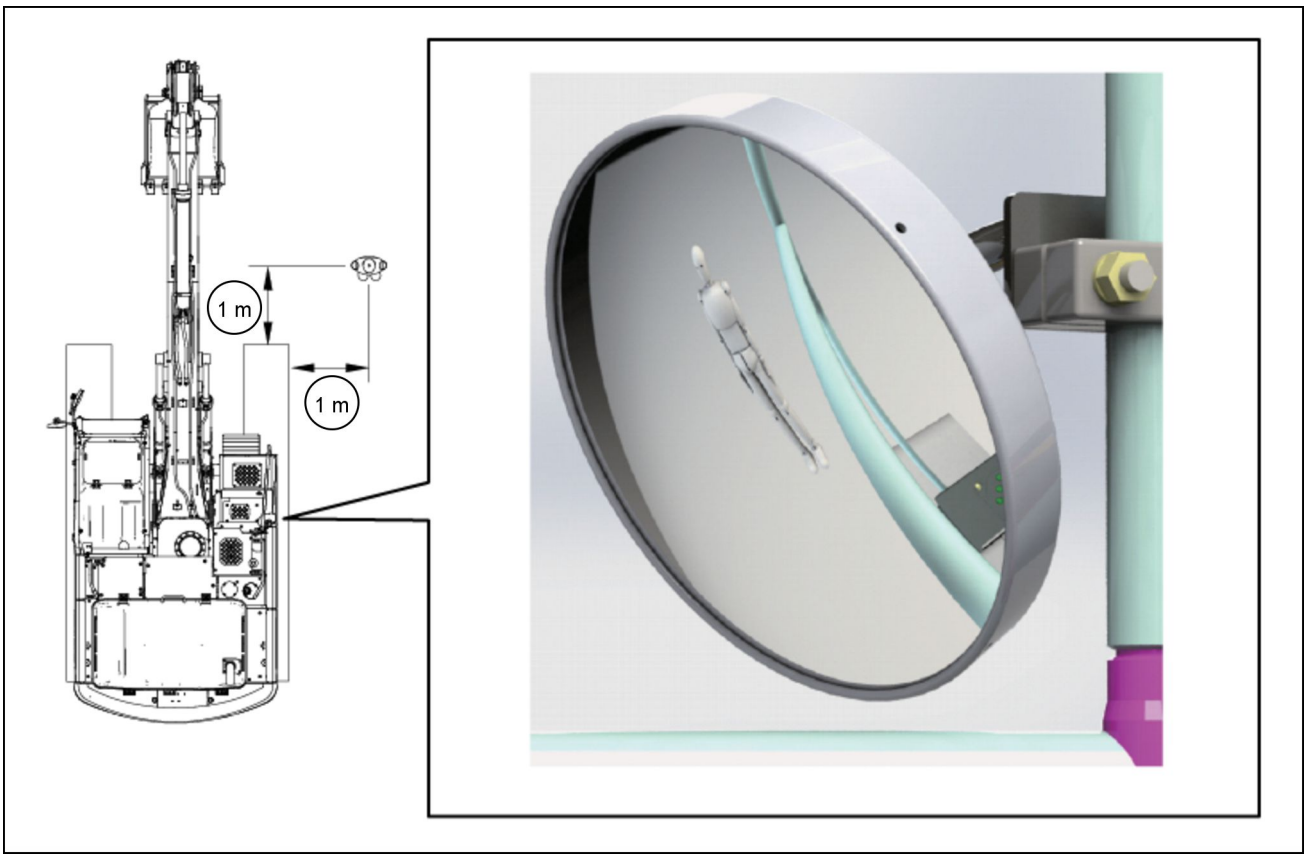


SMIL24CEX0286GA 7

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

The side on the front right of the machine shall be visible.

The area around a reference body positioned **1 m** (**39.4 in**) back from the edge of the right track and **1 m** (**39.4 in**) rightward the machine shall be visible.



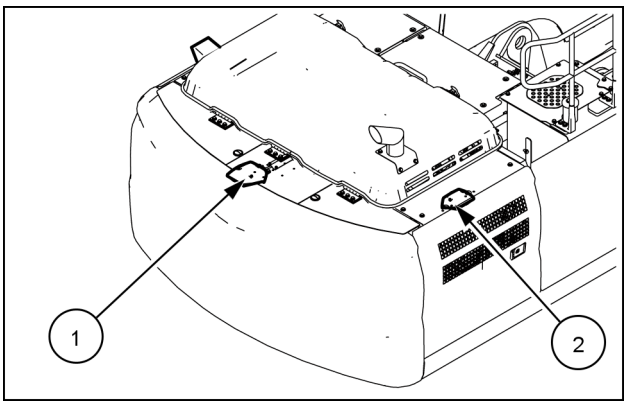
SMIL24CEX0287FA 8

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.*

Cameras

The external cameras, along with the external mirrors, ensure proper visibility around the machine during operation.

A rear camera **(1)** is installed on the counterweight. A right-side camera **(2)** is installed over the rear right-hand door.

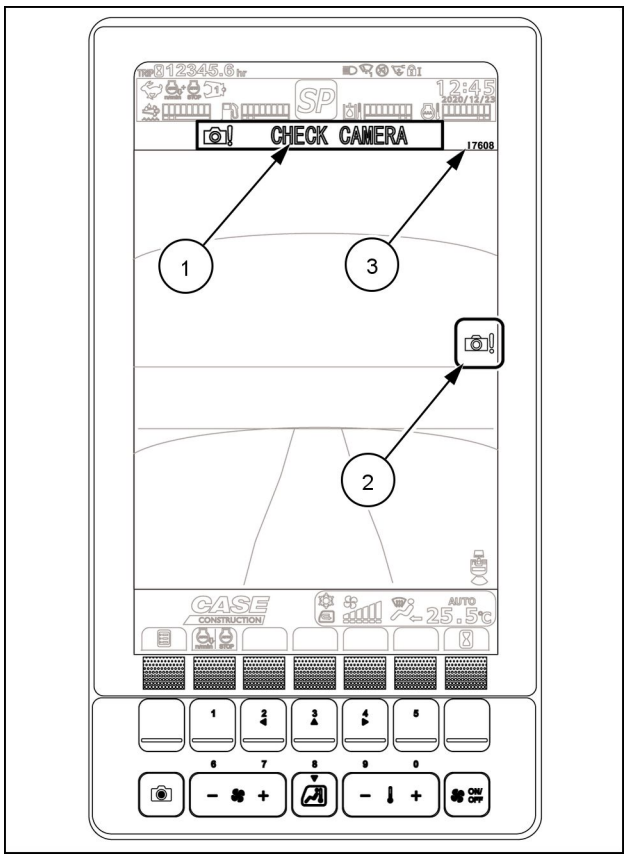


SMIL21CEX4358AA 1

NOTICE: *Never operate the machine while only looking at the images on the display. Make sure to check the area around the machine by the direct view or through the mirrors.*

NOTICE: *If any mud, raindrops, snow, etc. are adhered to the camera lens, the images on the display are deteriorated. Wipe away dirt with a wet and soft cloth, and then wipe it with a dry and soft cloth. Make sure not to scratch the cameras.*

If the cameras or the camera wirings have a failure, a warning buzzer sounds for about **5 s**, the CHECK CAMERA message **(1)** and a DTC **(3)** appear, and the camera failure icon **(2)** is displayed. Moreover, the image of the failed camera is replaced by a grey background.



SMIL21CEX1404BA 2

Camera guidelines

Guidelines can be set up on the camera views in order to support a primary check of the area around the machine.

(1) Guideline indicating a distance of about **1 m** (**39.37 in**) from the rear of the machine.

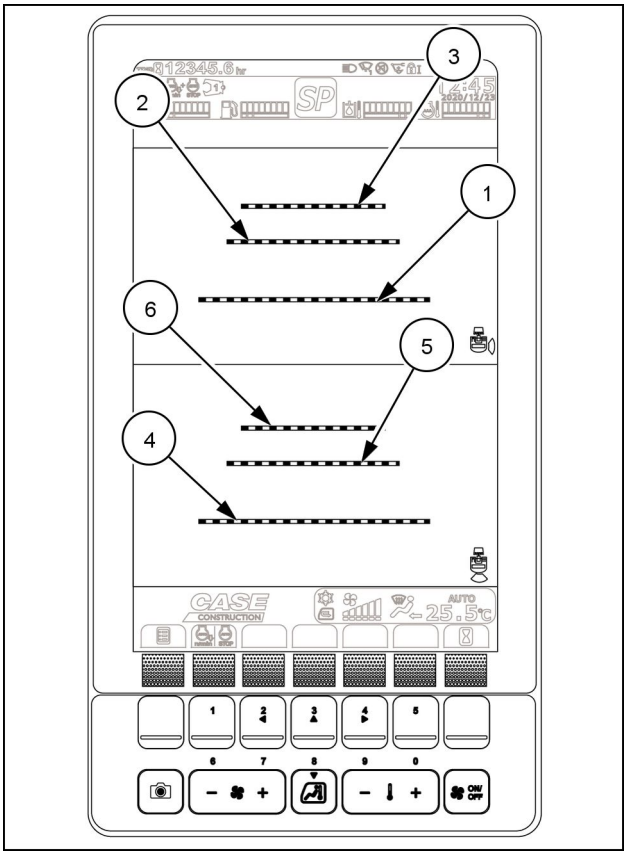
(2) Guideline indicating a distance of about **2 m** (**78.74 in**) from the rear of the machine.

(3) Guideline indicating a distance of about **3 m** (**118.11 in**) from the rear of the machine.

(4) Guideline indicating a distance of about **1 m** (**39.37 in**) from the right-side of the machine.

(5) Guideline indicating a distance of about **2 m** (**78.74 in**) from the right-side of the machine.

(6) Guideline indicating a distance of about **3 m** (**118.11 in**) from the right-side of the machine.

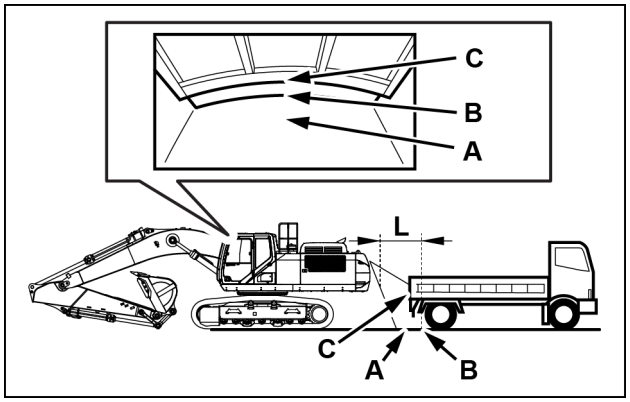


SMIL21CEX1405BA 3

Cautions for the rear view

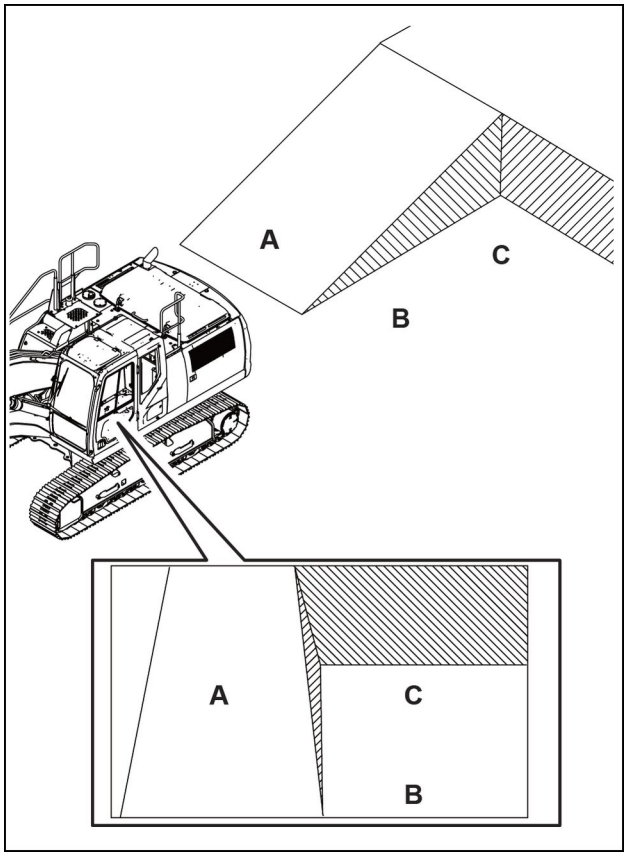
A distance guideline targets a planar object (e.g. the ground). Therefore, if a three-dimensional object with an overhang is approaching, in particular at low distance, the distance of the overhang is not displayed properly.

The picture provides an example. The machine gets rearward, and approaches an object at a distance **(L)** of about **1 m** (**3.3 ft**): on the display, the overhang **(C)** of the object appears aligned to the position **(B)** on the ground. Actually, the position **(B)** on the ground is beyond the overhang **(C)** of the object: the overhang **(C)** is rather aligned to the position **(A)** on the ground. Therefore, there is a risk of collision between the machine and the object if the machine is backed referring to the position **(B)**.



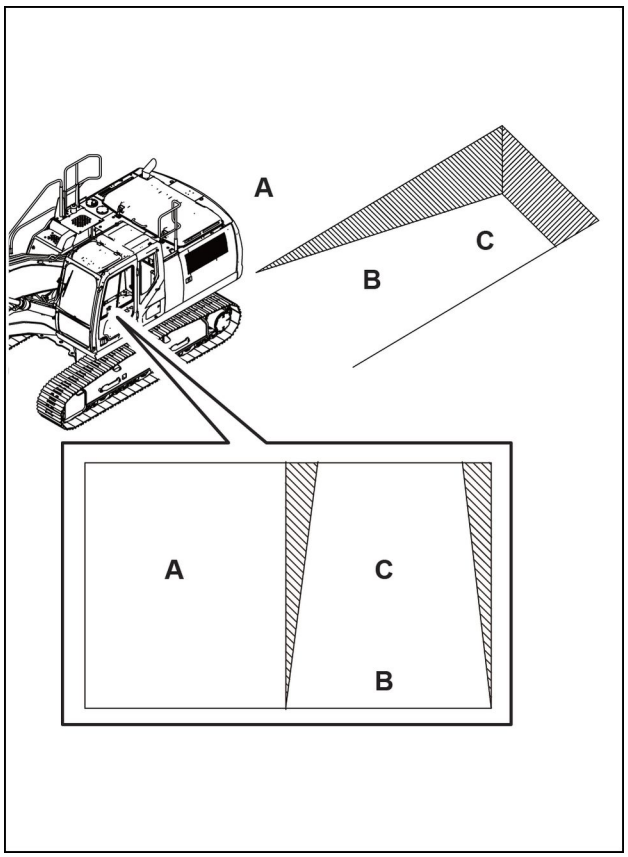
SMIL14CEX5591AA 4

Moreover, if the machine gets rearward and approaches an uphill road, an object in the position **(A)** appears aligned to the position **(C)** on the ground. Actually, the position **(C)** on the ground is beyond the position **(A)**: the position **(A)** is rather aligned to the position **(B)** on the ground. Therefore, there is a risk of collision between the machine and the object if the machine is backed referring to the position **(A)**.



SMIL14CEX5592BA 5

Similarly, if the machine gets rearward and approaches a downhill road, an object in the position **(A)** appears aligned to the position **(C)** on the ground. Actually, the position **(C)** on the ground is beyond the position **(A)**: the position **(A)** is rather aligned to the position **(B)** on the ground. Therefore, there is a risk of collision between the machine and the object if the machine is backed referring to the position **(A)**.

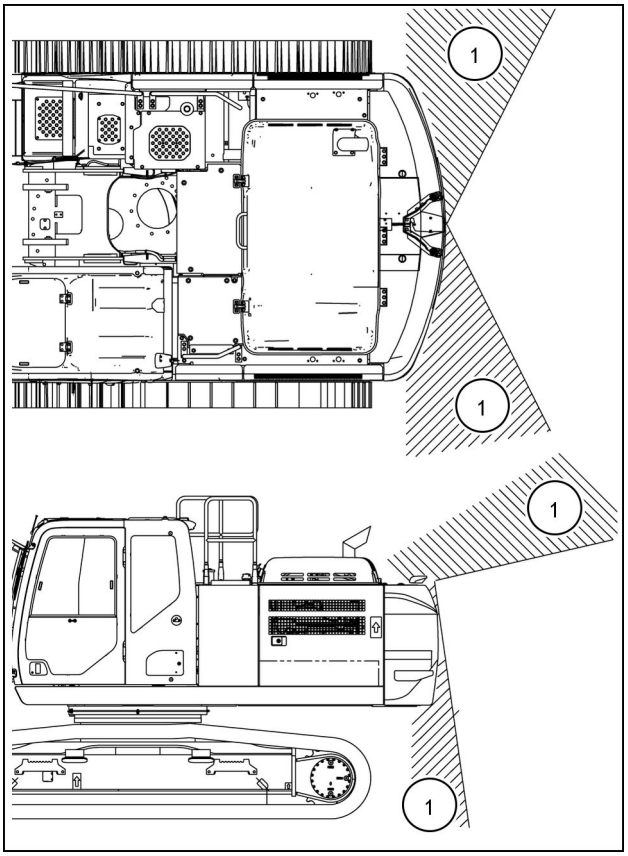


SMIL14CEX5593BA 6

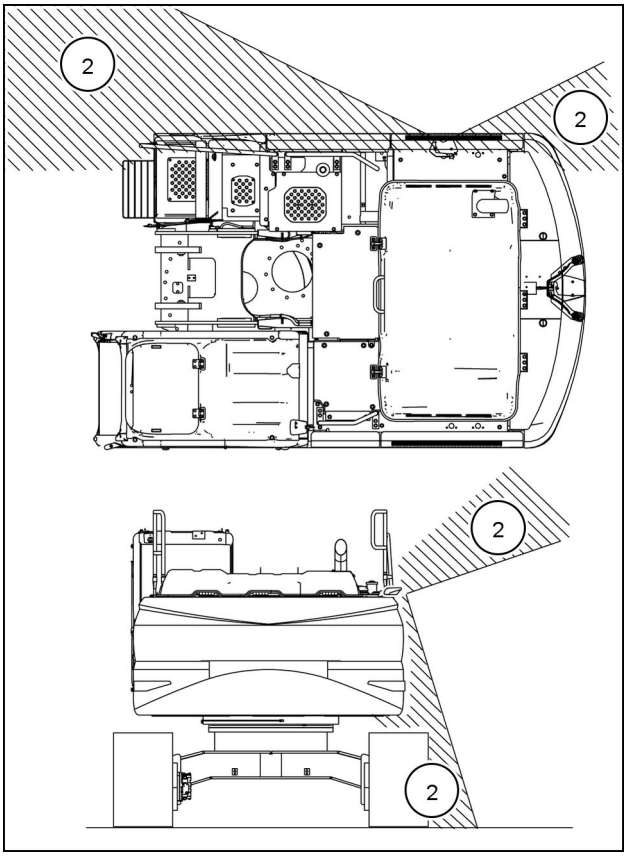
The camera system has a range where no image is displayed (blind spots):

(1) Range where no image from the rear camera is displayed.

(2) Range where no image from the right-side camera is displayed.



SMIL21CEX4360BA 7



SMIL21CEX4361BA 8

Side doors

⚠ WARNING

Moving parts!
Make sure all entry and mechanical access doors are properly closed before operating the machine.
Failure to comply could result in death or serious injury.

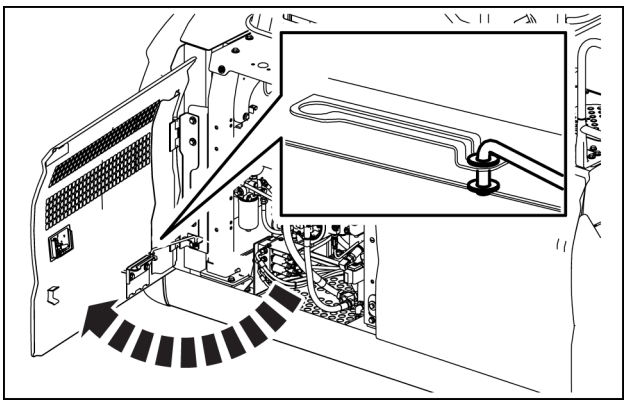
W0238A

Open the side doors until they are fixed by the stays. Close the side doors unlocking the stays. Make sure to close the doors firmly. Use the starter key to lock the doors.

Rear right-hand door

The rear right-hand door allows to access the compartment including the engine oil filter, the fuel filters, the hydraulic pilot filter, the hydraulic accumulator and the hydraulic pump.

NOTE: *Never leave tools inside the compartment.*

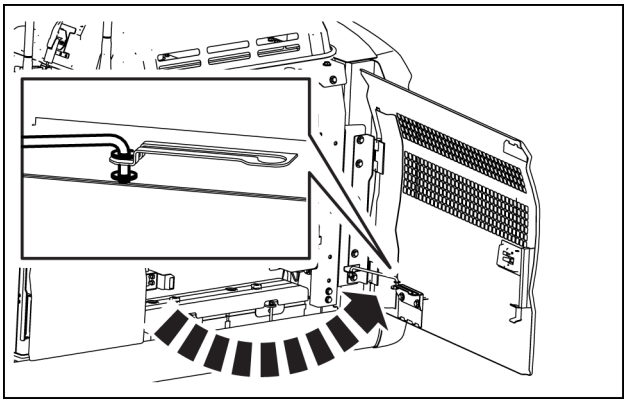


SMIL21CEX4362AA 1

Rear left-hand door

The rear left-hand door allows to access the compartment including the radiators, the oil cooler, the air conditioning dryer, the batteries, the battery disconnect switch, the reserve tank for engine coolant

NOTE: *Never leave tools inside the compartment.*

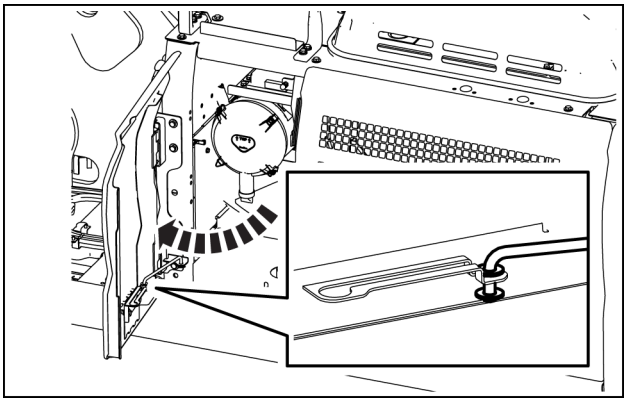


SMIL21CEX4363AA 2

Front left-hand door

The front left-hand door allows to access the compartment including the engine air cleaner and windshield washer tank.

NOTE: *Never leave tools inside the compartment.*



SMIL21CEX4364AA 3

Battery disconnect switch

⚠ WARNING

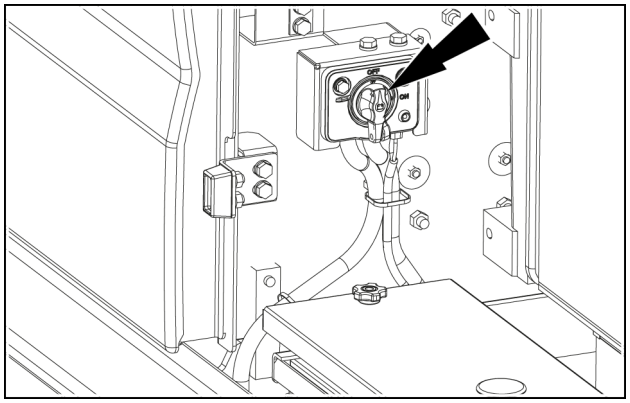
Electrical shock hazard!
Before you work on any part of the electrical system, disconnect the battery ground cable or turn the battery disconnect switch off (if equipped).
Complete all electrical work before you reconnect the cable.
Failure to comply could result in death or serious injury.

W1393A

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

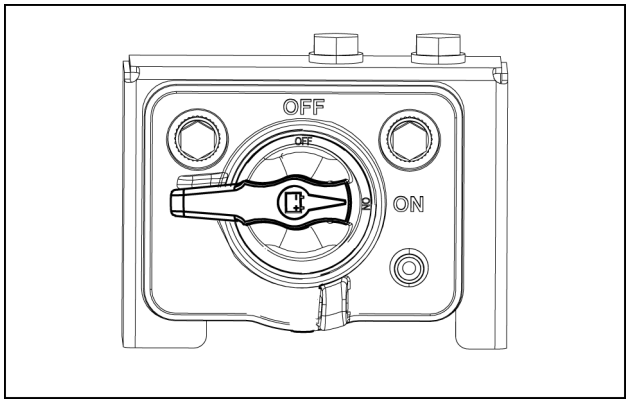
The battery disconnect switch allows to cut off any power supply in the electrical system of the machine.

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



SMIL21CEX3161AA 1

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



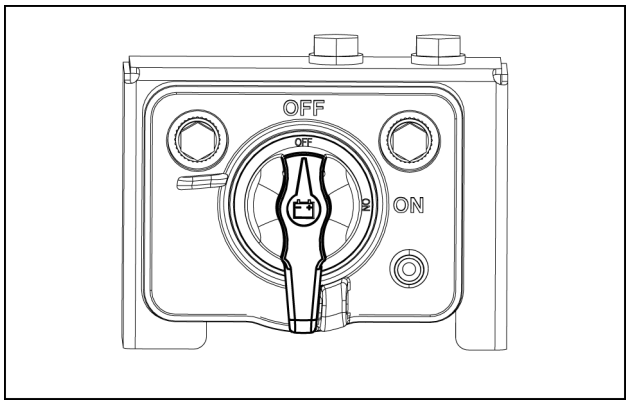
SMIL21CEX3163AA 2

The battery disconnect switch should be turned to OFF position only when the actions below must be done:

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

Before turning the battery disconnect switch to OFF position, make sure to park the machine and to stop the engine.

NOTICE: *If the battery disconnect switch is turned to OFF position when the engine is running, the machine electrical system, the machine control system and the engine control system will be severely damaged.*



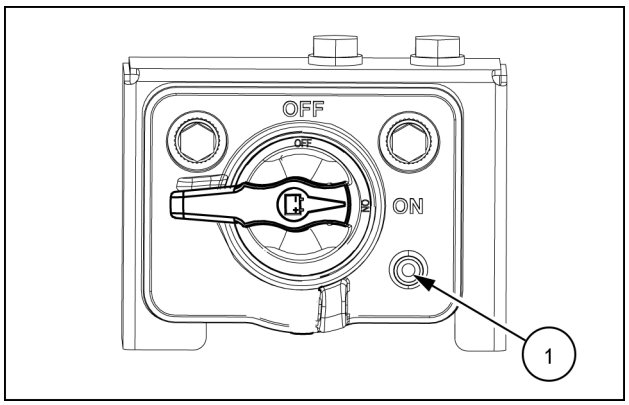
SMIL21CEX3162AA 3

The LED indicator **(1)** close to the battery disconnect switch is lit up in yellow as the main control systems are operating.

After the engine stop, the LED indicator will be active for some minutes. If the battery disconnect switch has to be turned to OFF position, wait the LED indicator **(1)** to turn off.

NOTICE: *Never turn the battery disconnect switch to OFF position when the LED indicator* ***(1)*** *is lit up in yellow. The machine control system and the engine control system will be severely damaged.*

NOTICE: *The ATS 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 ATS.*



SMIL21CEX3163AA 4

Engine hood

⚠ WARNING

Rotating parts!
Shut off the engine before opening the engine hood.
Failure to comply could result in death or serious injury.

W1059A

⚠ WARNING

Falling object hazard!
Risk of injury from FALLING ENGINE HOOD. Latch the hood in the fully open position prior to working within the engine compartment.
Failure to comply could result in death or serious injury.

W1090B

⚠ WARNING

Unexpected machine movement!
Before you operate the machine, check that the engine hood is securely closed.
Failure to comply could result in death or serious injury.

W1486A

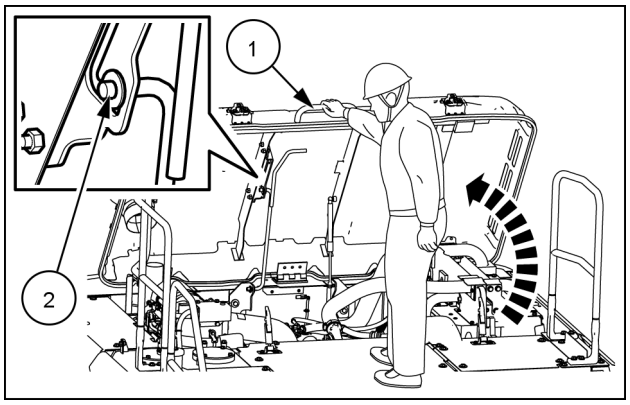
Opening

Unlock the latches with the starter key.

Disengage the latches, grab the hood handle **(1)**, and raise the engine hood.

Follow the hood movement until the stay **(2)** will reach the end of the guide. The engine hood is thus fixed in the open position.

NOTICE: *Do not open the engine hood during strong wind. The wind pressure on the hood surface will generate an excessive pushing force. Failing to comply may cause severe damage to the machine components, and serious injury to the operator.*

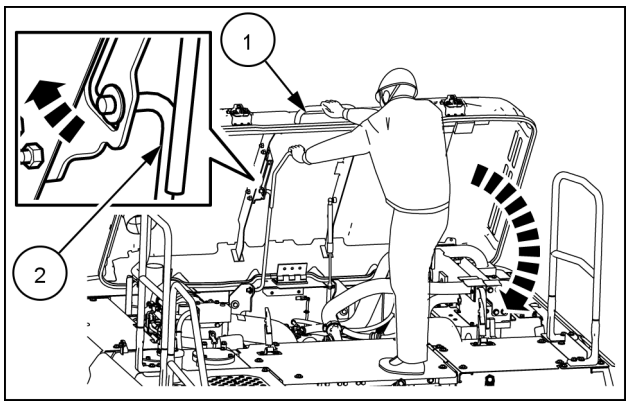


SMIL21CEX4365AA 1

Closing

As shown in the picture, grab the hood handle **(1)** with the right hand, and the stay handle **(2)** with the left hand. Raise a little the engine hood, and lead the stay into the guide so to unlock it. Close the engine hood.

Engage the latches firmly, and lock them with the starter key.



SMIL21CEX4366AA 2

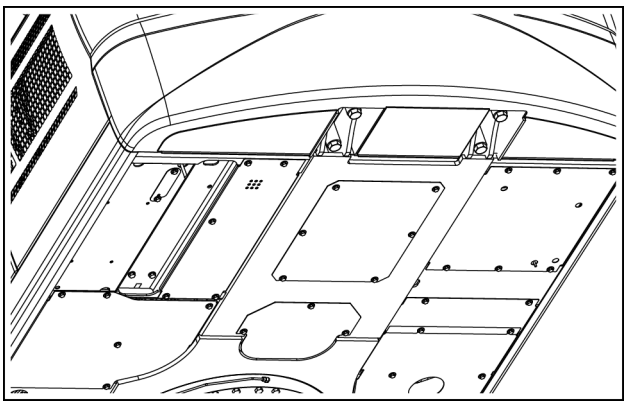
Lower panels

⚠ WARNING

Moving parts!
Make sure the lower panels are properly closed before driving the machine.
Failure to comply could result in death or serious injury.

W0910A

The lower panels are located on the bottom side of the upper frame.



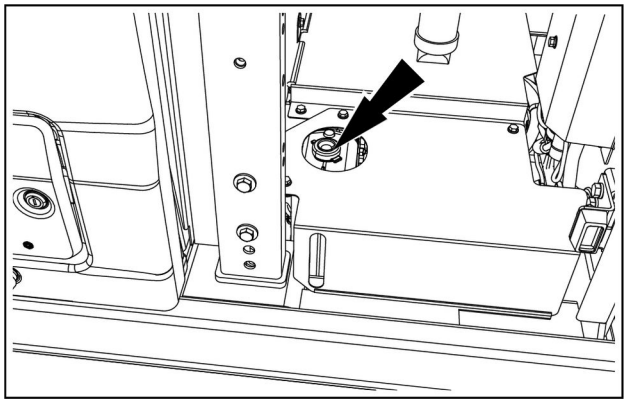
SMIL21CEX4981AA 1

The lower panels give access to the following maintenance points:

- Engine oil drain plug.
- Hydraulic tank drain valve.
- Fuel tank drain valve.
- Swing reduction unit oil drain plug.
- Engine coolant drain valve.
- **DEF/ADBLUE®** tank drain plug.
- Turntable bearing drain plug (located under the lower frame).

Windshield washer reservoir

The windshield washer reservoir is located inside the front left-hand compartment behind the cab.



PTIL24CEX0091AB 1

Make sure to check the reservoir level each day in order not to let the windshield washing fluid run out completely.

NOTICE: *Never operate the windshield washer when the reservoir is empty. This will cause damage to the electric pump*

When adding windshield washer fluid, ensure that no contaminants get into the reservoir. Contaminants could cause clogging.

NOTICE: *When the windshield washer reservoir cannot be filled from the ground, a stepladder compliant to current standards must be used to prevent injury.*

NOTE: *Use a windshield washer fluid suitable for the outside air temperature. In cold weather, add anti-freeze to the windshield washing fluid.*

Towing holes

⚠ WARNING

Misuse hazard!
Towing is a delicate maneuver that is always carried out at the risk of the user. The manufacturer's warranty does not apply to incidents or accidents that occur during towing. Where possible, carry out the repairs at the site.
Failure to comply could result in death or serious injury.

W0286A

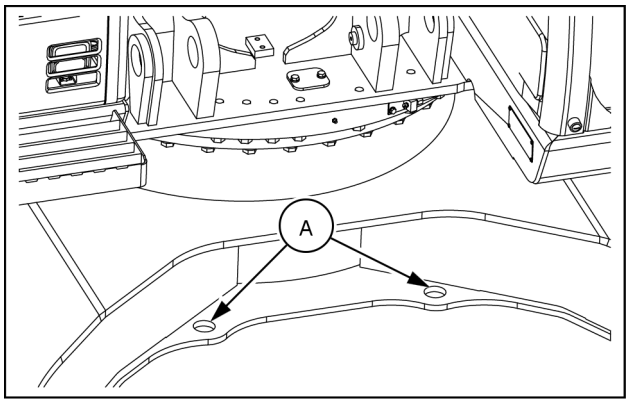
The towing holes are located at the front and rear of the undercarriage.

The towing holes are used to tow heavy objects, up to **10 t** (**22046.23 lb**).

Make sure that the slings, chains and accessories are in perfect condition and can bear the load to be moved.

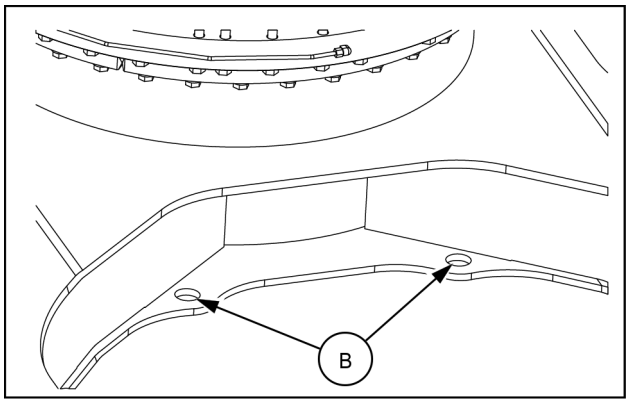
NOTICE: *Towing must always be done in alignment with the undercarriage.*

Front towing hole **(A)**



PTIL23CEX1044AB 1

Rear towing hole **(B)**



PTIL23CEX1045AB 2

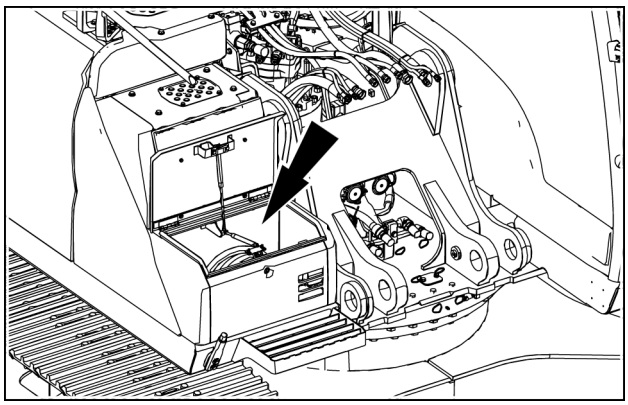
Front storage box

⚠ WARNING

Moving parts!
Make sure the storage box cover is closed properly before driving the machine.
Failure to comply could result in death or serious injury.

W0288A

The storage box is located in the right front of the upperstructure. It is intended for storage of emergency tools and of small spare parts. The storage box also gives access to the fuel tank filler pump (if equipped) and to the right-hand working light.



SMIL21CEX3148AA 1

Unlock the pushrod of the box cover with the starter key, and press the pushrod to open the box.

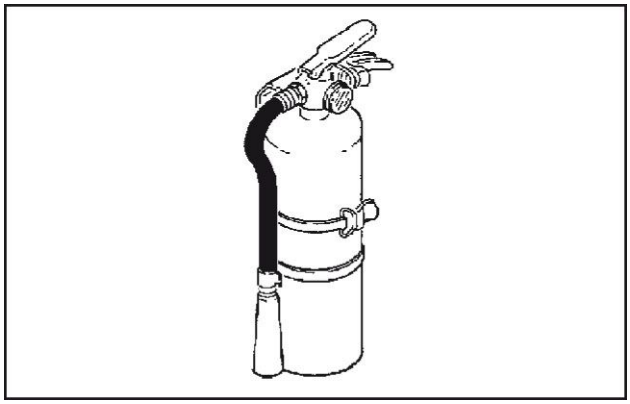
NOTE: *The box cover is fitted with a gas strut. Open by hand to avoid damage to the machine.*

Pull down the cover to close the box, and lock the pushrod of the box cover with the starter key.

NOTICE: *Make sure to close and lock the box before starting machine operation. Leaving the box open can cause serious damages to the machine, and may cause serious injuries to the bystanders.*

Fire extinguisher

It is strongly recommended to have a fire extinguisher available and to keep it inside the front storage box.



CS98M573TBP1 1

Service specifications:

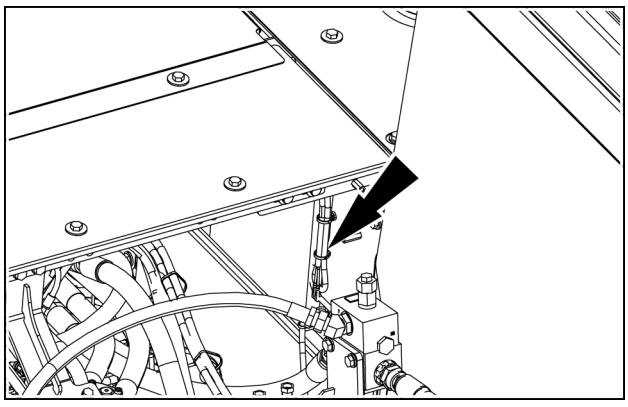
Every month: examine the fire extinguisher and make sure it is not damaged.

Every six months: have an approved specialist empty and refill the powder in the fire extinguisher.

Every year: have an approved specialist examine the fire extinguisher.

Rotary light cable

This cable is located behind the right-hand rear cab pillar. It can be used to connect a **24 V** rotary light (not supplied).



SMIL22CEX1937AA 1

Fuel tank

⚠ WARNING

Fire hazard!
When handling diesel fuel, observe the following precautions:
1. Do not smoke.
2. Never fill the tank when the engine is running.
3. Wipe up spilled fuel immediately.
Failure to comply could result in death or serious injury.

W0099A

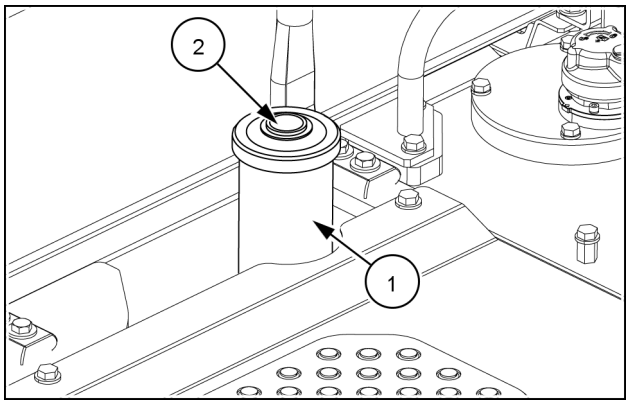
Fill the fuel tank with Ultra-Low Sulfur diesel fuel only. Refer to Chapter 6 for the detailed specifications and prescriptions about the fuel to be used.

NOTICE: *Never put any moisture elimination product (water draining agent) in the fuel tank. Doing so may damage the fuel system, and thus the engine.*

NOTICE: *If the machine is operated in cold climate, fill the fuel tank at the end of each working day to prevent the formation of condensation.*

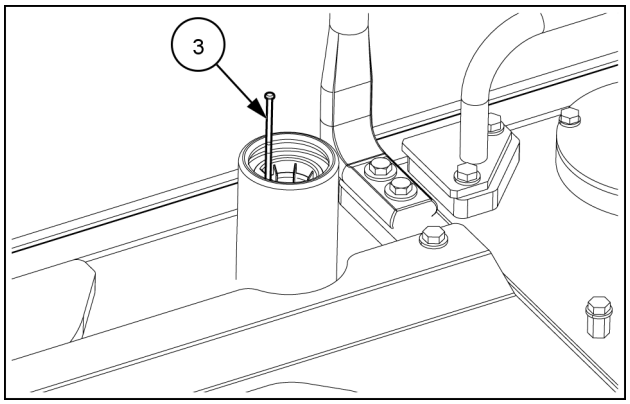
1. Stop the engine, and remove the starter key.
2. Get over the fuel tank. Clean the area around the fuel filler neck **(1)**.
3. Open the protective plate over the cap **(2)** of the fuel filler neck, and unlock the cap with the starter key.
4. Turn the cap **(2)** counterclockwise and open the filler neck.

NOTICE: *Never remove the strainer inside the fuel filler neck. Doing so may damage the fuel system, and thus the engine.*



SMIL21CEX3219AA 1

5. Refill until the needle indicator **(3)** gets up from the filler neck.
6. Put the cap **(2)** on the filler neck. Turn the cap clockwise until it engages the stopper on the filler neck.
7. Lock the cap **(2)** with the starter key.



SMIL21CEX3234AA 2

Fuel tank filler pump

⚠ WARNING

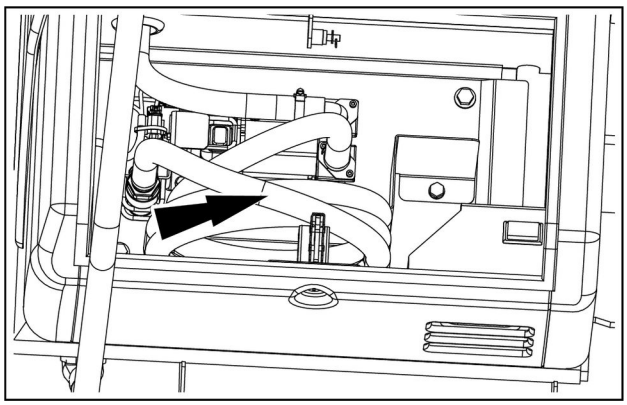
Fire hazard!
When handling diesel fuel, observe the following precautions:
1. Do not smoke.
2. Never fill the tank when the engine is running.
3. Wipe up spilled fuel immediately.
Failure to comply could result in death or serious injury.

W0099A

NOTICE: *Do not put a moisture elimination product (water draining agent) in the fuel tank. It may damage the engine.*

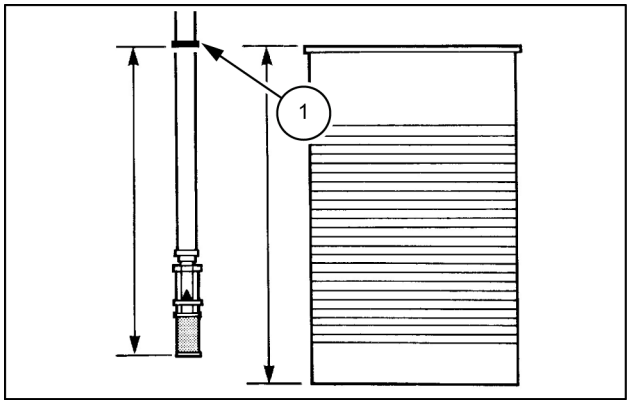
NOTICE: *The fuel tank filler pump is located inside the storage box on the right front of the upperstructure. Use only for suitable fuel.*

1. Park the machine on flat, horizontal ground, stop the engine and turn the starter key to ON position.
2. Take the inlet pipe out of the front storage box.



PTIL23CEX1041AB 1

3. Measure the height of the drum and place the identification clamp **(1)** of the suction tube at a length slightly less than that of the drum height.
4. Make sure that the end strainer of the suction tube is correctly attached and then insert the suction tube in the drum.



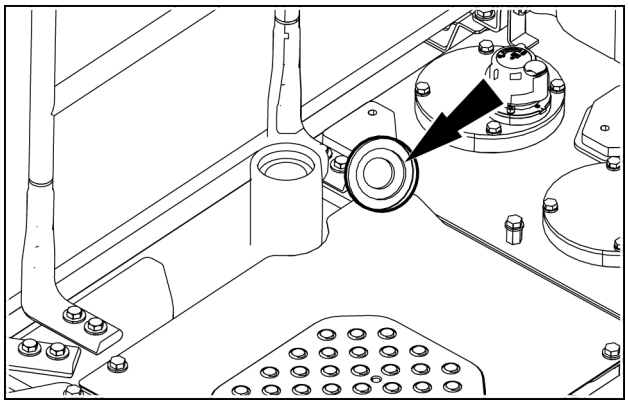
SMIL14CEX2515AB 2

5. Remove the fuel tank filler cap.

⚠ WARNING

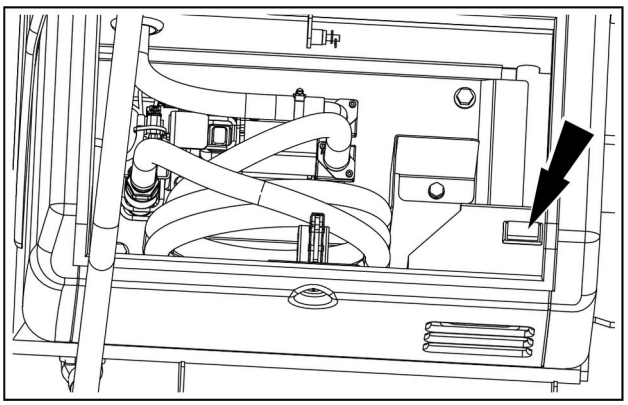
Burn hazard!
If the filler cap remains on during the refueling process, removing the cap after refueling could cause an accident. To reduce this risk, ALWAYS remove the fuel tank filler cap before refueling with the fuel tank filling pump.
Failure to comply could result in death or serious injury.

W0247A



SMIL21CEX3150AA 3

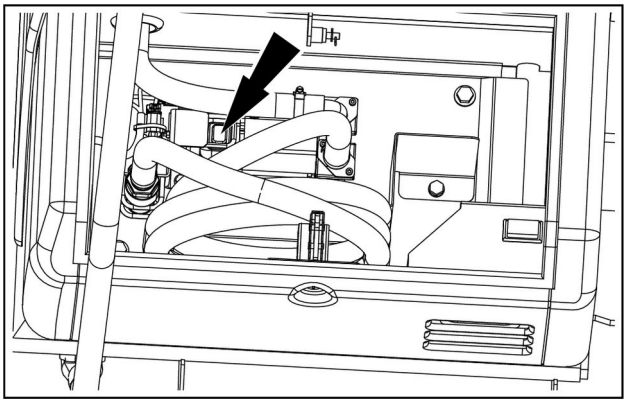
6. Select the filling method using the selector switch located on the right side of the filling pump:
   - Auto mode: the pump stops filling automatically and the audible alarm sounds when the fuel tank is full.
   - Manual mode: monitor the filling from the fuel tank gauge. Stop when the fuel reaches the maximum level.



PTIL23CEX1041AB 4

7. Turn the main switch of the pump to ON position. Filling begins.
8. When the fuel tank is full, turn the main switch of the pump to OFF position. In Auto mode, the audible alarm device will cease to function.

   NOTE: *It is possible to stop filling at any time by turning the main switch of the pump to OFF position.*
9. Run the pump for a few moments to empty the pipe outside the drum. Clean and replace the inlet pipe in the front storage box.
10. Refit the fuel tank filler cap.
11. Turn the starter key to OFF position.



PTIL23CEX1041AB 5

NOTE: *The pump is equipped with a **10 A** fuse.*

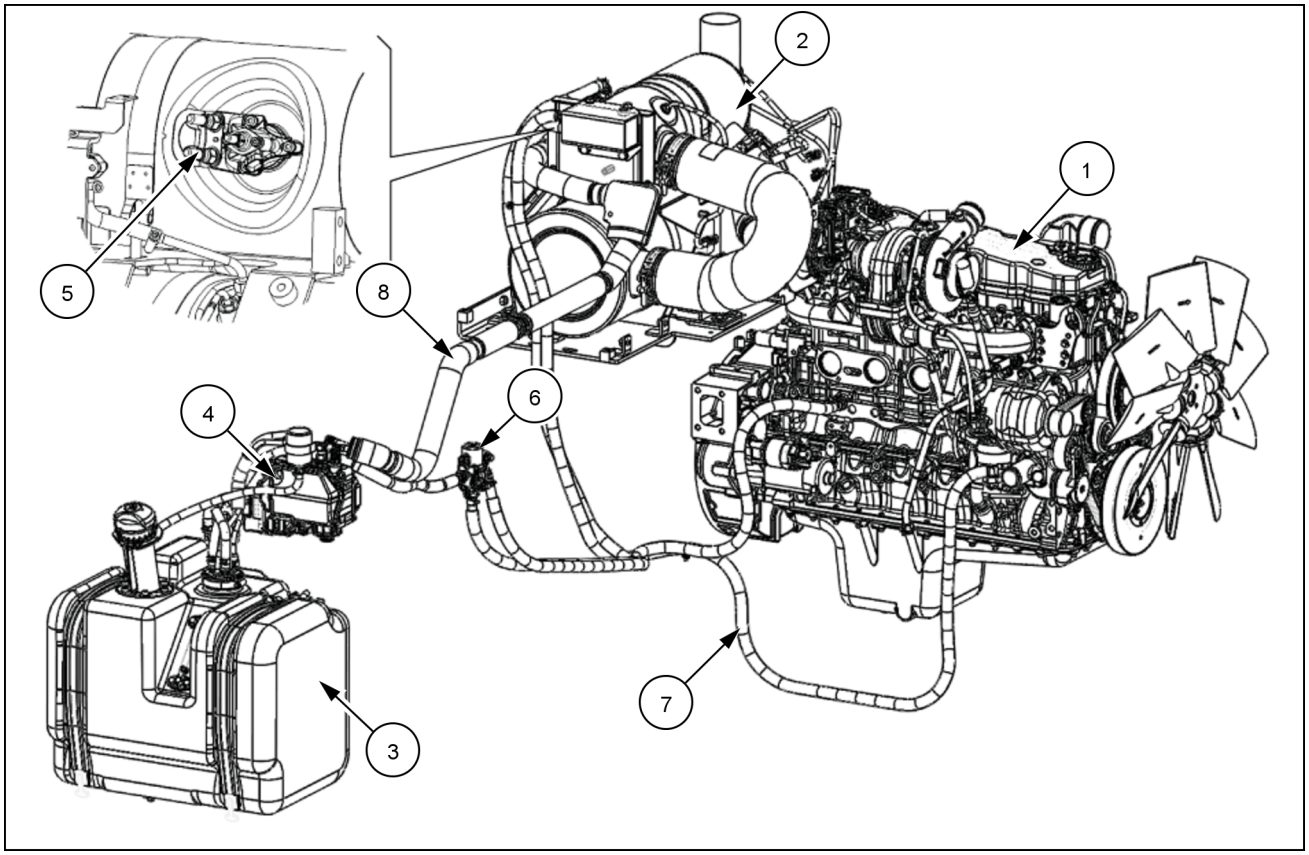
After Treatment System

The after treatment system doses a NOx (nitrogen oxides) reduction agent, **DEF/ADBLUE®**, into the exhaust gas by converting NOx into Nitrogen and water in order to be compliant with emissions regulation.

ATS: After Treatment System

DEF: Diesel Exhaust Fluid

AdBlue®: Registered trademark of the Germany Automobile Manufacturers' Association



SMIL21CEX5031FB 1

1. Engine
2. ATS catalyst
3. **DEF/ADBLUE®** tank
4. Supply module
5. Dosing module
6. 3way valve
7. Coolant lines
8. **DEF/ADBLUE®** and coolant lines

NOTE: *Monitor the level and add* ***DEF/ADBLUE®*** *in advance, before the* ***DEF/ADBLUE®*** *level becomes lower than* ***10%****.*

NOTICE: *Do not kick or hit the muffler. The oxidation catalyst in the muffler may get damaged.*

NOTICE: *Do not change the length or orientation of the exhaust pipe, muffler, or air cleaner line. The function of the ATS may be negatively affected. Do not remove or modify components of equipment related to the exhaust emission control system.*

NOTICE: *Do not touch the water released from the muffler. This water is slightly acidic due to the action of the oxidation catalyst built into the muffler. If the water from the muffler has come in contact with your skin, etc., rinse the affected area with ample water.*

Refilling DEF/AdBlue®

The ATS requires the usage of **DEF/AdBlue®** fluid. The fluid is stored into a specific tank installed on the machine.

Refill **DEF/AdBlue®** only after the related gauge on the display decreases.

NOTICE: *If the tank is always filled to the FULL level, the **DEF/AdBlue®** level sensor may be diagnosed as malfunctioning.*

NOTICE: *The **DEF/AdBlue®** actual consumption is highly dependent on engine loads, engine speed, ambient conditions.*

The recommended operating practice is to check **DEF/AdBlue®** level every time the fuel tank is being refilled, and to refill **DEF/AdBlue®** when four segments of the **DEF/AdBlue®** level gauge are lit.

Use only **DEF/AdBlue®** that complies with **ISO 22241-1**. **DEF/AdBlue®** is available from CASE CONSTRUCTION dealers, authorized **DEF/AdBlue®** dealers or truck stations.

NOTICE: *__DEF/AdBlue®__ is a transparent liquid with no color. Never use __DEF/AdBlue®__ featuring any color as this indicates poor quality of the fluid.*

NOTICE: *Do not put any fluid other than __DEF/AdBlue®__ in the __DEF/AdBlue®__ tank. If anything other than __DEF/AdBlue®__ is put in the tank, the quality of __DEF/AdBlue®__ will drop and lead to the "CHECK AdBlue QUALITY" message. Never put diesel fuel or gasoline in the __DEF/AdBlue®__ tank. Fire may occur, and the ATS will be damaged.*

It is recommended to use a **DEF/AdBlue®** filling equipment having a fill nozzle/pump with the proper length and diameter, triggered by the magnet in the tank filler neck and with overfill flow cut out. This will ensure that:

- The screen in the filler neck will not be damaged.
- Impurities are not entering the **DEF/AdBlue®** tank. The standardized **DEF/AdBlue®** nozzle matches the filler neck diameter.
- The **DEF/AdBlue®** tank is not overfilled, as the **DEF/AdBlue®** pump will stop when the **DEF/AdBlue®** tank is full.

NOTICE: *Refilling with a funnel is not recommended as this may lead to damage of the screen in the filler neck.*

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

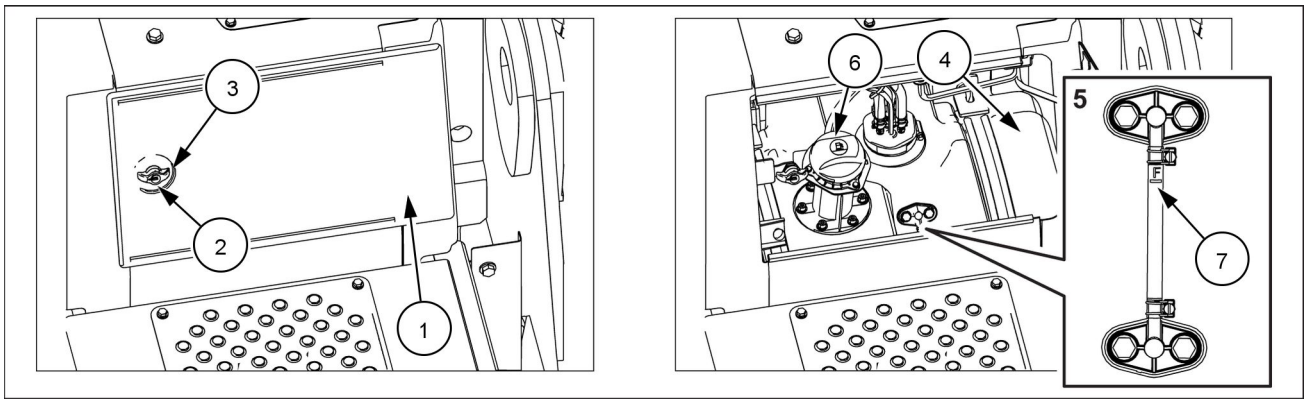
1. Stop the engine and remove the starter key. Wait **5 min** for ATS to completely suck **DEF/AdBlue®** back into the tank.
2. Turn the key cylinder **(2)** with the starter key to unlock the **DEF/AdBlue®** tank cover **(1)**. Turn the handle **(3)** and draw open the cover **(1)** frontward.
3. Wipe 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 ATS.*

   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.



SMIL21CEX4340EA 2

1. **DEF/AdBlue®** tank cover
2. Key cylinder
3. Handle
4. **DEF/AdBlue®** tank
5. **DEF/AdBlue®** level gauge
6. **DEF/AdBlue®** cap
7. **DEF/AdBlue®** level upper limit

NOTE: *The level gauge on the* ***DEF/AdBlue®*** *tank is showing just whether the tank is already full (indicated as the mark with "F") or not. As for the remaining DEF/ADBLUE® amount to the tank, refer to the gauge level shown on the monitor.*

ATS (operation explanation)

If a problem occurs in the ATS, is displayed on the monitor a text message according to the problem type, prompting the operator to take necessary actions.

- "REFILL AdBlue" message: The **DEF/ADBLUE®** level is lower than the required level.
- "CHECK AdBlue QUALITY" message: There is a **DEF/ADBLUE®** quality abnormality.
- "CHECK ATS" message: The ATS is not working.

Operations will be restricted until necessary actions are taken. If no measures are taken, operations will be even more restricted and the engine can only run at idle. Refer to the explanation below and take necessary actions immediately.

"REFILL AdBlue" Message (DEF/ADBLUE® level is lower than required level)

When the **DEF/ADBLUE®** level becomes lower than **10%**, a warning buzzer sounds (once for **5 s**) and the machine enters the state shown in **(B)**.

The orange text message “REFILL AdBlue” is displayed and the **DEF/ADBLUE®** level gauge turns orange. This message prompts the operator to add **DEF/ADBLUE®**. Refer to the previous page.

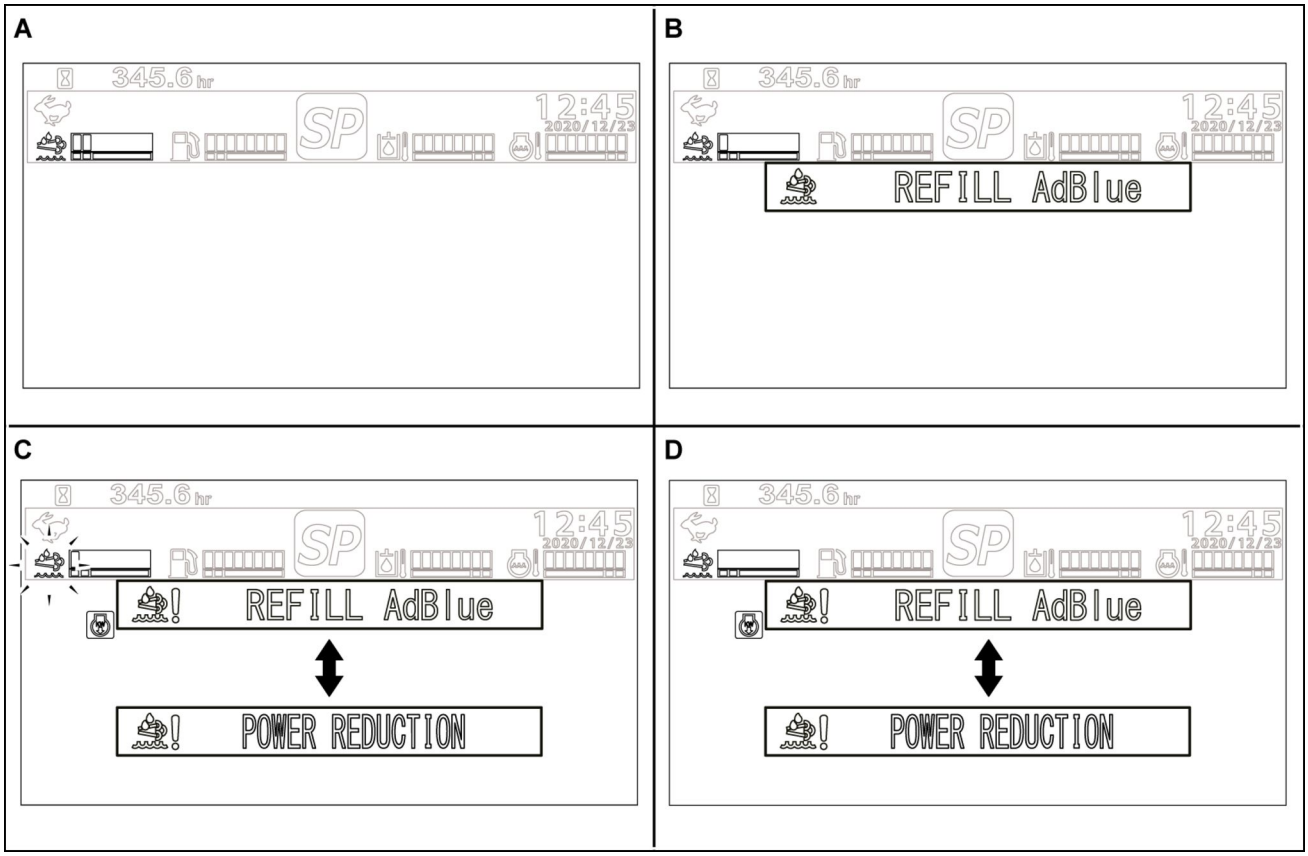
Once the system recognizes that **DEF/ADBLUE®** is added sufficiently (**10%** or more), the orange text message “REFILL AdBlue” turns off and the **DEF/ADBLUE®** level gauge turns white.

If the **DEF/ADBLUE®** level becomes lower than **5%**, a warning buzzer sounds (5 times for **1 s** intermittently) and the machine enters the state shown in **(C)**.

The inducement icon is displayed and the orange text messages “!REFILL AdBlue” and “!POWER REDUCTION” are displayed alternately. The **DEF/ADBLUE®** level gauge starts flashing. In this condition, operations are restricted. The engine torque is reduced to **35%** and the engine speed is reduced to **60%** within **40 min**.

When the **DEF/ADBLUE®** level reaches **0%**, a warning buzzer sounds (continuously for **1 s** intermittently) and the machine enters the state shown in **(D)**.

The red text messages “!REFILL AdBlue” and “!POWER REDUCTION” are displayed alternately. The induction icon and the **DEF/ADBLUE®** level gauge turn red. In this condition, operations are even more restricted. The engine torque is reduced to **50%** within **30 min** and the engine can only run at idle.



SMIL21CEX5497FA 3

A. Normal condition
B. Warning to the operator
C. Moderate Inducement
D. Severe Inducement

		A	B	C	D
DEF/ADBLUE® level		**10%** or more	Less than **10%**	Less than **5%**	**0%**
Engine torque		**100%**	**100%**	**35%**	**50%**
Engine speed		**100%**	**100%**	**60%**	Idle
Level gauge	Segments	2 or higher	1	1 (flashing)	0
	Color	White	Orange	Orange (flashing)	Red
Inducement icon		None	None	Displayed (orange)	Displayed (red)
Warning buzzer sound		None	Once for **5 s**	5 times for **1 s** intermittently	Continuously for **1 s** intermittently
Text message		None	(orange)	(orange)	(red)

"CHECK AdBlue QUALITY" Message (DEF/ADBLUE® does not satisfy quality requirements)

When the ATS detects a quality abnormality of **DEF/ADBLUE®**, a warning buzzer sounds (once for **5 s**) and the machine enters the state shown in **(B)**.

The orange text message “CHECK AdBlue QUALITY” is displayed. This message prompts the operator to take necessary measures.

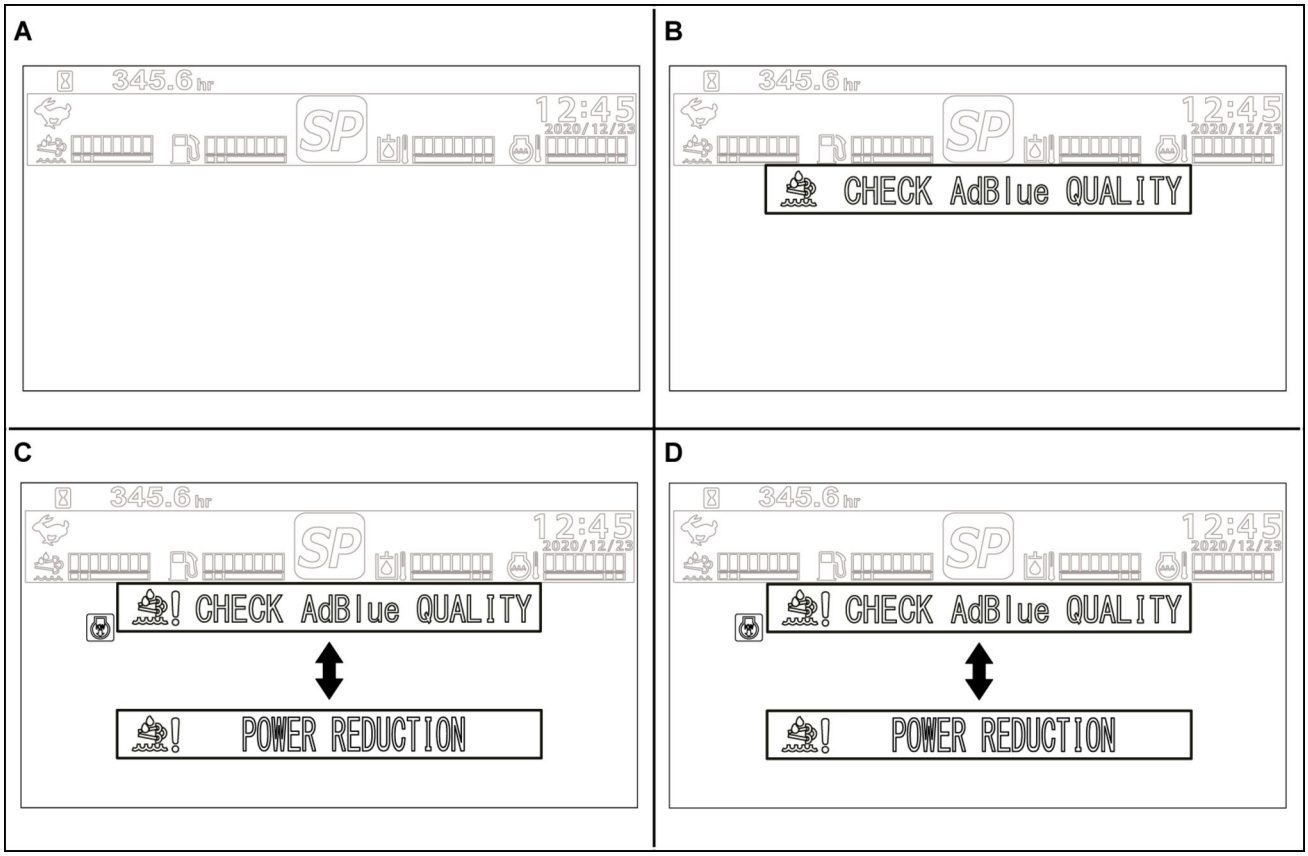
Completely drain the **DEF/ADBLUE®** tank. Refer to page **6-91**. Fill the tank with **DEF/ADBLUE®** that complies with the quality requirements.

If **50 min** have passed in the state shown in **(B)** without any measures taken, a warning buzzer sounds (5 times for **1 s** intermittently) and the machine enters the state shown in **(C)**.

The orange inducement icon is displayed and the orange text messages “!CHECK AdBlue QUALITY” and “!POWER REDUCTION” are displayed alternately. In this condition, operations are restricted. The engine torque is reduced to **35%** and the engine speed is reduced to **60%** within **40 min**.

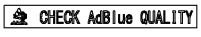
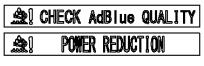
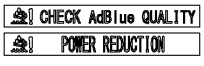
If **3 h** have passed in the state shown in **(C)** without any measures taken, a warning buzzer sounds (continuously for **1 s** intermittently) and the machine enters the state shown in **(D)**.

The text messages “!CHECK AdBlue QUALITY” and “!POWER REDUCTION” are displayed alternately in red and the inducement icon turns red. In this condition, operations are even more restricted. The engine torque is reduced to **50%** within **30 min** and the engine can only run at idle.



SMIL21CEX5498FA 4

A. Normal condition
B. Warning to the operator
C. Moderate Inducement
D. Severe Inducement

	A	B	C	D
DEF/ADBLUE® quality abnormality		Detected	**50 min** from state B	**3 h** from state C
Engine torque	**100%**	**100%**	**35%**	**50%**
Engine speed	**100%**	**100%**	**60%**	Idle
Inducement icon	None	None	Displayed (orange)	Displayed (red)
Warning buzzer sound	None	Once for **5 s**	5 times for **1 s** intermittently	Continuously for **1 s** intermittently
Text message	None	 (orange)	 (orange)	 (red)

"CHECK ATS" Message (ATS needs to be repaired)

The system detects technical failures regarding the ATS. A warning buzzer sounds (once for **5 s**) and the machine enters the state shown in **(B)**.

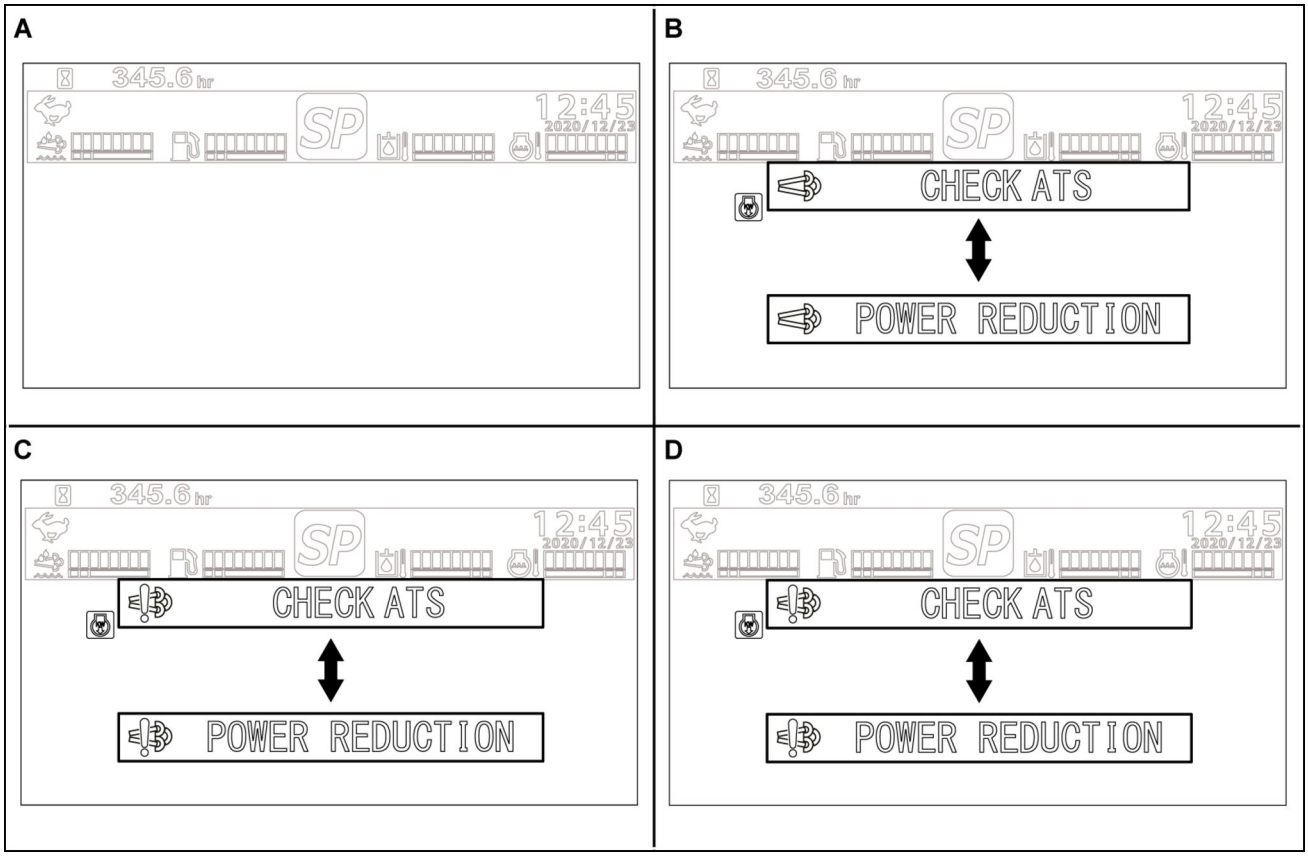
The orange inducement icon is displayed and the orange text messages “CHECK ATS” and “POWER REDUCTION” are displayed alternately. This message prompts the operator to take necessary measures. In this conditions, operations are restricted. The engine torque is reduced to **75%** within **25 min**. Stop the engine and contact your CASE CONSTRUCTION dealer.

If **2 h** have passed in the state shown in **(B)** without any measures taken, a warning buzzer sounds (5 times for **1 s** intermittently) and the machine enters the state shown in **(C)**.

The orange inducement icon is displayed and the orange text messages “!CHECK ATS” and “!POWER REDUCTION” are displayed alternately. In this condition, operations are restricted. The engine torque is reduced to **35%** and the engine speed is reduced to **60%** within **40 min**.

If **2 h** have passed in the state shown in **(C)** without any measures taken, a warning buzzer sounds (continuously for **1 s** intermittently) and the machine enters the state shown in **(D)**.

The red text messages “!CHECK ATS” and “!POWER REDUCTION” are displayed alternately and the inducement icon turns red. In this condition, operations are even more restricted. The engine torque is reduced to **50%** within **30 min** and the engine can only run at idle.



SMIL21CEX5499FA 5

A. Normal condition
B. Mild Inducement
C. Moderate Inducement
D. Severe Inducement

	A	B	C	D
ATS failure		Detected	**2 h** from state B	**2 h** from state C
Engine torque	**100%**	**75%**	**35%**	**50%**
Engine speed	**100%**	**100%**	**60%**	Idle
Inducement icon	None	Displayed (orange)	Displayed (orange)	Displayed (red)
Warning buzzer sound	None	Once for **5 s**	5 times for **1 s** intermittently	Continuously for **1 s** intermittently
Text message	None	(orange)	(orange)	(red)

ATS Cleaning

The ATS performs ATS cleaning at certain operating hour intervals to maintain its function.
Comply with the following instructions in order to prevent a decreased function of the ATS and damage to the components. Also, do not turn off the engine during ATS cleaning.

- Always use the recommended engine oil.
- Always use the recommended fuel.
- Always use the recommended **DEF/ADBLUE®**.

Always place the excavator in a well-ventilated location during automatic or manual ATS cleaning.

NOTICE: *Check that the engine hood is securely closed. If the engine hood is not closed, the insulation and other materials in the engine hood may melt due to the exhaust gas generated during automatic ATS cleaning, which may damage the excavator.*

NOTICE: *Put the machine into the transport position during manual ATS cleaning*

ATS CLEANING icon

During AUTO ATS CLEANING, icon is displayed to indicate the status of the operation. According to the ATS CLEANING status, the color and display pattern will be changed.

NOTICE: *Do not leave the excavator unattended during AUTO ATS CLEANING.*

NOTICE: *Keep away from and do not touch the ATS component, exhaust pipe, tail pipe and the exhaust gas when the engine is running, during ATS CLEANING and immediately after the ATS CLEANING process. Their temperatures may get high enough to burn people, ignite or melt materials.*

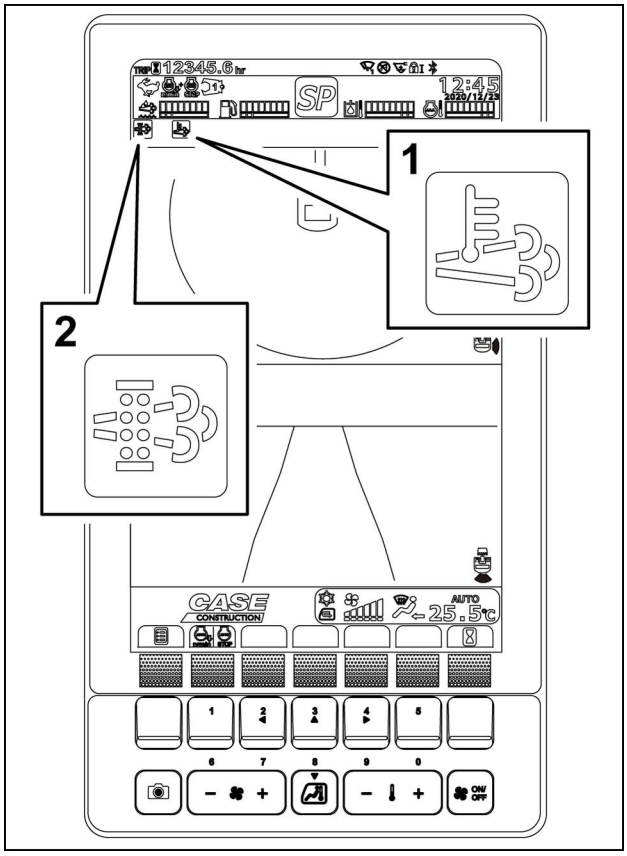
NOTICE: *During AUTO ATS CLEANING, make sure that the machine are away from any flammable and explosive. Those flammables such as dried grass, paper scraps and any easily burned material near the machine could cause a fire. Stop the engine while inspecting and carrying out maintenance on machine. Those activities during AUTO ATS CLEANING can result in serious personal injury.*

Automatic ATS Cleaning

The excavator can be operated during automatic ATS cleaning. The load from the excavator in operation helps reduce the time for automatic ATS cleaning.

Automatic ATS cleaning is performed automatically every **70 h**. The high temperature exhaust icon **(1)** and ATS cleaning icon (green) **(2)** are displayed and an alarm sounds for about **2 s**. Automatic ATS cleaning starts when the machine meets the following conditions.

- The engine coolant temperature is higher than **70 °C** (**158 °F**).
- The engine coolant temperature is lower than **100 °C** (**212 °F**).



SMIL21CEX3145BA 6

Automatic ATS cleaning takes about **1.5 h**. The duration of automatic ATS cleaning varies with outside air temperature, engine coolant temperature, and engine load. When the outside air temperature and engine coolant temperature are low, automatic ATS cleaning takes longer to be completed.

Automatic ATS cleaning stops in the following situations:

- When you select the ATS CONFIGURATION in user information mode and set the "AUTO ATS CLEANING STOP" item to "ON", automatic ATS cleaning stops and automatic ATS cleaning stop icon (green) and text message "AUTO ATS CLEANING REQUIRED" are displayed and an alarm sounds for about **2 s**. Automatic ATS cleaning resumes when you set the "AUTO ATS CLEANING STOP" item to "OFF".
- When the engine coolant temperature drops below **65 °C** (**149 °F**), ATS cleaning icon lights up in green and an alarm sound for about **2 s**.
  Automatic ATS cleaning resumes when the engine coolant temperature exceeds **70 °C** (**158 °F**).
- The ATS cleaning icon starts flashing in green when the engine coolant temperature exceeds **105 °C** (**221 °F**).
  Turn the engine throttle switch to idle speed and check the coolant. Automatic ATS cleaning resumes when the engine coolant temperature drops below **100 °C** (**212 °F**).

NOTE: *Do not continue operating the machine with automatic ATS cleaning stopped. If you continue operating the machine, it can damage the ATS system. Resume automatic ATS cleaning as soon as possible. When automatic ATS cleaning is stopped or remains uncompleted for* ***8 h****, the ATS cleaning icons flashes in orange and manual ATS cleaning is requested.*

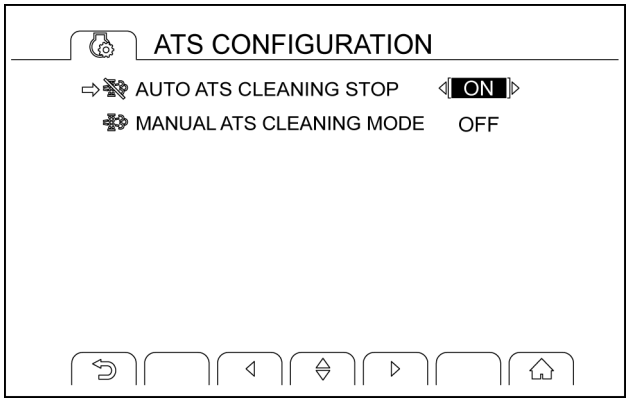
NOTICE: *If you operate the excavator as usual when the ATS cleaning icon is flashing in orange, the engine or exhaust system may be damaged. Move the excavator to a well ventilated location and start manual ATS cleaning as soon as possible.*

AUTO ATS CLEANING STOP function

The purpose of this function is to prevent fires and explosions. The temperature of the exhaust gas produced during automatic ATS cleaning is high, therefore it is dangerous to perform automatic ATS cleaning inside a building (including tunnels) or other locations with fire and explosion risks.

To pause automatic ATS cleaning after it has started, select ATS CONFIGURATION in user information mode, then set the "AUTO ATS CLEANING STOP" item to "ON".

Automatic ATS cleaning resumes when you set the "AUTO ATS CLEANING STOP" item to "OFF".

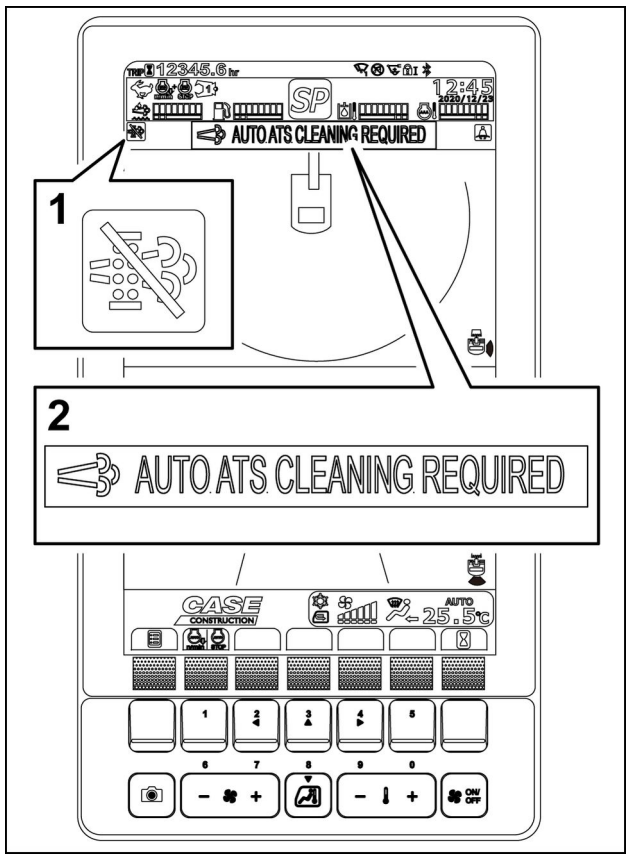


SMIL21CEX4344AA 7

When it is set to ON and automatic ATS cleaning stops, the automatic ATS cleaning stop icon (green) and text message "AUTO ATS CLEANING REQUIRED" are displayed and an alarm sounds for about **2 s**.

NOTE: *You cannot set automatic ATS cleaning not to start. You must stop it after it has started.*

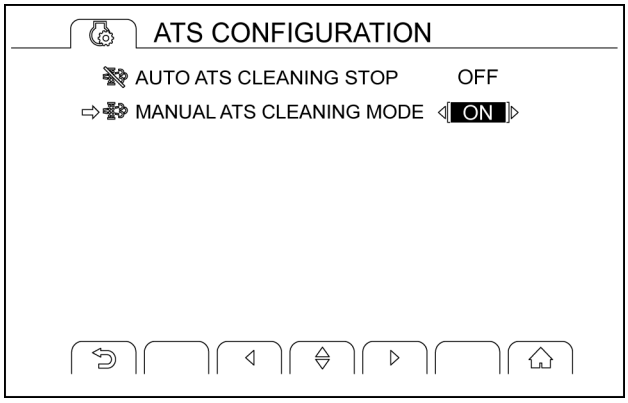
NOTE: *This function is only used for stopping automatic ATS cleaning that starts every **70 h**. For that reason, even when this function is used, if automatic ATS cleaning has been stopped for **8 h**, the system requests manual ATS cleaning. Use this function only when you need to stop automatic ATS cleaning for safety reasons.*



SMIL21CEX3146BA 8

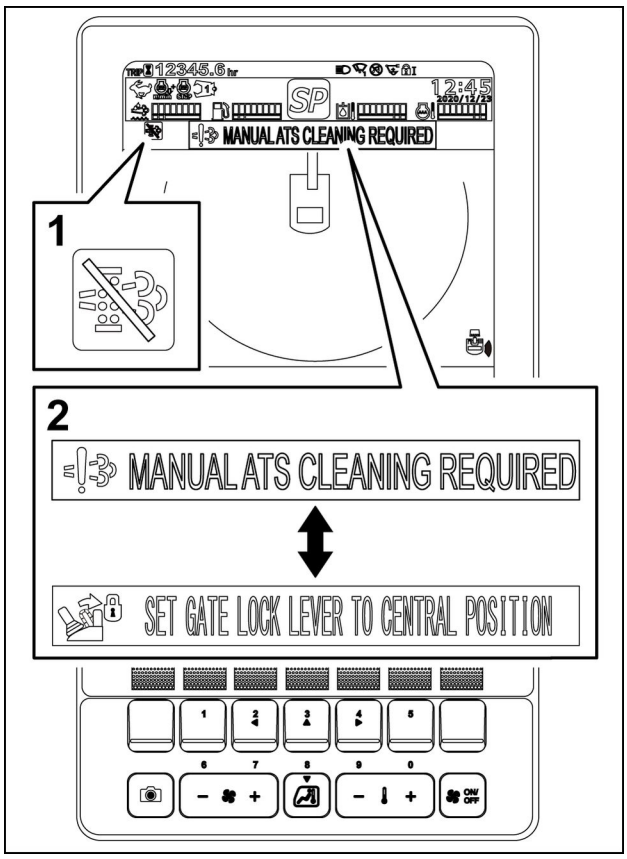
MANUAL ATS CLEANING MODE function

To use manual ATS cleaning, select "ATS CONFIGURATION" on the menu selection screen and set the "MANUAL ATS CLEANING MODE" setting to ON.



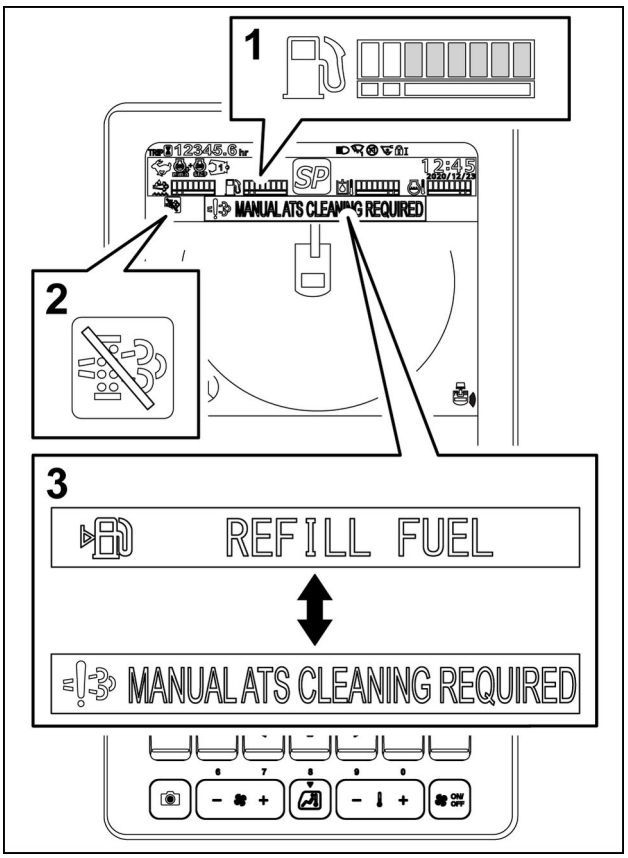
SMIL22CEX4597AA 9

The excavator cannot be operated during manual ATS cleaning. If manual ATS cleaning is requested during operation, the ATS cleaning icon **(1)** flashes in orange, an alarm sounds for about **2 s**, and the text messages **(2)** "!MANUAL ATS CLEANING REQUIRED" and “SET GATE LOCK LEVER TO CENTRAL POSITION" are displayed alternately.



SMIL21CEX4345BA 10

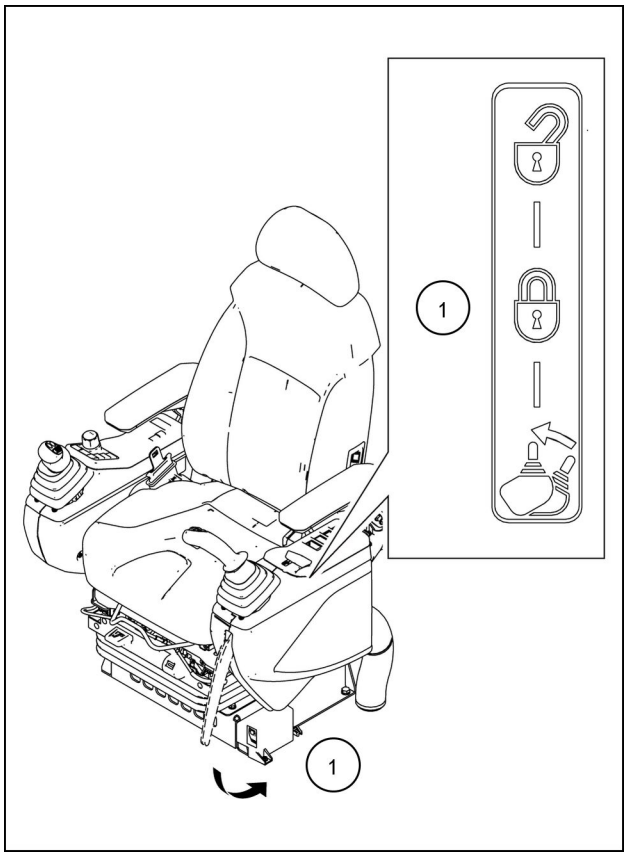
If the fuel gauge **(1)** shows 2 segments or less, the ATS cleaning icon **(2)** flashes in orange and the text messages **(3)** “!MANUAL ATS CLEANING REQUIRED" and “REFILL FUEL" are displayed alternately and manual cleaning cannot be started so that manual cleaning does not stop before it is finished due to being out of fuel. In this case, add fuel immediately.



SMIL21CEX4346BA 11

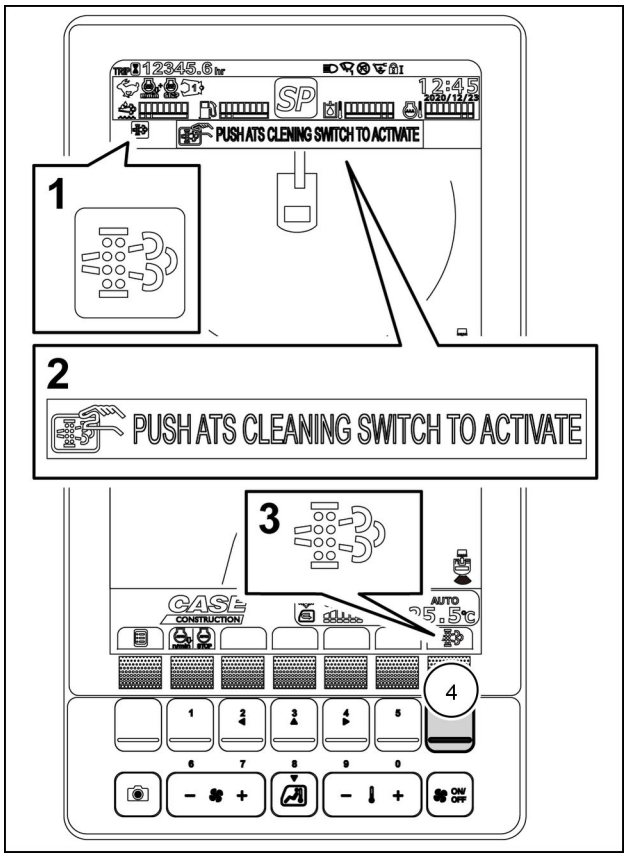
Starting manual ATS cleaning

1. Move the excavator to a well ventilated location.
2. Check that the fuel gauge shows 3 segments or more, then set the gate lock lever to the center position **(1)** (with safety bar in the non-operation position).
3. Turn the engine throttle switch to idle speed.



SMIL21CEX3153BA 12

4. The ATS cleaning icon **(1)** flashes in orange, an alarm sounds for about **2 s**, and the text message **(2)** “PUSH ATS CLEANING SWITCH TO ACTIVATE” is displayed. The ATS cleaning icon **(3)** is displayed on the function switch tab.
5. Press the button **(4)** underneath the icon to start manual ATS cleaning.



SMIL21CEX4347BA 13

When manual ATS cleaning starts, the orange ATS cleaning icon **(1)** and the orange high temperature exhaust icon **(2)** are displayed. An alarm sounds for about **2 s**, and the orange text messages **(3)** "!DO NOT OPERATE" and "!MANUAL ATS CLEANING" are displayed alternately.

Manual ATS cleaning takes about **30 min**. When manual ATS cleaning is complete, the ATS cleaning icon **(1)**, the high temperature exhaust icon **(2)**, and the messages **(3)** disappear. Manual ATS cleaning stops in the following situations. If manual ATS cleaning stops before it is finished, the ATS system needs to be cooled down. The orange text messages "!DO NOT OPERATE" and "!MANUAL ATS CLEANING CANCELLED" are displayed alternately. Do not operate the excavator until the ATS system is cooled down.

- Problems with the machine (The applicable text message is displayed.)
- Problems with the engine (The applicable text message is displayed.)

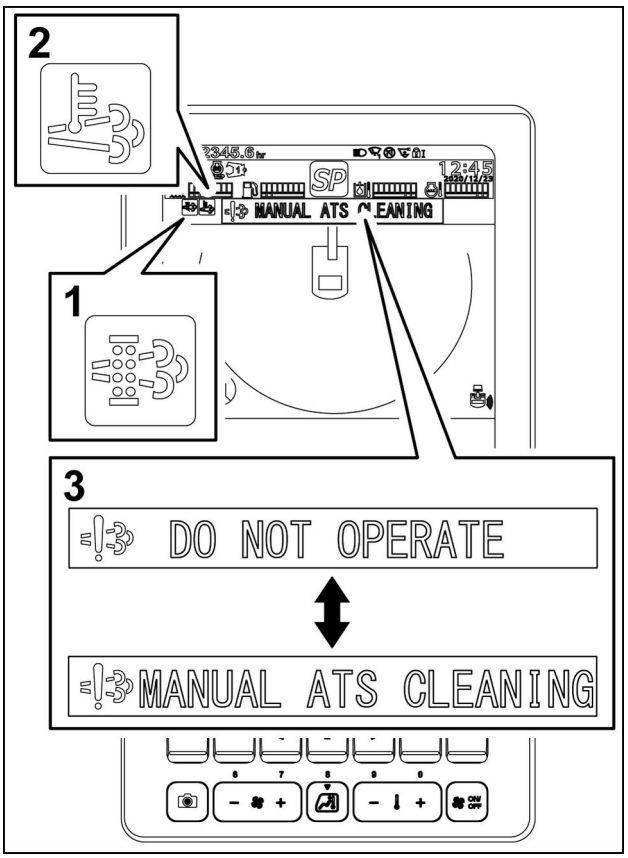
NOTICE: *Do not continue operating the machine with manual ATS cleaning stopped. If you continue operating the machine, it can damage the ATS system. Resume manual ATS cleaning as soon as possible.*

Manual ATS cleaning becomes disabled in the following situations.

- A message that requests manual ATS cleaning "PUSH ATS CLEANING SWITCH TO ACTIVATE" was displayed but cleaning did not start within **10 h**.
- Manual ATS cleaning was not completed within **40 min** after it started.

When the ATS cleaning icon changes from orange to red, an alarm sounds for about **2 s** and the red text message "SERVICE ATS" is displayed.

This indicates that an abnormality has occurred that requires a repair. Contact your CASE CONSTRUCTION dealer immediately.



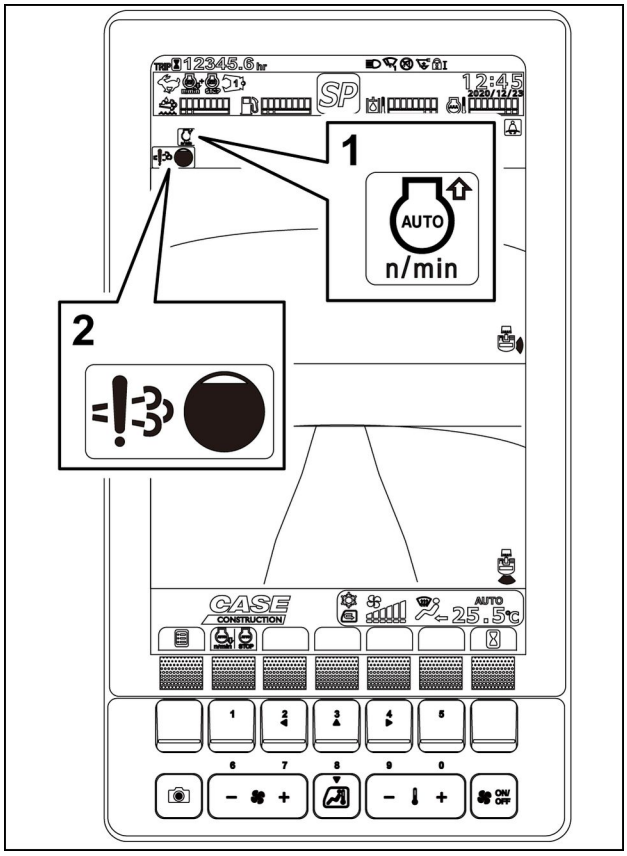
SMIL21CEX4348BA 14

Hydrocarbon (HC) Accumulation

Running the engine at low idle continuously causes hydrocarbons to accumulate. To burn the hydrocarbons, the engine speed needs to be increased. The system detects the amount of hydrocarbon accumulation and increases the low idle speed to burn the hydrocarbons.

While the system is starting up, the low idle speed increase icon **(1)** stays lit in green. If hydrocarbons accumulate while the engine is running at low idle and the gate lock lever is in the center position (with safety bar in the non-operation position), the green low idle speed increase icon **(1)** and orange hydrocarbon accumulation icon **(2)** light up and the low idle speed is automatically increased.

Once the excavator is operated and the engine speed increases, the low idle speed increase icon **(1)** goes out.

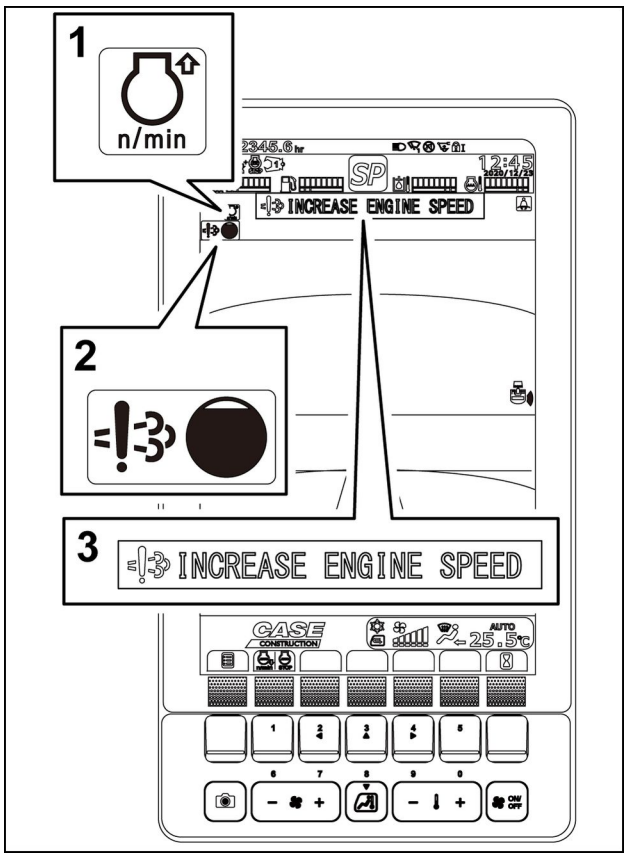


SMIL21CEX4349BA 15

If hydrocarbons accumulate when the gate lock lever is in the normal operating position (with the safety bar raised), the low idle speed increase icon **(1)** and hydrocarbon accumulation icon **(2)** light up in orange and the text message **(3)** “!INCREASE ENGINE SPEED" is displayed.

When this happens, move the gate lock lever to the center position (with safety bar in the non-operation position). The text message **(3)** disappears (the hydrocarbon accumulation icon **(2)** remains the same) and the low idle speed increase icon **(1)** lights up in green and the low idle speed is automatically increased.

If hydrocarbons accumulate even more, the hydrocarbon accumulation icon **(2)** and text message **(3)** change from orange to red. When this happens, increase the engine speed immediately. Keep the engine speed high until the hydrocarbon accumulation icon **(2)** goes out.



SMIL21CEX4350BA 16

4 - OPERATING INSTRUCTIONS

Starting the unit

Anti-theft protection

In order to prevent the theft of the machine, the security function is available. Whether enabling this function or not is selected when the ignition key is turned OFF (lock guidance screen). To operate the machine with this function enabled, a password needs to be input.

For setup of the security function, consult the CASE CONSTRUCTION dealer. Entering wrong passwords for 3 times or more, or starting up the engine before entering password causes generation of warning and activation of the machine is subject to restriction.

This is called immobilized status.

1. Travel alarm sounds.
2. Monitor buzzer sounds continuously.
3. The swing function is disabled.
4. Although the engine starts, its speed is fixed at a low idle.
5. When the operation lever is used in the state of 4, the engine will stop automatically.

NOTE: *Be careful not to forget the recorded code. The code cannot be changed without prior consultation the CASE dealer.*

Enabling the security function

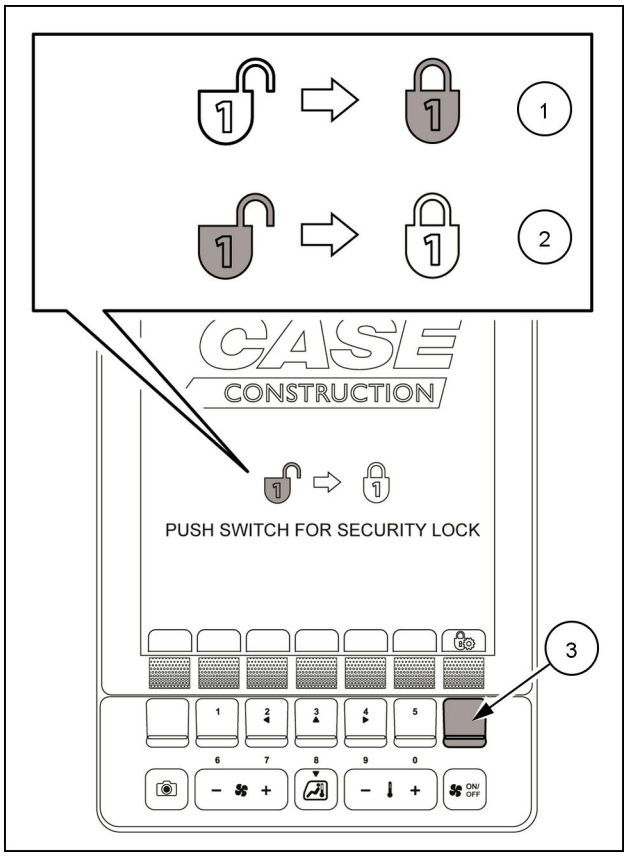
When the operator turns the starter key OFF, the lock guidance screen is displayed on the monitor screen.

To change the security function setting, press the lock switch **(3)** while the lock guidance screen is displayed.

The machine can be locked by enabling the security function.

(1) Security function disabled

(2) Security function enabled



SMIL22CEX1271BA 1

Disabling the security function

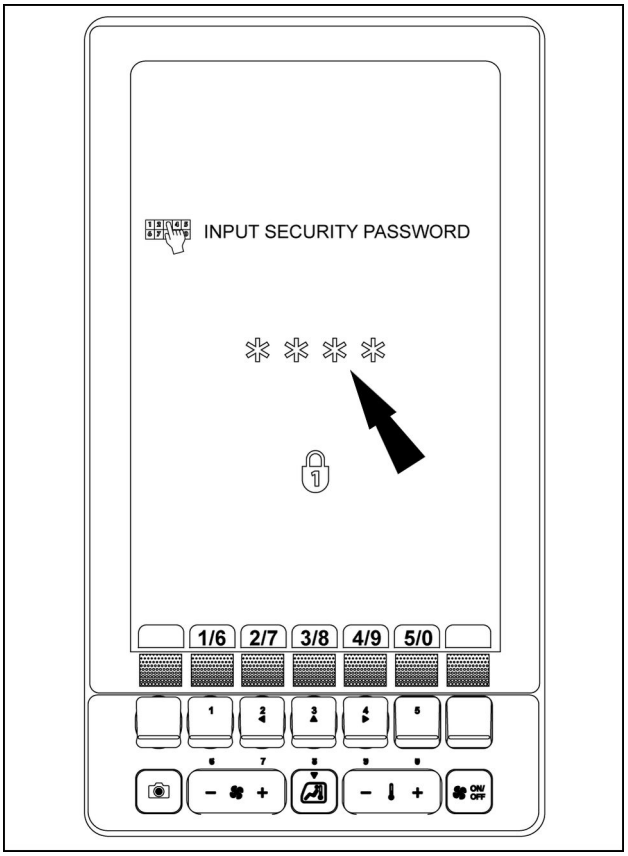
If the security function is enabled, when the operator turns the starter key ON, the password entry screen is displayed.

Use the monitor switches to enter the password on the entry screen to unlock.

If the machine cannot be unlocked:

1. The machine becomes immobilized, but you can continue to enter the password.
2. If password verification failed 3 times in total, you cannot enter the password anymore. Turn the starter key OFF and then turn the starter key ON again, then enter the password again.
3. If you start the engine before entering the password, the machine becomes immobilized.

NOTICE: *If you forgot your password, consult your CASE CONSTRUCTION dealer.*



SMIL21CEX3152BA 2

Starting the engine

⚠ WARNING

Avoid injury!
Before starting the engine, securely fasten the seat belt. The seat belt can help ensure your safety if it is properly used and maintained. Never wear a seat belt loosely or with slack in the belt system. Never wear the belt if it is twisted or pinched between the seat structures.
Failure to comply could result in death or serious injury.

W0142A

⚠ WARNING

Hazard to bystanders!
Make sure the area surrounding the machine is clear of all persons before starting the engine.
Failure to comply could result in death or serious injury.

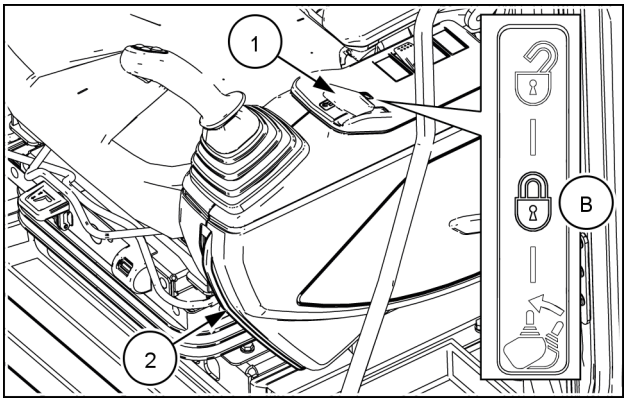
W0090A

⚠ WARNING

Toxic gas and asphyxiation hazard!
Diesel exhaust contains dangerous compounds. Never operate the engine in a closed building or area. Proper ventilation is required under all circumstances.
Failure to comply could result in death or serious injury.

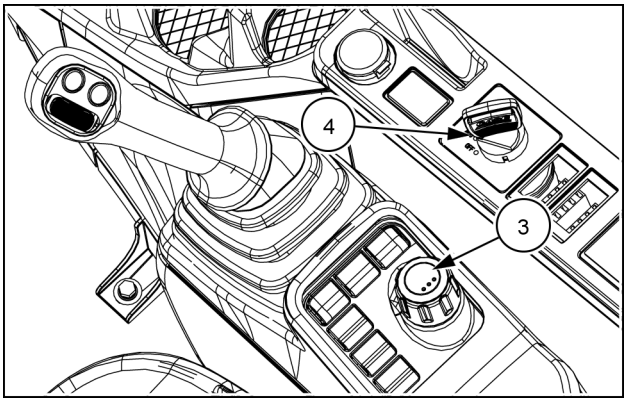
W1302A

1. Check that there is no abnormality in the machine.
2. Confirm that the engine hood and the side doors are closed and locked.
3. Confirm that the gate lock lever **(1)** is in central position **(B)** (the safety bar **(2)** is in inward position).
4. Set each operation lever in neutral.
5. Securely fasten the seat belt.



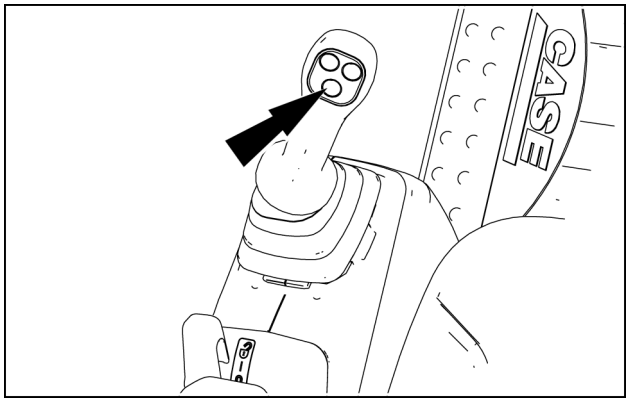
SMIL22CEX1957AA 1

6. Confirm that the engine speed throttle **(3)** is in low idle position.
7. Turn the starter key **(4)** to ON position. The buzzer of the instrument cluster, the travel alarm (if equipped), and the warning buzzer of the Quick Coupling System (if equipped) will make a check sound.
8. Unlock the display if the security function had been activated.



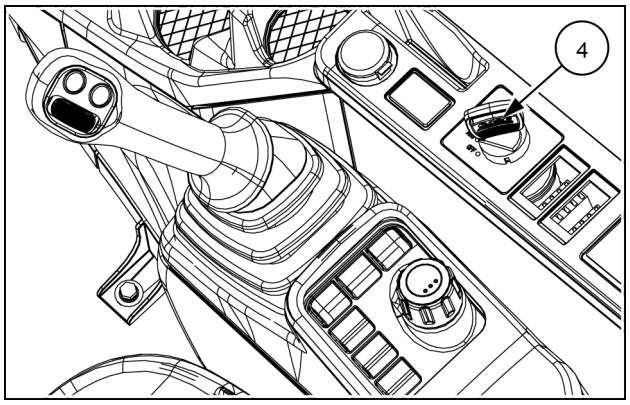
SMIL21CEX3158AA 2

9. If the engine preheating is necessary, the icon (P) appears on the monitor. Wait for the auto preheating to complete and the icon to disappear.
10. Sound the horn with the button on the left control lever to warn that the machine is starting up.



SMIL21CEX3112AA 3

11. Turn the starter key **(4)** to START position. The engine running takes approximately **1 s** to stabilize after it has been cranked up.
12. Release the starter key as soon as the engine is running regularly.



SMIL21CEX3158AA 4

NOTICE: *The cranking up of the engine may be difficult in severe winter climate. If the engine does not start after* ***10 s*** *of operation of the starter motor, turn the key to OFF position and wait* ***2 min*** *before attempting a new cranking.*

NOTICE: *When the engine is started in severe winter climate, moisture vapor may be temporarily generated resulting in a whitened smoke.*

NOTICE: *Immediately after the engine is started, the engine sound is louder compared to the sound after the engine is warmed up, and also the color of the exhaust smoke becomes more whitened or more blackened than the smoke emitted during the normal operation. The engine sound and the color of the exhaust smoke get smoothed after the engine is warmed up.*

NOTICE: *Due to resonance, vibration might come up while the engine is running at low speed. Increasing slightly the engine speed reduces the vibration.*

Bringing the machine up to operating temperature

Before starting operation, the main systems of the machine should be warmed up to their normal operating temperature.

NOTE: *The normal operating temperature for the hydraulic fluid is* ***50 – 80 °C*** *(****122 – 176 °F****) . This corresponds to four segments lit on the hydraulic temperature gauge.*

NOTE: *The normal operating temperature for the engine coolant is* ***75 – 90 °C*** *(****167 – 194 °F****). This corresponds to four segments lit on the coolant temperature gauge.*

A warm-up procedure should be carried out in order to grant a proper and safe usage of the machine, and in order to grant the best machine performance and fuel efficiency.

NOTICE: *The warm-up of the machine is mandatory when operating in severe winter climates.*

NOTICE: *The warm-up of the machine prevents wear and severe damages to the engine, to the fuel system, to the SCR system and to the hydraulic system.*

NOTICE: *The exhaust pipe becomes extremely hot while the engine is idling. Make sure that there is no flammable material such as plants, dried grass, paper waste, oil and old tires close to the exhaust pipe before starting warm-up procedure.*

NOTICE: *Never cover the grids of the radiators with flammable materials.*

Automatic machine warm up

Regardless of the ambient conditions, the machine control system allows to carry out an automatic warm-up procedure that brings the temperature of the main operating fluids to the proper level for machine operation.

Start the engine with the speed throttle in the low idle position and let the machine complete the automatic warm-up procedure. During the automatic warm-up, the engine speed and the engine load are automatically managed in order to match the warm-up cycle to the ambient conditions and to optimize the warm-up cycle in respect to the machine operating parameters.

NOTE: *the engine speed and the noise of the hydraulics are supposed to change during the warm-up cycle.*

NOTICE: *The automatic warm-up procedure is the recommended operating practice. However, the automatic warm-up procedure can be overridden either by changing the engine speed manually or by operating any operation lever.*

As the procedure starts up, the message AUTO WARM UP is displayed:

The automatic warm-up procedure takes about **5 – 10 min** depending on the ambient conditions.

After completion of the automatic warm-up procedure, the AUTO WARM UP message disappears, and the engine speed gets back to low idle.

Manual machine warm up

A manual machine warm-up can be carried out referring to the following procedure:

1. Set the engine speed throttle three steps over the low idle position.
2. Start the engine and let it run approximately for **5 – 10 min** with no load.
3. When the coolant temperature reaches the second segment on the coolant temperature gauge, set the engine speed throttle in intermediate position.
4. Push the gate lock lever forward (the safety bar is facing outward).
5. Move the bucket control slowly until the bucket is fully curled.
6. Operate the arm until the it is completely retracted, and hold the position for **30 s**.
7. Extend the arm completely, and hold the position for **30 s**.
8. Repeat the sequence of extending and retracting the arm until the temperature of the hydraulic fluid raises over the first two segments on the hydraulic temperature gauge, corresponding to **25 °C** (**77 °F**).

   NOTICE: *Never overload the hydraulic system until the temperature of the hydraulic fluid reaches **25 °C** (**77 °F**). If the hydraulic system is overloaded with the temperature of the hydraulic fluid below **25 °C** (**77 °F**) it will be severely damaged.*
9. Gently operate the controls for travel, front equipment and swing for 3 to 4 times to circulate warmed hydraulic fluid into the whole circuit.

Check the followings after reaching normal operating temperature of the fluids:

- Exhaust gas is normal.
- No unusual noise or vibration.
- No leak of oil, fuel or water.
- No unusual noise when activating the hydraulic equipment.
- Inspection of the horn, buzzer, working lights and instrument cluster.
- Proper display of the temperature gauges.
- Check the visibility from the rear view mirrors, the side view mirrors and the cameras before operation. Adjust and clean up dirt as necessary.
- Check each operation (travel, front equipment and swing).

If any of the following occurs during the warm-up procedure, stop the engine immediately.

- Engine speed increases or decreases rapidly.
- Engine sound and exhaust gas color are abnormal.
- Messages are displayed, and a warning alarm sounds.

Operating the machine in hot or cold weather

In cold weather

- Make sure to use fluids and lubricants which have specifications suitable for operation at low ambient temperatures.
- Check the batteries for full charge state.
- Fill up the fuel tank after completing the work, and then drain water before starting work on the next day in order to prevent dew condensation and invasion of water to the fuel system.
- Use fuel which is rated to the outside air temperature, or proper anti-freeze in order to prevent crystal generation at **-2 °C** (**28 °F**).

  NOTICE: *Before transporting the machine to a cold region, fill the tank with fuel that has a low freezing temperature.*

In hot weather

- Make sure to use fluids and lubricants which have specifications suitable for operation at high ambient temperatures.
- Keep the coolant at the correct level in the coolant reservoir and in the radiator.
- Use the correct solution of ethylene glycol and water in the cooling system.
- Test the radiator cap before hot weather starts. Replace the cap as required.
- Clean all dirt and debris from the radiator, cooler and engine area.
- Check the condition of the fan drive belt.

Operation under dusty and sandy conditions

- Frequently inspect the element of the air cleaner and clean or replace the element and the dust cup regardless of service due.
- Tightly close the breather cap of the hydraulic tank to prevent invasion of sand and dust to the hydraulic circuits.
- Make sure to thoroughly clean the grease fittings before greasing any lubrication point of each pin and bush.
- Make sure to clean the radiator fin and oil cooler fin and the radiator grid.

Operation on seashore

- Inspect tightness of the plugs/cocks/bolts in each point in order to prevent salt corrosion.
- Thoroughly wash the machine after the work, especially take good care of the electrical equipment and hydraulic cylinder to prevent corrosion.

Operation on highly humid land or soft land

- Keep the machine as dry as possible during operation and make sure to carry out regular lubrication. Moisture and mud water cause deterioration and corrosion of paints/wirings/metal components.

Operating the machine

⚠ WARNING

Misuse hazard!
Follow the operating instructions in this chapter. Any other practice that has not received the prior approval of the manufacturer is considered to be strictly forbidden.
Failure to comply could result in death or serious injury.

W0281A

⚠ WARNING

Hazard to bystanders!
Always know the location of all workers in your area. Warn them before you start working on the machine. Always keep all unauthorized bystanders clear of the area.
Failure to comply could result in death or serious injury.

W0176A

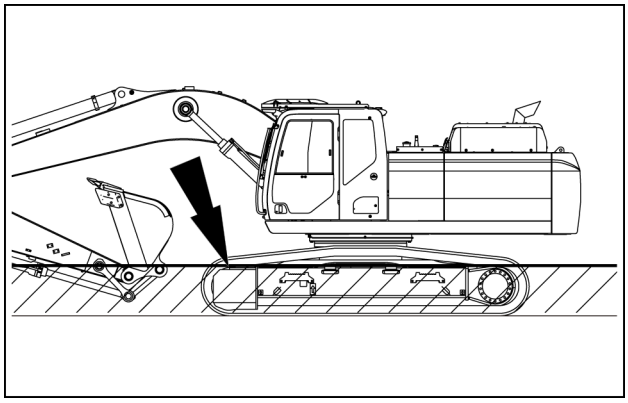
- Pay attention to work condition characteristics of ground and climate condition before operating the machine.
- Inspect every possible risk before operating the machine. Holes on working site, obstructions and hazardous materials such as debris are subject to cause serious accident.
- Pay attention to location of pipes and cables before commencing work. Electric cables, gas pipes, water pipes and underground installations may cause serious injury. If the work takes place adjacent to high voltage power lines make sure to check the following work range:
  Less than **57000 V**: **4 m** (**13.1 ft**)
  57000 V or more: **5 m** (**16.4 ft**)
- Sit on the operator's seat, adjust it so as to be able to easily reach the console, and then fasten the safety belt.
- Check that the cab door is tightly secured at position of open or close.
- Sound the horn.
- Start up the engine.
- Check all the indicator lamps and gauges are operating properly.
- Push the gate lock lever forward (the safety bar is facing outward).

The following operation may cause damage to the machine:

- Do not use weight of the machine as an impact force for excavation.
- Do not use traveling force of the machine for excavation.
- Avoid abrupt change of swing direction when swinging the upper structure.
- Never hit or push objects with side of the bucket. Do not sweep ground with the bucket to level rubbles.
- Open and close the bucket for several times to loosen soil and mud when soil and mud are tightly packed in the bucket.
- After work, remove mud from the machine and clean it.

Operating the machine on soft ground or in water

- The machine could gradually sink when working on soft ground. Pay attention to undercarriage during work.
- Before operating the machine in water, check the water depth and the footing. Permissible water depth is up to the upper rollers.
- After operation underwater or on soft ground, apply grease to the attachment and the turntable bearings. Clean and inspect the undercarriage as well.
- In case of accidental sinking in water or soil up to the swing body, replacement of grease and service are required. Terminate operation, and contact the CASE CONSTRUCTION dealer.



SMIL21CEX4378AB 1

NOTICE: *Do not operate in a fast flowing stream.*

Operating the machine on sloping ground

⚠ WARNING

Driving hazard!
Hillside operations can be dangerous. Rain, snow, ice, loose gravel, or soft ground, etc. can change the ground conditions. You must make a judgment if it is safe to operate your machine on any hillside or ramp.
Failure to comply could result in death or serious injury.

W0144A

⚠ WARNING

Overturning hazard!
Before parking the machine, make sure the ground is stable. Plan the worksite so that the ground is flat, hard, and level.
Failure to comply could result in death or serious injury.

W0258A

The machine gradeability is **35°** (**70%**).

NOTICE: *Do not operate the engine when incline of the machine is **35°** or more. The engine or the hydraulic system may be damaged.*

During hillside operations, be extra careful.

- Maintain the maximum engine speed.
- Make sure that the low speed travel is selected.
- Always keep the travel reduction gears pointing down towards the bottom of the slope.
- Always travel in the same direction as the slope, to prevent the machine from turning over. Never decelerate when descending a slope.
- Raise the bucket about **40 cm** (**15.75 in**) away from ground when ascending a slope. Contact the bucket on ground to avoid slipping the machine when descending a slope.
- Avoid swinging to a direction of travel on a **15°** slope, or avoid swinging perpendicular to direction of travel on a **10°** slope.
- During digging operation, avoid swinging the upperstructure towards the bottom of the slope with the bucket full.

Digging and loading operations

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

You can set E work mode to optimizes fuel efficiency

Use the SP work mode for heavy digging operation.

Filling

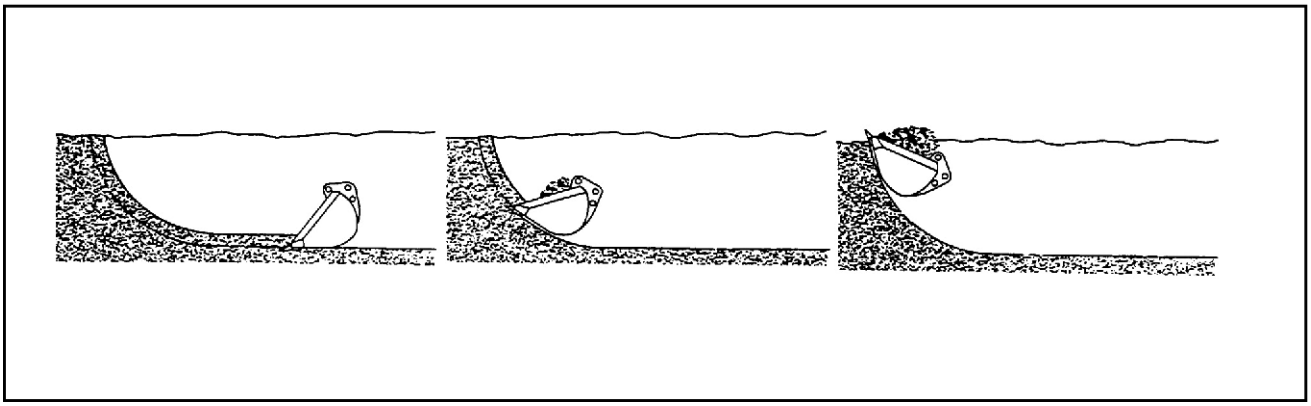
Fill the bucket by maneuvering the arm.

Keep the bottom of the bucket parallel to the cut.

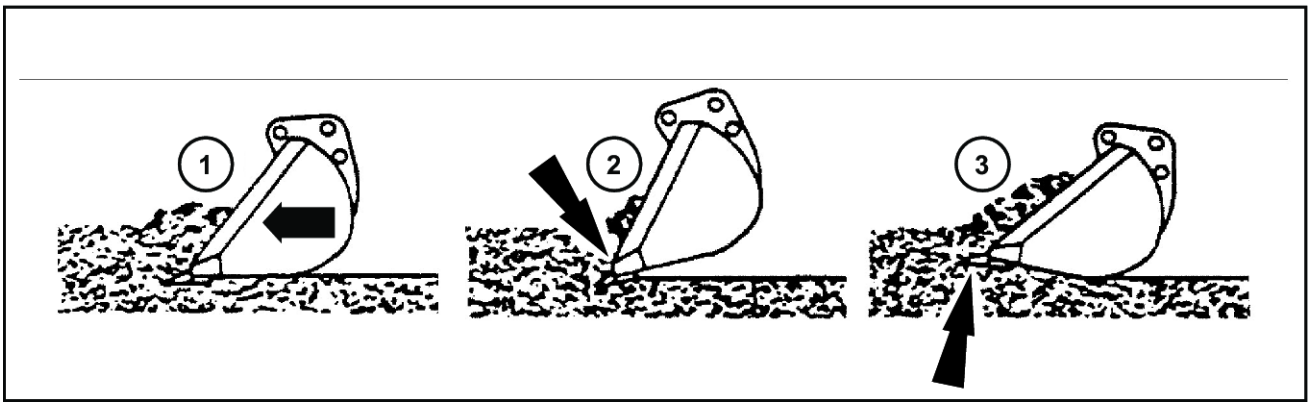
The bucket teeth and blade must cut the ground like the blade of a knife.

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.

Lowering the attachment in the event of a failure

⚠ WARNING

Unexpected machine movement!
Only use the following procedure in case of machine failure. Always use extreme caution during operations. Keep other persons away from the bucket, attachment, and boom. The bucket or attachment can move unexpectedly during operations due to weight of the bucket, attachment, arm, or boom. Failure to comply could result in death or serious injury.

W1364A

⚠ CAUTION

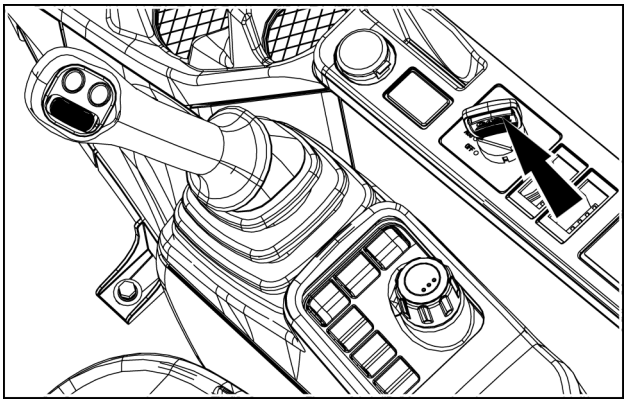
Crushing hazard!
Keep away from the space under the bucket or attachment when lowering the bucket or attachment. In cases where the machine fails and the engine stops, lower the attachment using the procedure described in this manual.
Failure to comply could result in minor or moderate injury.

C0169A

NOTICE: *the procedure should be completed within five minutes after the engine stops. The accumulator pressure will gradually falls which will disable the ability to lower the attachment.*

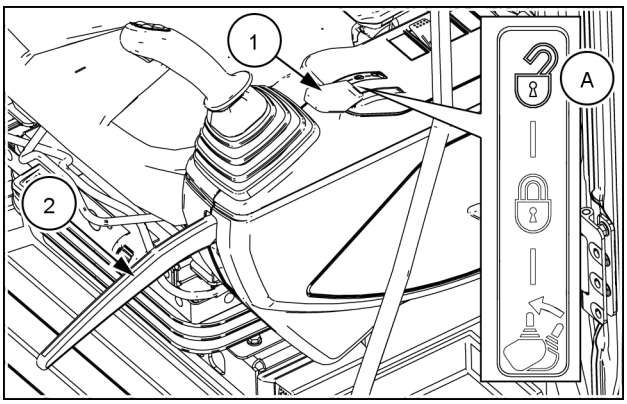
If the engine breaks down, use the following procedure to lower the attachment:

1. Turn the starter key to ON position.



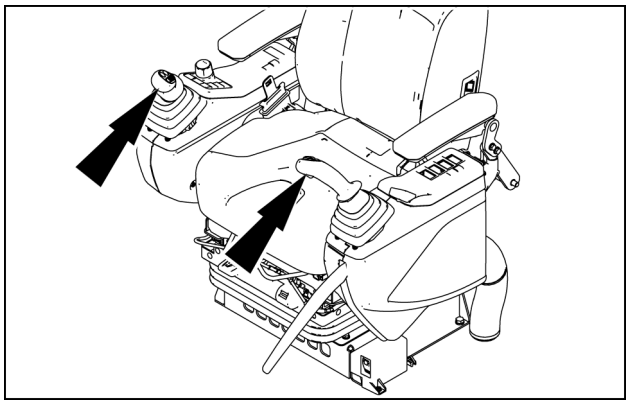
SMIL21CEX3158AA 1

2. Set the gate lock lever **(1)** to the normal operating position **(A)** with safety bar **(2)** raised.



SMIL22CEX1958AA 2

3. Slowly operate the control levers to lower the attachment to the ground.



SMIL21CEX3157AA 3

Bucket replacement

⚠ CAUTION

Avoid injury!
Handle all parts carefully. Do not place your hands or fingers between parts. Use Personal Protective Equipment (PPE) as indicated in this manual, including protective goggles, gloves, and safety footwear.
Failure to comply could result in minor or moderate injury.

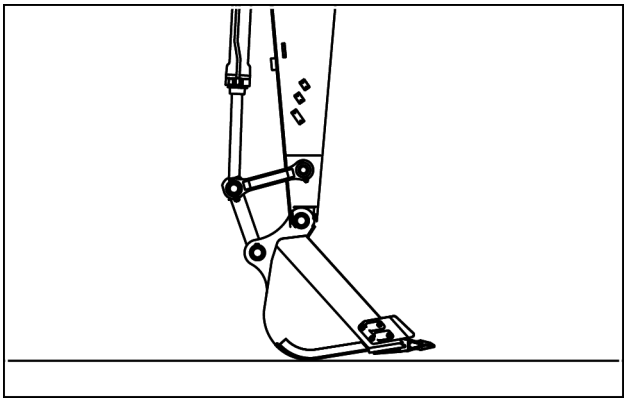
C0145A

To remove the bucket from the linkage, proceed as follows:

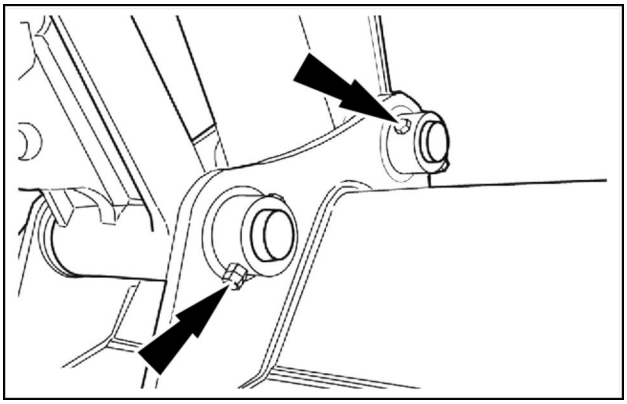
1. Operate the arm and bucket controls so that the arm stands vertical and the bottom side of the bucket leans against a hard and level ground.

   NOTICE: *never push the bucket onto the ground. The bucket pins should be unloaded in order to be properly extracted from the bushings.*

2. Place the gate lock lever in central position, stop the engine and remove the starter key.
3. Slide the O-ring seals onto the inner bosses of the bucket.
4. Unlock the bucket pins by removing either the retaining pins or the locking bolts. Check the locking tools for wear or damage. Make sure to properly store the locking tools to prevent damage.
5. Place a punch on the flat edge of the pin **(1)**, and push it out using a hammer. Extract the pin **(2)** using the same procedure. Make sure to properly handle and store the bucket pins to prevent damage.



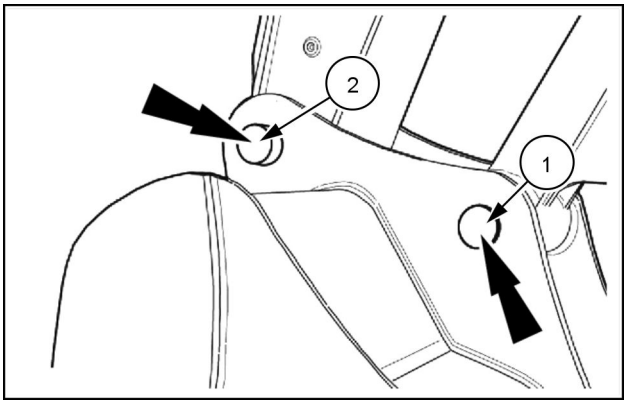
SMIL16CEX0478AA 1



SMIL13CEX2827AB 2

6. Get onto the cab, start the engine and place the gate lock lever in the forward position.
7. Gently retract the bucket cylinder to release the bucket connecting rod from the bucket hangers.
8. Gently operate the arm and boom controls to release the arm top from the bucket hangers. Check the O-ring seals and the mounting spacers for wear or damage. Make sure to properly store the O-ring seals and the mounting spacers to prevent damage.

   NOTICE: *If the bucket linkage does not easily come out from the bucket hangers, lower the bucket to the ground. In order to unstick the mating surfaces, gently operate the bucket control to extend the bucket cylinder or the boom control to push down the arm top.*



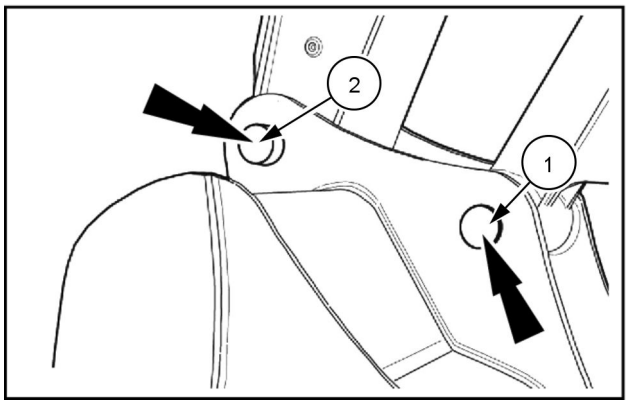
SMIL13CEX2828AB 3

To mount the bucket to the linkage, proceed as follows:

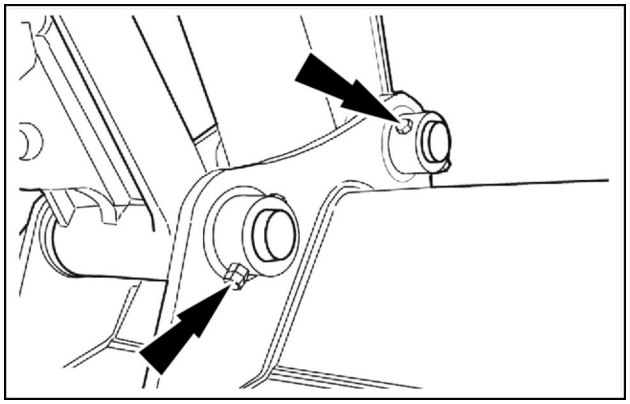
1. Make sure that the machine and the bucket stand both onto a hard and level ground. The bucket should stand on its bottom side.
2. Place the O-ring seals onto the inner bosses of the bucket.
3. Position the machine close to the bucket, and gently operate the boom and arm controls in order to align the arm top between the respective bosses on the bucket.
4. Place the gate lock lever in central position, stop the engine and remove the starter key.
5. Position the mounting spacers if required. Place a punch on the flat edge of the pin **(2)**, and push it in using a hammer.

   NOTICE: *Make sure to insert the pin by its chamfered edge. Make sure to insert the pin from the bucket side opposite to the locking boss.*

6. Push the pin until the locking hole on the pin is aligned to the locking hole on the bucket boss. Install either the retaining pin or the locking bolt.
7. Get into the cab, start the engine and place the gate lock lever in the forward position.
8. Gently extend the bucket cylinder to align the bucket connecting rod between the respective bosses on the bucket.
9. Place the gate lock lever in central position, stop the engine and remove the starter key.
10. Insert the pin **(1)** and lock it as described for the pin **(2)**.
11. Slide down the O-ring seals. Grease the bucket pins.



SMIL13CEX2828AB 4



SMIL13CEX2827AB 5

Stopping the unit

Stopping the engine

1. Lower the attachment until it is resting on the ground.
2. Turn the engine throttle **(1)** to low idle position.
3. Wait for the green cooling down icon to appear.

The engine has cooled down and can be stopped.

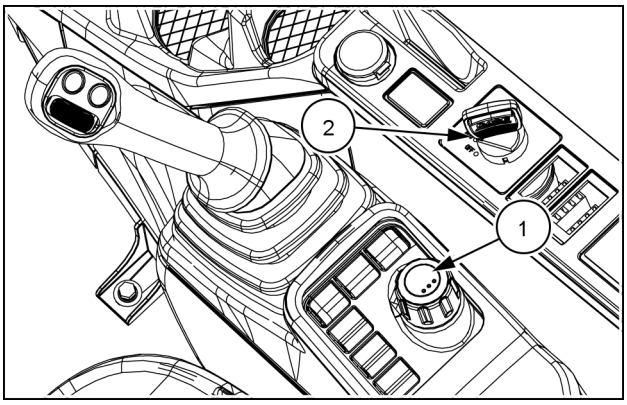
4. Turn the starter key **(2)** to OFF position.

   If the key is turned to OFF position before the green icon appears, the engine stops, but the warning message IMPROPER SHUT DOWN appears on the top of the display, and the audible alarm sounds.

   Do not repeat anymore this early shut down in order to avoid severe damages to the engine and its components.

   NOTICE: *If the engine is stopped before the green icon appears, the lubricated section on the turbocharger gets dried from the high heat, leading to a turbocharger failure.*

The ATS 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 ATS system. This is considered normal, and requires no action from the operator.



SMIL21CEX3158AA 1

Emergency stop switch

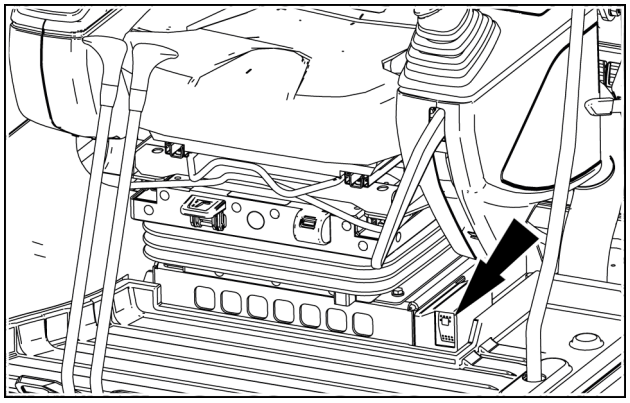
The emergency stop switch is located under the left-hand console.

The emergency stop switch enables the engine to be shut down in emergency or when it is not possible to shut it down by means of the starter key.

NOTICE: *The emergency stop switch should be used for emergency purpose only. Do not use it on a day-to-day basis to stop the engine.*

Press on the front of the switch to stop the engine. The audible warning device sounds and the message ENGINE STOP is displayed.

To start the engine again, press on the back of the emergency stop switch, turn the starter key to OFF position, and then restart the engine.



SMIL22CEX1955AA 2

Moving the unit

Machine travel

⚠ WARNING

Controls can be reversed!
In the normal travel position, the operator's compartment is above the idler wheels and the travel reduction gears are to the rear of the upper structure. If the upper structure is turned 180 degrees in relation to the undercarriage, the controls are reversed.
Failure to comply could result in death or serious injury.

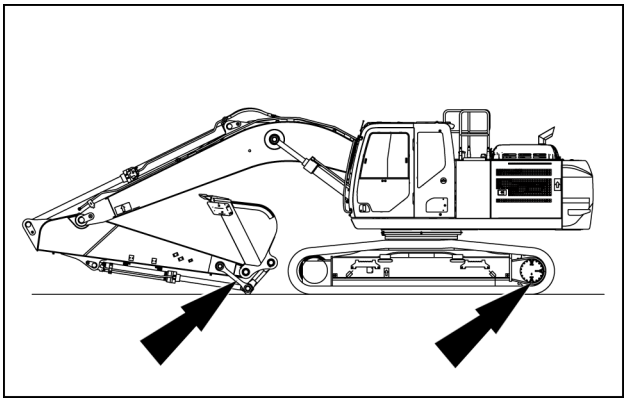
W0289A

⚠ WARNING

Hazard to bystanders!
Always sound the horn before starting the machine. Make sure the work area is clear of other persons, domestic animals, tools, etc. before you operate the machine. Never allow anyone in the work area during machine operation.
Failure to comply could result in death or serious injury.

W0304A

NOTE: *increase the engine speed before start traveling. Fold the attachment to raise it to* ***40 – 50 cm*** *(****15.7 – 19.7 in****) above ground.*



SMIL21CEX4329AA 1

Selection of travel speed

⚠ WARNING

Loss of control hazard!
Avoid pressing the travel speed button while traveling. Avoid shifting to FAST speed when traveling downhill or when loading/unloading from a trailer.
Failure to comply could result in death or serious injury.

W0390A

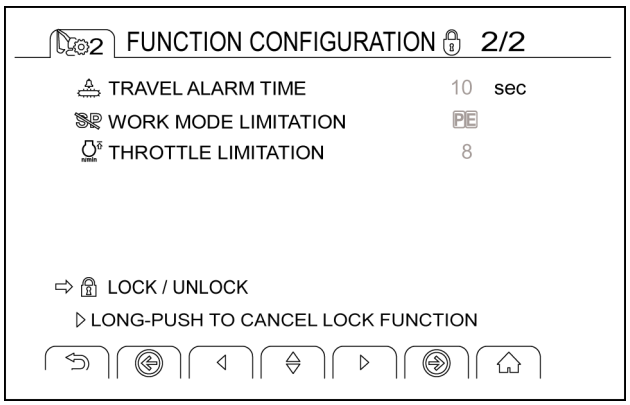
Before start traveling, make sure to select the proper travel mode between "Turtle" and "Rabbit".

As the travel mode is selected, the travel speed varies with the tilting angle of the travel control levers and pedals. Refer to Chapter 8 for speed ranges.

Travel alarm (Optional)

The travel alarm sounds when the travel controls are activated.

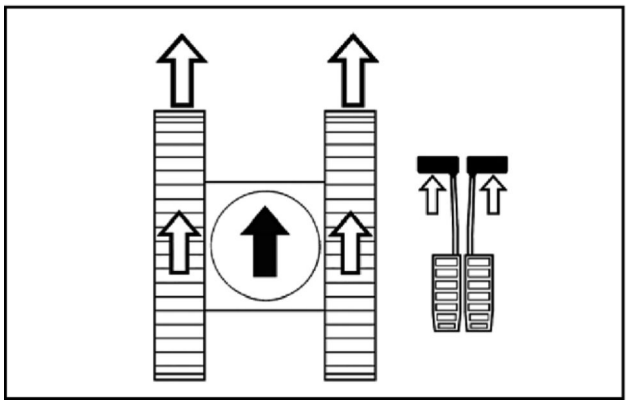
The TRAVEL ALARM TIME function on the monitor allows to set how long the travel alarm sounds during travel operation (**10 s**, **20 s**, **30 s**, **60 s**, **∞ s**).



SMIL21CEX3134AA 2

Straight line travel (forward travel)

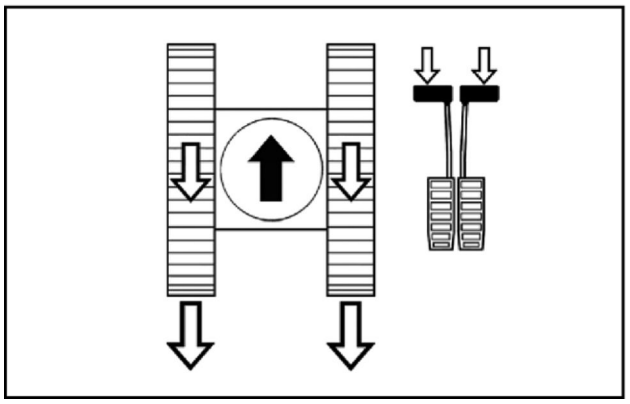
Press the two pedals (or push the two levers) forward at the same time.



SMIL13CEX2679AB 3

Straight line travel (reverse travel)

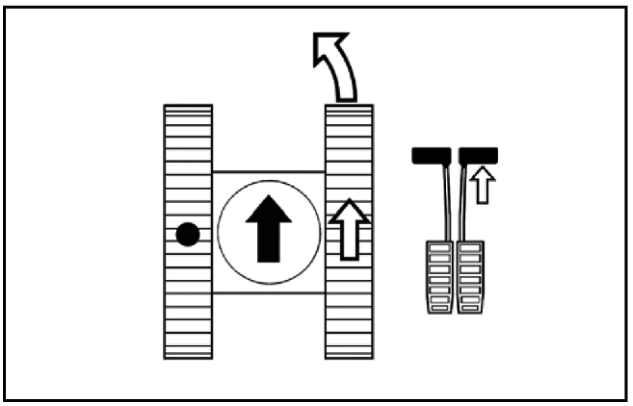
Press the two pedals (or pull the two levers) rearwards at the same time.



SMIL13CEX2680AB 4

Turning to the left (forward travel)

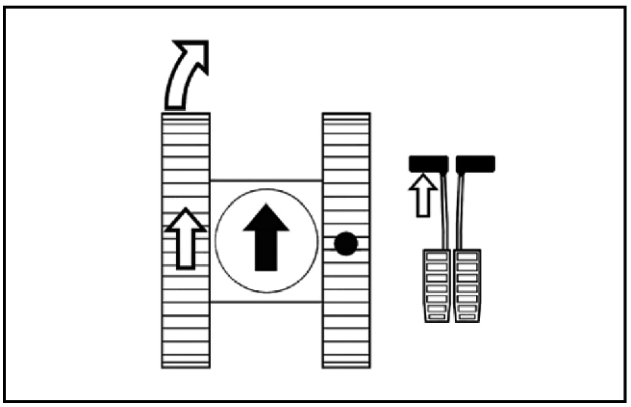
Simply press the right-hand pedal or push the right-hand lever forwards.



SMIL13CEX2681AB 5

Turning to the right (forward travel)

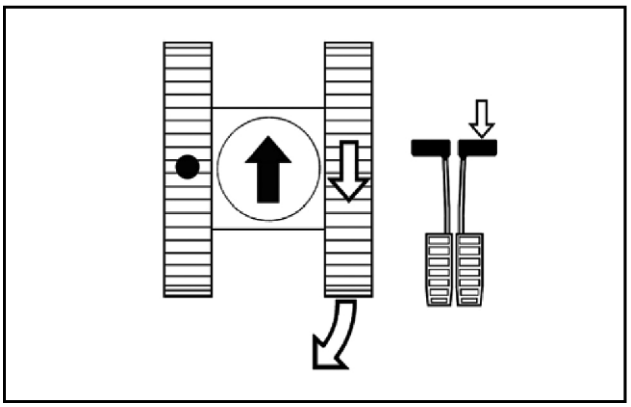
Simply press the left-hand pedal or push the left-hand lever forwards.



SMIL13CEX2682AB 6

Turning to the left (reverse travel)

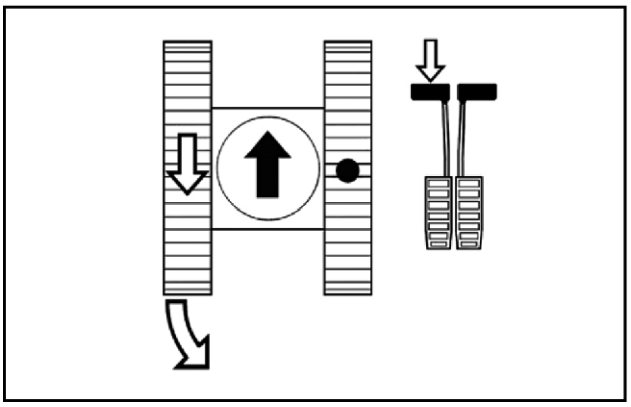
Simply press the right-hand pedal or pull the right-hand lever rearwards.



SMIL13CEX2683AB 7

Turning to the right (reverse travel)

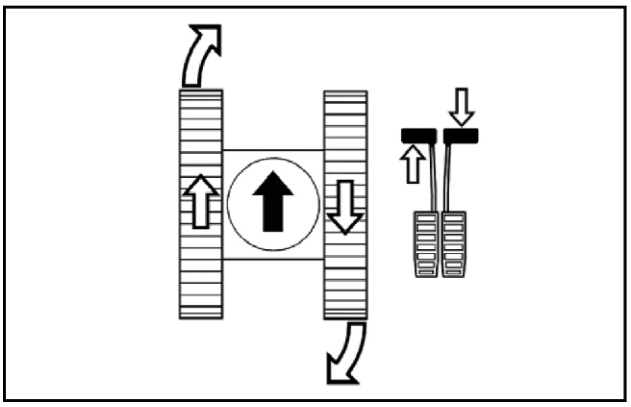
Simply press the left-hand pedal or pull the left-hand lever rearwards.



SMIL13CEX2684AB 8

Turning on the spot, to the right

Press the left-hand pedal or push the left-hand lever forwards and at the same time press the right-hand pedal or pull the right-hand lever rearwards.

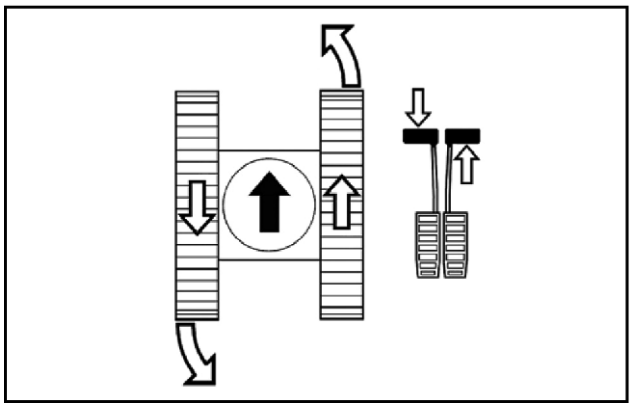


SMIL13CEX2685AB 9

Turning on the spot, to the left

Press the right-hand pedal or push the right-hand lever forwards and at the same time press the left-hand pedal or pull the left-hand lever rearwards.

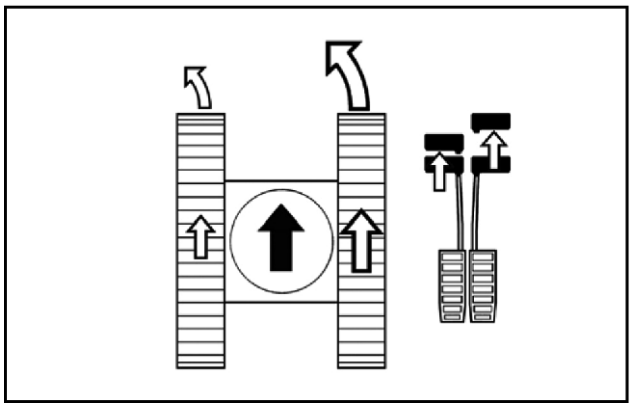
NOTE: *Turning on the spot cannot be done if high speed travel mode is selected.*



SMIL13CEX2686AB 10

Gradual turn on the move

Press one of the pedals or push one of the levers and, at the same time, press the other pedal or push the other lever in the same direction, but slightly harder.



SMIL13CEX2687AB 11

Stopping travel

To come to a complete halt, simply release the levers or pedals and they will return to neutral.

NOTICE: *Allow as much time as possible to stop the machine.*

NOTICE: *Avoid abrupt stopping as much as practicable.*

NOTICE: *Park or stop the machine on level solid ground in safe area.*

Cautions for traveling

1. Start traveling operation after checking location of the travel unit before commencing travel operation.
2. Select ground as flat and solid as possible for traveling.
3. Travel bypassing obstructions.

NOTICE: *when using wide shoes avoid traveling on rough ground. Wider shoes tend to cause deformation or crack of the shoes.*

4. Travel with decreased traveling speed on rough ground.
5. Encourage a large turn for changing direction and avoid abrupt pivoting turns or spinning turns as much as possible.
6. Check the route to travel in advance.
7. Prepare a personnel to signal operator whenever moving the machine in a location with poor visibility.
   Pay attention to permissible weight of bridge when crossing the bridge.
8. Take necessary measure such as placing plates so as not to damage surface of paved road.
9. Slow down and loosen tension of the track shoes when traveling on place with gravels and cobbles.

Parking the unit

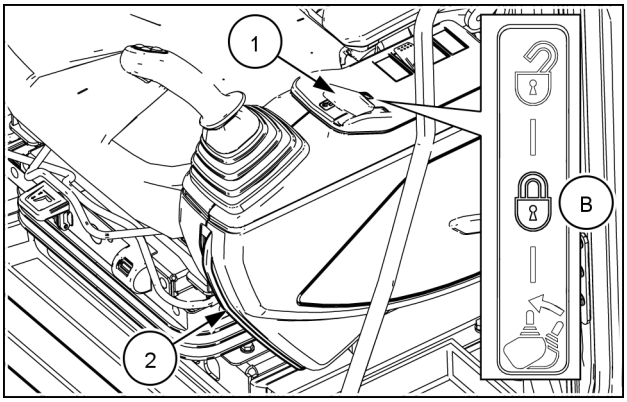
Parking the machine

⚠ 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 a hard and level ground, and orient the upper structure frame parallel to the undercarriage.
2. Operate the boom, arm, and attachment controls so that the arm stands vertical and the attachment rests on the ground.
3. Set the gate lock lever **(1)** to central position **(B)** (the safety bar **(2)** is in inward position).

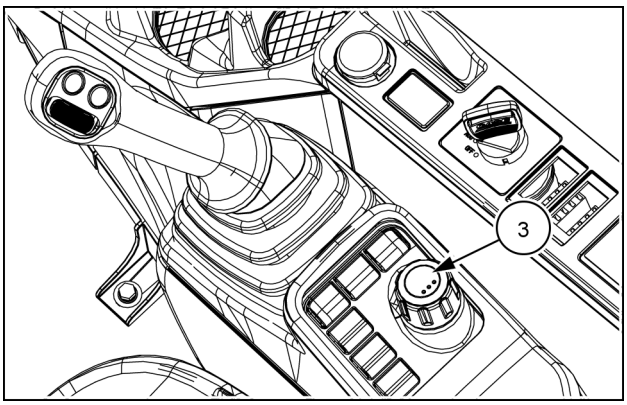


SMIL22CEX1957AA 1

4. Turn the engine throttle **(3)** to low idle position.
5. Wait for the green cooling down icon to appear.

The engine has cooled down and can be stopped.

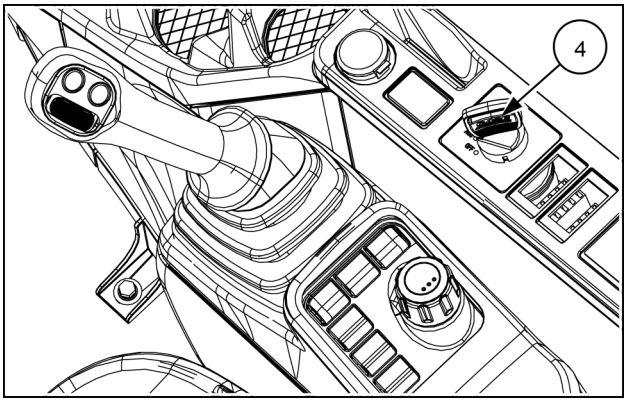
NOTICE: *If the engine is stopped before the icon appears, the lubricated section on the turbocharger gets dried from the high heat, leading to a turbocharger failure.*



SMIL21CEX3158AA 2

6. Turn the starter key **(4)** to OFF position.

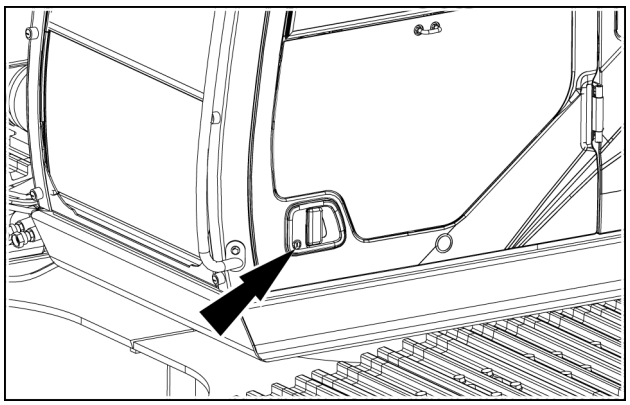
NOTE: *If the security function is set up, the option for activating the security function is displayed.*



SMIL21CEX3158AA 3

7. Remove the starter key, get off the cab and lock the cab door. Check that the hood and the side doors are properly locked, and that the lower panels are properly fixed.

NOTE: *Make sure that any portion of the machine is interfering public road. Install appropriate traffic signs if any portion interferes public road.*



SMIL21CEX3220AA 4

5 - TRANSPORT OPERATIONS

Road transport

Loading the machine onto a transport trailer

⚠ WARNING

Improper operation or service of this machine can result in an accident.
Assign a supervisor to direct worksite operations. Agree on all safety measures, procedures, and suitable hand signals.
Failure to comply could result in death or serious injury.

W0287A

⚠ WARNING

Transport hazard!
The machine can slip or fall from a ramp or trailer. Make sure the ramp and trailer are not slippery. Remove all oil, grease, ice, etc. Move the machine on or off the trailer with machine centered on the trailer or ramp.
Failure to comply could result in death or serious injury.

W0152A

Make sure to check the total weight, length, width and height of the machine to be transported. Refer to Chapter 8.

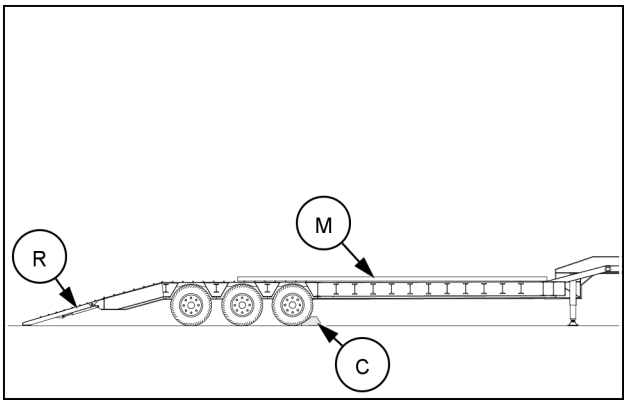
If any heavy attachment is fitted on the machine, such as a hydraulic breaker or a hydraulic crusher, remove the attachment before loading the machine onto the trailer. Refer to the Operator's Manual of the attachment, and strictly follow the specific procedure to remove the attachment from the machine.

Make sure to use a trailer with a rated capacity and dimensions sufficient to transport the machine. Make sure that ramps are available to climb onto the trailer bed. Use ramps which have sufficient width, length, thickness and strength. The ramp slope should be **15°** or less.

Investigate beforehand the conditions of the road to be traveled, weight and size limits, and special local traffic regulations. Obtain any permits required from proper government agencies for machine transportation.

Trailer setup

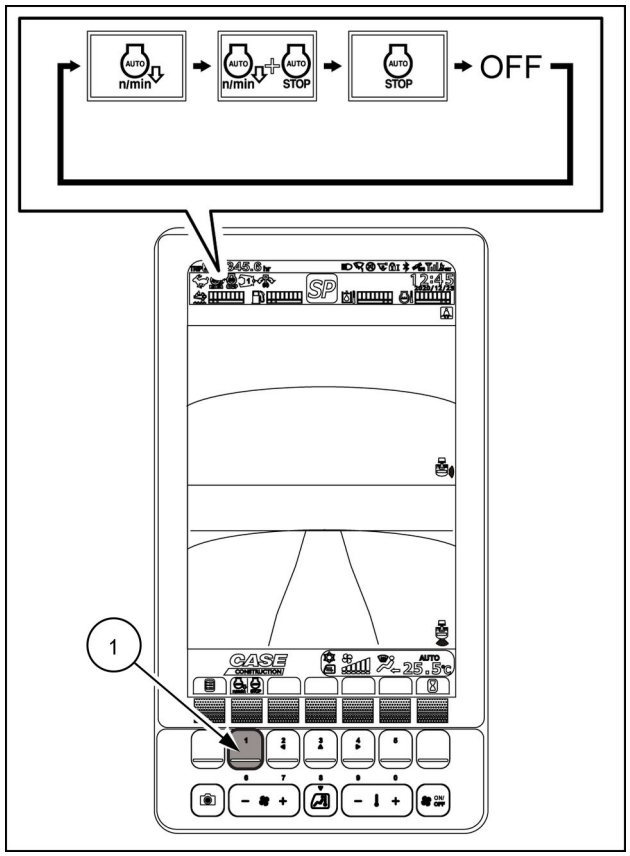
1. Position the trailer on firm and level ground.
2. Position the wheel chocks **(C)** against the tires of the trailer to prevent trailer from moving.
3. Prepare the loading ramps **(R)**. If the ramps are included in the trailer frame, lower them to the ground. If the ramps are external to the trailer, match them to the rear edge of the trailer avoiding any bump between trailer bed and external ramps.
4. Place the rubber mats **(M)** on the trailer bed. Make sure that the rubber mats match the base of the tracks.



SMIL24CEX0506AA 1

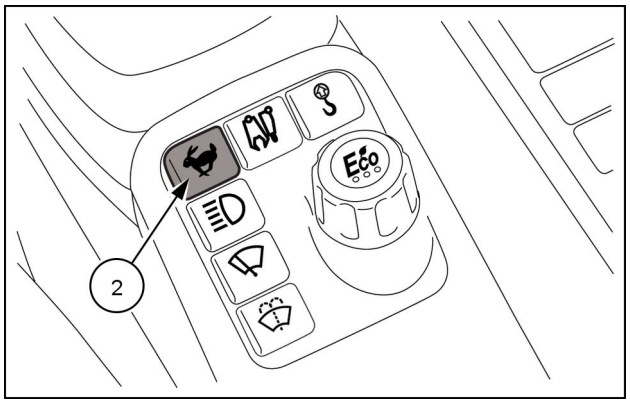
Machine setup

1. Accurately clean the machine undercarriage and tracks to prevent mud or debris from skidding during transport.
2. Make sure to deactivate the auto idle function and the auto shut-down function. Press the idle mode button **(1)** until any idle icon on the display turns off.



SMIL21CEX3500BA 2

3. Press the travel mode selector button **(2)** to select the low travel speed. The “Turtle” icon appears on the display.



SMIL21CEX3498AA 3

Loading procedure

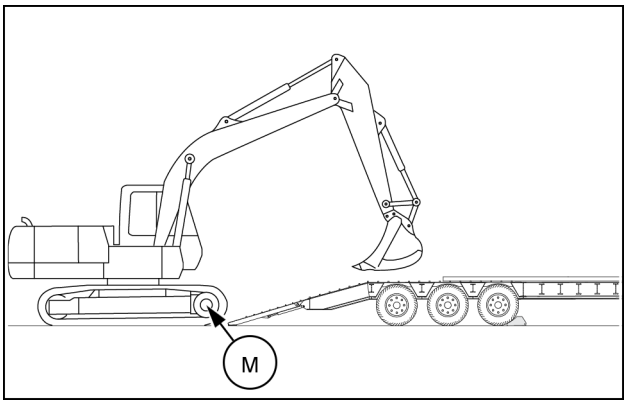
1. Select the P work mode.

NOTE: *The recommended practice is to set P8 work mode.*

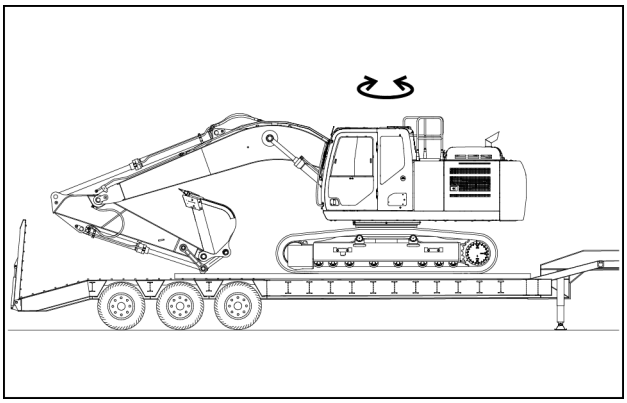
2. Align the machine to the trailer, so as the travel motors **(M)** face the trailer ramps.

NOTICE: *Starting from this position, the travel control levers must be pulled backward to move on the ramps and on the trailer bed. Confirm the travel control directions before start moving onto the ramps.*

3. Get close to the ramps and operate the arm and bucket controls so that the arm stands vertical and the bottom side of the bucket is about **20 cm** (**7.9 in**) above the trailer bed.
4. Slowly climb the trailer ramps keeping the bucket close to the trailer bed. Slowly travel on the trailer bed to reach the resting position, giving particular attention to the attachment so as not to touch the trailer bed.
5. Slowly turn the upper structure **180°**.
6. Set the machine in the position for transport: fully open the positioner (2PB version only), fully retract the arm and curl the bucket slowly.
7. Lower the boom slowly until the bucket linkage lays on the rubber mats on the trailer bed.
8. Check the overall height between the ground and the highest point of the machine and check the overall width of the machine. Make sure to be within the size limits defined before transport, in order to confirm documents and permissions already got to comply to the local traffic regulations.
9. Place the gate lock lever in central position.
10. Stop the engine and remove the starter key.
11. Get off the machine. Retract the radio antenna. Fold the rear view mirror.
12. Lock the cab door and the side panels.
13. Remove the wheel chocks.
14. Check that the trailer is not tilted.
15. Check the condition of the tie-down points on the trailer.



SMIL24CEX0504AA 4



SMIL24CEX0507AA 5

Loading the machine on a rear loading type trailer (without front equipment installed)

⚠ WARNING

Tip-over hazard!
The counterweight MUST be removed before transporting the machine without an attachment. Consult you dealer.
Failure to comply could result in death or serious injury.

W0260A

⚠ WARNING

Pressurized system!
Before removing the attachment from the machine, make sure the air pressure and hydraulic oil pressure are at zero.
Failure to comply could result in death or serious injury.

W0284A

If the machine has to be transported without the complete front equipment (boom and arm), the counterweight should be removed from the base machine. Loading the base machine on the trailer with the counterweight installed affects the stability of the base machine itself, and definitely compromises its climbing ability.

NOTICE: *The use of lifting systems is necessary for removal and installation of the machine front attachment and of the counterweight. Refer to your CASE CONSTRUCTION dealer for proper removal and installation procedure.*

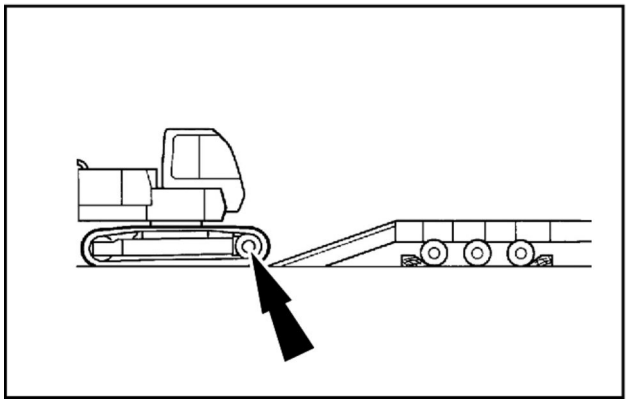
Select the P work mode.

The recommended practice is to set P8 work mode.

Align the machine to the trailer, so as the travel motors face the trailer ramps.

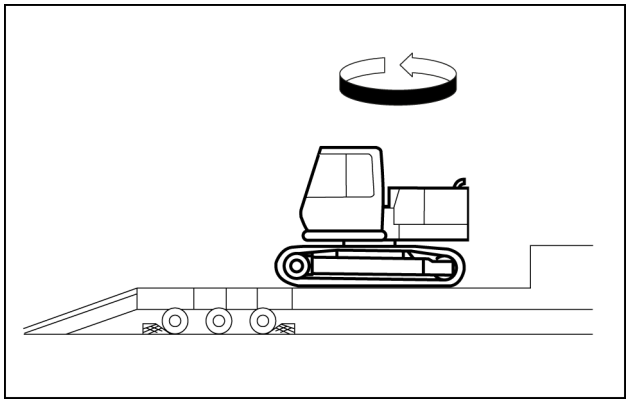
NOTICE: *Starting from this position, the travel control levers must be pulled backward to move on the ramps and on the trailer bed. Confirm the travel control directions before start moving onto the ramps.*

Slowly climb the trailer ramps. Slowly travel on the trailer bed to reach the resting position.



SMIL13CEX2721AB 6

Slowly turn the upper structure **180°**.



SMIL20CEX0029AA 7

Tie downs for shipping

The machine must be secured choosing and setting the tie-down devices according to the following specifications and the illustration in the next page:

Working load limit	**75 kN** (**16861 lb**)
Angle **(a)**	**10 – 20°**
Angle **(b)**	**30 – 40°**
Angle **(c)**	**90°** or less
Angle **(d)**	**90°** or less
Angle **(e)**	**90°** or less
Angle **(f)**	**90°** or less

NOTE: *The reference machine weight is* ***24800 kg*** *(****54675 lb****). The working load limit value given above is obtained by multiplying the tension applied to the wire rope/ chain or other fastening equipment by a safety factor of 1.25 during fastening.*

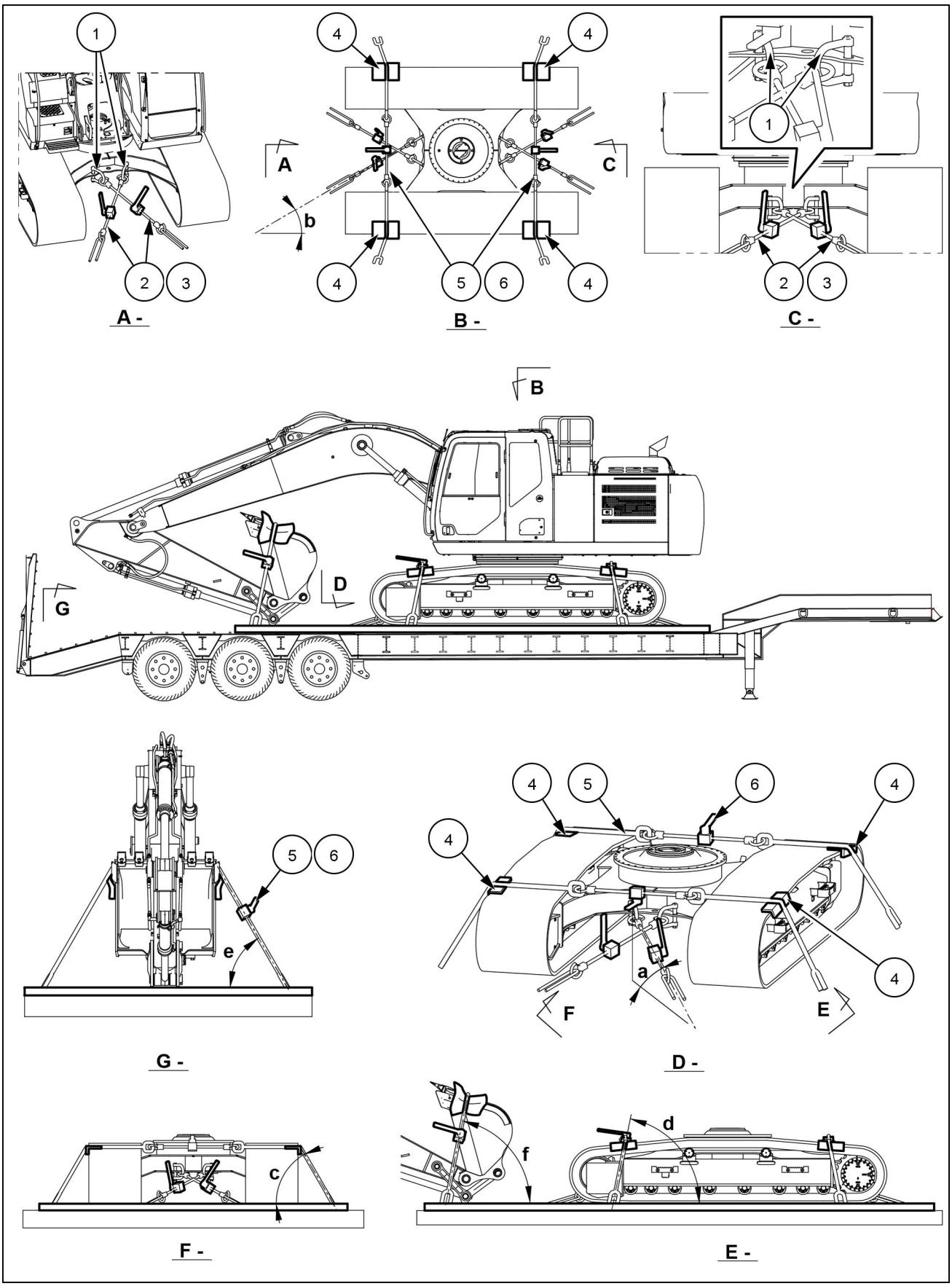
1. Install the shackles **(1)** to the front and rear lashing points of the lower frame.
2. Install one end of a wire rope/chain **(2)** to each of the four shackles **(1)**.
3. Set the wire ropes/chains **(2)** in an X shape as shown in the illustration, and fix them to the tie-down points on the trailer. Make sure to respect the angles indicated in the table.
4. Tension the wire ropes/chains evenly with a load-tightening device **(3)** to secure the machine to the trailer.

The machine should be further secured onto the trailer bed with a vertical tie-down.

NOTICE: *Make sure not to tie-down the machine only in the vertical direction: the required tie-down force would be high, and this will cause damages to the tracks and to the other traction components.*

1. Put pads **(4)** over the tracks in the positions identified by the lashing point decals along the sides of the lower frame.
2. Route the wire rope/chain **(5)** across the tracks, and fix them to the tie-down points on the trailer.
3. Tension the wire rope/chain evenly with a load-tightening device **(6)**.

Check that the machine has been secured completely.

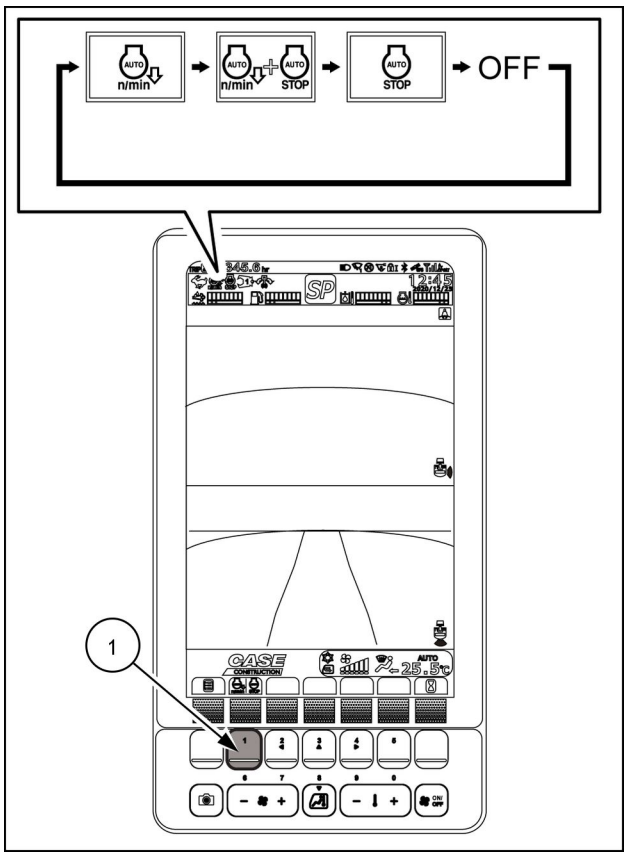


SMIL24CEX0488HA 1

Unloading the machine from a transport trailer

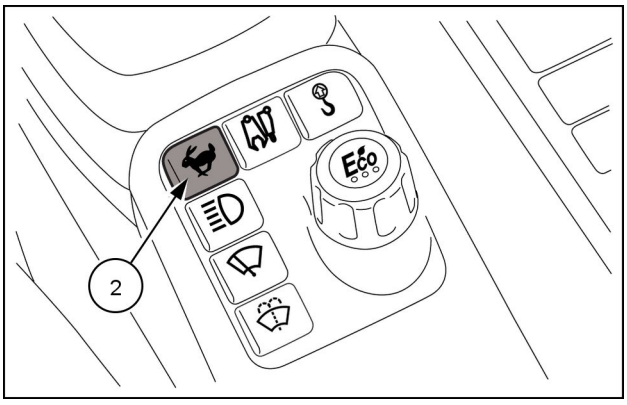
Rear loading type transport trailer

1. Position the trailer on firm and level ground. Put blocks to the tires of trailer to prevent trailer from moving.
2. Remove chains, wire ropes, chocks, blocks and other devices used to secure the machine during road transport.
3. Prepare the loading ramps. If the ramps are included in the trailer frame, lower them to the ground. If the ramps are external to the trailer, match them to the rear edge of the trailer avoiding any bump between trailer bed and external ramps.
4. Get on the machine and start the engine.
5. Make sure to deactivate the auto idle function and the auto shut-down function. Press the idle mode button **(1)** until any idle icon on the display turns off.



SMIL21CEX3500BA 1

6. Press the travel mode selector button **(2)** to select the low travel speed. The “Turtle” icon appears on the display.



SMIL21CEX3498AA 2

7. Select the P work mode and set the gate lock lever in forward position.

   NOTE: *The recommended practice is to set* ***(P8)*** *work mode.*

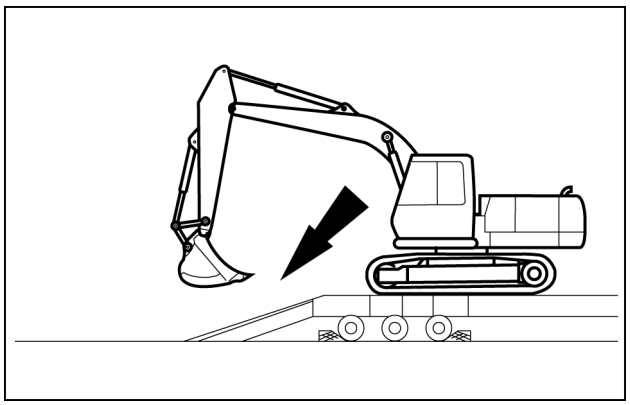
8. If the front equipment is installed, operate the arm and bucket controls so that the arm stands vertical and the bottom of the bucket is about **20 cm** (**7.9 in**) above the trailer bed.

   NOTICE: *Starting from this position, the travel control levers must be pushed forward to move on the trailer bed and on the ramps. Confirm the travel control directions before start moving.*

9. Travel slowly towards the back of the trailer and stop as reaching the ramps. If the front equipment is installed, operate boom and arm softly in order to get the bucket close to the ground ahead of the ramps. Avoid to fully extend the bucket cylinder to prevent damaging it due to accidental impacts with the ground.

10. Move down on ramps with extreme care while operating boom and arm softly in order to keep the bucket close to the ground and so to grant machine stability.

11. Pass through the ramps completely and stop the machine once it gets on the ground.



SMIL20CEX0037AC 3

Shipping transport

Lifting the machine with a crane

⚠ WARNING

Improper operation or service of this machine can result in an accident.
Assign a supervisor to direct worksite operations. Agree on all safety measures, procedures, and suitable hand signals.
Failure to comply could result in death or serious injury.

W0287A

⚠ WARNING

Crushing hazard!
The lifting systems must be operated by qualified personnel who are aware of the correct procedures to follow. Make sure all lifting equipment is in good condition, and all hooks are equipped with safety latches.
Failure to comply could result in death or serious injury.

W0256A

⚠ WARNING

Hazard to bystanders!
ALWAYS make sure the work area is clear of bystanders and domestic animals before starting this procedure. Know the full area of movement of the machine. Do not permit anyone to enter the area of movement during this procedure.
Failure to comply could result in death or serious injury.

W0245A

Preparation before lifting the machine

Always lift the machine with the complete front equipment (boom and arm) installed, and fitted with an average size bucket. Never lift the machine fitted with heavy attachments as hydraulic breakers or hydraulic crushers.

NOTICE: *if the machine has to be lifted without the complete front equipment (boom and arm), the counterweight shall be removed from the base machine. Lifting up the base machine with the counterweight installed affects the stability of the base machine during lifting operation.*

Make provision for wire ropes and other lifting devices of proper capacity in order to tackle the machine weight. Refer to Chapter 8 for the machine weights, and always consider **120%** of these reference weights for the selection of the lifting devices.

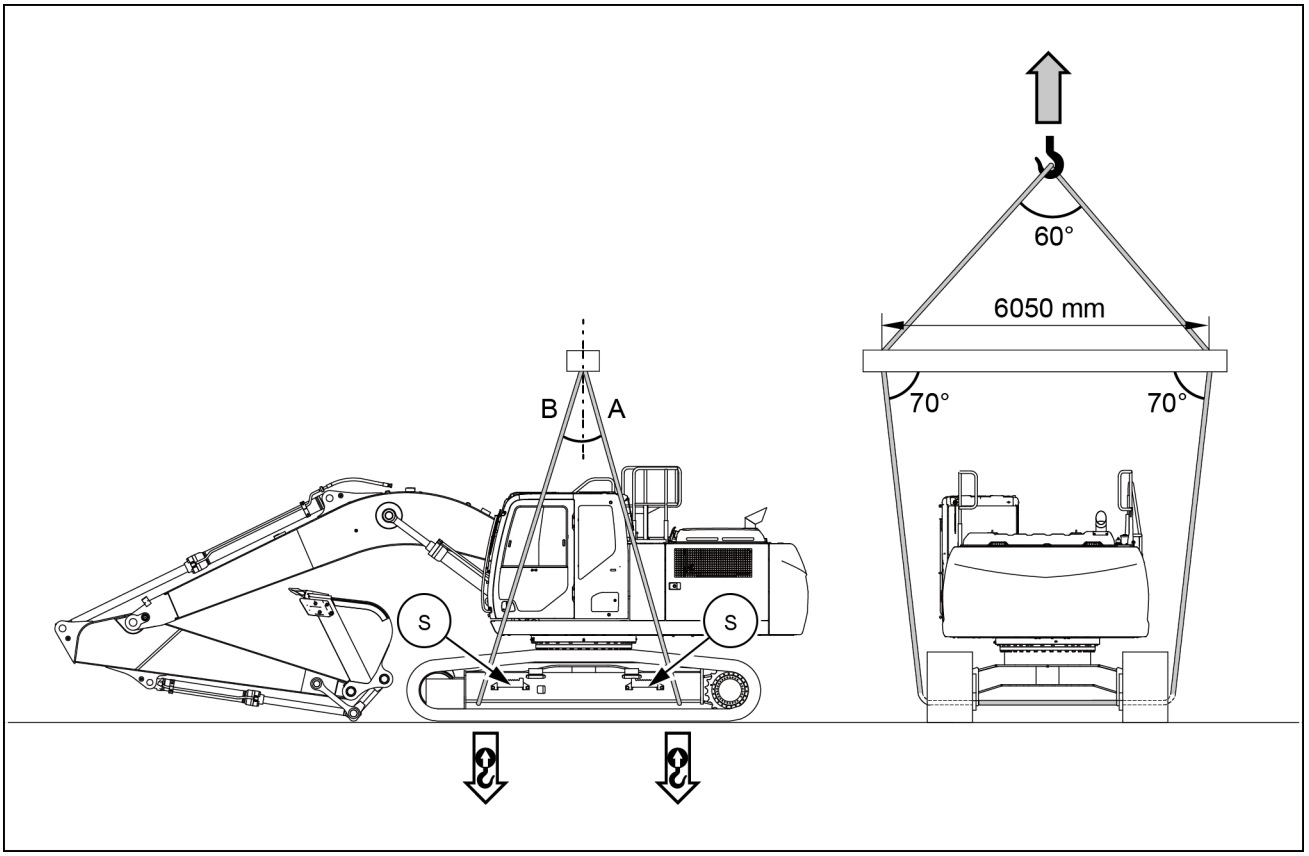
Refer to the picture on the next page for layout and sizing of the wire ropes and of the other lifting devices to be used. Always make sure to check the machine stability before carrying out the lifting operation.

NOTICE: *As reference guideline, each one of the angles A and B between the wire ropes and the middle of the expander should be preliminary assumed at* ***15°*** *. However, these values shall be checked and thus calibrated to tackle the actual machine configuration. The overall angle A+B shall be anyway kept at* ***30 – 35°****.*

Make provision for wire ropes and other lifting devices fitted with selflocking hooks in order to avoid unintended opening during lift operation.

Make provision for wire ropes of sufficient length and expander of proper size to prevent interference with the machine body when lifting up the machine. Cover the wire ropes with paddings where they get in contact with the machine frames in order to protect the machine from damaging.

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



SMIL15CEXZ414FB 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 lock 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 anyway 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.*

Recovery transport

Towing the machine

⚠ WARNING

Misuse hazard!
Towing is a delicate maneuver that is always carried out at the risk of the user. The manufacturer's warranty does not apply to incidents or accidents that occur during towing. Where possible, carry out the repairs at the site.
Failure to comply could result in death or serious injury.

W0286A

⚠ WARNING

Hazard to bystanders!
The operator must be the only person on the machine when towing. Make sure that nobody else is on the machine or within its working range.
Failure to comply could result in death or serious injury.

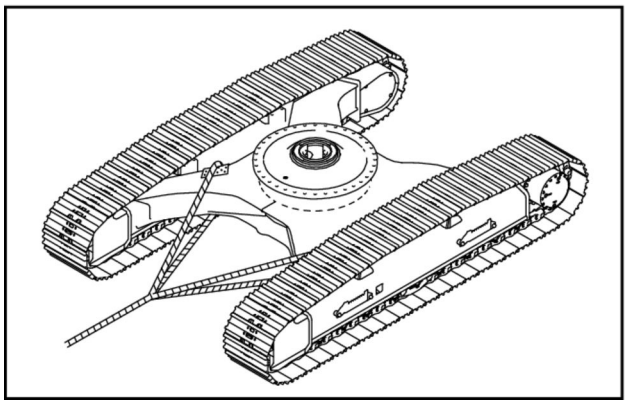
W0259A

As far as possible try to carry out repairs on spot or consult your CASE CONSTRUCTION Dealer.

NOTICE: *the machine must be towed very slowly, over a short distance and only if it is really unavoidable. Always tow the machine in alignment with the undercarriage.*

If the machine is bogged down, it must be towed as follows:

1. Make sure that it can be towed without risk of further damage.
2. Make sure that the shackles, chains and tackle are in perfect condition and strong enough to move the load.
3. Attach the shackles, chains and tackle to the undercarriage taking care to protect any salient angles.
4. Pull the machine without jerking, very slowly and in alignment with the undercarriage.



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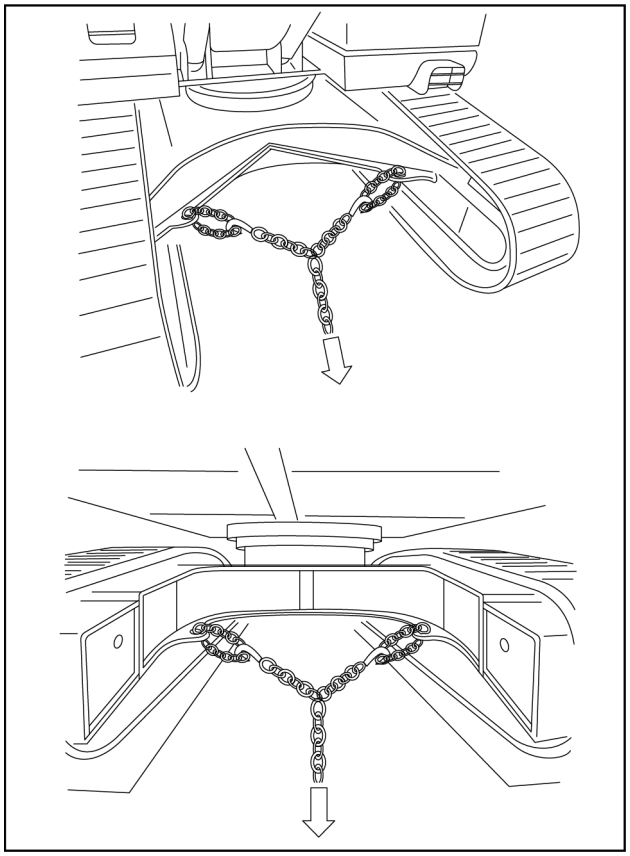
Towing a load

To tow a load of up to **10 t** (**22046 lb**) , use two of the towing holes provided for this purpose.



PTIL23CEX1046AB 2

6 - MAINTENANCE

General information

Basic instructions

⚠ WARNING

Improper operation or service of this machine can result in an accident.
If you do not understand a maintenance procedure, or doubt your ability to perform a maintenance procedure correctly, see your authorized dealer.
Failure to comply could result in death or serious injury.

W0157A

⚠ WARNING

Improper operation or service of this machine can result in an accident.
Raised equipment or machine movement without an operator can cause serious injury. Always do the following before performing any maintenance:
Park the machine on flat, level ground.
Lower the attachment to the ground.
Shut down the engine and remove the ignition key.
Lock the tracks.
Failure to comply could result in death or serious injury.

W0944D

⚠ WARNING

Falling object hazard!
Risk of injury from FALLING ENGINE HOOD. Latch the hood in the fully open position prior to working within the engine compartment.
Failure to comply could result in death or serious injury.

W1090B

NOTICE: *be sure all the service operations in this section are carried out punctually at the intervals given, in order to ensure optimum performance levels and maximum safety when using the machine.*

- Before any maintenance operation, park the machine on a hard and level ground, away from obstacles, and lower the attachment and the dozer blade (if equipped) to the ground.
- Unless otherwise specified, carry out all maintenance operations with the engine stopped and the key removed from the starter switch. Wait for all circuits to cool down before you start work.
- Clean the grease fittings before lubrication. Clean around plugs and filler holes before adding fluid. No dust or dirt must enter the components or the circuits. Wear suitable clothing and remember to use the necessary safety equipment.
- When carrying out service work on the machine, place the "Do not operate" tag on the instrument panel. Never climb down from the operator's compartment leaving the engine running.
- Remove the necessary lower panels during maintenance of certain machine components. Make sure the lower panels are properly closed before operating the machine.

Any modification to the machine without prior authorization could cause serious injury. Do not make any modifications without authorization. Consult your CASE CONSTRUCTION Dealer.

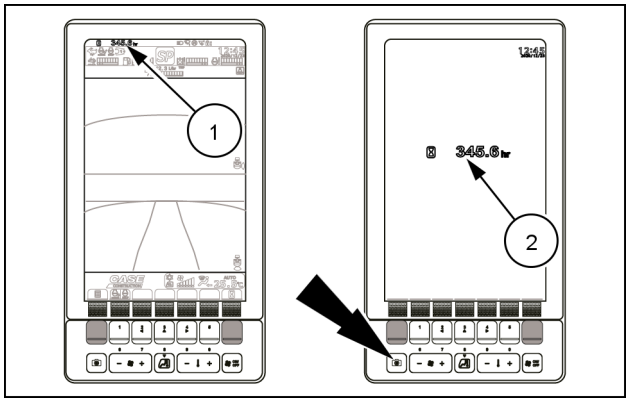
NOTICE: *if you use your machine in particularly harsh conditions (dusty or corrosive atmosphere, etc.), the servicing intervals should be reduced accordingly.*

NOTICE: *take particular care to replace all filters regularly. Clean filters mean longer engine running life.*

NOTE: *oil and fluid should not be thrown on the ground. They must be stored and removed by a company which is responsible for their recycling or their disposal.*

Hour meter

The machine control system is readily warning about the need of specific maintenance operations. However, some other maintenance operations have to be carried out on a regular basis without any specific warning. Make sure to get acquainted with the main time intervals indicated into this Chapter, and make sure to check the hour meter at the beginning of every working day in order to anticipate the need for maintenance operations at a certain time interval.



SMIL21CEX3248AA 1

Positions of the hour meter on display:

(1) Starter key in ON position.

(2) Starter key in OFF position, each time the cab door is opened, or each time the camera button is pressed.

Daily inspections

Every day, before starting work, it is necessary to inspect the machine and service certain of its components.

General remarks

- Check signs of leaking oil or water.
- Check that all screws and nuts are correctly tightened.
- Wipe off any dust (engine, operator's compartment etc.).
- Check for any signs of damage.

Engine

- Check the oil level and change the oil if necessary.
- Check the coolant level.
- Check the radiator for signs of clogging or deterioration.
- Check the radiator fan belt tension.
- Check the air filter is clean and not restricted.
- Check the components for signs of leaking oil or water.
- Check the condition of all lines.

Undercarriage

- Check the pad hardware.
- Check the condition of the tracks.
- Check that the upper and lower track rollers and the idler wheels are not leaking oil.

Upperstructure

- Check the fuel tank level.
- Check the **DEF/AdBlue®** tank level.
- Check the hydraulic tank level.
- Check that the hydraulic oil is clean.
- Check the components for signs of leaking oil or water.
- Check the condition of all lines.
- Make sure there are no electrical short circuits.
- Check the battery connections are properly tightened.
- Adjust the rear view mirrors.
- Check the cameras.

Attachment

- Check the cylinders are not leaking oil.
- Check the condition of all lines.
- Check the condition of the bucket and its tools.

After starting the engine

- Did the engine start correctly? Are the exhaust fumes normal? Any strange noises?
- Check for abnormal noise on the hydraulic components.
- Check the components for signs of leaking oil or water.
- Check the audible alarm devices, working lights and windshield wipers.
- Check that all circuits (travel, swing and tool) are functioning correctly.

NOTICE: *if the slightest defect is found, repair it immediately before using the machine or consult your CASE CONSTRUCTION Dealer.*

Biodiesel fuel

Biodiesel usage in CASE CONSTRUCTION products

Introduction to Fatty Acid Methyl Ester (FAME) biodiesel

FAME biodiesel, called biodiesel fuel in the following section, consists of a family of fuels derived from vegetable oils treated with methyl esters.

There are two main biodiesel fuel types: Rapeseed Methyl Ester (RME) and Soybean Methyl Ester (SME). RME is a blend of rapeseed and sunflower methyl ester, and is the preferred crop in Europe. SME is the preferred crop in the United States.

Biodiesel fuel is a renewable alternative fuel source. Its use and development is promoted worldwide, especially in Europe and in the United States.

NOTICE: *Your emissions control system is compatible with up to* ***7%*** *biodiesel fuel (B7). Be aware that the use of biodiesel fuel that does not comply with the standards mentioned in this section could lead to severe damage to the engine, fuel system or after treatment system of your machine. The use of non-approved fuels may void CASE CONSTRUCTION Warranty coverage.*

Biodiesel can be used to run Stage V diesel engines only when blended with standard diesel fuel:

- B7: indicates the blend of **7%** biodiesel and **93%** diesel fuels.

NOTICE: *Never use biodiesel blends higher than B7.*

Biodiesel fuel has several positive features in comparison with diesel fuel:

- Biodiesel adds lubricity to the fuel, which is beneficial in many circumstances, particularly as sulfur and aromatics are removed from the fuel.
- Biodiesel has a greater cetane number and burns cleaner.
- Biodiesel produces less particulate matter and reduces smoke emissions.
- Biodiesel is fully biodegradable and non-toxic.

Diesel and biodiesel fuel specifications

Stage V diesel fuel specifications are covered by the following:

- **EN 590** - Specification of Diesel fuel (10 ppm sulfur maximum).

Biodiesel blends are covered by:

- European Diesel Fuel Specification **EN 590** allows up to **7%** biodiesel since 2009. European fuel suppliers are allowed to use up to **7%** biodiesel fuel (B7) to supply the network.

Pure biodiesel blend stock (B100) specification is covered by the following requirements:

- Europe: **EN14214** - Automotive fuels. Fatty Acid Methyl Ester (FAME) for diesel engines. Requirements and test methods.
- **DIN V 51606** - German standard for biodiesel.

Before raw oil can be converted into usable biodiesel fuel, it must undergo transesterification to remove glycerides. During the transesterification process, the oil reacts with an alcohol to separate the glycerine from the fat or vegetable oil. This process leaves behind two products: methyl ester (the chemical name for biodiesel) and glycerine (a byproduct usually sold for use in soaps or other products).

NOTICE: *Biodiesel fuels approved for use in the CASE CONSTRUCTION equipment must be transesterified and comply with the European Standard* ***EN14214*** *or the German standard* ***DIN V 51606****.*

NOTICE: *Cold Pressed Biodiesel, Cold Pressed Oil, Straight Vegetable Oil (SVO), or more generally unrefined vegetable oils used as motor fuel, are fuels that are normally made from Rapeseed oil or similar high oil content crops. These kinds of fuel are not transesterified, so they do not fulfil the* ***EN14214*** *requirements. There is no recognized quality standard available for these types of fuel. Therefore the use of Cold Pressed Biodiesel, Cold Pressed Oil, Straight Vegetable Oil (SVO), or more generally unrefined vegetable oils used as motor fuel are NOT APPROVED at any blend in any CASE CONSTRUCTION product.*

NOTICE: *Any engine and fuel injection equipment fitted to a CASE CONSTRUCTION vehicle found to have run with any blend of NON-APPROVED fuel (fuel not fulfilling the specification described in the requirement* ***EN14214****) will no longer be covered for Warranty by CASE CONSTRUCTION.*

Biodiesel fuel usage conditions

You must stringently follow the biodiesel fuel usage conditions. Incorrect application of the biodiesel fuel usage conditions could lead to severe damage to the engine, fuel injection equipment and aftertreatment system.

The main concerns related to operation with biodiesel fuels are:

- Filters and injector blockage caused by poor fuel quality.
- Wear and corrosion of internal components due to water content, which affects lubricity.
- Deterioration of some rubber sealing compounds in the fuel system.
- Biodiesel oxidation, which can lead to the formation of deposits that can harm the fuel injection system.

NOTICE: *Any problem in the engine fuel injection equipment associated with non-compliance to the following conditions for biodiesel fuel handling and maintenance will not be covered for Warranty by CASE CONSTRUCTION.*

Purchase biodiesel fuel from a trusted supplier who understands the product and maintains acceptable fuel quality.

The use of biodiesel blends up to B7 will not void the CASE CONSTRUCTION warranty as long as the following conditions for biodiesel fuel handling and maintenance are stringently followed:

Biodiesel fuel must be pre-blended by the supplier. Mixing biodiesel fuels on-site can result in an incorrect mixture that could damage the engine and/or fuel system.

NOTICE: *CASE CONSTRUCTION may void your warranty if the problem is associated with poor fuel quality due to improper blending. It is the responsibility of the fuel supplier and/or yourself to ensure the right type of fuel and blend is delivered and used.*

Storage

The machine should not be stored for long periods without changing the diesel fuel in the fuel system.

NOTICE: *Biodiesel is highly hygroscopic and tends to collect water more than diesel fuel. This increases the risk of algae and bacteria growth which can cause severe damage to the fuel injection system. Keep the machine fuel tanks and on-site storage tanks as full as possible to limit the amount of air and water vapors inside the tank. Drain water from the tanks at least once a week.*

If the machine should be stored for long periods, make sure to replace the diesel fuel every three months at most.

Fluids and lubricants

By using appropriate fluids and lubricants the excavator can operate in ambient temperatures ranging from **-20 °C** (**-4 °F**) to **45 °C** (**113 °F**). Refer to the list of fluids and lubricants contained in this manual.

NOTICE: *When operating the machine in ambient temperatures outside the above mentioned range, consult your CASE CONSTRUCTION Dealer for specific machine provision and for specific fluids and lubricants to be used.*

Application	Capacity	Product name	Specifications
Fuel tank	**410 L** (**108 US gal**)	—	**EN 590**
DEF/ADBLUE® tank	**84 L** (**22 US gal**)	—	**ISO 22241-1**
Engine	**14.6 L** (**3.9 US gal**)	**AKCELA UNITEK PLUS SAE 10W-40**	**SAE 10W40** **ACEA E9** **API CK-4**
Swing reduction unit	**6 L** (**2 US gal**)	**AKCELA GEAR 135H EP 85W-140**	**SAE 85W-140** **API GL-5**
Travel reduction unit	**4.75 L** (**1.25 US gal**)	**AKCELA GEAR 135H EP 85W-140**	**SAE 85W-140** **API GL-5**
Engine cooling system	**30 L** (**8 US gal**)	**AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT** CONCENTRATE (*)	**ASTM D6210** TYPE I-FF
		AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT 50/50 PREMIXED	**ASTM D6210** TYPE III-FF
Hydraulic oil tank (**)	**162 L** (**43 US gal**)	**AKCELA HYDRAULIC EXCAVATOR FLUID**	**ISO 11158** L-HV46
Grease	—	**AKCELA MOLY GREASE**	**NLGI 2**

(*) Concentrate antifreeze to be mixed 50/50 with distilled (deionized) water.

(**) The total capacity (without optional circuits) of the hydraulic oil system is:

280 L (**74.0 US gal**)

Engine coolant

AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT is the reference genuine product for machine service.

NOTICE: *Never add Supplemental Coolant Additives (SCA) when using* ***AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT****.*

AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT has to be used if refilling of the cooling system is needed. Refer to the dedicated procedure and recommendations described in Chapter 6.

AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT shall be used for the replacement of engine coolant according to the maintenance program of the machine. The replacement shall also be tackled in case of repair or replacement of components of the cooling system. Refer to the dedicated procedure described in Chapter 6.

The engine cooling system shall always be refilled with coolant solution made by mixture of antifreeze and distilled (deionized) water.

NOTICE: *Never refill the cooling system with only antifreeze. Never refill the cooling system with only water.*

Using **AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT**, a 50/50 mixture of antifreeze and distilled (deionized) water grants proper performance of the engine cooling system in the above mentioned operating temperature range of the machine.

AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT is available as:

- 50/50 PREMIXED coolant solution ready for usage.
- CONCENTRATE antifreeze to be mixed 50/50 with distilled (deionized) water.

NOTICE: *If operating in extreme winter climate, a coolant solution made by 60/40 antifreeze/distilled (deionized) water mixture shall be used in order to grant proper performance of the engine cooling system.*

NOTICE: *Never use coolant solution with more than* ***60%*** *of antifreeze. This affects the cooling capacity of the mixture.*

When the coolant solution is prepared starting from the CONCENTRATE product, the antifreeze concentration in the mixture of antifreeze and distilled (deionized) water can be determined with a refractometer designed to measure ethylene glycol content.

If distilled (deionized) water is not available, use water for dilution with the following properties:

Property	Maximum limit
Total Solids	**340 ppm**
Total Hardness	**170 ppm**
Chloride (Cl)	**40 ppm**
Sulfate (SO4)	**100 ppm**
Acidity pH	5.5 to 9.0

NOTICE: *Never use hard water, sea water and softened sea water that has been conditioned with salt. The minerals and salts present in potable water can cause corrosion and deposits resulting in shortened engine life.*

Fuel

Use only Ultra-Low Sulphur Diesel (S10) that meets **EN 590** specifications.

Using other types of fuel may lead to stalled engine output or deterioration in fuel economy.

NOTICE: *The warranty shall be invalid if any serious defect is caused by usage of any other fuel. Using any fuel other than the prescribed type will cause damages to the fuel supply system, to the fuel injection system, to the engine block, and to the exhaust after treatment system. CASE CONSTRUCTION will not be responsible to any of such damages.*

If the temperature drops below the fuel cloud point, output deficiency or engine start problems may occur due to wax crystals.

NOTICE: *If operating in severe winter climate, consult the fuel supplier or the CASE CONSTRUCTION dealer for specific diesel fuel according to the* ***EN 590*** *to be used.*

The diesel fuel to be used on the machine shall:

- be free from dust particles, even minute ones.
- have the proper viscosity.
- have a high cetane number.
- present great fluidity at low temperatures.
- have low sulphur content.
- have very little residual carbon.

NOTICE: *Never use a mix of diesel fuel and old engine oil. The fuel injection system and the exhaust after treatment system will be severely damaged.*

NOTICE: *consult the fuel supplier or the CASE CONSTRUCTION Dealer regarding appropriate use of fuel additives.*

NOTICE: *in order to prevent condensation during cold weather, fill the fuel tank to full after completing the day's work.*

Fuel storage:

Long storage can lead to the accumulation of impurities and condensation in the fuel. Engine trouble can often be traced to the presence of water in the fuel. The storage tank must be placed outside and the temperature of the fuel should be kept as low as possible. Drain off water and impurities regularly.

Disposal of fluids, lubricants, and spare parts

Fluids, lubricants and spare parts used on the machine are not fully compatible with the environment. Make sure to carry out all maintenance operations using appropriate tools, in order to avoid any risk of damaging the environment.

NOTE: *for example, make sure that the receptacle for collecting oil to be replaced is not leaking.*

Never spread fluids or lubricants on the ground or into water. Consult the CASE CONSTRUCTION Dealer or the Local Environmental Agency in order to obtain information on the correct method of disposing fluids and lubricants used on the machine.

Never throw away spare parts as filters or batteries. Consult the CASE CONSTRUCTION Dealer or the Local Environmental Agency in order to obtain information on the correct method of disposing filters, batteries or other spare parts used on the machine.

Engine oil recommended operating temperature range

CASE CONSTRUCTION prescribes the use of engine oils that meet CNH Industrial standard **MAT3571** in your engine.

You may use other engine oils only if they meet **API CK-4** or **ACEA E9** performance requirements.

CASE CONSTRUCTION engine oils exceed API and ACEA performance requirements.

NOTE: *Do not put performance additives or other oil additive products in the engine crankcase. See your CASE CONSTRUCTION dealer for engine oil analysis test package information.*

RECOMMENDED VISCOSITY GRADES AT VARYING AMBIENT TEMPERATURE LIMITS										
	(H) SAE 0W-40									
		(H) SAE 10W-40								
-40 °C -40 °F	-30 °C -22 °F	-20 °C -4 °F	-10 °C 14 °F	0 °C 32 °F	10 °C 50 °F	20 °C 68 °F	30 °C 86 °F	40 °C 104 °F	50 °C 122 °F	
(H) = Engine oil pan or coolant block heater recommended in this range										

Engine oil and filter service intervals

Always change engine oil and filter at the service intervals prescribed in the maintenance chart, or annually (whichever comes first).

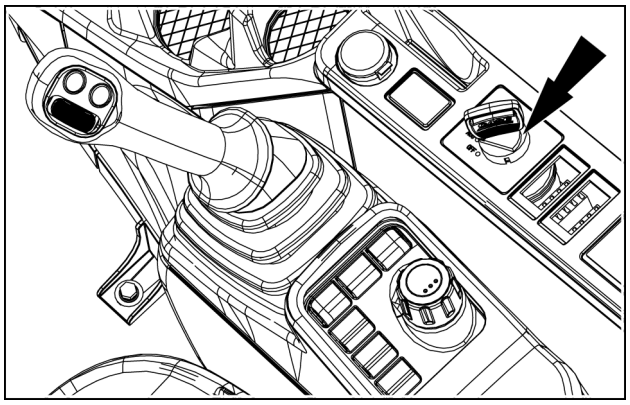
CASE CONSTRUCTION defines the oil/filter change intervals given in this manual from tests with CASE CONSTRUCTION lubricants/filters.

The service intervals for engine oil and filter are based on type of engine oil and oil filter used, and also on sulfur content of diesel fuel. Never use filters other than CASE CONSTRUCTION genuine filters. See the previous page for the approved sulfur content and for other prescriptions for diesel fuel to be used.

Releasing pressure in the hydraulic system

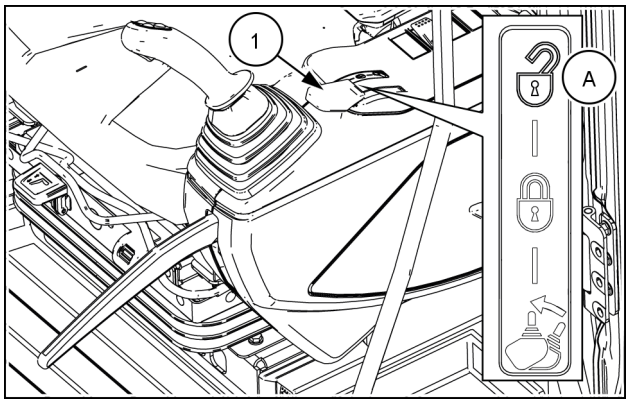
NOTICE: *before carrying out any work on the hydraulic system, there should be no pressure in any of the circuits.*

1. Place the machine on flat, level ground, lower the attachment to the ground and stop the engine.
2. Turn the starter key to the ON position.



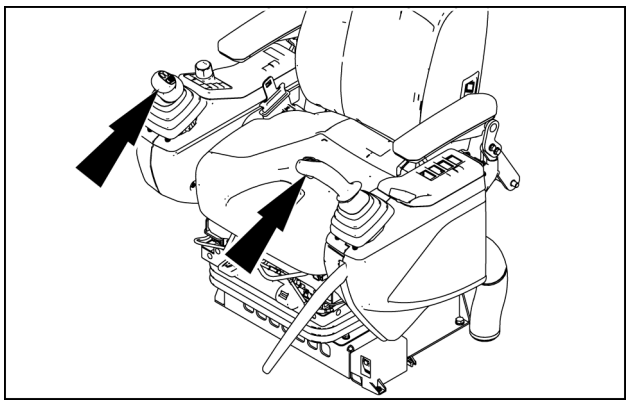
SMIL21CEX3158AA 1

3. Set the gate lock lever **(1)** in forward position **(A)**.



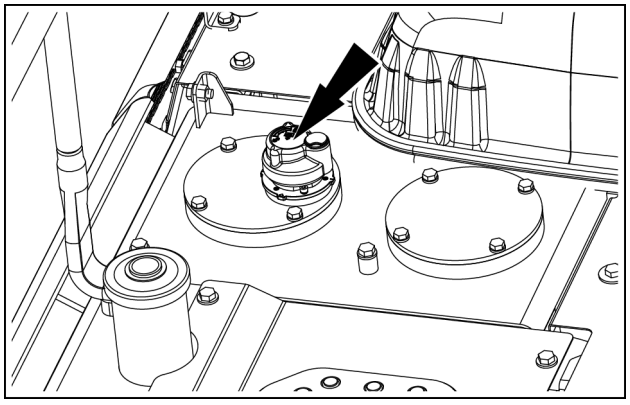
SMIL22CEX1958AA 2

4. Operate the control levers from right to left and front to rear a dozen times approximately.
5. Turn the starter key to the OFF position.



SMIL21CEX3157AA 3

6. Unlock the hydraulic tank breather with the starter key.
7. Turn the hydraulic tank breather about **30°** counterclockwise to relieve the pressure in the hydraulic tank (It stops rotating once it hits the stopper).



SMIL21CEX4973AA 4

Fuel system bleeding

⚠ WARNING

Pressurized system!
Only use the bleed screw to bleed air from the fuel system. DO NOT loosen the fuel or injector lines to bleed air. Injury or damage can occur. Fuel or injector lines are under very high pressure. Failure to comply could result in death or serious injury.

W0285A

⚠ WARNING

Fire hazard!
Leaking fuel could cause a fire. DO NOT perform the bleed procedure while the engine is hot. Failure to comply could result in death or serious injury.

W1119A

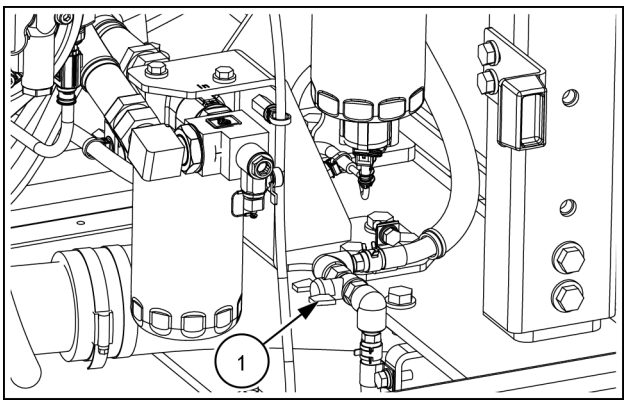
Air gets trapped in the fuel system after maintenance or repair.

Also, air enters the fuel system when tank has become completely empty.

Moreover, air eventually gets dissolved in the fuel after the machine has been stored for a quite long time.

The air must be thus bled away from the fuel system in order to grant a proper fuel supply, and to avoid severe damages to the high pressure injection components.

Open the fuel cut valve **(1)**.



SMIL21CEX4984AA 1

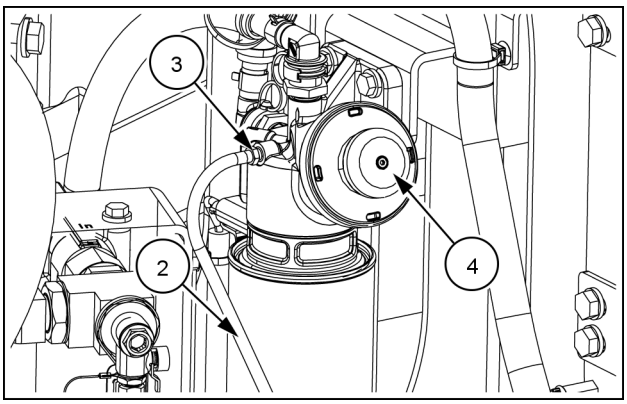
Place a container with an appropriate capacity below the end of the draining hose **(2)**.

Loosen the purge screw **(3)** using a **11 mm** wrench.

Press several times the priming pump **(4)** until the fuel flows out from the draining hose **(2)** without air bubbles.

Tighten the purge screw **(3)**.
Tightening torque: **15 N·m** (**11 lb ft**)

Close the rear right-hand door.



SMIL21CEX5012AA 2

Protecting the electronic and electrical systems during battery charging or welding

⚠ DANGER

Improper operation or service of this machine can result in an accident.
Any unauthorized modifications made to this machine can have serious consequences. Consult an authorized dealer on changes, additions, or modifications that may be required for this machine. Do not make any unauthorized modifications.
Failure to comply will result in death or serious injury.

D0030A

⚠ DANGER

Battery acid causes burns. Batteries contain sulfuric acid.
Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.
Failure to comply will result in death or serious injury.

D0117A

Whenever carrying out a welding operation on the undercarriage or upperstructure carriage as authorized by the manufacturer and in accordance with his instructions, disconnect the batteries, disconnect the alternator B+ and D+ terminal wires and connect the welding apparatus earth cable to the component on which the welding operation is to be performed. Never connect the welding apparatus to the undercarriage when welding on the upperstructure (or vice-versa). Never connect the welding apparatus earth to a component of the hydraulic system.

To avoid damage to the electronic/electrical systems, always observe the following:

- Never make or break any of the charging circuit connections, including the battery connections, when the engine is running.
- Never short any of the charging components to ground.
- Make sure to set the battery disconnect switch to OFF position in advance or cut-off the connection of the ground cable when executing arc welding to the machine.
- Always disconnect the negative cable from the battery when charging the battery in the machine with a battery charger.

NOTICE: *position the welder ground clamp as close to the welding area as possible. If welding in close proximity to a computer module, then the module should be removed from the machine. Never allow welding cables to lay on, near or across any electrical wiring or electronic component while welding is in progress.*

NOTICE: *if welding must be performed on the unit, either the machine, the battery ground cable must be disconnected from the machine battery. The electronic monitoring system and charging system will be damaged if this is not done.*

Maintenance planning

Maintenance chart

Maintenance action	Grease	Check	Replace	Change fluid	Test	Cleaning	Drain fluid	Page no.
Break-in period								
Grease points (Bucket)	x							**6-15**
Cab protection (ROPS and FOPS)		x						**6-15**
Tightening torques		x						**6-15**
Track shoe bolt torque		x						**6-15**
Hydraulic oil return filter			x					**6-15**
Pilot line filter			x					**6-15**
Swing reduction unit oil				x				**6-15**
Travel reduction units oil				x				**6-15**
Every 10 hours								
Engine oil level		x						**6-16**
Engine coolant level		x						**6-17**
Fuel tank					x			**6-19**
Every 50 hours								
Air conditioner filters						x		**6-20**
Grease points (Bucket)	x							**6-22**
Grease points (Boom and arm)	x							**6-23**
Every 250 hours								
Swing reduction unit oil		x						**6-26**
Travel reduction oil (Checking the level)		x						**6-27**
Engine primary air filter						x		**6-29**
Batteries		x						**6-32**
Hydraulic oil tank					x			**6-35**
Tightening torques		x						**6-36**
Track shoe bolt torque		x						**6-37**
Track rollers and idler wheels		x						**6-38**
Cab protection (ROPS and FOPS)		x						**6-38**
Every 500 hours								
Turntable bearing	x							**6-39**
Radiator and coolers						x		**6-42**
Every 1000 hours								
Engine oil and filter				x				**6-44**
Fuel pre-filter			x					**6-46**
Fuel filter			x					**6-47**
DEF/AdBlue® tank vent filter			x					**6-48**
Hydraulic tank breather filter			x					**6-49**
Engine air filters			x					**6-50**
Hydraulic fluid analysis		x						**6-53**
Swing reduction unit oil				x				**6-54**
Travel reduction oil				x				**6-56**
Alternator		x						**6-58**
Starter motor		x						**6-58**
Every 1500 hours								
Blow-by filter			x					**6-60**
Every 2000 hours								
Hydraulic oil suction filter						x		**6-61**
Hydraulic oil return filter			x					**6-63**

Maintenance action	Grease	Check	Replace	Change fluid	Test	Cleaning	Drain fluid	Page no.
Pilot line filter			x					**6-64**
Air conditioner filters			x					**6-65**
Engine valve rocker clearance adjustment		x						**6-65**
Every 4000 hours								
Engine coolant				x				**6-66**
DEF/AdBlue® tank suction filter					x			**6-70**
DEF/AdBlue® supply module filter			x					**6-72**
Pump outlet hoses		x						**6-73**
Every 5000 hours								
Hydraulic oil and filters				x				**6-74**
When necessary								
Track tension		x						**6-77**
Fuel tank strainer					x			**6-80**
Engine oil analisys						x		**6-81**
Gas spring inspection		x						**6-82**
Bulb replacement (inside cab)			x					**6-83**
LED work lights on boom, cab and toolbox			x					**6-84**
Bucket teeth			x					**6-86**
Cylinders		x						**6-88**
Plastic and resin parts					x			**6-88**
Air-conditioning system		x						**6-89**
DEF/AdBlue® tank drain				x				**6-91**

Break-in period

Grease points (Bucket)

Lubricate the bucket linkage every **10 h** within the first **50 h**: to lubricate the bucket linkage refer to page **6-22** .

Cab protection (ROPS and FOPS)

Check the cab protections after **50 h**: To check the cab protections refer to page **6-38**.

Tightening torques

Check the tightening torques after **50 h**: To check the tightening torques refer to table on page **6-36**.

Track shoe bolt torque

Check the tracks shoes bolts torque after **50 h**: To check the tightening torques refer to table on page **6-37**.

Hydraulic oil return filter

Replace the hydraulic return filter after **250 h**: To replace the hydraulic return filter perform the operations described on page **6-63**.

Pilot line filter

Replace the pilot filter after **250 h**: To replace the pilot filter perform the operations described on page **6-64**.

Swing reduction unit oil

Replace the swing reduction gear oil after **250 h**: To replace the swing reduction gear oil perform the operations described on page **6-54**.

Travel reduction units oil

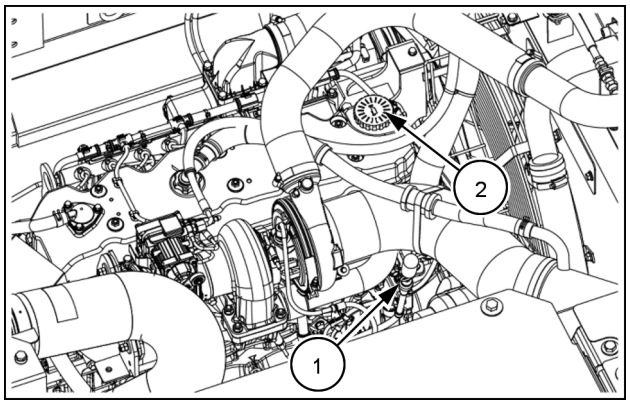
Replace the travel reduction gear oil after **250 h**: To replace the travel reduction gear oil perform the operations described on page **6-56**.

Every 10 hours

Engine oil level

Check the engine oil level every **10 h** or every day
Lubricant: **AKCELA UNITEK PLUS SAE 10W-40**

1. Park the machine on a flat and level place.
2. Stop the engine, and remove the starter key.
3. After stopping the engine for **30 min** or more, raise and lock the engine hood.
4. Remove the oil dipstick **(1)**, and wipe oil off the dipstick with a clean cloth.
5. Reinsert the oil dipstick into the guide tube as far as it will go, and then take it out.

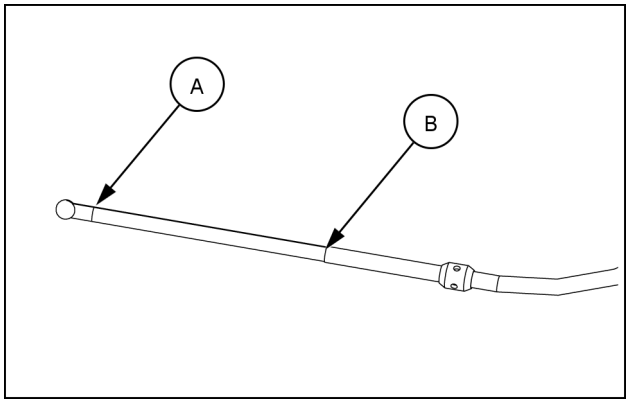


SMIL21CEX4401AA 1

6. The engine oil level is optimal when the oil level is between the mark **(A)** (minimum) and mark **(B)** (maximum).
7. If the oil level is at or below the mark **(A)** (minimum) on the oil dipstick, remove the fill plug **(2)** and pour in oil until the level reaches the mark **(B)** (maximum).

NOTE: *Make sure that the oil level is not above the* ***(B)*** *(maximum) on the oil dipstick. Doing so will cause such problems as poor fuel economy and an abnormal rise in coolant temperature.*

8. Install the fill plug **(2)**.
9. Close and lock the engine hood.



SMIL21CEX3170AA 2

Engine coolant level

⚠ WARNING

Hazardous chemicals!
Coolant can be toxic. Avoid contact with skin, eyes, and clothing. Antidotes:
EXTERNAL - Rinse thoroughly with water. Remove soiled clothing.
INTERNAL - Rinse the mouth with water. DO NOT induce vomiting. Seek immediate medical attention.
EYES - Flush with water. Seek immediate medical attention.
Failure to comply could result in death or serious injury.

W0282A

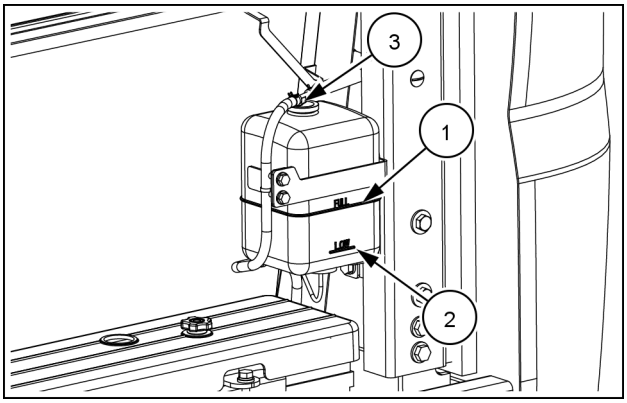
Check the coolant level in the reserve tank every **10 h** or every day
Fluid: **AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT**

NOTICE: *make sure that the level of the engine coolant is checked after the engine has cooled down.*

NOTICE: *the refilling of the engine coolant should be done only if the level of coolant in the reserve tank is at the LOW mark.*

NOTICE: *If the refilling frequency is higher than **250 h**, CASE CONSTRUCTION recommends not to further refill the system: carefully inspect the cooling circuit for damages, replace any damaged part, and then replace the whole fluid into the cooling system. Refer to the dedicated procedure described ahead in this Chapter.*

1. Park the machine on a flat and level place.
2. Stop the engine, and remove the starter key.
3. Open the rear left-hand door.
4. Check that the level of the reserve tank is between the FULL **(1)** mark and the LOW **(2)** mark.
5. If the coolant level is at the LOW mark, remove the plug **(3)** and add coolant until the level is right below the FULL mark.
6. Install the plug **(3)**.
7. Close the rear left-hand door.



SMIL21CEX4971AA 1

Hydraulic oil level

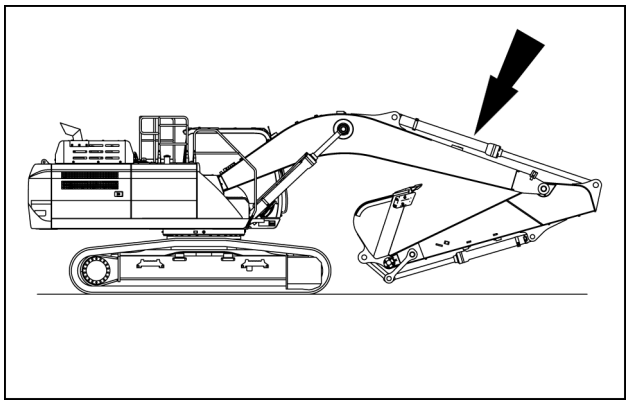
⚠ WARNING

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

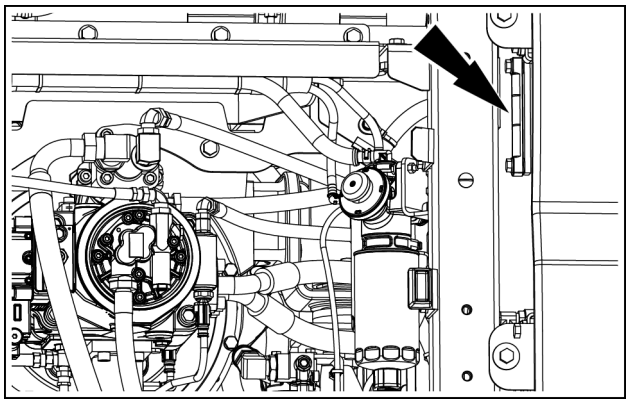
Check the hydraulic oil level every **10 h** or every day
Fluid: **AKCELA HYDRAULIC EXCAVATOR FLUID**

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



SMIL21CEX3171AA 1

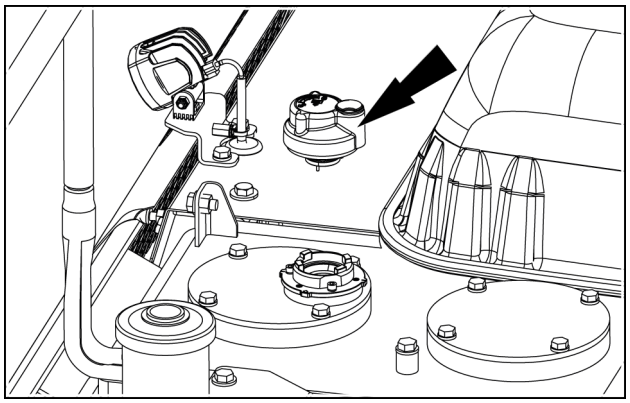
3. Open the rear right-hand door.
4. Check the indicator of the hydraulic oil level. The oil level should be in the middle of the band indicated by the two lines.



SMIL21CEX4972AA 2

5. 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 top surface of the hydraulic tank.
   - Remove the hydraulic tank breather, and supply hydraulic oil to the tank.
   - Install the hydraulic tank breather.

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



SMIL22CEX2001AA 3

Fuel tank

⚠ WARNING

Fire hazard!
When handling diesel fuel, observe the following precautions:
1. Do not smoke.
2. Never fill the tank when the engine is running.
3. Wipe up spilled fuel immediately.
Failure to comply could result in death or serious injury.

W0099A

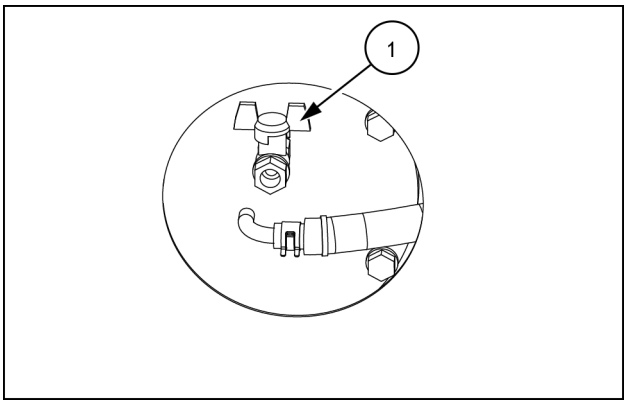
Drain water and sediment from the fuel tank every **10 h** or every day

NOTICE: *The fuel tank must be drained taking precautions so that any foreign material may gets inside. Failing to comply will lead to severe damages to the fuel supply system and to the fuel injection system.*

1. Park the machine on a hard and level ground.
2. Orient the upper structure frame so that there is enough free space under the fuel tank to place a container of suitable capacity.
3. Stop the engine and remove the starter key.
4. Place a container of a suitable capacity under the fuel tank.
5. Open the drain valve **(1)** and drain the accumulated sediment and water.

NOTICE: *the drained materials shall be disposed according to the local Regulations for special wastes.*

6. Close the drain valve.



SMIL21CEX4974AA 1

Every 50 hours

Air conditioner filters

⚠ CAUTION

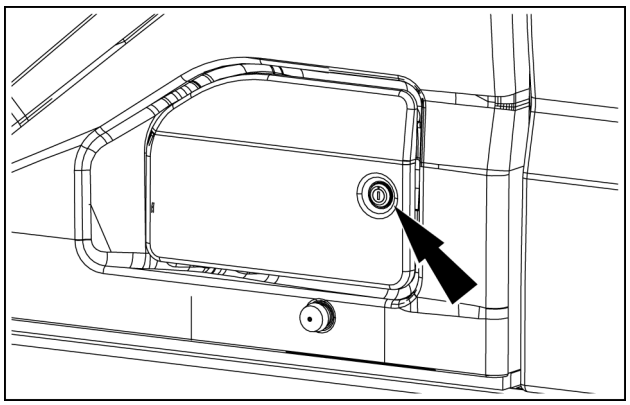
Flying debris!
Compressed air can propel dirt, rust, etc. into the air. Wear eye and face protection when using compressed air.
Failure to comply could result in minor or moderate injury.

C0049A

Clean the air inlet filter every **50 h**
Clean the air circulation filter every **50 h**

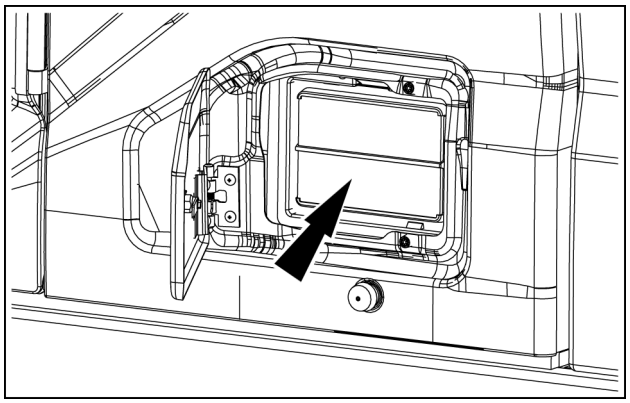
Air inlet filter

1. Open the cover of the air inlet filter with the starter key.



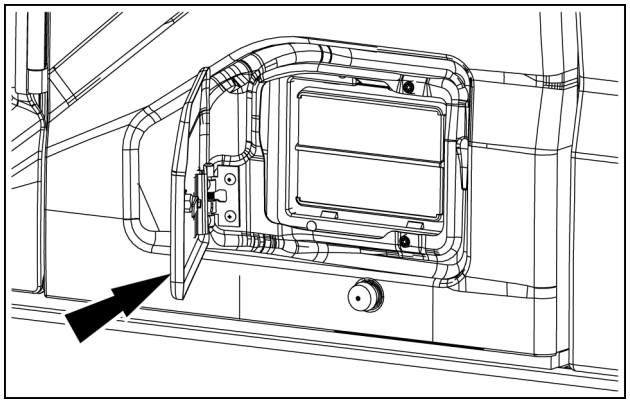
SMIL21CEX4334AA 1

2. Remove the filter and clean it with compressed air. If the filter is damaged, replace it.



SMIL21CEX4335AA 2

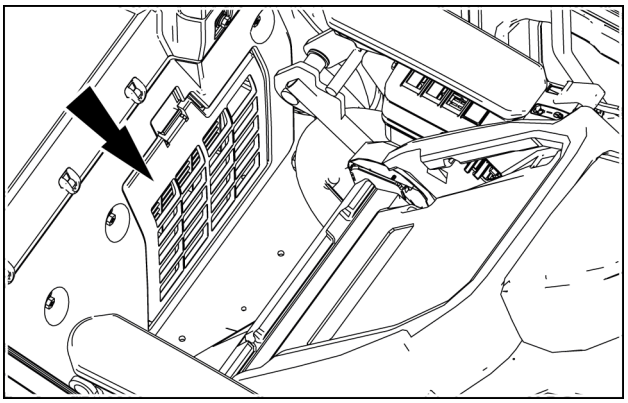
3. Install the air inlet filter.
4. Close the cover and lock it with the starter key.



SMIL21CEX4335AA 3

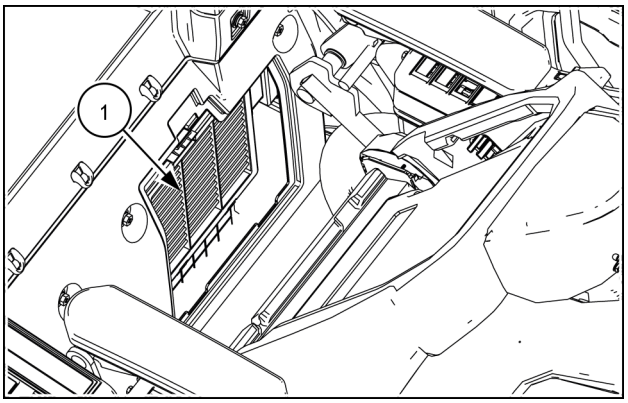
Air circulation filter

1. Slide the seat fully forward.
2. Remove the filter cover located behind the seat.



SMIL22CEX1265AA 4

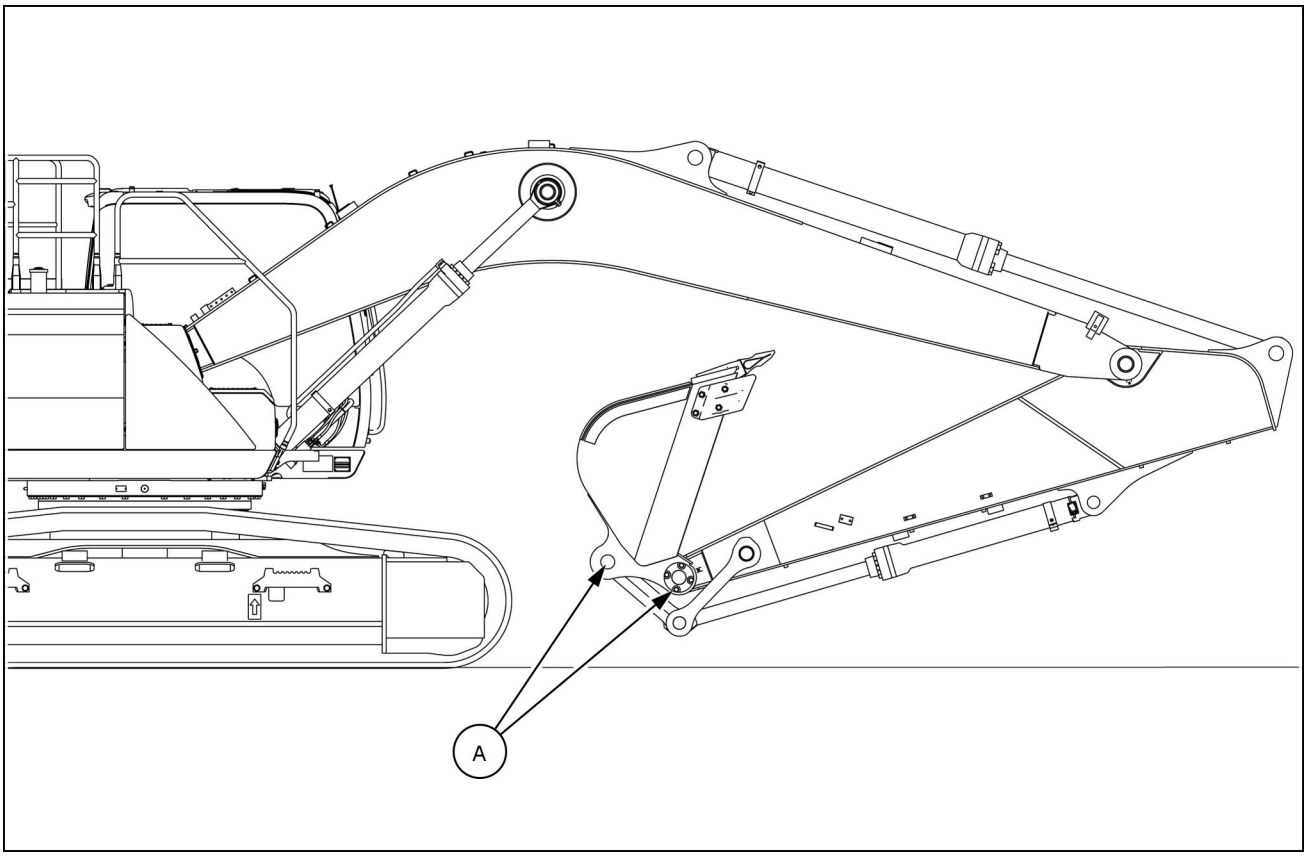
3. Remove the air circulation filter **(1)** and clean it with compressed air. If the filter is damaged, replace it.
4. Install the air circulation filter.
5. Install the filter cover.



SMIL22CEX1266AA 5

Grease points (Bucket)

Grease the bucket linkage every **50 h**.
Lubricant: **AKCELA MOLY GREASE**.



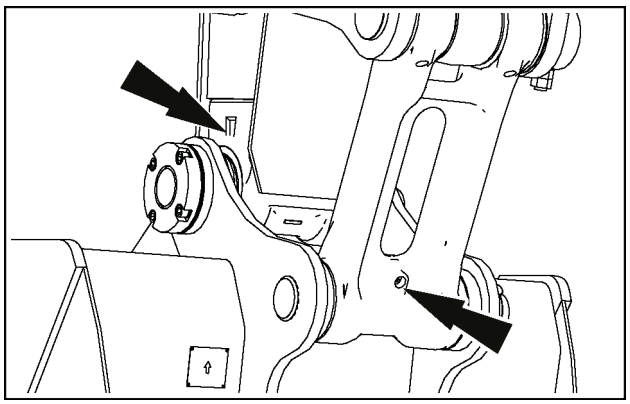
SMIL21CEX3196FA 1

NOTE: *the bucket linkage shall be lubricated every **10 h** if non-genuine grease is used.*

(A) Bucket linkage: two grease fittings.

NOTICE: *the bucket linkage shall be lubricated every **10 h** if the machine is operated in water or mud.*

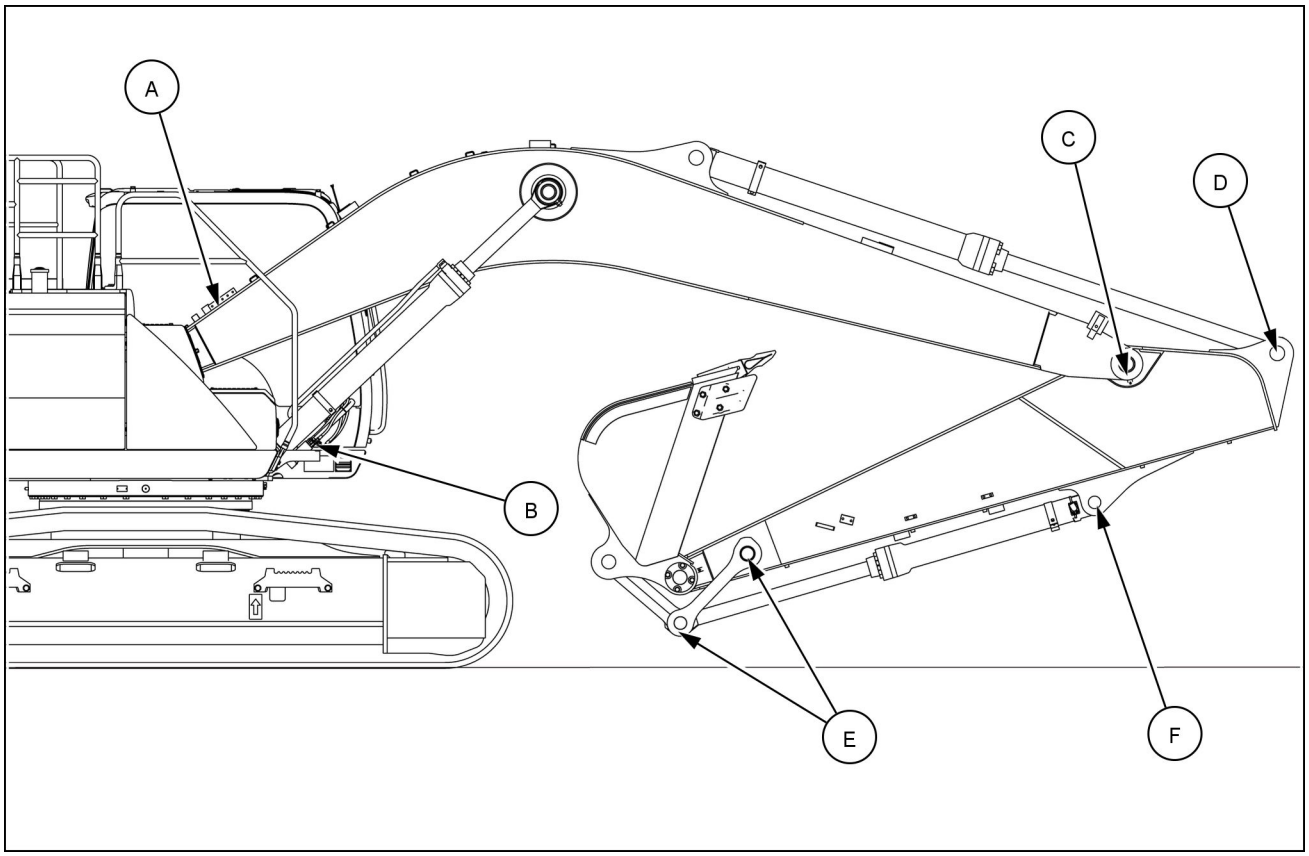
NOTICE: *the bucket linkage shall be lubricated every **10 h** if any attachment other than a bucket is used.*



SMIL14CEX4369AB 2

Grease points (Boom and arm)

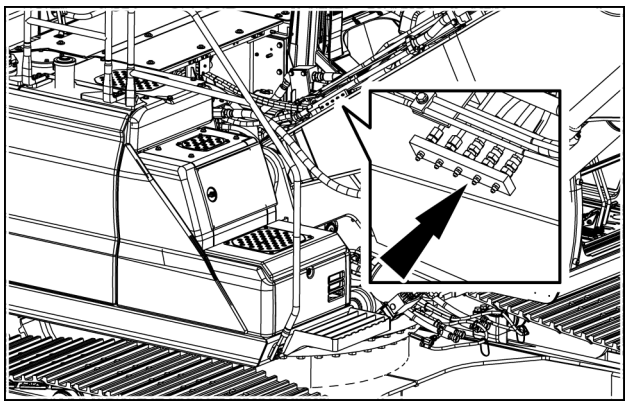
Grease the boom and arm every **50 h**.
Lubricant: **AKCELA MOLY GREASE**.



SMIL21CEX3196FA 1

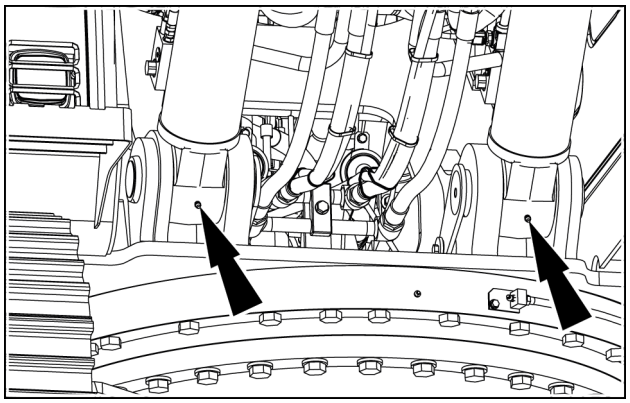
NOTE: *The boom and the arm shall be lubricated every **50 h** if non-genuine grease is used.*

(A) Boom bottom pin: two grease fittings.
Boom cylinder top pin: two grease fittings.
Arm cylinder bottom pin: one grease fitting.



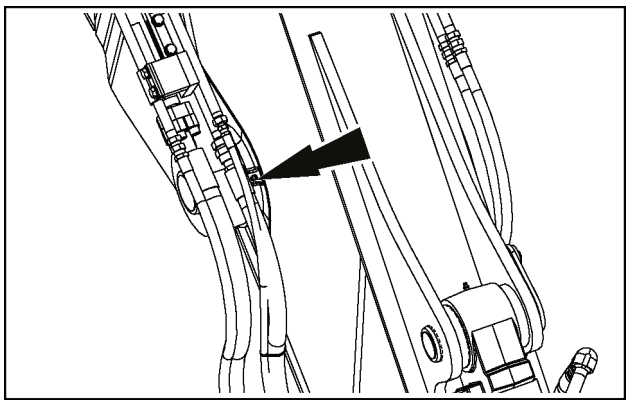
SMIL21CEX3197AA 2

(B) Boom cylinder bottom pin: two grease fittings.



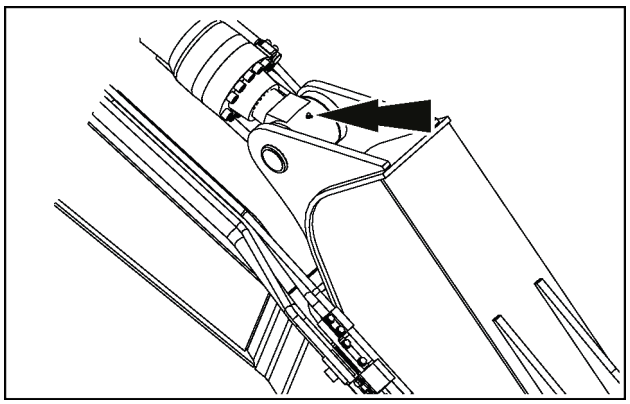
SMIL22CEX2000AA 3

(C) Boom/arm linkage: one grease fitting.



SMIL14CEX4321AB 4

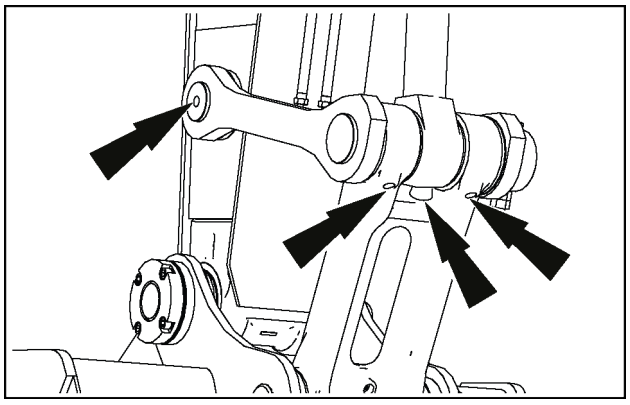
(D) Arm cylinder top pin: one grease fitting.



SMIL14CEX4322AB 5

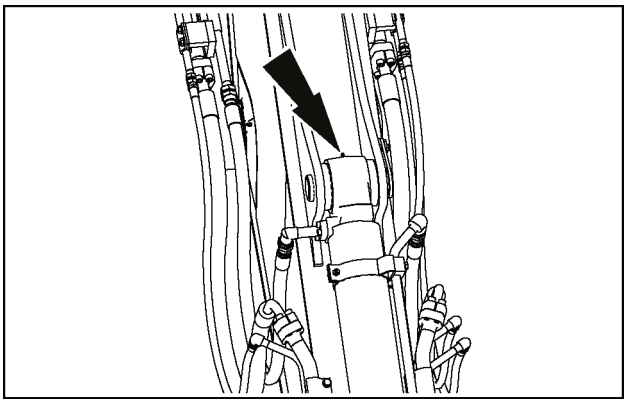
(E) Arm link / Connecting rod: four grease fittings.

NOTICE: *the arm link and the connecting rod shall be lubricated every* ***10 h*** *if any attachment other than a bucket is used.*



SMIL14CEX4323AB 6

(F) Bucket cylinder bottom pin: one grease fitting.



SMIL14CEX4324AB 7

Every 250 hours

Swing reduction unit oil

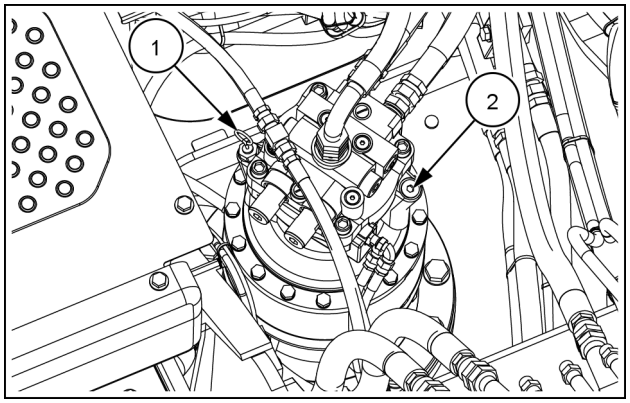
⚠ WARNING

Hot surface possible!
Wait for all components to cool before performing any operation.
Failure to comply could result in death or serious injury.

W0251A

Check the swing reduction gear oil level every **250 h**.
Lubricant: **AKCELA GEAR 135H EP 85W-140**.

1. Park the machine on a flat and level place.
2. Stop the engine, and remove the starter key.
3. Remove the oil dipstick **(1)**, clean it with a neat cloth, and check the oil level. Oil needs to reach the hatched area. If necessary, supply oil via the fill port **(2)**, and check the oil level again.
4. Install the oil dipstick **(1)**.



SMIL21CEX4975AA 1

Travel reduction oil (Checking the level)

⚠ WARNING

Hot surface possible!
Wait for all components to cool before performing any operation.
Failure to comply could result in death or serious injury.

W0251A

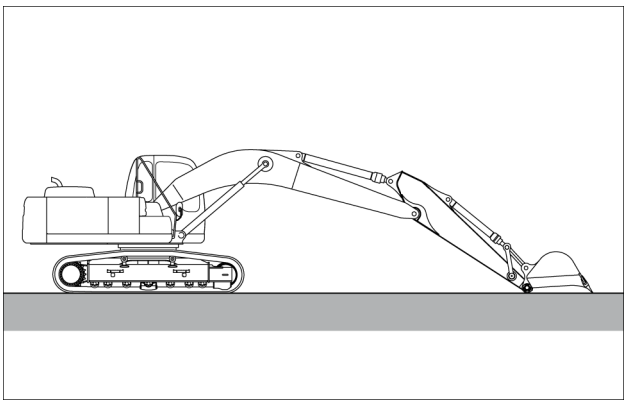
NOTICE: *The oil of the travel reducers is under pressure. Protect the face and body using appropriate protective goggles and protective clothing. Never service a hot machine. Allow the machine to cool down before starting any maintenance. Heat increases the travel reducer oil pressure. Slowly loosen the filler, drain and level plugs to slowly relieve the pressure inside the reducers. When checking the oil level, stay to the side of the travel reducers. The procedure for alignment of the plugs must be carried out with the help of an assistant on the ground, and this assistant should be away from the operating area of the machine. Failure to comply with these recommendations could result in death or serious injury.*

NOTICE: *The travel reducer oil level must be checked every 250 hours of operation or more frequently (shorter periods) when you operate the machine in extreme conditions.*

How to check the travel reducer oil level

To check the travel reducer oil level, proceed as follows:

1. Keep all unauthorized personnel clear of the area.
2. Park the machine on a flat, level, firm surface, away from any obstacles.
3. Position the arm, boom and bucket or implement as shown.
4. Set the park brake.
5. Place the safety lever in the function lockout position.
6. Place the ignition key in the "OFF" position to shut down the engine.
7. Remove the ignition key.
8. Put the safety lever in the locked position.
9. Wait until the machine cools down.



NHC0257 1

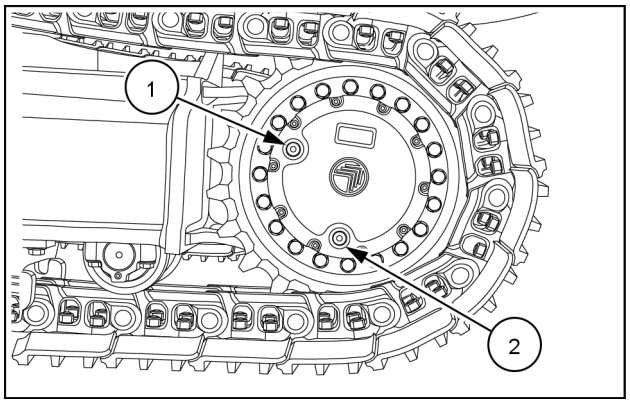
10. Put the ignition switch in the "START" position to turn on the engine.
11. Position the machine so that the drain plug **(2)** is in the lowest possible position.
12. Place the ignition key in the "OFF" position to shut down the engine again.
13. Remove the key from the ignition.
14. Slowly loosen the plug **(1)** to relieve the pressure inside the reducer.
15. Remove the plug **(1)**, check the oil level.

NOTE: *The level should be flush with the bottom edge of the door. Add more oil to reach this level, if necessary.*

16. Check the seal of the plug **(1)**.

NOTE: *Replace if required.*

17. Reinstall the drain plug **(2)**.
18. Repeat this procedure for the other reducer.
19. Put the ignition key in the "START" position to turn the engine on again.
20. Move the machine slowly. Check for any leaks.



PTIL19CEX0119AA 2

Engine primary air filter

⚠ CAUTION

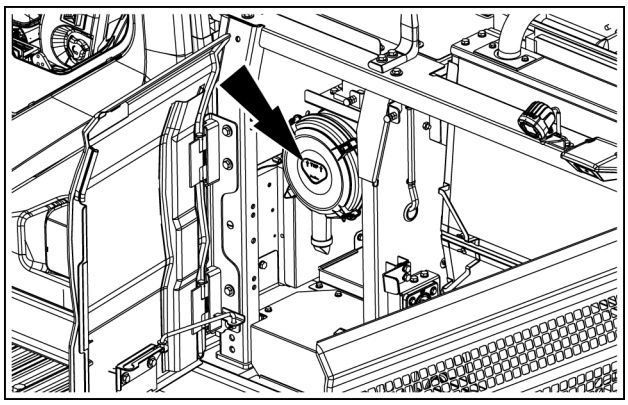
Flying debris!
Compressed air can propel dirt, rust, etc. into the air. Wear eye and face protection when using compressed air.
Failure to comply could result in minor or moderate injury.

C0049A

Clean the engine primary air filter every **250 h** or when the AIR FILTER message is displayed.

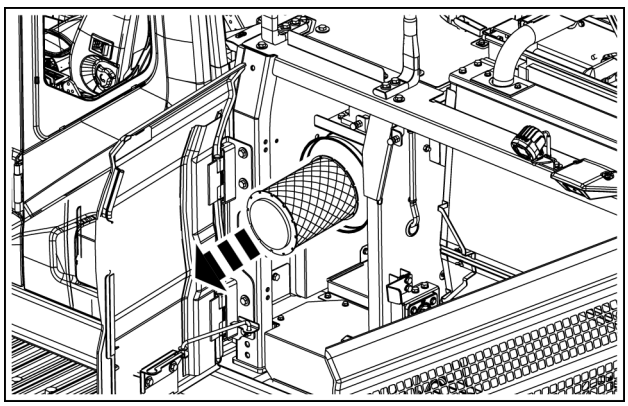
NOTE: *The primary element can be cleaned. The secondary element cannot be cleaned and must be changed.*

1. Park the machine on a flat and level place. Stop the engine, and remove the starter key.
2. Open the front left-hand door.
3. Release the fasteners, and remove the cover.



SMIL21CEX4385AA 1

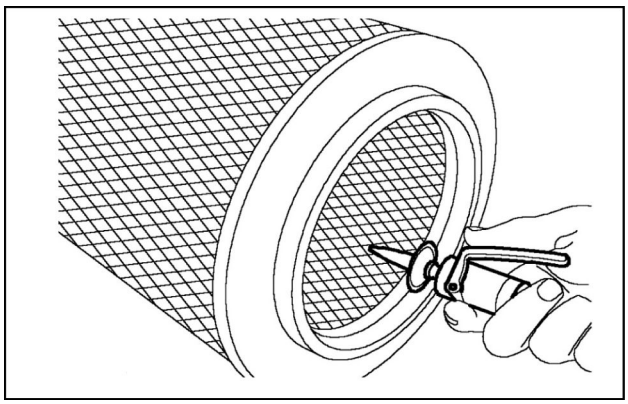
4. Remove the primary element.



SMIL21CEX4386AA 2

When the primary element is dry:
Blow compressed air at very low pressure from the inside to the outside.
Hold the compressed air nozzle at a position at least **3 cm** (**1.181 in**) away from the inside wall of the element. When no more dust comes out of the primary element, cleaning is complete.

NOTE: *Be sure to keep the compressed air pressure below* ***7 bar****.*



SMIL14CEX2795AA 3

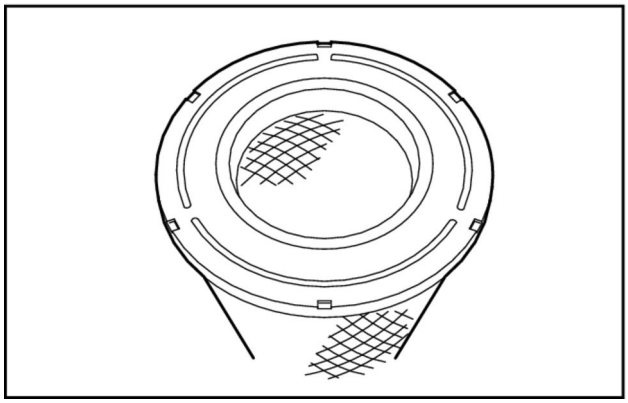
NOTE: *Do not use compressed air if there is oil or soot in the element.*

If the cartridge is greasy:

Clean it in water, with suitable detergent. (Consult your CASE CONSTRUCTION dealer).

Instructions for using the detergent are printed on the package.

NOTE: *Dry the element out completely before installing it. It is advisable to keep a clean spare element ready that can be installed on the air cleaner while the cleaned element is drying.*

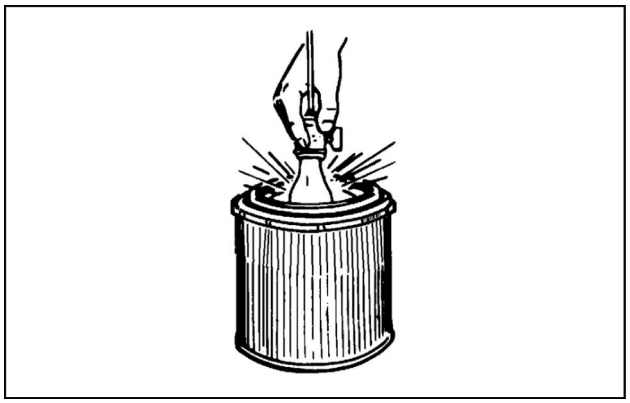


SMIL13CEX2757AA 4

Inspecting the element

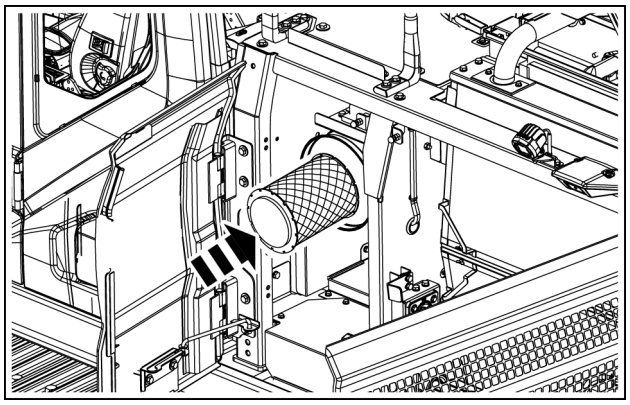
Check the element for damage by placing an inspection lamp inside the element.

NOTE: *Change the element if light can be seen through a hole, however small.*



SMIL14CEX2797AA 5

5. Clean the inside of the air cleaner case, and attach the primary element.
6. Attach the cover (with the "TOP" display facing up), and lock the fasteners.

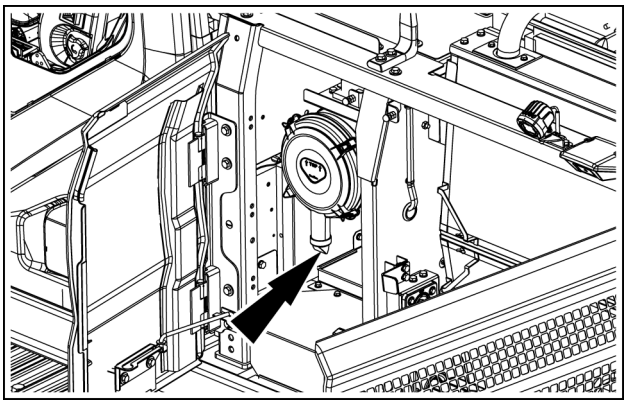


SMIL21CEX4386AA 6

NOTICE: *The mass air flow (MAF) sensor is mounted on the inlet duct of the air cleaner. Output of the engine may be restricted if any dust is attached to the MAF sensor or failure of sensing part of the MAF sensor due to usage of retailed cleaning fluid.*
Pay attention not to allow dust to invade the inlet duct when replacing the air cleaner element. Also, pay attention not to spray retailed cleaning fluids to the MAF sensor when using them.

7. 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.*

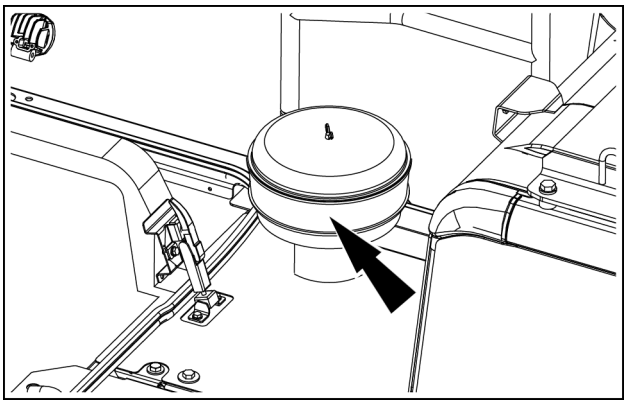


SMIL21CEX4385AA 7

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.



SMIL21CEX5017AA 8

Batteries

⚠ WARNING

Improper operation or service of this machine can result in an accident.
Before working on any component(s) of the electrical circuit, put the ignition key in the off (shut down) position. When disconnecting batteries, always disconnect the negative (-) cable first. When reconnecting batteries, always connect the negative (-) cable last.
Failure to comply could result in death or serious injury.

W0943A

⚠ WARNING

Battery acid causes burns. Batteries contain sulfuric acid.
Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.
Failure to comply could result in death or serious injury.

W0111A

⚠ WARNING

Battery gas can explode!
To prevent an explosion: 1. Always disconnect the negative (-) battery cable first. 2. Always connect the negative (-) battery cable last. 3. Do not short circuit the battery posts with metal objects. 4. Do not weld, grind, or smoke near a battery.
Failure to comply could result in death or serious injury.

W0011A

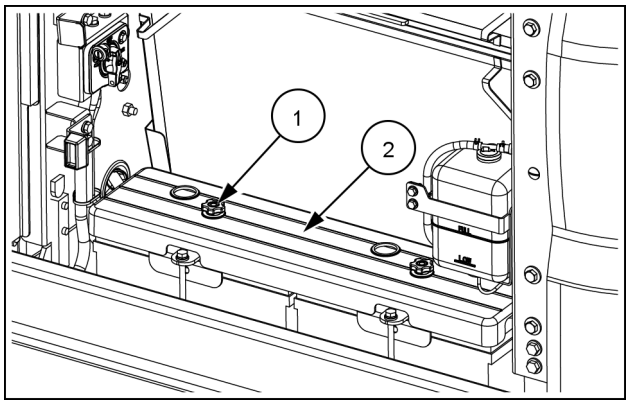
⚠ WARNING

Explosive gas!
Batteries emit explosive hydrogen gas and other fumes while charging. Ventilate the charging area. Keep the battery away from sparks, open flames, and other ignition sources. Never charge a frozen battery.
Failure to comply could result in death or serious injury.

W0005A

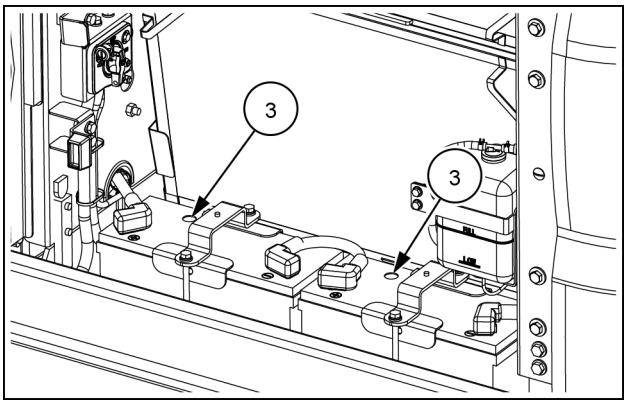
Check the electric charge of the battery every **250 h**.

1. Open the rear left-hand door.
2. Remove the two knobs **(1)**.
3. Remove the battery cover **(2)**.



SMIL21CEX4976AA 1

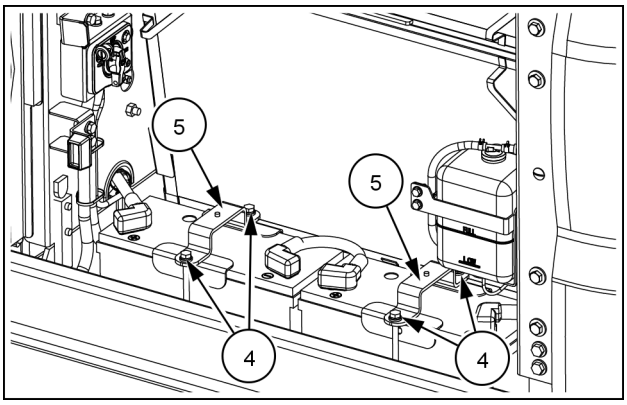
4. Check the charge indicators **(3)** on the batteries:
   Green: the battery is properly charged.
   Black: the battery is discharged.
   Transparent (colorless): replace the battery.



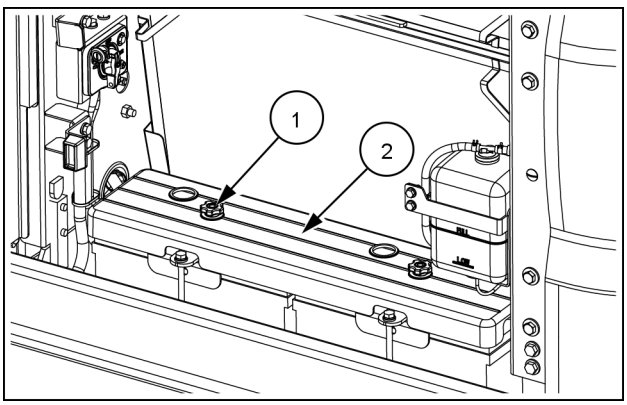
SMIL21CEX4977AA 2

Replacement of the batteries

1. Turn the battery disconnect switch to the OFF position.
2. Remove the terminal protection caps, and disconnect the negative-terminal cable. Next, disconnect the positive-terminal cable.
3. Remove the bolts **(4)**.
4. Remove the battery holders **(5)**.
5. Replace the batteries.
6. Clean the cables and the batteries terminals, and apply grease.
7. Connect the positive and the negative cable to the positive and the negative terminal of the battery respectively. Attach the terminal protection caps.
8. Install the battery holders **(5)** with the bolts **(4)**.
9. Install the battery cover **(2)** with the two knobs **(1)**.
10. Turn the battery disconnect switch to the ON position.
11. Close the rear left-hand door.



SMIL21CEX4977AA 3



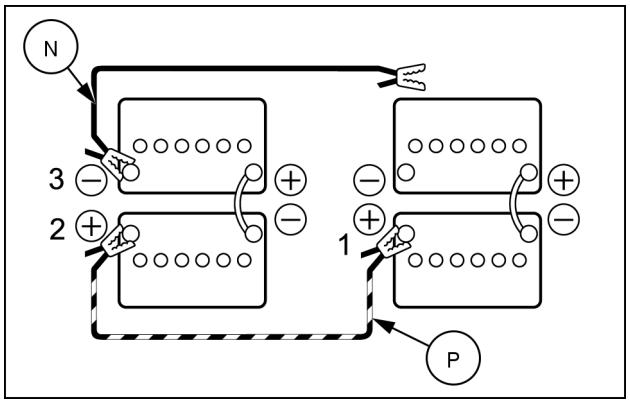
SMIL21CEX4976AA 4

Starting the engine with booster batteries

⚠ WARNING

Improper operation or service of this machine can result in an accident.
An error connecting auxiliary starting cables or short-circuiting battery terminals can cause an accident. Connect auxiliary starting cables as instructed in this manual.
Failure to comply could result in death or serious injury.

W0263A



SMIL15CEX5131AA 5

Make sure that the booster battery voltage corresponds to the voltage system of the machine **24 V**.
Make sure that the starter key is in OFF position and the gate lock lever in inward position.
Make sure to use supply cables of appropriate dimensions (at least **50 mm²** (**0.1 in²**).

1. Connect one terminal of the positive jumper cable **(P)** to the positive (+) pole of the machine batteries.
2. Connect the other terminal of the positive jumper cable **(P)** to the positive (+) pole of the booster batteries.
3. Connect one terminal of the negative jumper cable **(N)** to the negative (-) pole of the booster batteries.
4. Connect the other terminal of negative jumper cable **(N)** to the upper frame of the machine (ground).

Turn the starter key to ON position and start the engine.
After the engine has started proceed as follows:

1. Disconnect the terminal of negative jumper cable **(N)** from the upper frame of the machine (ground).
2. Disconnect the other terminal of the negative jumper cable **(N)** from the negative (-) pole of the booster batteries.
3. Disconnect the terminal of the positive jumper cable **(P)** from the positive (+) pole of the booster batteries.
4. Disconnect the other terminal of the positive jumper cable **(P)** from the positive (+) pole of machine batteries.

Hydraulic oil tank

⚠ WARNING

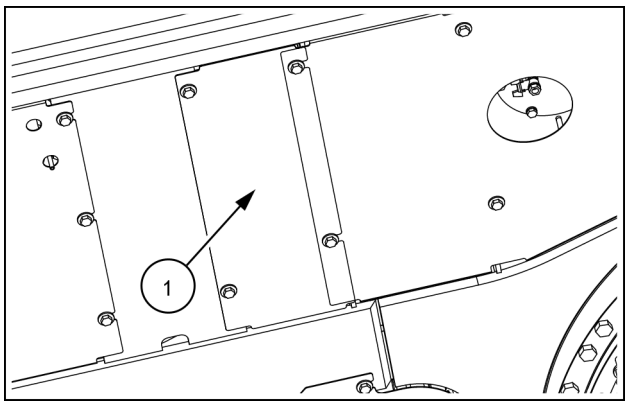
Burn hazard!
Before performing any service on the hydraulic system, you must allow it to cool. Hydraulic fluid temperature should not exceed 40 °C (104 °F).
Failure to comply could result in death or serious injury.

W0241A

Drain water and sediment from the hydraulic oil tank every **250 h**

NOTICE: *The hydraulic tank must be drained taking precautions so that any foreign material may gets inside. Failing to comply will lead to severe damages to the hydraulic system.*

1. Park the machine on a hard and level ground. Orient the upper structure frame so that there is enough free space under the hydraulic tank to place a container of suitable capacity.
2. Stop the engine and remove the starter key.
3. Release all the pressure in the hydraulic tank. Refer to page **6-10**.
4. Remove the lower panel **(1)** below the hydraulic tank.

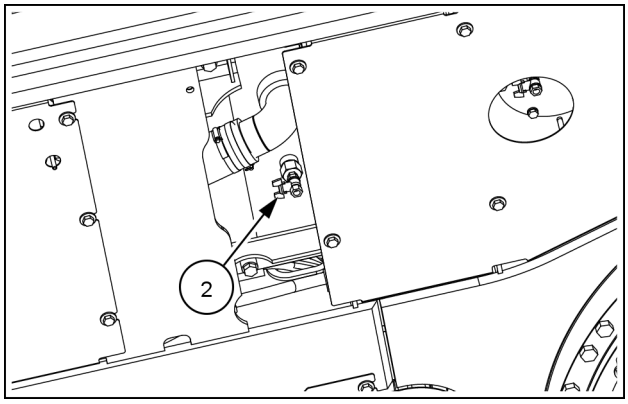


SMIL21CEX4978AA 1

5. Place a container of a suitable capacity under the drain valve **(2)**.
6. Open the drain valve **(2)** and drain the accumulated sediment and water.

NOTICE: *the drained materials shall be disposed according to the local Regulations for special wastes.*

7. Close the drain valve **(2)**.
8. Install the lower panel **(1)**.
9. Check the level of the hydraulic fluid in the system, and refill if needed.



SMIL21CEX4979AA 2

Tightening torques

Check the tightening torques every **250 h** (after the first **50 h** during the run-in period).

NOTICE: *At the end of each working day, check all mounting nuts and screws for tightness and tighten if necessary. Make sure no hardware items are missing. Replace them, if necessary.*

Component	Bolt Size	Wrench	Tightening torque
Travel motor (*)	M16	**24 mm**	**268 – 312 N·m** (**198 – 230 lb ft**)
Drive sprocket (*)	M20	**30 mm**	**521.0 – 608.0 N·m** (**384.3 – 448.4 lb ft**)
Take-up roller (*)	M16	**24 mm**	**250.0 – 308.0 N·m** (**184.4 – 227.2 lb ft**)
Upper rollers (*)	M20	**30 mm**	**521.0 – 608.0 N·m** (**384.3 – 448.4 lb ft**)
Lower rollers (*)	M18	**27 mm**	**372 – 472.0 N·m** (**274 – 348.1 lb ft**)
Track guards (*)	M18	**27 mm**	**401 – 461 N·m** (**296 – 340 lb ft**)
Counterweight	M33	**50 mm**	**1960 – 2156 N·m** (**1445 – 1590 lb ft**)
Turntable bearing (Lower Frame)	M20	**30 mm**	**519 – 589 N·m** (**383 – 434 lb ft**)
Turntable bearing (Swing Frame)	M20	**30 mm**	**469 – 545 N·m** (**346 – 402 lb ft**)
Swing unit (*)	M20	**30 mm**	**541 – 629 N·m** (**399 – 464 lb ft**)
Engine front bracket (*)	M12	**19 mm**	**103.0 – 127.0 N·m** (**76.0 – 93.7 lb ft**)
Engine rear bracket (*)	M12	**19 mm**	**103.0 – 127.0 N·m** (**76.0 – 93.7 lb ft**)
Front engine mount (*) (**)	M18	**27 mm**	**203 – 247 N·m** (**149 – 182 lb ft**)
Rear engine mount (*) (**)	M18	**27 mm**	**203 – 247 N·m** (**149 – 182 lb ft**)
Radiator	M16	**24 mm**	**147 – 177 N·m** (**108 – 130 lb ft**)
Hydraulic pump (Flange) (*)	M10	**17 mm**	**64 – 73 N·m** (**47 – 54 lb ft**)
Hydraulic pump (Pump) (*)	M20	**17 mm** Hexagon socket head	**367 – 496 N·m** (**271 – 365 lb ft**)
Hydraulic tank (*)	M16	**24 mm**	**232 – 276 N·m** (**171 – 203 lb ft**)
Fuel tank (*)	M16	**24 mm**	**232 – 276 N·m** (**171 – 203 lb ft**)
DEF/AdBlue® tank (*)	M12	**18 mm**	**88 – 107 N·m** (**65 – 79 lb ft**)
Control valve (*)	M16	**24 mm**	**267 – 312 N·m** (**196 – 230 lb ft**)
Center joint (Swing frame) (*)	M12	**19 mm**	**90 – 106 N·m** (**66 – 78 lb ft**)
Center joint (Lower frame) (*)	M12	**19 mm**	**110 – 126 N·m** (**81 – 92 lb ft**)
Cab	M16	**24 mm**	**149 – 173 N·m** (**110 – 128 lb ft**)
Batteries	M10	**17 mm**	**8 – 12 N·m** (**6 – 9 lb ft**)

NOTE: *On the screws with mark (*), use* ***LOCTITE® 262™*** *or its equivalent.*

NOTE: *On the bolts with mark (**), use* ***LOCTITE® 271™*** *or its equivalent.*

Track shoe bolt torque

Check the tightening torque of the track shoes every **250 h** (after the first **50 h** during the run-in period)

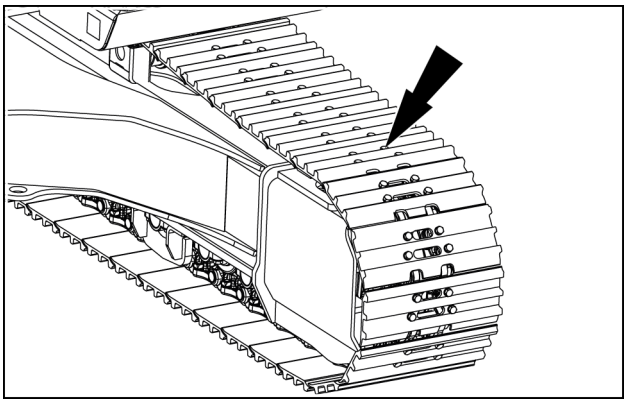
NOTE: *If the tracks are too tight, they wear quickly. If tracks are not tight enough, they wear quickly and the links can catch on the sprocket wheel or slide off the idler wheel or the sprocket wheel. Clean the tracks after work.*

NOTE: *Check the screws for tightness periodically. Do not use the machine with track pad screws loose. Otherwise, the screws may come out to cause damage to tracks.*

Bolt size: M20

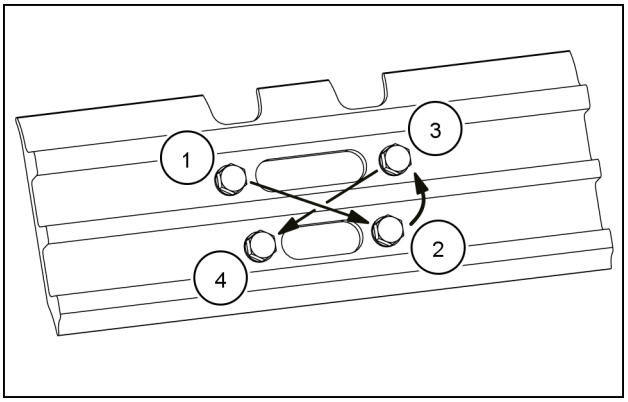
Wrench: **30 mm**

Tightening torque: **800 – 880 N·m** (**590 – 649 lb ft**).



SMIL22CEX1927AA 1

NOTE: *Follow the specified order when tightening the screws.*

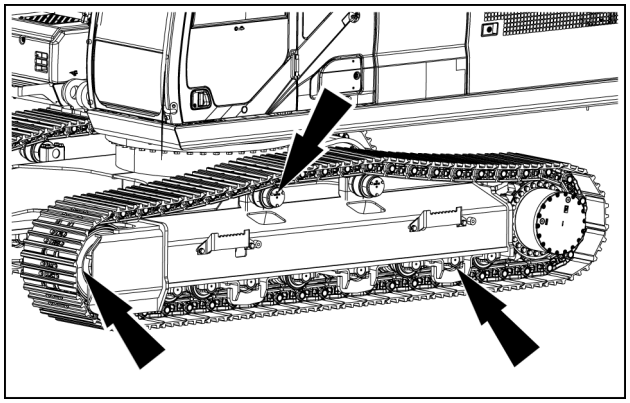


SMIL22CEX1928AA 2

Track rollers and idler wheels

Visually check the track rollers and the idler wheels every **250 h**

Floating seals are used on the upper/lower roller and the idler wheel. Although they endure enough until the average overhaul timing, visually check for oil leaks before work. If there is any oil leak, the components need to be replaced. Consult the CASE CONSTRUCTION dealer.



SMIL21CEX3237AA 1

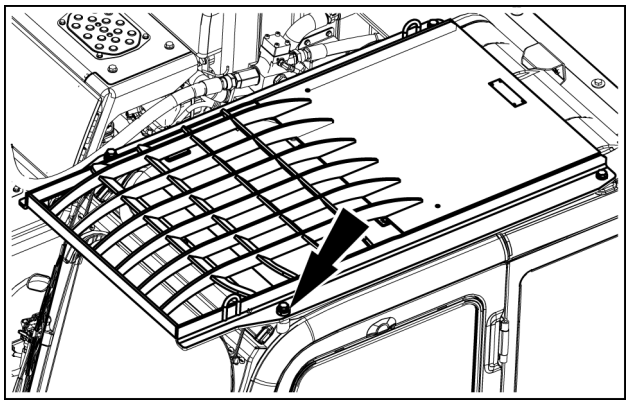
Cab protection (ROPS and FOPS)

Check the cab protection every **250 h** (after the first **50 h** during the run-in period)

Check the retaining hardware, if necessary retighten the screws.

Check the absence of cracks, rust or holes in the protective structure and the components that constitute it. Ageing, bad weather and accidents can cause damage. If you have even the slightest doubt regarding the condition of the structure, consult your CASE CONSTRUCTION Dealer.

If the protective structure has suffered any accident, it is necessary to replace the damaged components of the structure in order to restore the initial protection, consult your CASE CONSTRUCTION Dealer.



SMIL21CEX3246AA 1

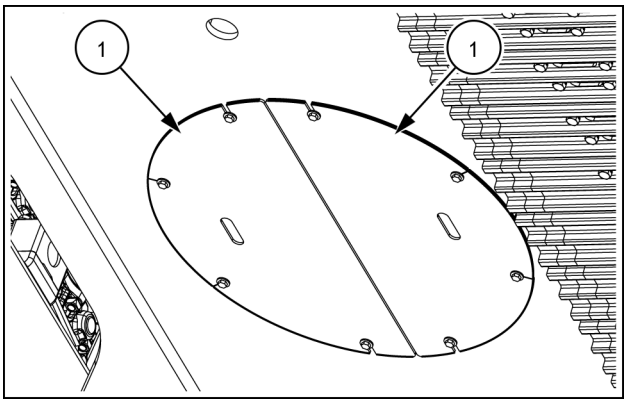
Every 500 hours

Turntable bearing

Check the greasing of the swing gears, and grease the turntable bearing every **500 h**.
Lubricant: **AKCELA MOLY GREASE**.

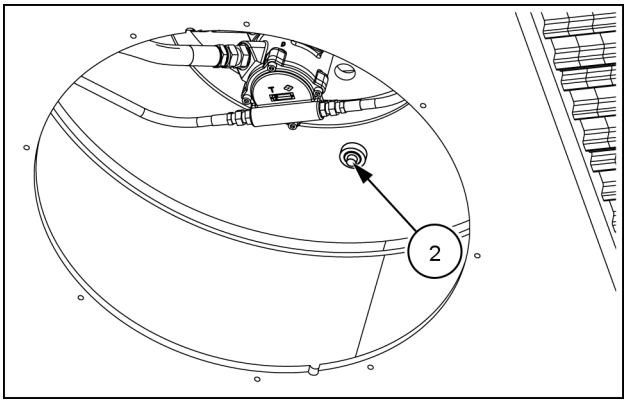
Prepare a can of loose and clean grease for checking the greasing of the swing gears. Prepare a gun and cartridges of clean grease for greasing the turntable bearing.

1. Park the machine on a hard and level ground. Orient the upper structure frame parallel to the undercarriage.
2. Operate the boom, arm, and attachment controls so that the arm stands vertical and the attachment rests on the ground.
3. Set the gate lock lever to central position, stop the engine, and remove the starter key.
4. Remove the covers **(1)** in the bottom of the lower frame.



SMIL21CEX3244AA 1

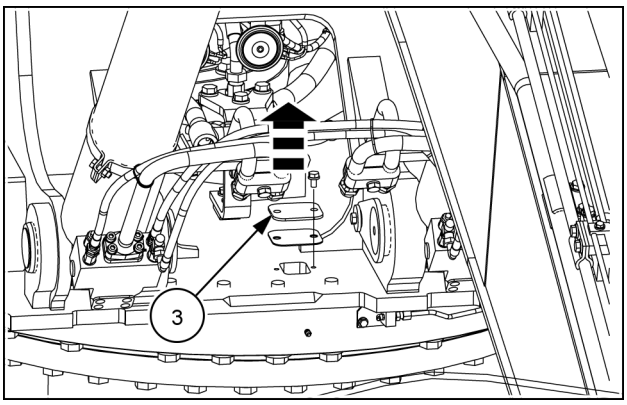
5. Remove the plug **(2)** so to drain water, and greasy mud. Snug tighten the plug **(2)**.



SMIL21CEX3245AA 2

6. Check the greasing of the swing gears. Remove the inspection cover **(3)** on the front of the upper frame.
7. Remove all dirty grease.
8. Check the surfaces of the swing gears for excessive wearing or damages. If any excessive wearing or damage is found, immediately call the CASE CONSTRUCTION Dealer for inspection and repair.
9. Taking clean grease from the can, restore proper greasing of the surface of the teeth of the swing ring.

NOTICE: *do not grease the teeth at full height in order not to have too much grease spread beyond the swing ring.*

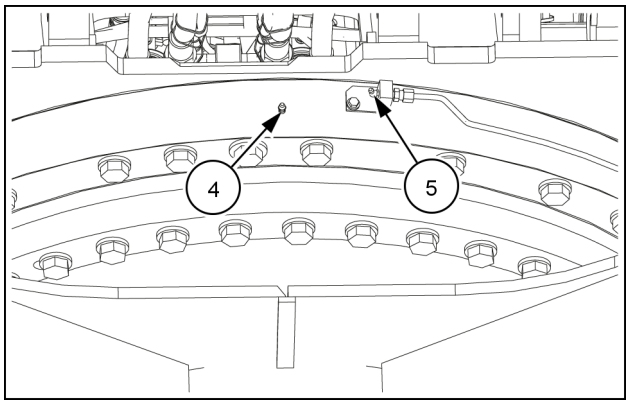


SMIL21CEX3185AA 3

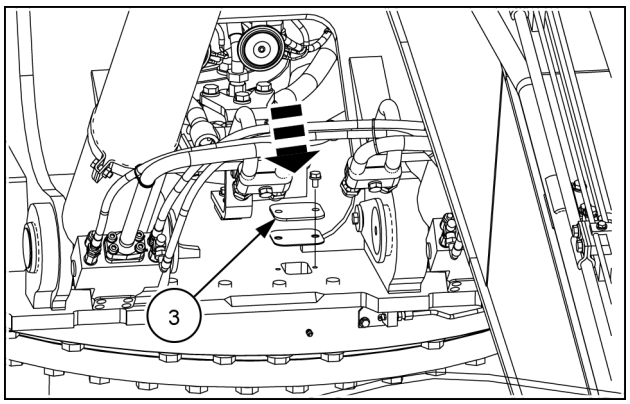
10. Grease the turntable bearing. Remove the protective caps from the fittings **(4)**, **(5)**, on the bearing.
11. Using the grease gun, inject clean grease into the fitting **(4)** so to push the old grease out from the lower sealing lip of the turntable bearing. Stop injecting as clean grease comes out from the lip.
12. Clean up the grease that exceeded the sealing lip, and reset the lip to its seating position.

NOTICE: *Always check the sealing lip for excessive wearing or damages. If any excessive wearing or damage is found, immediately call the CASE CONSTRUCTION Dealer for inspection and repair.*

13. Inject the same amount of grease into the fitting **(4)**, and then into the fitting **(5)**. Reach the end of each greasing tube on the bearing, clean up the grease that exceeded the sealing lip, and reset the lip to its seating position.
14. Get onto the cab, start the engine, and set the gate lock lever in forward position.
15. Turn the upper frame **45°** clockwise. Set the gate lock lever to central position, stop the engine, and remove the starter key.
16. Check the greasing of the swing gears from the inspection hole. Restore proper greasing if needed.
17. Start the engine, and turn the upper frame **45°** clockwise. Set the gate lock lever to central position, stop the engine, and remove the starter key.
18. Repeat the procedure described in the steps from 6 to 16 for three more times.
19. Install the inspection cover **(3)** on the front of the upper frame.



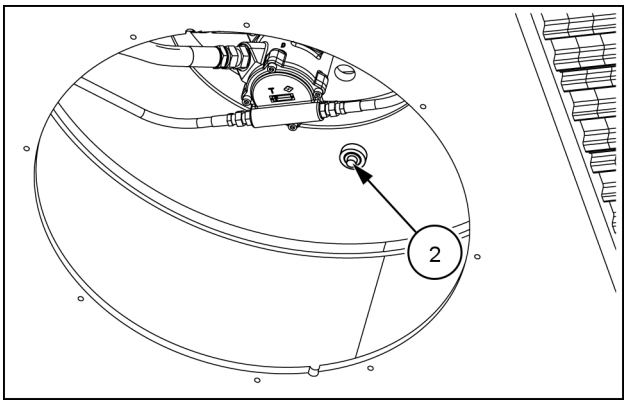
SMIL21CEX3227AA 4



SMIL21CEX3185AA 5

20. Get onto the cab, start the engine, and set the gate lock lever in forward position. Slowly turn the upper structure frame counterclockwise, and complete three **360°** rotations.
21. Stop the rotation. Slowly turn the upper structure frame clockwise and complete two **360°** rotations.

22. Stop the rotation. Set the gate lock lever to central position, stop the engine, and remove the starter key.
23. Clean up any more grease that has come out from the sealing lip of the turntable bearing. Make sure that the sealing lip is reset to its seating position.
24. Clean the grease fittings on the turntable bearing, and install the protective caps.
25. Remove the plug **(1)** so to drain any more water and greasy mud. Tighten the plug **(1)**. Install the cover in the bottom of the lower frame.



SMIL21CEX3245AA 6

Radiator and coolers

⚠ WARNING

Flying debris!
Compressed air can propel dirt, rust, etc. into the air. Wear eye and face protection when using compressed air.
Failure to comply could result in death or serious injury.

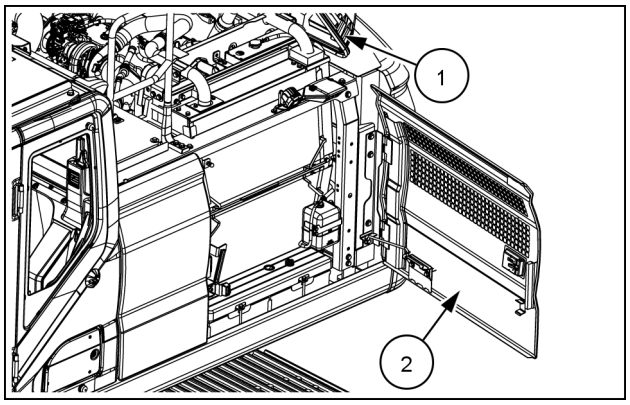
W0307A

Clean the radiator every **500 h**

NOTICE: *overheat may occur if the anti-dust nets, the radiator fin, or the oil cooler fin is clogged.*

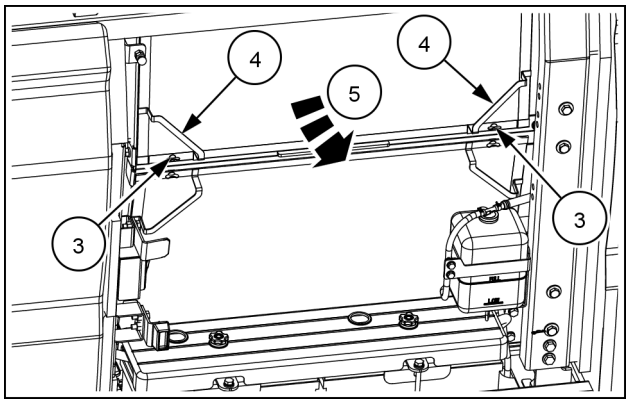
1. Stop the engine, and remove the starter key.
2. Raise and lock the engine hood **(1)**
3. Open the rear left-hand door **(2)**.

NOTICE: *always check that the door is fixed firmly.*



SMIL21CEX5008AA 1

4. Remove the two wing nuts **(3)** located on both sides of the upper anti-dust net **(5)**.
5. Hold the handles **(4)** and remove the upper anti-dust net **(5)**.

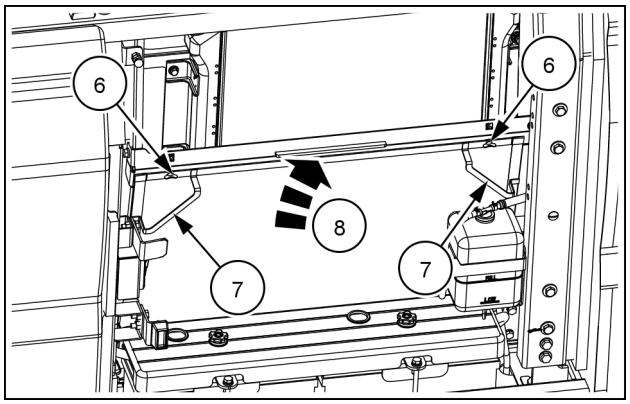


SMIL21CEX5006AA 2

6. Remove the two wing nuts **(6)** located on both sides of the lower anti-dust net **(8)**.
7. Hold the handles **(7)** and remove the lower anti-dust net **(8)**.
8. Use compressed air to blow away mud or dirt clogged in the anti-dust nets and the radiator fin. Steam or compressed water may be used instead of compressed air.

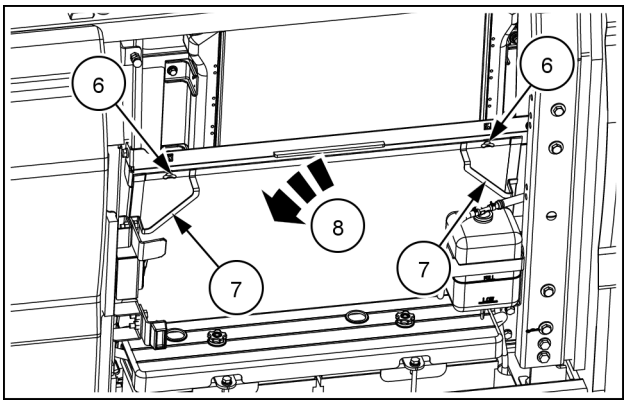
NOTICE: *Apply high-pressure vehicle-wash steam from a sufficient distance away. If the steam outlet is too close, the radiator fin may deform.*

NOTICE: *In presence of greasy or oily dust, use perchlorethylene. Use of trichloroethylene is strictly forbidden.*



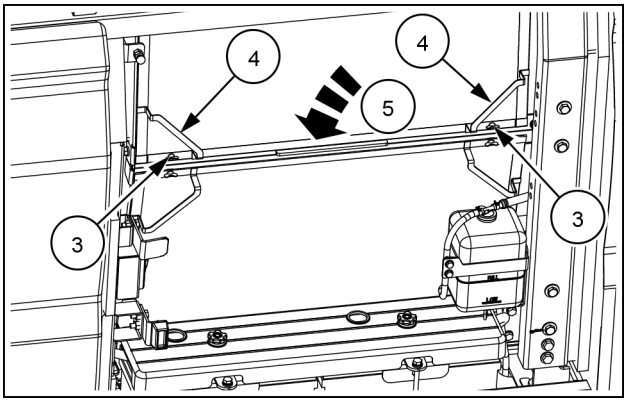
SMIL21CEX5007AA 3

9. Carefully insert the lower anti-dust net **(8)** into the guide rails by holding the handle **(7)**.
10. Lock the lower anti-dust net with the wing nuts **(6)**.



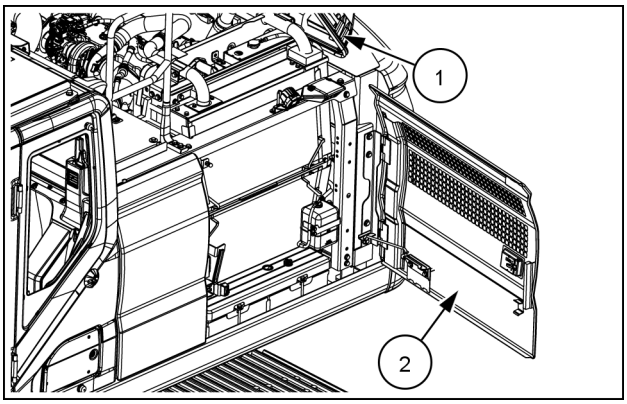
SMIL21CEX5007AA 4

11. Carefully insert the upper anti-dust net **(5)** into the guide rails by holding the handle **(4)**.
12. Lock the upper anti-dust net with wing nuts **(3)**.



SMIL21CEX5006AA 5

13. Close and lock the engine hood **(1)**
14. Close and lock the rear left-hand door **(2)**.



SMIL21CEX5008AA 6

Every 1000 hours

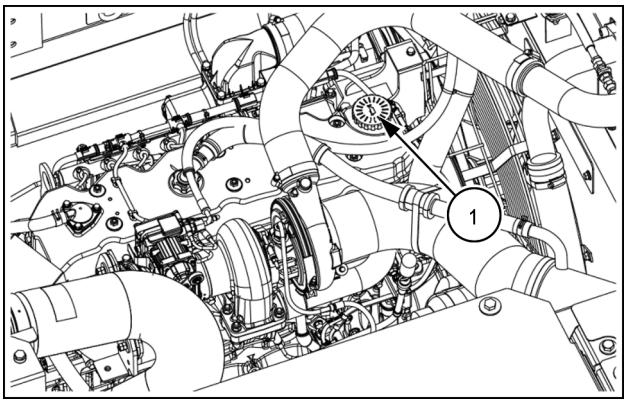
Engine oil and filter

Replace the engine oil every **1000 h** or every year (whichever comes first).
Replace the engine oil filter every **1000 h** or every year (whichever comes first).
Lubricant: **AKCELA UNITEK PLUS SAE 10W-40**
Quantity: **14.6 L** (**3.9 US gal**)

NOTICE: *always perform a Manual ATS Cleaning before replacing the engine oil and filter. Refer to After Treatment System.*

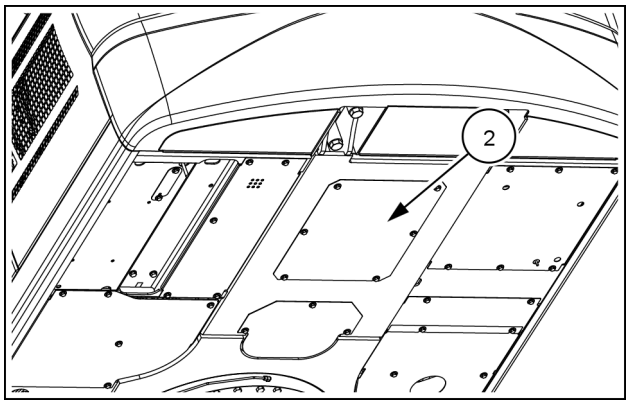
NOTE: *Replace the oil while the engine is warm. Doing so helps the oil in flowing.*

1. Park the machine on a flat and level place.
2. Stop the engine and remove the starter key.
3. Raise and lock the engine hood.
4. Remove the filling plug **(1)**.



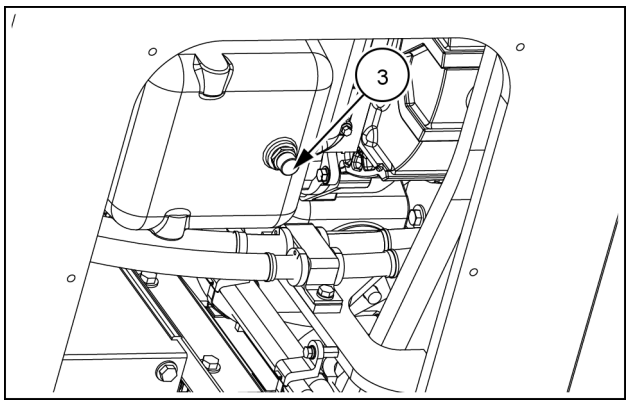
SMIL21CEX4980AA 1

5. Remove the lower panel **(2)** under the engine oil pan.



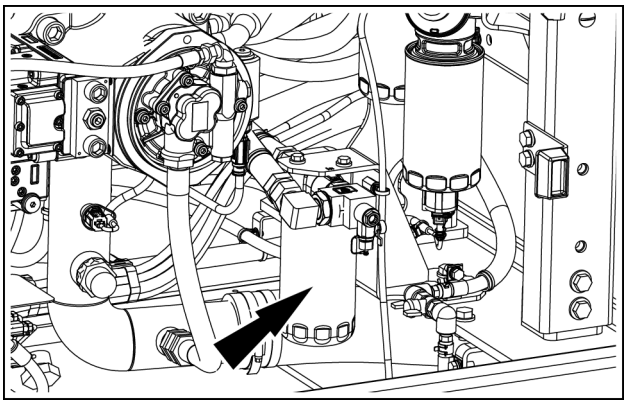
SMIL21CEX4981AA 2

6. Place a container with an appropriate capacity under the drain valve.
7. Unscrew the threaded plug **(3)** from the drain valve.
8. Completely drain the engine oil and install the threaded plug **(3)**.



SMIL21CEX4982AA 3

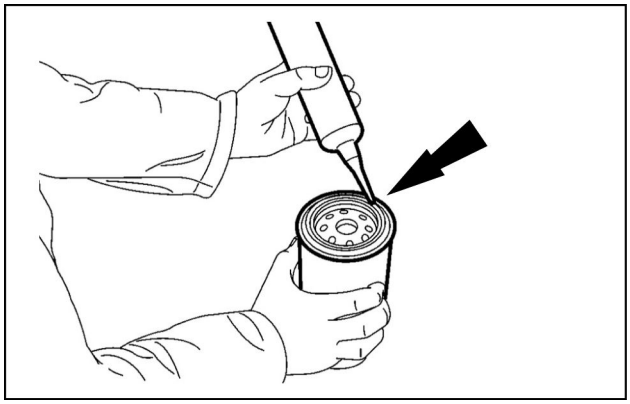
9. Open the rear right-hand door.
10. Clean the area around the engine oil filter and remove it with a filter wrench.



SMIL21CEX4983AA 4

11. Apply an oil film finely to the seal of a new filter.
12. Attach a new filter. Turn the filter until the seal touches the filter head, and then tighten it further a half turn by hand.

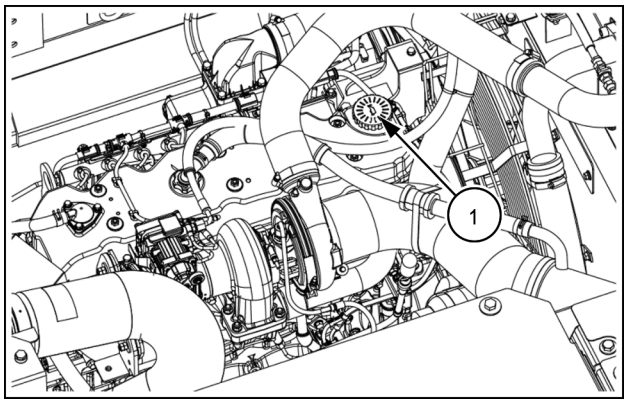
NOTE: *Do not use a filter wrench for tightening the filter. Overtightening can damage the filter and its seal.*



SMIL14CEX2751AA 5

13. Add new engine oil to the engine. Attach the filling plug. **(1)**
14. Run the engine for several minutes to check that there is no leak.
15. Recheck the level, and add oil if necessary.

NOTE: *always wait **15 min** to allow the oil to return to the sump before checking the oil level.*



SMIL21CEX4980AA 6

Fuel pre-filter

⚠ WARNING

Fire hazard!
When handling diesel fuel, observe the following precautions:
1. Do not smoke.
2. Never fill the tank when the engine is running.
3. Wipe up spilled fuel immediately.
Failure to comply could result in death or serious injury.

W0099A

Replace the fuel pre-filter element every **1000 h** or every year (whichever comes first).

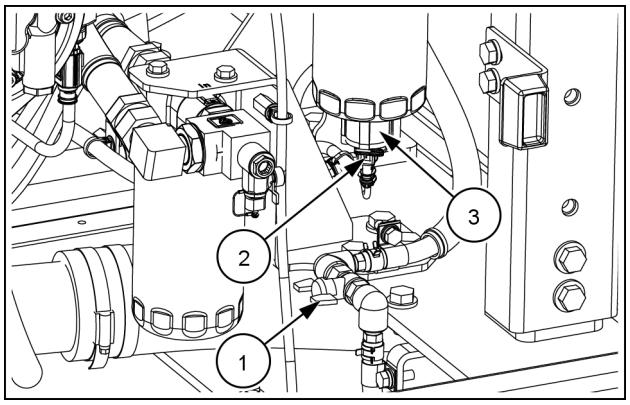
The filter element may get clogged earlier than **1000 h** depending upon the quality of fuel, the integrity of filter, the functionality of the supply system, or other not regular conditions. In these cases, the message FUEL FILTER appears on the top of the display. Immediately stop machine operation, and replace the filter element in order to avoid severe damages to the fuel system.

NOTICE: *The filter must be replaced taking precautions so that any foreing material may get into the filter body or the filter element. Failing to comply will lead to severe damages to the fuel supply system and to the fuel injection system.*

NOTICE: *Never reuse fuel that rests into the filter body. To clean the filter body, use clean diesel fuel only.*

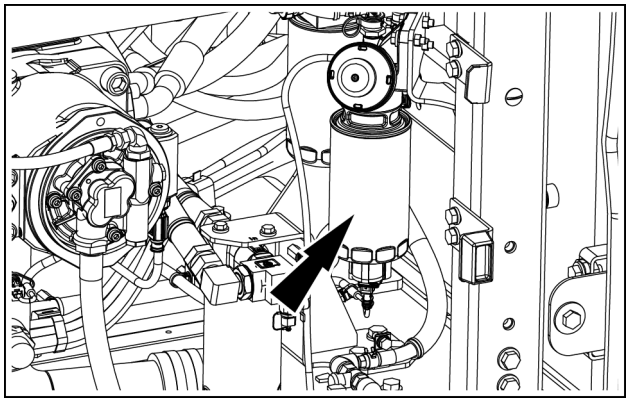
NOTICE: *Use of fuel filters other than CASE CONSTRUCTION genuine components, is prohibited.*

1. Open the rear right-hand door.
2. Place a container with an appropriate capacity below the fuel pre-filter.
3. Close the fuel cut valve **(1)**.
4. Remove the water sensor connector **(2)**.
5. Open the Water In Fuel (WIF) sensor **(3)** by turning counterclockwise two or three turns.
6. Drain the water and/or contaminants from the pre-filter into a suitable container until clean fuel flows.



SMIL21CEX4984AA 1

7. Turn the pre-filter counterclockwise to remove it.
8. Replace with a new pre-filter cartridge, turning clockwise until the cartridge meets the pre-filter head. Tightening torque: **20 N·m** (**15 lb ft**).
9. Install the Water In Fuel (WIF) sensor **(3)**.
10. Connect the water sensor connector **(2)**.
11. Bleed the fuel system. Refer to **6-11**.



SMIL21CEX4985AA 2

Fuel filter

⚠ WARNING

Fire hazard!
When handling diesel fuel, observe the following precautions:
1. Do not smoke.
2. Never fill the tank when the engine is running.
3. Wipe up spilled fuel immediately.
Failure to comply could result in death or serious injury.

W0099A

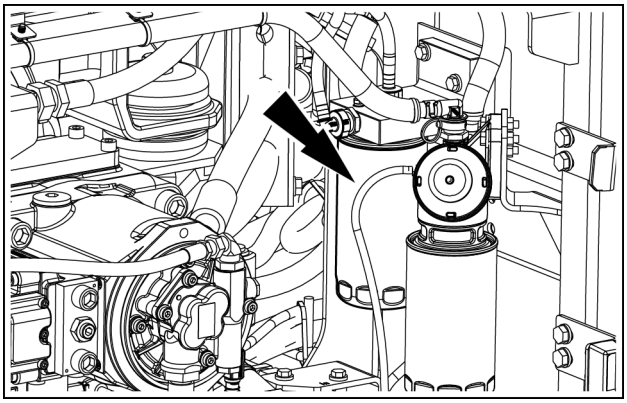
Replace the fuel filter every **1000 h** or every year (whichever comes first).

NOTICE: *Use of fuel filters other than CASE CONSTRUCTION genuine components, is prohibited.*

1. Open the rear right-hand door.
2. Turn the fuel filter counterclockwise and remove it.

NOTE: *Be sure to capture any fuel remaining in the lines or the filter and discard properly.*

3. Apply a thin layer of clean oil to the gasket on the new fuel filter.
4. Fill the new filter with fuel.
5. Hand tighten the fuel filter 1/2 to 3/4 turn after the filter makes contact with the filter head.
6. Bleed the fuel system. Refer to **6-11**.

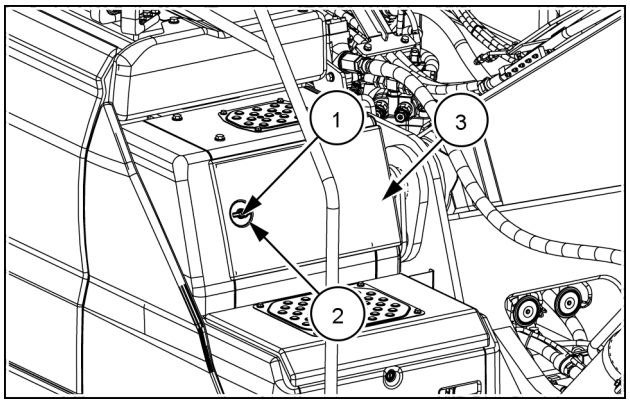


SMIL21CEX4986AA 1

DEF/AdBlue® tank vent filter

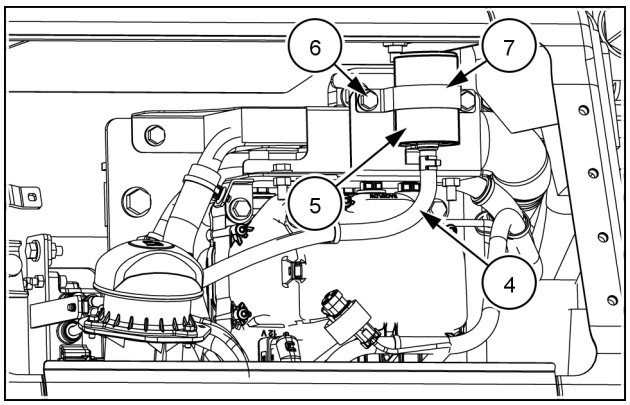
Replace the **DEF/AdBlue®** tank vent filter every **1000 h** or every year (whichever comes first).

1. Turn the starter key to OFF position. Wait **3 min** for ATS system to completely suck **DEF/AdBlue®** back into the tank.
2. Unlock the key cylinder **(1)** with the starter key, and turn the handle **(2)** to open the **DEF/AdBlue®** tank cover **(3)**.



SMIL21CEX3211AA 1

3. Disconnect the hose **(4)** from the **DEF/AdBlue®** tank vent filter **(5)**.
4. Remove the two bolts **(6)**.
5. Remove the clamp **(7)**.
6. Install the new **DEF/AdBlue®** tank vent filter with the clamp **(7)** and the two bolts **(6)**.
   Tightening torque: **19.6 N·m** (**14.5 lb ft**)
7. Connect the hose **(4)** to the new **DEF/AdBlue®** tank vent filter **(5)**.
8. Close and lock the **DEF/AdBlue®** tank cover **(3)**.

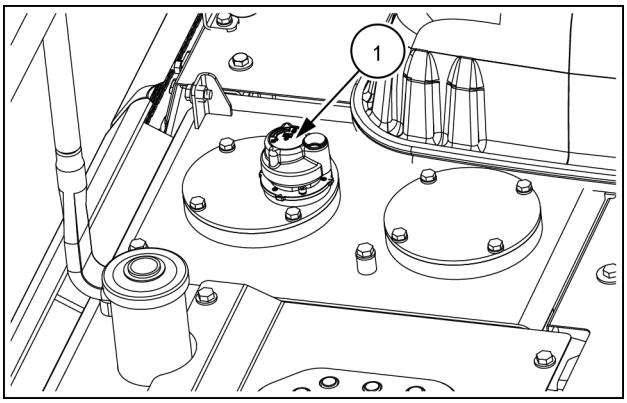


SMIL21CEX3253AA 2

Hydraulic tank breather filter

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

1. Unlock the hydraulic tank breather **(1)** with the starter key.
2. Turn the hydraulic tank breather **(1)** about **30°** counter-clockwise to relieve the pressure in the hydraulic tank. (It stops rotating once it hits the stopper.)
3. Press and further rotate the hydraulic tank breather **(1)** to remove it from the hydraulic tank.

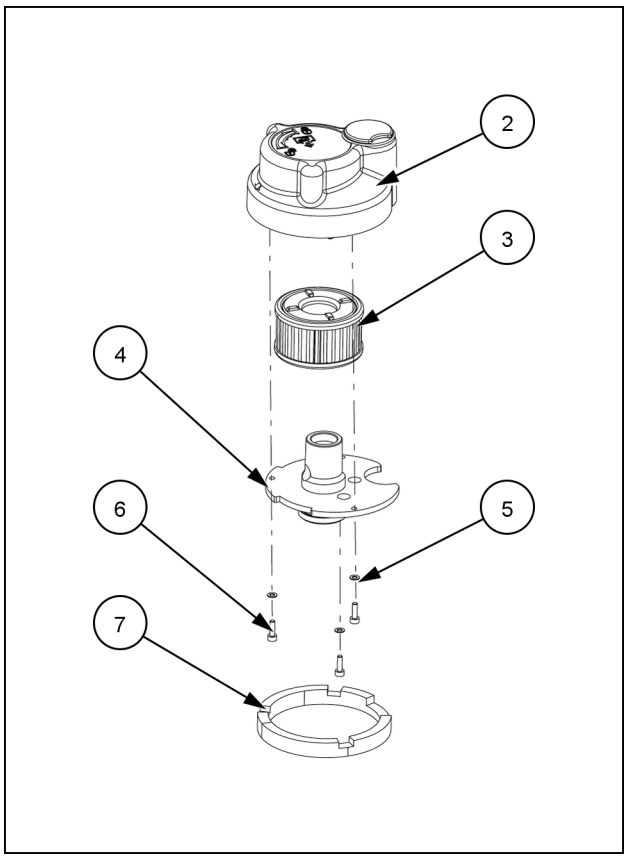


SMIL21CEX4987AA 1

4. Remove the packing **(7)** from the base **(4)**.
5. Remove the three hexagon socket head bolts **(6)** with their relevant washers **(5)**.
6. Remove the cover **(2)** and the filter **(3)** from the base **(4)**.

NOTE: *the hexagon socket head bolts **(6)**, and the washers **(5)** cannot be reused.*

7. Place the new filter **(3)** with the "TOP" surface facing up on the base **(4)** .
8. Install the cover **(2)** on the base **(4)** with the three hexagon socket head bolts **(6)** and their relevant washers **(5)**.
9. Install the packing **(7)** on the base **(4)**.
10. Install the hydraulic tank breather **(1)** on the hydraulic tank.
11. Lock the hydraulic tank breather **(1)** with the starter key.



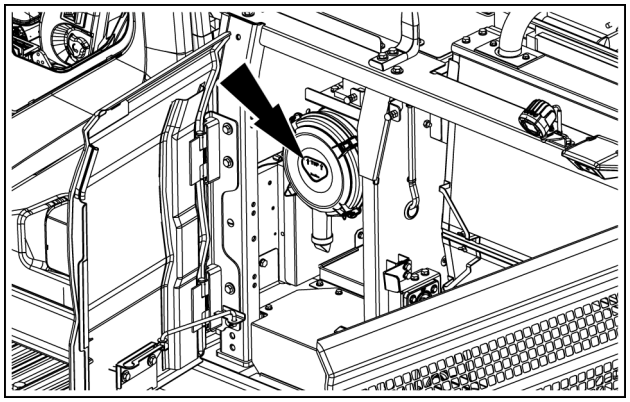
SMIL21CEX3200AA 2

Engine air filters

Change the primary element: every **1000 h** or after cleaning 6 times
Change the secondary element every **1000 h**

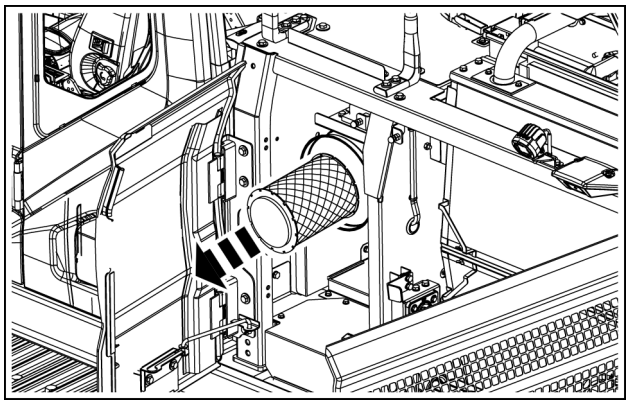
NOTICE: *Be sure to carry out regular checks on the air filter, intake manifold, seals and hoses. At the same time, check the intake manifold screws and hose clamps for tightness. The hoses should be changed before they are worn.*

1. Park the machine on a flat and level place. Stop the engine, and remove the starter key.
2. Open the front left-hand door.
3. Release the fasteners, and remove the cover.



SMIL21CEX4385AA 1

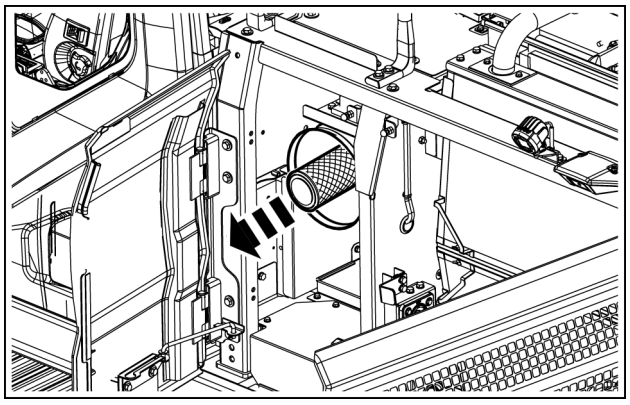
4. Remove the primary element.



SMIL21CEX4386AA 2

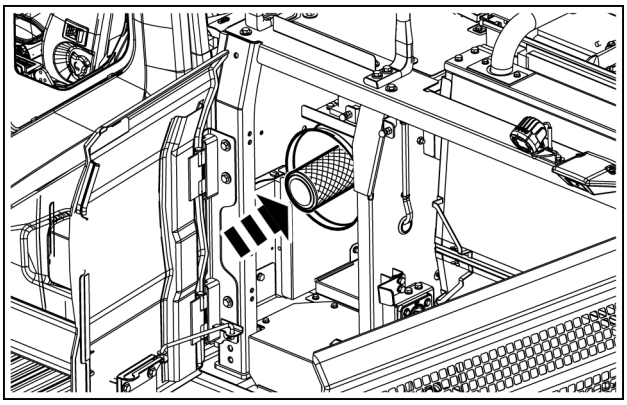
5. Remove the secondary element.

NOTICE: *Make sure that the secondary element is replaced. Do not clean it.*



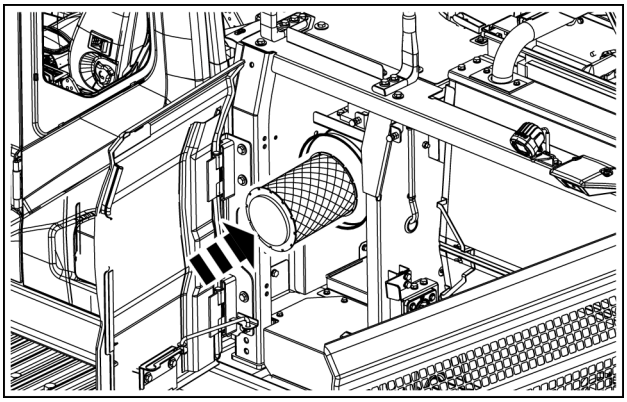
SMIL21CEX4387AA 3

6. Clean the inside of the air cleaner case, and attach the new secondary element.



SMIL21CEX4387AA 4

7. Attach the new primary element.

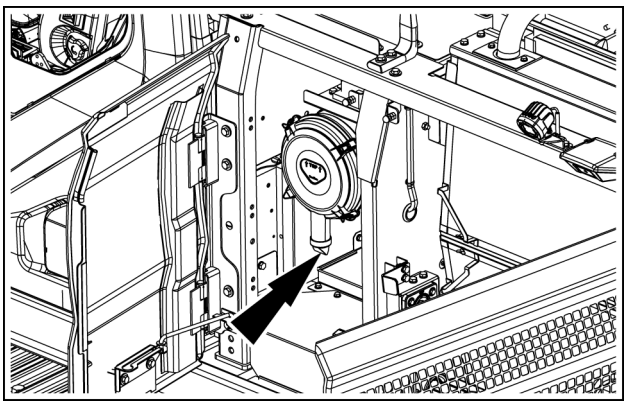


SMIL21CEX4386AA 5

8. Attach the cover (with the "TOP" display facing up), and lock the fasteners.

NOTICE: *The mass air flow (MAF) sensor is mounted on the inlet duct of the air cleaner. Output of the engine may be restricted if any dust is attached to the MAF sensor or failure of sensing part of the MAF sensor due to usage of retailed cleaning fluid.*
Pay attention not to allow dust to invade the inlet duct when replacing the air cleaner element. Also, pay attention not to spray retailed cleaning fluids to the MAF sensor when using them.

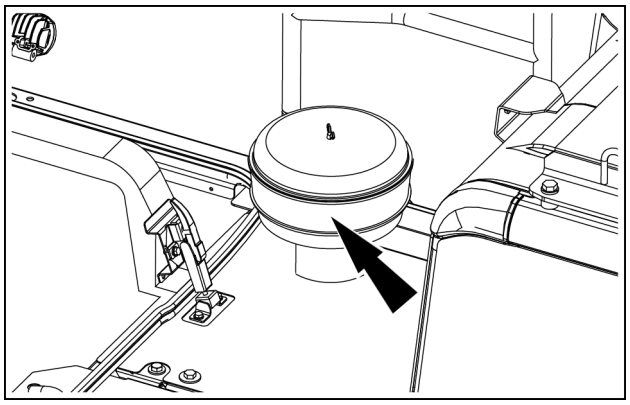
9. Check that the dust ejector under the filter is operating correctly.



SMIL21CEX4385AA 6

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.



SMIL21CEX5017AA 7

Hydraulic fluid analysis

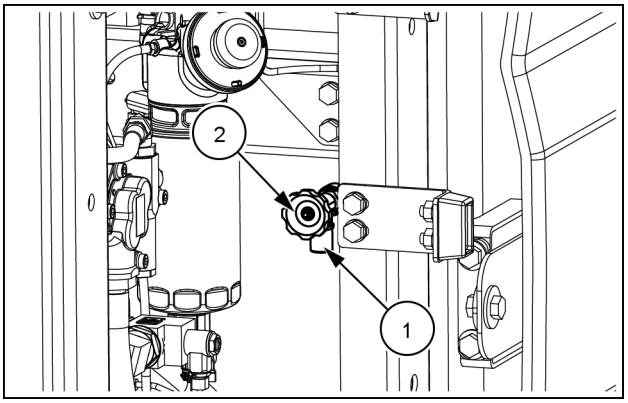
Check the hydraulic oil condition every **1000 h**

NOTICE: *If any attachment other than a bucket is used, reduce the interval of the hydraulic oil analysis. Refer to Chapter 9.*

Ask your CASE CONSTRUCTION Dealer to analyze the hydraulic oil condition.

If the machine is equipped with the hydraulic oil sampling port, take a sample as follows:

1. Open the rear right-hand door.
2. Place the sampling container under the sampling port **(1)**.
3. Open the valve **(2)** and drain the appropriate amount of oil.
4. Close the valve **(2)** and check for leaks.
5. If necessary, add oil according to the amount of oil drained.
6. Close the rear right-hand door.



SMIL21CEX4994AA 1

Swing reduction unit oil

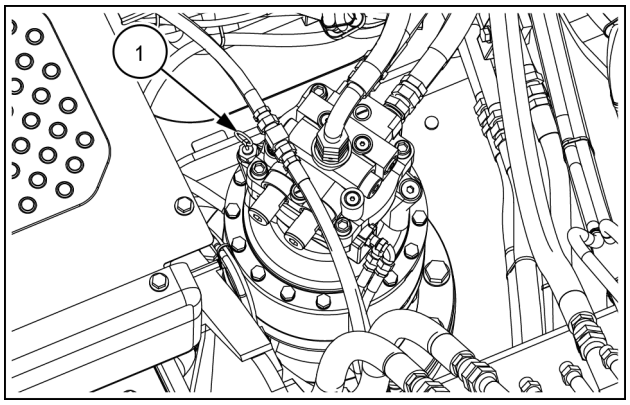
⚠ WARNING

Hot surface possible!
Wait for all components to cool before performing any operation.
Failure to comply could result in death or serious injury.

W0251A

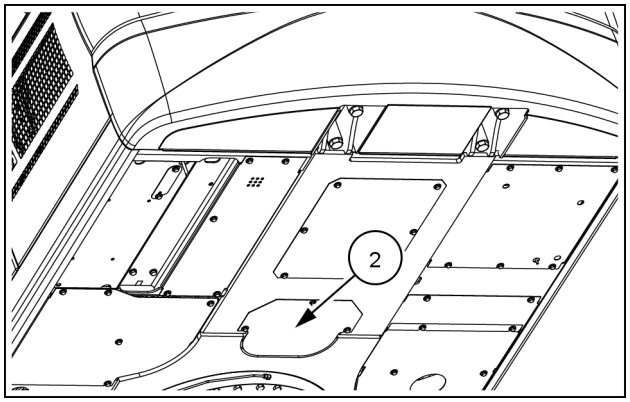
Replace the swing reduction unit oil every **1000 h** (After **250 h** of operation in break-in period).
Lubricant: **AKCELA GEAR 135H EP 85W-140**.
Quantity: **6 L** (**2 US gal**).

1. Park the machine on a flat and level place.
2. Stop the engine, and remove the starter key.
3. Remove the oil dipstick **(1)**. Clean it with a neat cloth.



SMIL21CEX4975AA 1

4. Remove the lower panel **(2)**.



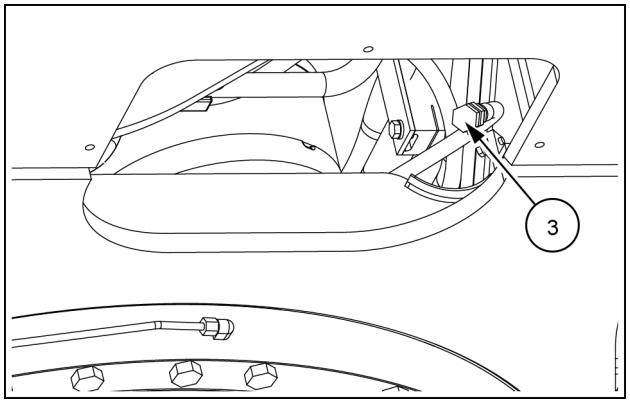
SMIL21CEX4981AA 2

5. Place a container with an appropriate capacity under the oil drain plug **(3)**.
6. Remove the oil drain plug **(3)** to drain oil.

NOTE: *Draining oil requires a comparatively long time.*

NOTE: *Check the condition of the drained oil. If foreign objects, such as metal scrapings, are included, consult the CASE CONSTRUCTION dealer.*

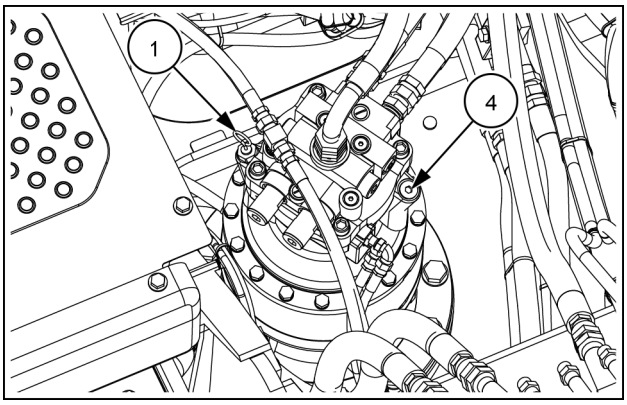
7. Attach the drain plug **(3)**, and install the lower panel **(2)**.



SMIL21CEX4988AA 3

8. Supply oil via the fill port **(4)**.
9. Install the oil dipstick **(1)** and check that the oil level is in the hatched area.
10. Wait for **10 min** and check the oil level again.

    If necessary, supply additional oil via the fill port **(4)**.



SMIL21CEX4975AA 4

Travel reduction oil

⚠ WARNING

Hot surface possible!
Wait for all components to cool before performing any operation.
Failure to comply could result in death or serious injury.

W0251A

NOTICE: *The oil of the travel reducers is under pressure. Protect the face and body using appropriate protective goggles and protective clothing. Never service a hot machine. Allow the machine to cool down before starting any maintenance. Heat increases the travel reducer oil pressure. Slowly loosen the filler, drain and level plugs to slowly relieve the pressure inside the reducers. The procedure for alignment of the plugs must be carried out with the help of an assistant on the ground, and this assistant should be away from the operating area of the machine. Failure to comply with these recommendations could result in death or serious injury.*

NOTICE: *The travel reducer oil must be changed in the first 250 hours of operation of a new machine (break-in period) and then every 1000 hours of operation, or more frequently (shorter periods) when you operate the machine in extreme conditions.*

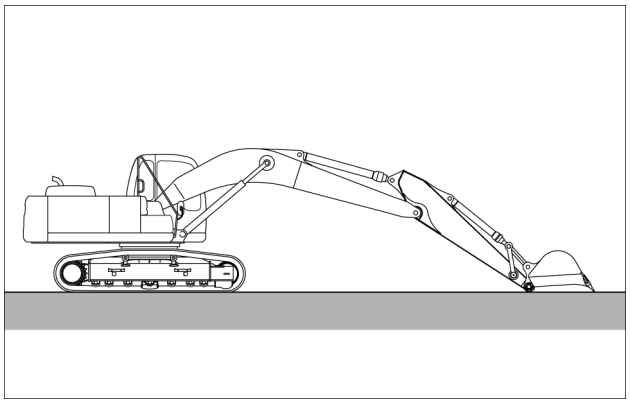
NOTE: *Handle and dispose of the waste in accordance with environmental regulations, laws and government codes.*

Lubricant: **AKCELA GEAR 135H EP 85W-140**
Quantity: **4.75 L** (**1.25 US gal**) (per travel reduction gear)

How to change the travel reducer oil

To change the travel reducer oil, proceed as follows:

1. Keep all unauthorized personnel clear of the area.
2. Park the machine on a flat, level, firm surface, away from any obstacles.
3. Position the arm, boom and bucket or implement as shown.
4. Set the park brake.
5. Place the safety lever in the function lockout position.
6. Place the ignition key in the "OFF" position to shut down the engine.
7. Remove the ignition key.
8. Put the safety lever in the locked position.
9. Wait until the machine cools down.



NHC0257 1

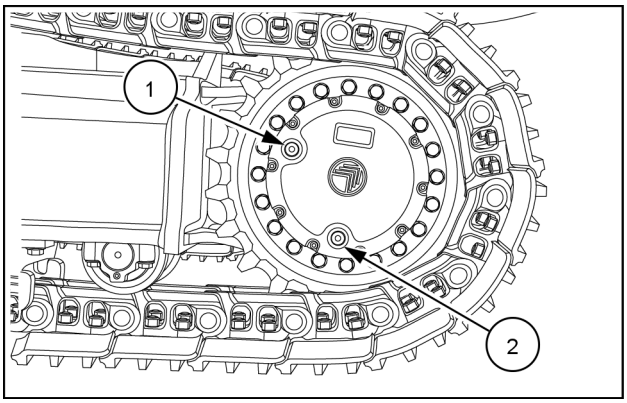
10. Put the ignition switch in the "START" position to turn on the engine.
11. Position the machine so that the drain plug **(2)** is in the lowest possible position.
12. Place the ignition key in the "OFF" position to shut down the engine again.
13. Remove the key from the ignition
14. Slowly loosen the plug **(1)** to relieve the pressure inside the reducer.
15. Place a container with sufficient capacity under the travel reducer.
16. Then remove the drain plug **(2)**, the oil filling and level plug **(1)**.
17. Allow the oil to drain.

NOTICE: *Check the condition of the drained oil. If the oil contains metal filings or foreign material, see your CASE CONSTRUCTION dealer.*

18. If required, replace the plug seals.
19. Install the plug **(2)**. Fill with oil until it comes out through the bottom edge of the orifice **(1)**. Then install the oil filling and level plug **(1)**.

NOTE: *Tighten the plug **(1)** and **(2)** to a torque of **30.0 – 40.0 N·m** (**22.1 – 29.5 lb ft**) .*

20. Repeat this procedure for the other reducer.
21. Put the ignition key in the "START" position to turn the engine on again.
22. Move the machine slowly. Check for any leaks.



PTIL19CEX0119AA 2

Alternator

⚠ WARNING

Improper operation or service of this machine can result in an accident.
Welding sparks can cause battery gases to explode. When welding on the machine, always disconnect the B+ and D+ wires from the alternator. Check the wire markings before reconnecting to ensure a correct connection.
Failure to comply could result in death or serious injury.

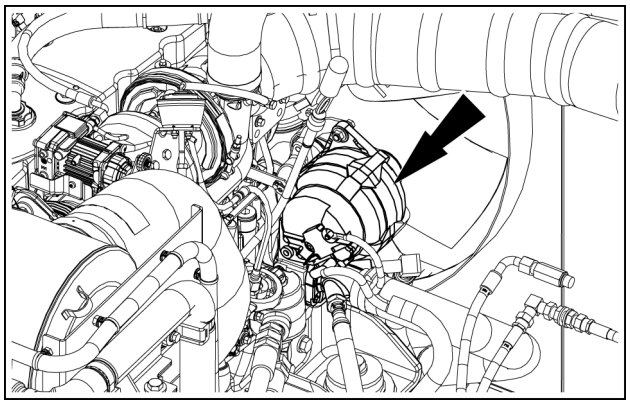
W0253A

Check the alternator every **1000 h**

Ask your CASE CONSTRUCTION Dealer to check the alternator.

NOTICE: *check that the terminal protectors are correctly installed.*

NOTICE: *do not use a steam cleaning machine or solvent to clean the alternator.*



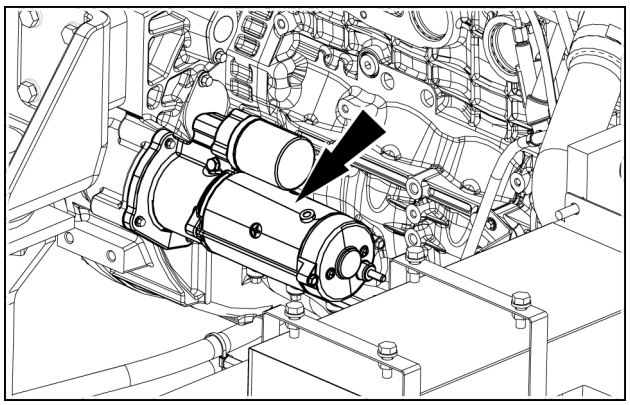
SMIL21CEX3203AA 1

Starter motor

Check the starter motor every **1000 h**

Ask your CASE CONSTRUCTION Dealer to check the starter motor.

NOTICE: *check that the terminal protectors are correctly installed.*

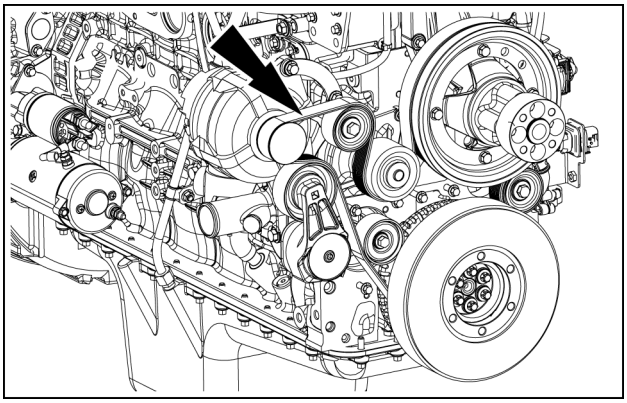


SMIL21CEX3204AA 1

Engine belts

Replace the engine belt every **1000 h** or every year (whichever comes first).

Ask your CASE CONSTRUCTION Dealer to replace the engine belt.



SMIL21CEX4370AA 1

Every 1500 hours

Blow-by filter

⚠ WARNING

Burn hazard!
The engine and exhaust system become hot during operation. To prevent burns, open the engine compartment and allow the components to cool to a comfortable touch temperature before you work inside the engine compartment.
Failure to comply could result in death or serious injury.

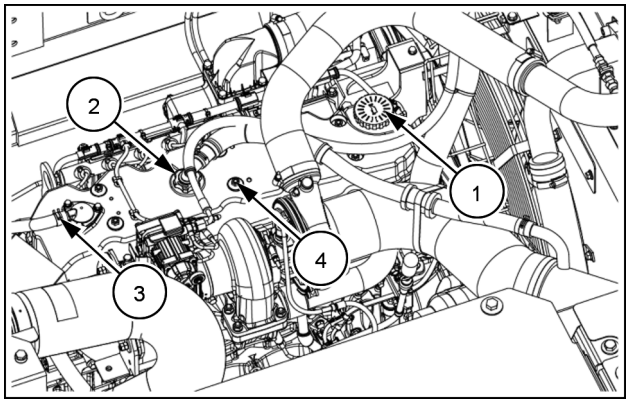
W1406A

Replace the blow-by filter every **1500 h**.

NOTICE: *replace the cylinder head cover gasket each time the blow-by filter is replaced.*

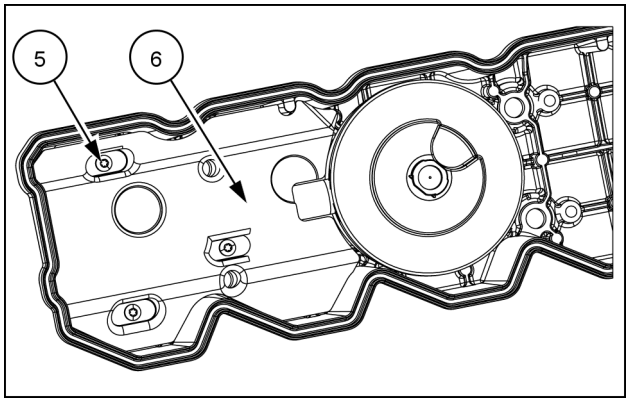
To replace the blow-by filter proceed as follows:

1. Raise and lock the engine hood.
2. Remove the oil filling plug **(1)**.
3. Unscrew the plastic nut **(2)** and remove the spigot outlet.
4. Remove the hose **(3)** from the breather cover.
5. Unscrew the hexagonal flanged nuts **(4)** with their relevant spring dowels.
6. Remove the cylinder head cover.



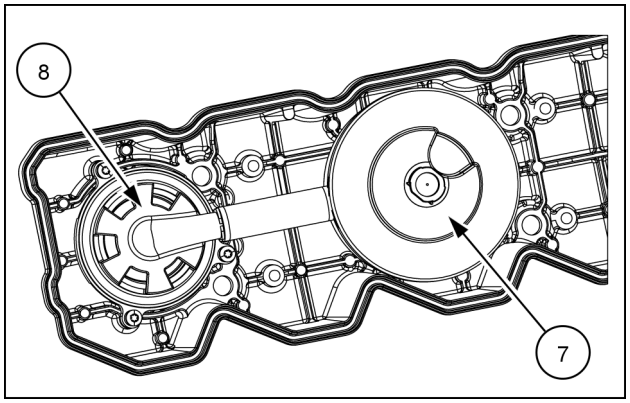
SMIL21CEX4401AA 1

7. Unscrew the self-locking screws **(5)** from the guard **(6)**.



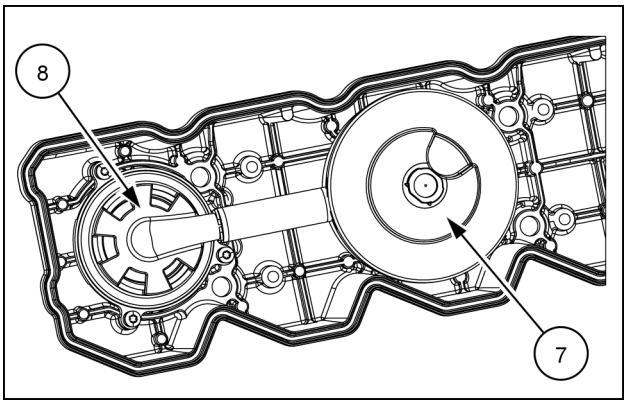
SMIL21CEX4375AA 2

8. Disconnect the blow-by filter **(7)** from the regulator **(8)**.
9. Replace the blow-by filter **(7)**.



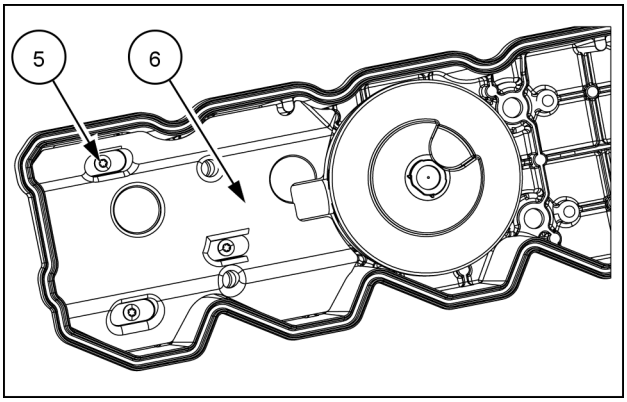
SMIL21CEX4376AA 3

10. Connect the new blow-by filter **(7)** to the regulator **(8)**.



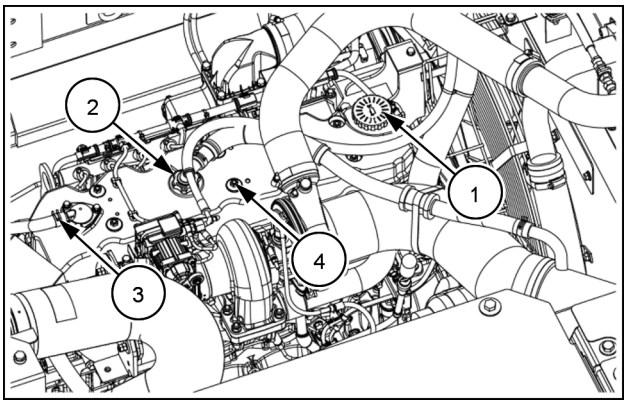
SMIL21CEX4376AA 4

11. Install the guard **(6)** with the self-locking screws **(5)**.



SMIL21CEX4375AA 5

12. Replace the cylinder head cover gasket.
13. Install the cylinder head cover with the hexagonal flanged nuts **(4)** and their relevant spring dowels. Tightening torque: **20 – 28 N·m** (**14.8 – 20.7 lb ft**).
14. Install the hose **(3)** to the breather cover.
15. Install the spigot outlet with the plastic nut **(2)**.
16. Install the oil filling plug **(1)**.
17. Close and lock the engine hood.



SMIL21CEX4401AA 6

Every 2000 hours

Hydraulic oil suction filter

⚠ 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

⚠ WARNING

Pressurized system!
Never attempt to drain fluids or remove filters when the engine is running. Turn off the engine and relieve all pressure from pressurized systems before servicing the machine.
Failure to comply could result in death or serious injury.

W0905A

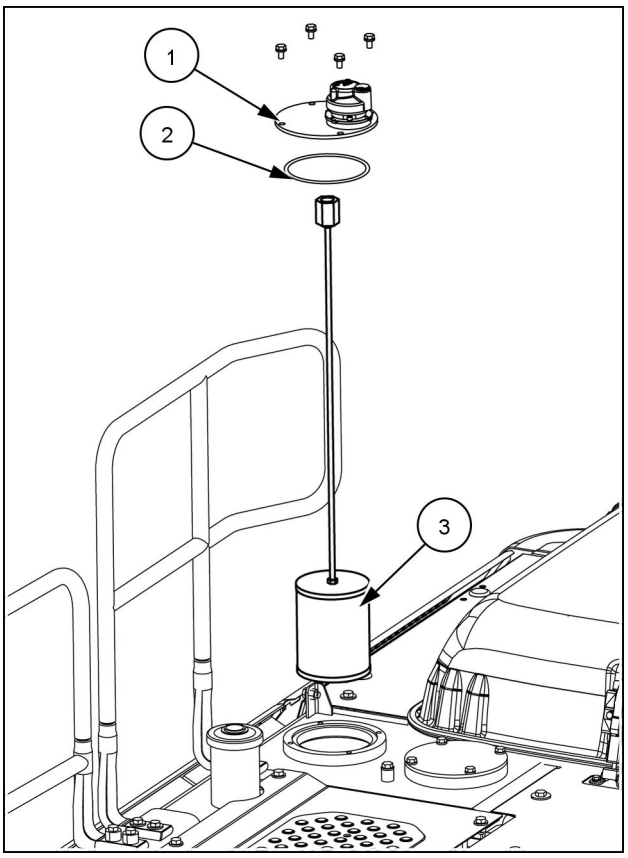
Clean the hydraulic oil suction filter every **2000 h**

NOTICE: *If any attachment other than a bucket is used, reduce the interval of the hydraulic oil suction filter cleaning. Refer to Chapter 9.*

NOTICE: *If you find any metal particles on the old filters, consult the CASE CONSTRUCTION dealer.*

NOTICE: *Replace the hydraulic oil suction filter every **5000 h** of operation or when hydraulic fluid is replaced.*

1. Release all the pressure in the hydraulic tank. Refer to page **6-10**.
2. Clean the top of the hydraulic tank, and clean the cover of the suction filter.
3. Remove the cover **(1)**.
4. Remove the O-ring **(2)**.
5. Remove the oil suction filter **(3)**, and clean it with a solvent.
   Let it dry completely, and check for damage. If any damage is found on its surface, replace it with a new component.
6. Install the suction filter **(3)** and the rod assembly.
7. Replace the O-ring **(2)**.
8. Install the cover **(1)**.
9. Check the hydraulic oil level, and supply it if necessary.



SMIL22CEX4568BA 1

Hydraulic oil return filter

⚠ 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

⚠ WARNING

Pressurized system!
Never attempt to drain fluids or remove filters when the engine is running. Turn off the engine and relieve all pressure from pressurized systems before servicing the machine.
Failure to comply could result in death or serious injury.

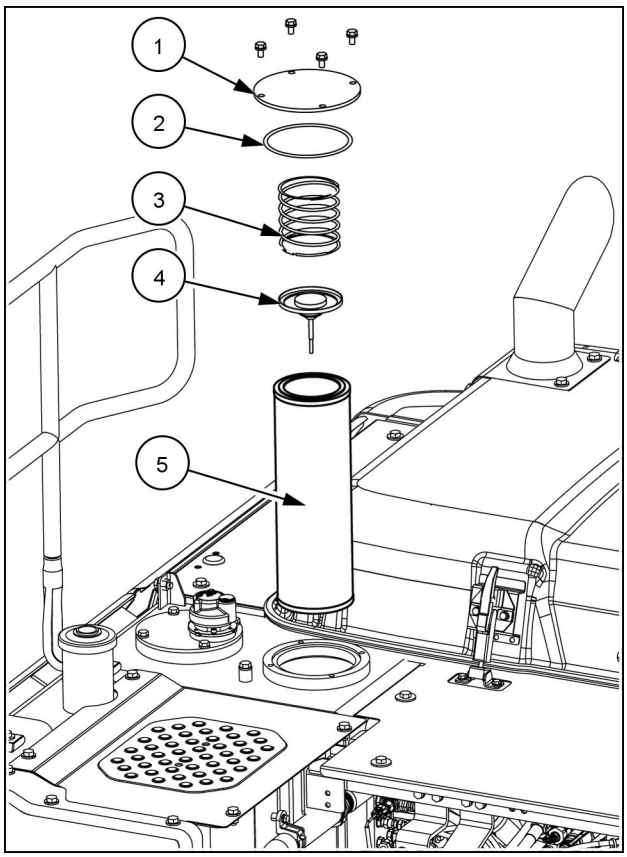
W0905A

Replace the hydraulic oil return filter every **2000 h** (After **250 h** of operation in break-in period).

NOTICE: *When the machine is a new vehicle, or when the main components of the hydraulic system are already overhauled or replaced, replace the oil return filter after **250 h** of operation. After that, replace the filter at specified intervals.*

NOTICE: *If any attachment other than a bucket is used, reduce the interval of the hydraulic oil return filter replacement. Refer to Chapter 9.*

1. Release all the pressure in the hydraulic tank. Refer to page **6-10**.
2. Clean the top of the hydraulic tank, and clean the cover of the return filter.
3. Remove the cover **(1)**.
4. Remove the O-ring **(2)**.
5. Remove the compression spring **(3)**, the relief valve **(4)**, and the oil return filter **(5)**.
6. Install the new oil return filter **(5)**.
7. Clean and install the relief valve **(4)** and the compression spring **(3)**.
8. Replace the O-ring **(2)**.
9. Install the cover **(1)**.
10. Check the hydraulic oil level, and supply it if necessary.



SMIL22CEX4567BA 1

Pilot line filter

⚠ 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

⚠ WARNING

Pressurized system!
Never attempt to drain fluids or remove filters when the engine is running. Turn off the engine and relieve all pressure from pressurized systems before servicing the machine.
Failure to comply could result in death or serious injury.

W0905A

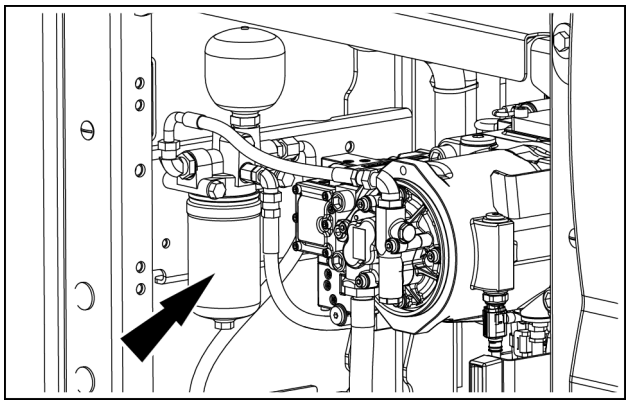
Replace the pilot line filter every **2000 h** (After **250 h** of operation in break-in period).

NOTICE: *The accumulator of the pilot circuit contains high pressure gas. Do not perform welding and avoid any operation generating sparks and high temperature close to the accumulator.*

NOTICE: *When the machine is a new vehicle, or when the main components of the hydraulic system are already overhauled or replaced, replace the pilot filter after **250 h** of operation. After that, replace the filter at specified intervals.*

NOTICE: *If any attachment other than a bucket is used, reduce the interval of the pilot line filter replacement. Refer to Chapter 9.*

1. Release all the pressure in the hydraulic tank. Refer to page **6-10**.
2. Open the rear right-hand door.
3. Unscrew and remove the filter using a wrench.
4. Coat the seal of the new filter with a fine film of clean oil.
5. Install the new filter. Turn the filter until the seal comes into contact with the filter head then tighten by an extra third of a turn by hand.
6. Close the rear right-hand door.



SMIL21CEX4989AA 1

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 **6-20**.
2. Place the new filters in the housings according to the installation procedure.

Engine valve rocker clearance adjustment

Check the clearance of the engine valve rocker every **2000 h**

Ask your CASE CONSTRUCTION Dealer to check the engine valve rocker clearance.

Every 4000 hours

Engine coolant

⚠ WARNING

Hazardous chemicals!
Coolant can be toxic. Avoid contact with skin, eyes, and clothing. Antidotes:
EXTERNAL - Rinse thoroughly with water. Remove soiled clothing.
INTERNAL - Rinse the mouth with water. DO NOT induce vomiting. Seek immediate medical attention.
EYES - Flush with water. Seek immediate medical attention.
Failure to comply could result in death or serious injury.

W0282A

⚠ WARNING

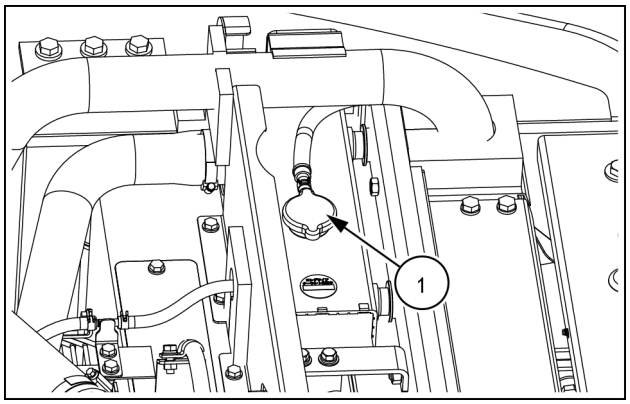
Burn hazard!
Hot coolant can spray and scald if you remove the radiator or deaeration tank cap while the system is hot. To remove the cap: allow the system to cool, turn the cap to the first notch, and wait for all pressure to release. Remove the cap only after all pressure has released.
Failure to comply could result in death or serious injury.

W0367A

Replace the engine coolant every **4000 h** or every four years (whichever comes first).
Fluid: **AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT**
Quantity (50/50 antifreeze/deionized water mixture): **30.0 L** (**7.9 US gal**)

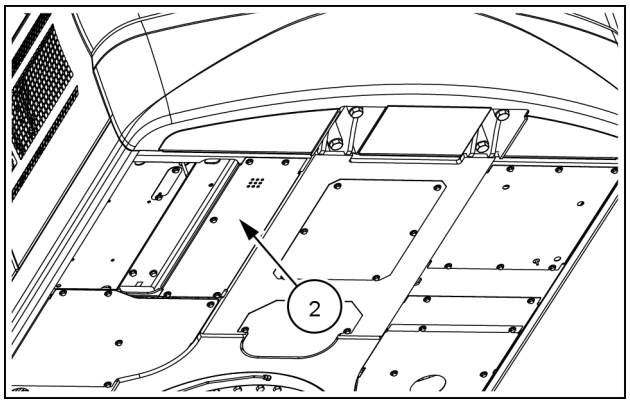
Draining the engine cooling system

1. Stop the engine and let it cool down.
2. Raise and lock the engine hood.
3. Remove the radiator cap **(1)**.



SMIL21CEX4992AA 1

4. Remove the lower panel **(2)**

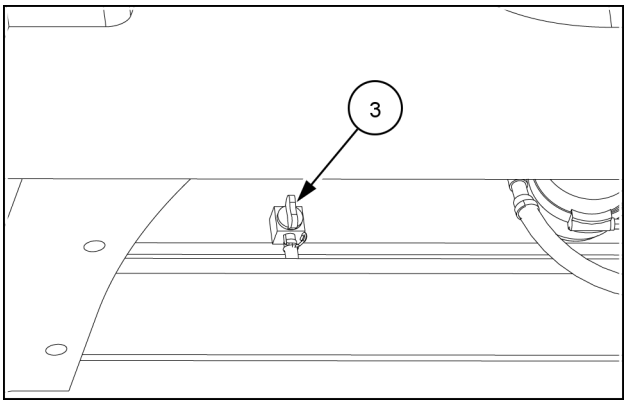


SMIL21CEX4981AA 2

5. Open the coolant drain cock of the radiator. Drain coolant from the radiator. **(3)**.
6. Close the coolant drain cock of the radiator. **(4)**

NOTICE: *the engine shall never be started with no water in the radiator. This causes the engine to seize up.*

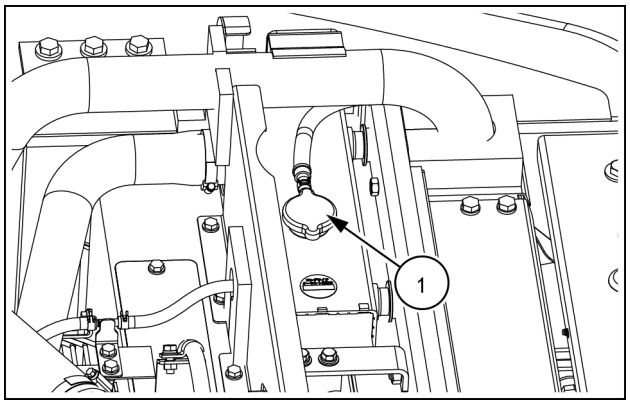
NOTICE: *the drained coolant shall be disposed according to the local Regulations for coolant fluids.*



SMIL21CEX3209AA 3

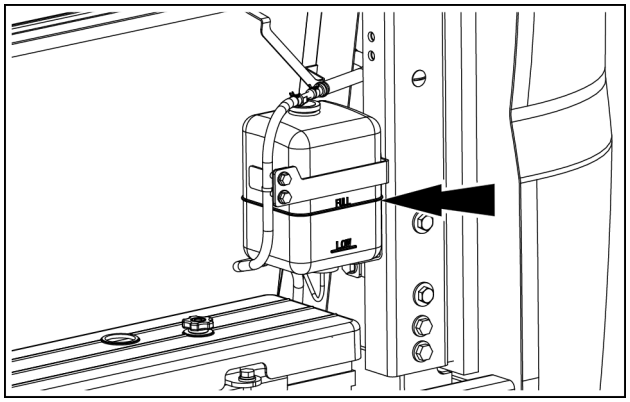
Flushing the engine cooling system

7. Inspect and clean the radiator cap **(1)** . Inspect hoses and clamps of the engine cooling system. Make sure to replace any damaged parts.
8. Fill the radiator with tap water up to the edge of the coolant inlet.
9. Close the radiator cap.



SMIL21CEX4992AA 4

10. Fill the reserve tank with tap water up to the FULL mark. Close the cap of the reserve tank.
11. Start the engine and let it run at low idle speed for **20 min**. Turn on the cab heating system, and set the temperature and the fan speed to intermediate level.
12. Stop the engine. Wait until the engine has cooled down. Check for leakages from the hoses of the engine cooling system.
13. Drain water completely from the engine cooling system. Repeat the flushing procedure (steps from 10 to 15) for 2 more times. If drained water is still not clean, further repeat the flushing procedure until clean water is drained from the engine.



SMIL21CEX4971AA 5

Filling the engine cooling system

14. Slowly supply coolant through the radiator coolant inlet. Add coolant up to the edge of the coolant inlet.

NOTICE: *the coolant shall be added slowly in order to prevent the entry of air into the engine cooling system.*

15. Close the radiator cap.
16. Fill the reserve tank with coolant up to the FULL mark. Close the cap of the reserve tank.
17. Start the engine and let it run at low idle speed for **3 – 5 min**, and then stop the engine.
18. Wait until the engine has cooled down. Slowly open the radiator cap and check for coolant level. If needed, add coolant up to the edge of the coolant inlet of the radiator.
19. Close the radiator cap.
20. Start the engine and let it run at low idle speed for **3 min**. Turn on the cab heating system, and set the temperature and the fan speed to the maximum level.
21. Gradually increase the engine speed to H position. Let the engine run until the coolant temperature reaches **90 °C**. Make sure that coolant temperature stays at **90 °C** for some minutes.

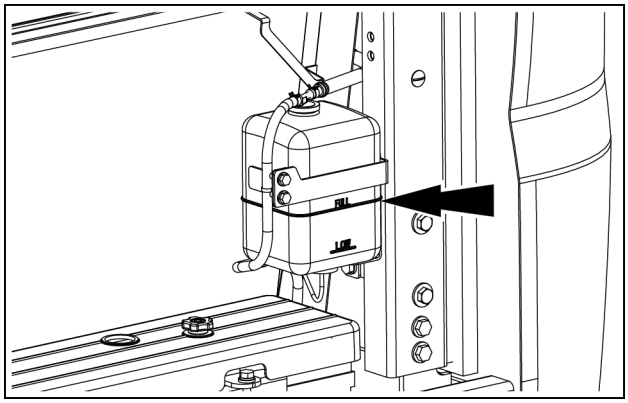
NOTICE: *if coolant temperature gets quickly over **90 °C**, lower the engine speed to low idle. Stop the engine and check for leakages from the hoses of the cooling system.*

22. Gradually decrease the engine speed to low idle and let it run for **3 min**. Stop the engine.
23. Wait until the engine has cooled down. Slowly open the radiator cap and check for coolant level. Add some coolant up to the edge of the coolant inlet of the radiator.

NOTICE: *if too much coolant has to be added at this stage, carefully check for leakages into the engine cooling system.*

24. Close the radiator cap.
25. Carry out final filling of the coolant reserve tank up to the FULL mark. Close the cap of the reserve tank.

NOTICE: *the coolant level in the reserve tank shall be always double checked the morning after. The cooling circuit may take some more time to get stabilized. If needed, fill the reserve tank with coolant up to the FULL mark. Close the cap of the reserve tank.*



SMIL21CEX4971AA 6

DEF/AdBlue® tank suction filter

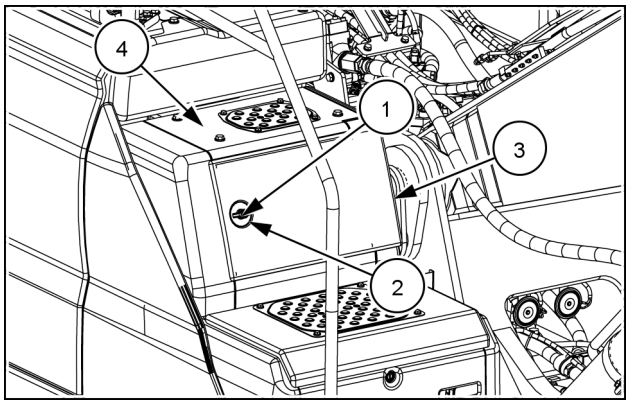
⚠ WARNING

Burn hazard!
The engine and exhaust system become hot during operation. To prevent burns, open the engine compartment and allow the components to cool to a comfortable touch temperature before you work inside the engine compartment.
Failure to comply could result in death or serious injury.

W1406A

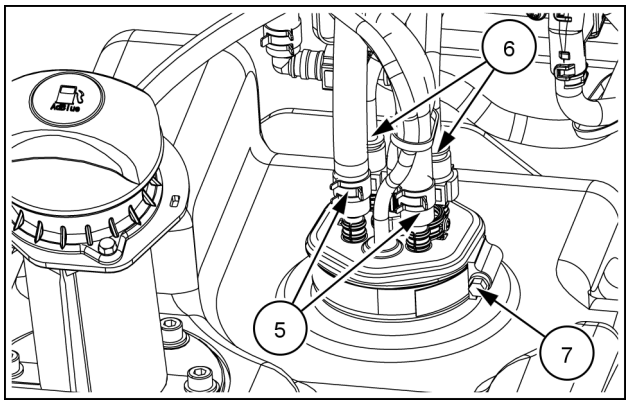
Clean the **DEF/ADBLUE®** tank suction filter every **4000 h**

1. Turn the starter key to OFF position. Wait **3 min** for ATS system to completely suck **DEF/ADBLUE®** back into the tank.
2. Turn the battery disconnect switch to the OFF position.
3. Unlock the key cylinder **(1)** of the **DEF/ADBLUE®** tank cover with the starter key, and turn the handle **(2)** to open the tank cover **(3)**.
4. Remove the panel **(4)**.



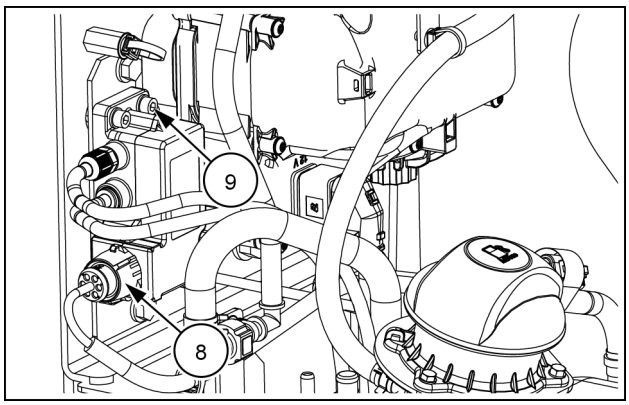
SMIL21CEX3211AA 1

5. Disconnect the coolant hoses **(5)**.
6. Disconnect the **DEF/ADBLUE®** hoses **(6)**.
7. Remove the clamp **(7)**.



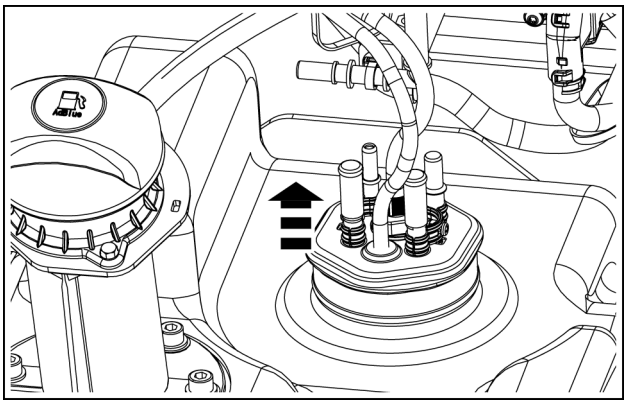
SMIL21CEX4395AA 2

8. Disconnect the harness **(8)**.
9. Unscrew the four bolts **(9)** to remove the electrical box of the sender unit.



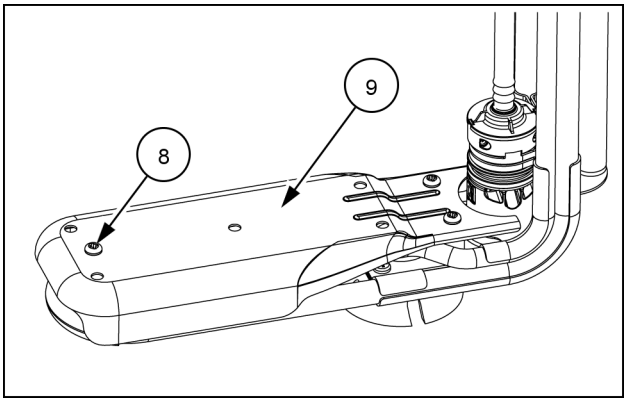
SMIL21CEX4995AA 3

10. Lift the sender unit and extract it from the **DEF/ADBLUE®** tank.



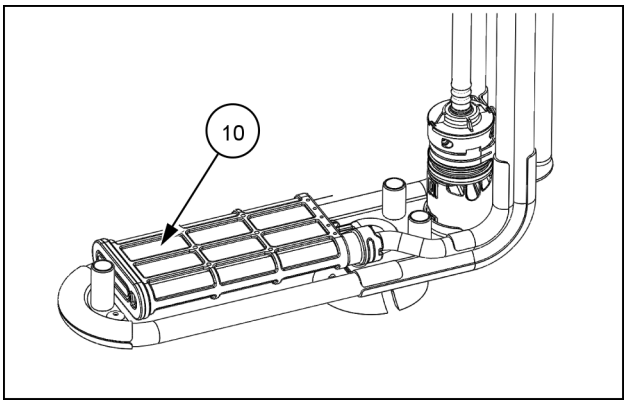
SMIL21CEX4396AA 4

11. Remove the three screws **(8)**.
12. Remove the cover **(9)**.



SMIL21CEX4397AA 5

13. Disconnect the **DEF/ADBLUE®** tank suction filter **(10)** from the **DEF/ADBLUE®** suction line.
14. Clean the **DEF/ADBLUE®** tank suction filter.

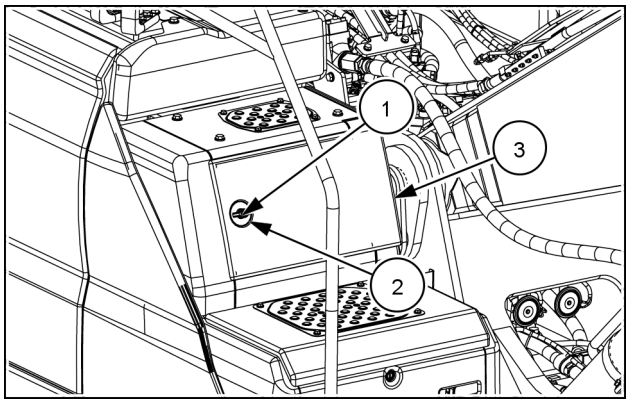


SMIL21CEX4398AA 6

DEF/AdBlue® supply module filter

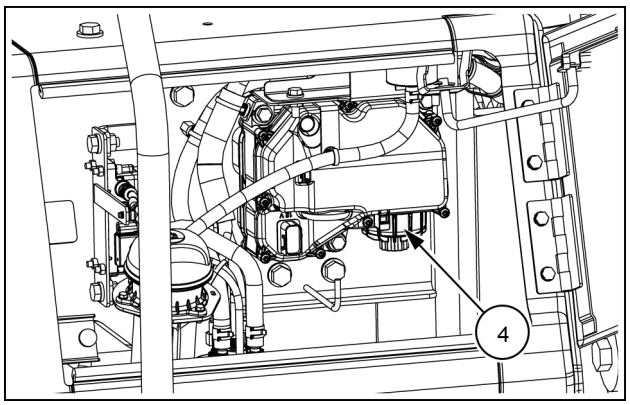
Replace the supply module filter every **4000 h**

1. Turn the starter key to OFF position. Wait **3 min** for ATS system to completely suck **DEF/ADBLUE®** back into the tank.
2. Unlock the key cylinder **(1)** with the starter key, and turn the handle **(2)** to open the **DEF/AdBlue®** tank cover **(3)**.



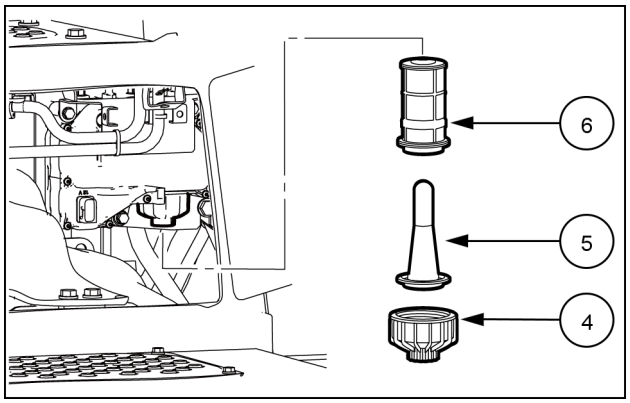
SMIL21CEX3211AA 1

3. Prepare a container with an appropriate capacity under the supply module filter cap **(4)**.
4. Remove the supply module filter cap **(4)**.



SMIL21CEX4377AA 2

5. Remove the equalizing element **(5)**.
6. Remove the supply module filter **(6)**.
7. Install the new supply module filter **(6)** and the new equalizing element **(5)**.
8. Install the supply module filter cap **(4)**. Tightening torque: **20 – 25 N·m** (**15 – 18 lb ft**).
9. Wipe off the spilled **DEF/AdBlue®** with a cloth, and then rinse the area with fresh water. Finally, blow compressed air at very low pressure to clean the compartment of the **DEF/AdBlue®** tank.
10. Idle the engine for several minutes to check that there is no leak.



SMIL21CEX3213AA 3

Pump outlet hoses

Check the outlet hose of main pump: Every 2 years or every **4000 h** (whichever comes first)

Checking the hydraulic system piping

Make sure there are no leaks from the hydraulic system hoses, pipes, plugs, connections and fittings and check that all nuts and screws are correctly tightened. In the event of problems, repair, change or tighten the component (s) concerned.

Hydraulic hoses

Check the boom, arm, and bucket cylinder hose: Every 2 years or every **4000 h** (whichever comes first)

Checking the hydraulic system piping

Make sure there are no leaks from the hydraulic system hoses, pipes, plugs, connections and fittings and check that all nuts and screws are correctly tightened. In the event of problems, repair, change or tighten the component (s) concerned.

NOTICE: *Ensure that genuine hydraulic hoses are used. The use of non-genuine hoses could cause damage to the hydraulic system.*

Every 5000 hours

Hydraulic oil and filters

⚠ 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

⚠ WARNING

Pressurized system!
Never attempt to drain fluids or remove filters when the engine is running. Turn off the engine and relieve all pressure from pressurized systems before servicing the machine.
Failure to comply could result in death or serious injury.

W0905A

⚠ CAUTION

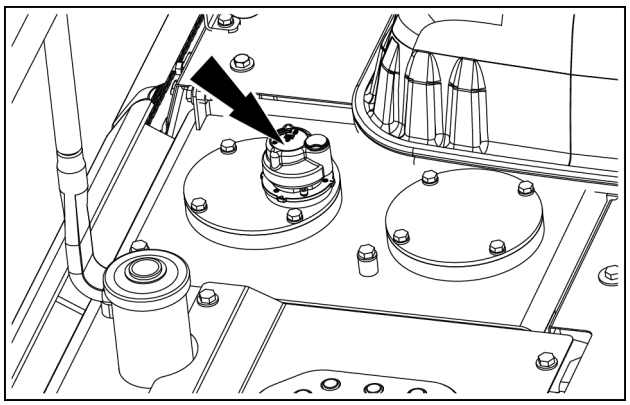
Escaping fluid!
Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.
Failure to comply could result in minor or moderate injury.

C0104A

Replace the hydraulic oil and filters every **5000 h**
Fluid: **AKCELA HYDRAULIC EXCAVATOR FLUID**
Quantity: **162 L** (**42.8 US gal**)

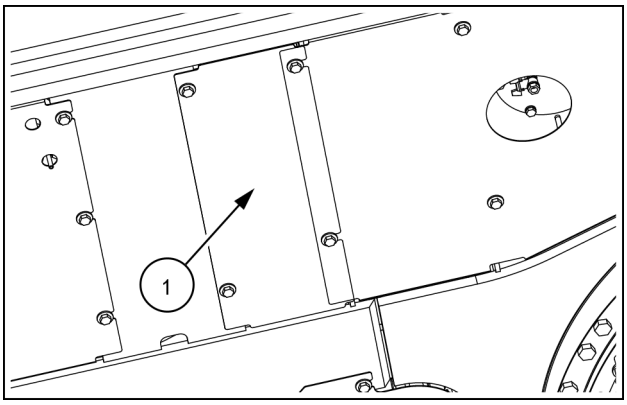
NOTICE: *If any attachment other than a bucket is used, reduce the interval of the hydraulic oil and filters replacement. Refer to Chapter 9.*

1. Park the machine on a hard and level ground. Orient the upper structure frame so that there is enough free space under the hydraulic tank to place a barrel of suitable capacity.
2. Stop the engine and remove the starter key.
3. Release all the pressure in the hydraulic tank. Refer to page **6-10**.
4. Clean the top of the hydraulic tank, and clean the cover of the suction filter.
5. Remove the cover of the hydraulic oil suction filter.
6. With a pump, remove the hydraulic oil from the hydraulic tank.

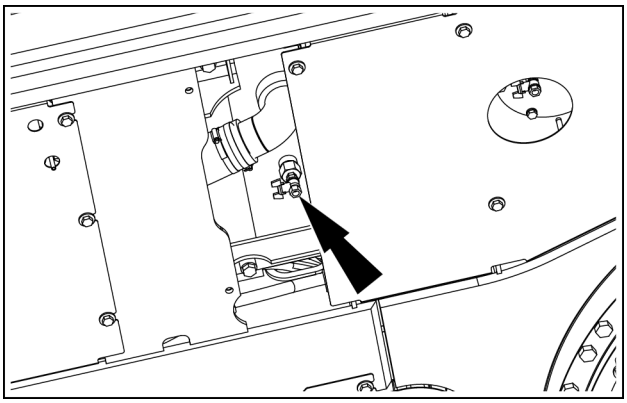


SMIL21CEX4973AA 1

7. Remove the lower panel **(1)** below the hydraulic tank to access the drain valve.
8. Place a container of a suitable capacity under the drain valve.
9. Open the valve to drain the remaining hydraulic fluid.
10. Replace the suction filter as described on page **6-61**.
11. Replace the return filter as described on page **6-63**.
12. Close the drain valve. Install the lower panel below the hydraulic tank.
13. Add new hydraulic oil to the tank.
14. Replace the O-ring, and attach the cover of the hydraulic oil suction filter.
15. Start the engine, and run it with no load for about **5 min**.
16. Move each control several times to remove all air from the system.
17. Swing the upper structure all the way from left to right equally twice or more.
18. Park the machine at the specified position, and then stop the engine.
19. Check the oil level of the hydraulic tank, refill it with oil as necessary. Check that there are no bubbles in the hydraulic tank.



SMIL21CEX4978AA 2



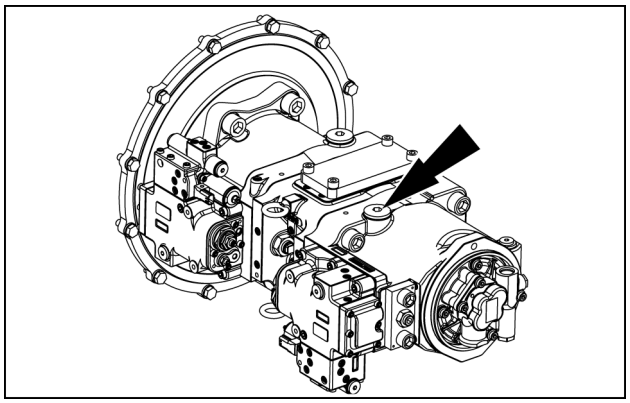
SMIL21CEX4979AA 3

Bleeding air from the hydraulic components

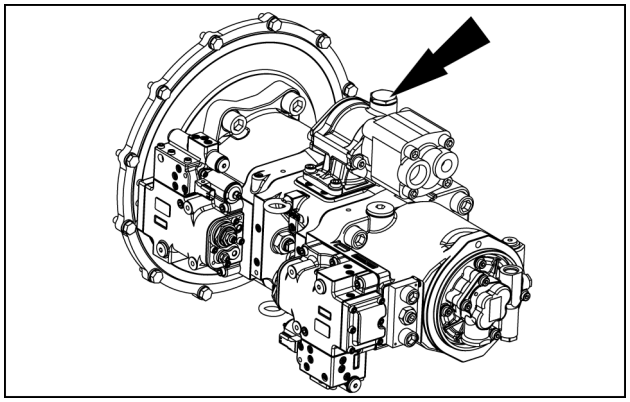
NOTE: *After bleeding air from the components, stop the engine for five minutes and check there are no bubbles at the surface of the hydraulic fluid in the reservoir.*

Hydraulic pump

Using a solvent, clean the periphery of the air bleed plug.
Loosen the air bleed plug, remove the plug if the fluid does not flow.
Fill the pump with new clean hydraulic fluid. Install and tighten the air bleed plug.
Start the engine and run it at low idle speed. Loosen the air bleed plug on the pump.
Tighten the plug when air free fluid comes out of the bleed plug hole.
Clean the area completely.



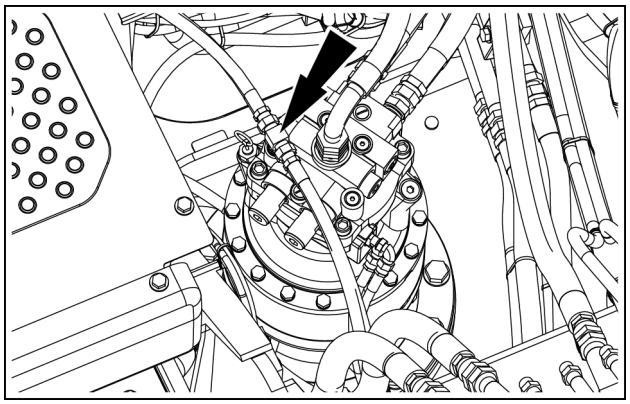
SMIL22CEX1994AA 4



SMIL22CEX1993AA 5

Swing reduction gear

Set the engine at a low idle, and loosen the hose connected with the joint of the drain port. Check that oil oozes from there. At this time, do not perform swing operation.
If oil does not ooze, stop the engine, remove the joint connected with the drain port, and fill the motor case with hydraulic fluid via the drain port.
Attach the joint of the drain port, and temporarily tighten the hose.
Set the engine at a low idle, and run it until oil oozes from the drain port.
After checking that oil has oozed, fully tighten the joint and the hose.
With the engine at a low idle, perform swing operation slowly right and left at two or more revolutions.



SMIL21CEX4975AA 6

Attachment cylinders

Start the engine and run it at low idle speed. Extend and retract the attachment cylinder rods four or five times without bringing them to end of stroke. Then repeat the operation three or four times, this time bringing the cylinder rods to end of stroke.

When necessary

Track tension

⚠ WARNING

Tip-over hazard!
Only raise the track as little as necessary.
Failure to comply could result in death or serious injury.

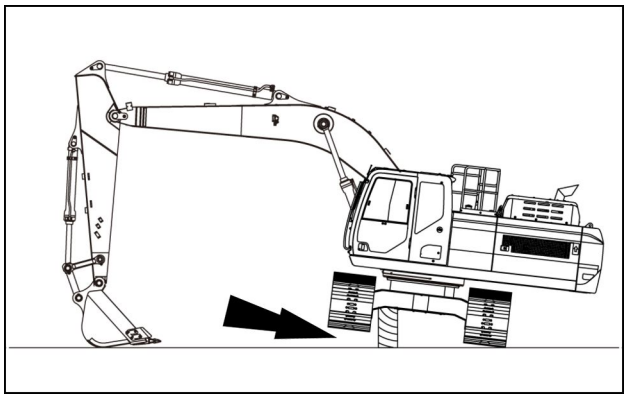
W0276A

Check the track tension periodically

NOTICE: *if the tracks are too tight, they wear quickly. If tracks are not tight enough, they wear quickly and the links can catch on the sprocket wheel or slide off the idler wheel or the sprocket wheel. Clean the tracks after work.*

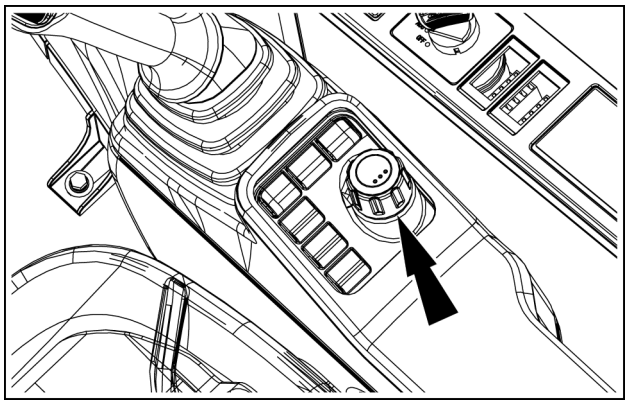
To check the tracks tension, proceed as follows:

1. Swing the upper structure perpendicular to the undercarriage. Lower the attachment to the ground, then lower the boom until the track is raised off the ground. Place a block under the undercarriage and raise the attachment off the ground.



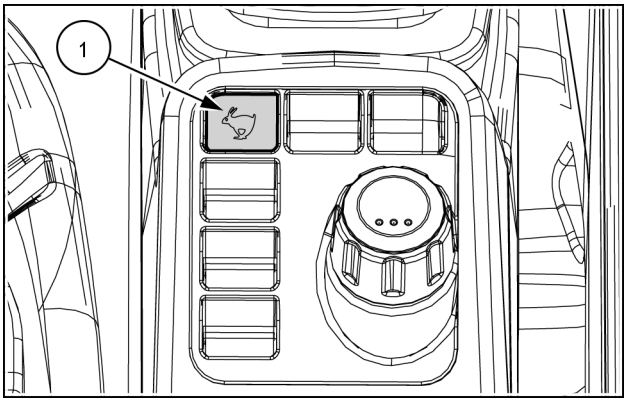
SMIL21CEX1420AA 1

2. Turn the engine speed throttle to the maximum speed position.



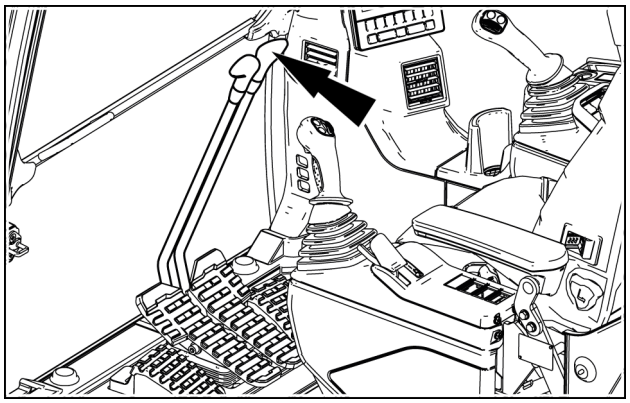
SMIL21CEX3101AA 2

3. Press the travel mode selector button **(1)** to set the "Rabbit" mode.



SMIL21CEX3106AA 3

4. Operate the travel control lever to move the raised track forward and backward and shake off the mud.
5. Repeat the same operations for the other track.

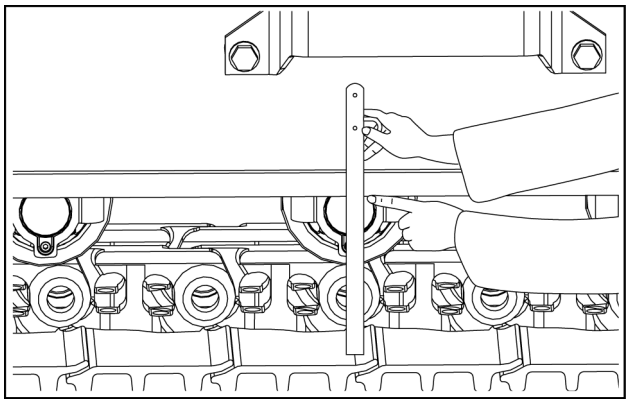


SMIL22CEX1257AA 4

Checking the tension

1. If the track is not yet raised, perform the same procedure as for cleaning to put the machine into the required position.
2. Operate the travel control lever to move the raised track rearward for a while.
3. Stop the engine, and remove the starter key.
4. At the center of the track, measure the slack between the base of the undercarriage and the pad. The value must be within:

   300 – 330 mm (**11.8 – 13.0 in**).

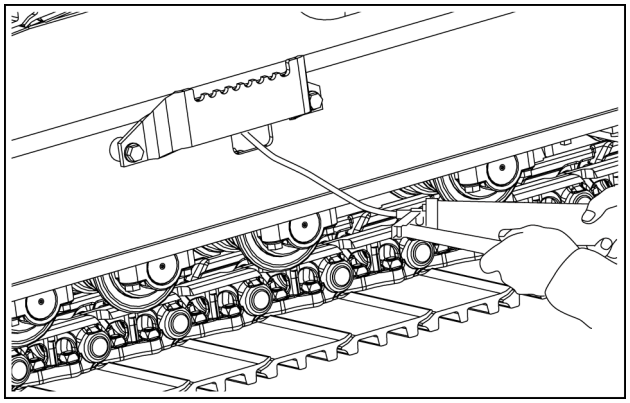


SMIL14CEX2855AA 5

Adjusting the tension

To increase the tension:

1. Clean the grease fitting adapter and the grease fitting.
2. Connect the grease pump. Inject the grease to obtain the right amount of track tension.
3. Remove the grease pump and clean the grease fitting.
4. Repeat the same operations for the other track



SMIL21CEX3104AA 6

⚠ WARNING

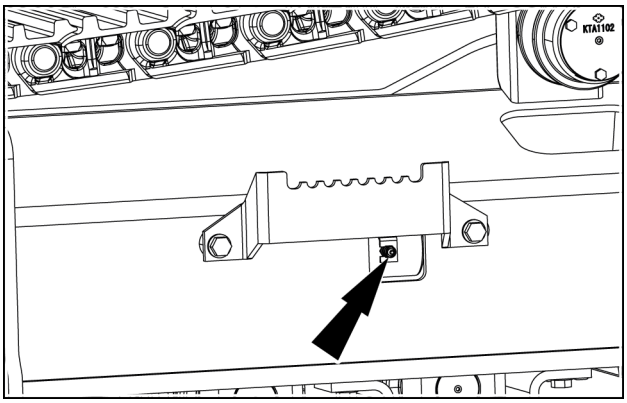
Pressurized fluid can penetrate the skin and cause severe injuries.
The grease in the cylinder is under high pressure. Never loosen the grease fitting adaptor completely in order to speed up the flow of grease.
Failure to comply could result in death or serious injury.

W0261A

To reduce the tension:

1. Turn the grease fitting adapter about 3 times to loosen it and drain grease from the cylinder.
2. When the track tension is correct, tighten the adapter.
3. Clean the grease adapter and fitting, then lower the track to the ground.
4. Repeat the same operations for the other track.

NOTICE: *if the grease fitting adaptor is damaged, grease may leak out. Check the condition of the grease fitting adaptor regularly and replace it if necessary.*

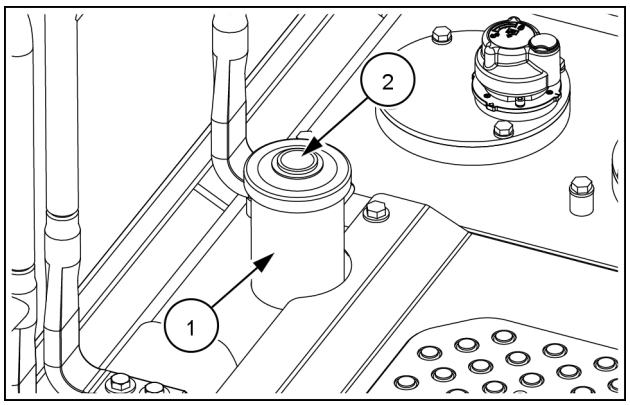


SMIL22CEX2003AA 7

Fuel tank strainer

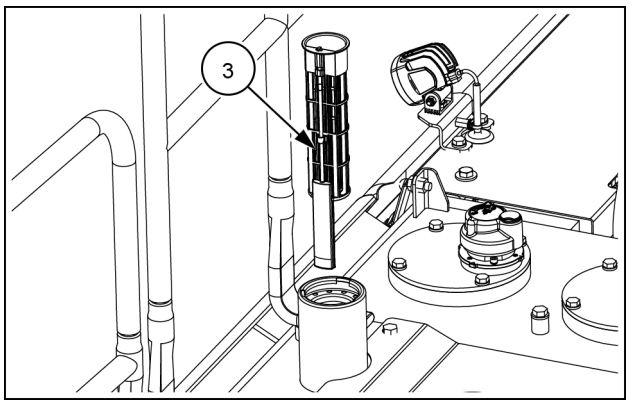
Clean the fuel tank strainer periodically

Get over the fuel tank. Clean the area around the fuel filler neck **(1)**.
Slide the protective plate over the cap **(2)** of the fuel filler neck, and unlock the cap with the starter key.



SMIL21CEX4990AA 1

Remove the fuel tank strainer **(3)**, inspect it for damage. If damaged, discard and replace. If in good condition, clean it in an environmentally safe manner. Diesel fuel is a preferred cleaning agent. Fuel must not be added to the tank unless the strainer is in place and in good working condition.



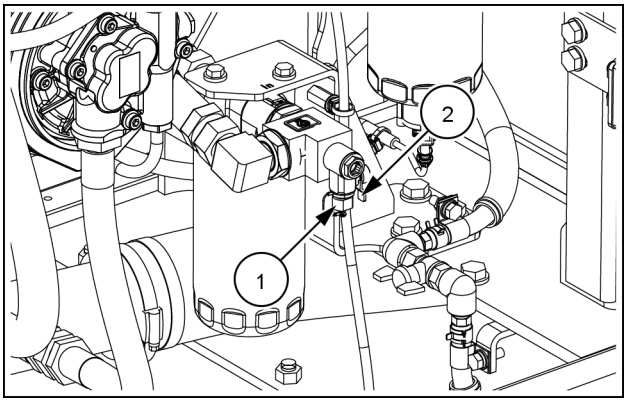
SMIL21CEX4991AA 2

Engine oil analisys

Ask your CASE CONSTRUCTION Dealer to analyze the engine oil condition.

If the machine is equipped with the engine oil sampling port, take a sample as follows:

1. Open the rear right-hand door.
2. Place the sampling container under the sampling port **(1)**.
3. Open the valve **(2)** and drain the appropriate amount of oil.
4. Close the valve **(2)** and check for leaks.
5. If necessary, add oil according to the amount of oil drained.
6. Close the rear right-hand door.



SMIL21CEX4996AA 1

Gas spring inspection

⚠ WARNING

Explosive gas!
Gas struts contain high-pressure nitrogen gas. If handled improperly, they could explode.
- Do not disassemble.
- Do not expose to flame or fire.
- Do not puncture, weld, or melt.
- Do not expose to shock by striking or turning.
- The fill gas must be removed before disposal. Consult your dealer.
Failure to comply could result in death or serious injury.

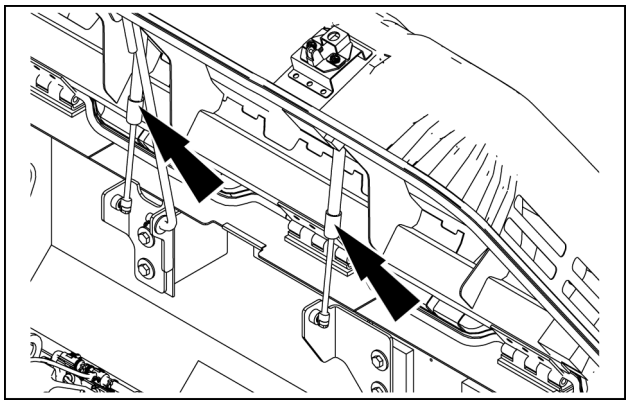
W0914A

Check the gas springs periodically

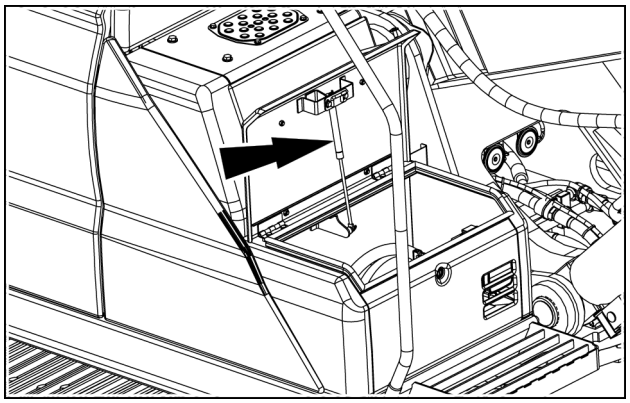
The engine hood, and the front storage box are supported by gas springs.

In the following cases, request inspection, service, and replacement from the CASE CONSTRUCTION dealer:

- The engine hood, or the front storage box does not open without force.
- The engine hood, or the front storage box does not remain open.
- Oil or gas leak is found in the gas spring.



SMIL21CEX4382AA 1

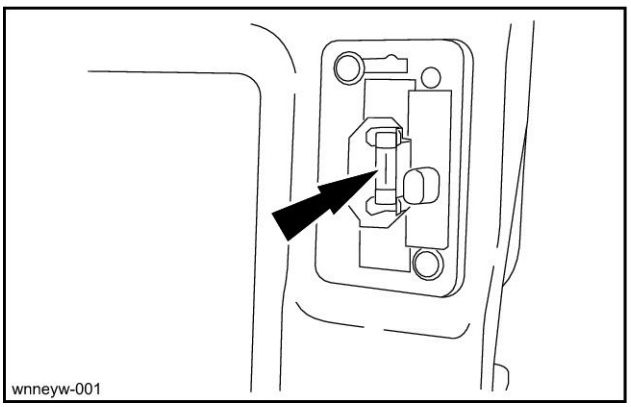


SMIL21CEX3216AA 2

Bulb replacement (inside cab)

Lighting in the operator compartment:

1. Remove the cover.
2. Remove the light bulb, then install a new light bulb of the same wattage (**10 W**).
3. Install the cover.



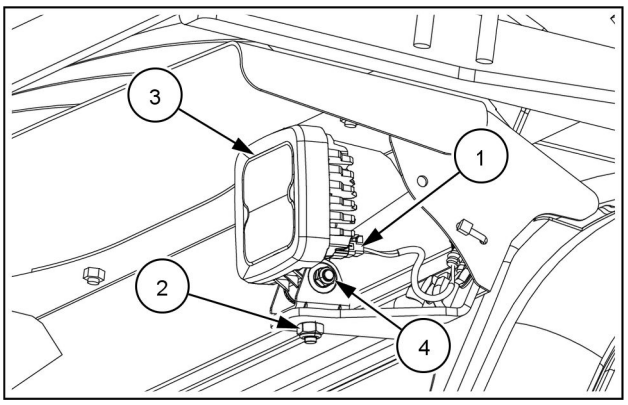
8YHY9K-001A 1

LED work lights on boom, cab and toolbox

Cab work lights

1. Turn the starter key to OFF position.
2. Disconnect the connector **(1)**.
3. Remove the nut **(2)** with its relevant washer using a **17 mm** wrench.
4. Remove the cab work light **(3)**.
5. Install the new cab work light with the nut **(2)** and its relevant washer. Tightening torque: **30 – 32 N·m** (**14.8 – 22.1 lb ft**).
6. Connect the connector **(1)**.

NOTE: *The cab work light can be tilted by loosening the nut **(4)** with a **13 mm** wrench. Once in position, the tightening torque must be: **25.0 – 27.0 N·m** (**18.4 – 19.9 lb ft**).*

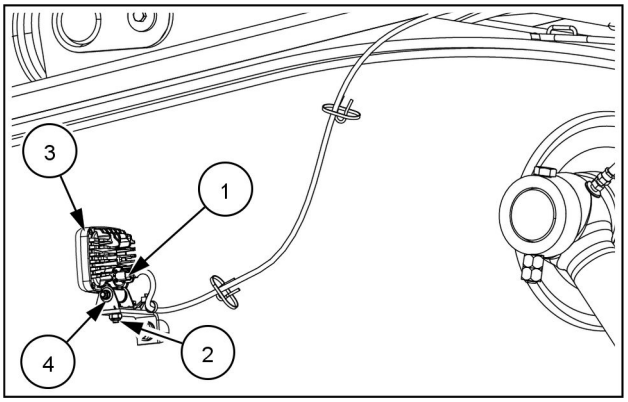


PTIL23CEX1048AB 1

Boom work light

1. Turn the starter key to OFF position.
2. Disconnect the connector **(1)**.
3. Remove the nut **(2)** with its relevant washer using a **17 mm** wrench.
4. Remove the boom work light **(3)**.
5. Install the new boom work light with the nut **(2)** and its relevant washer. Tightening torque: **30 – 32 N·m** (**14.8 – 22.1 lb ft**).
6. Connect the connector **(1)**.

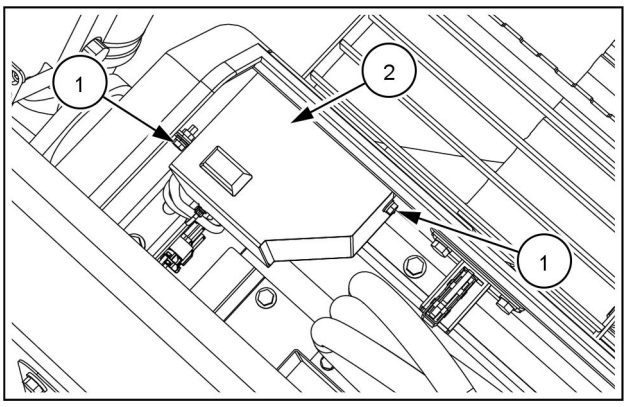
NOTE: *The boom work light can be tilted by loosening the nut **(4)** with a **13 mm** wrench. Once in position, the tightening torque must be: **25.0 – 27.0 N·m** (**18.4 – 19.9 lb ft**).*



PTIL23CEX1051AB 2

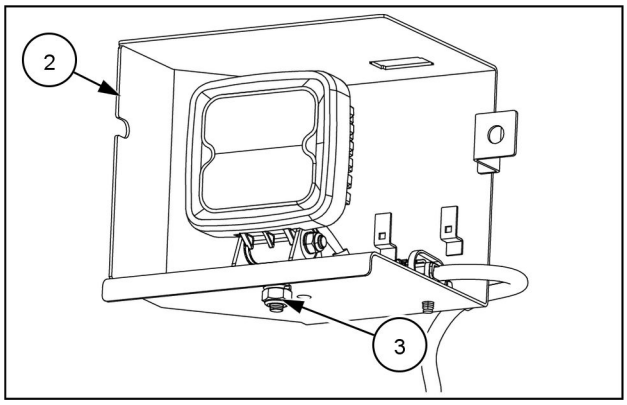
Front storage box work light

1. Turn the starter key to OFF position.
2. Open the front storage box.
3. Remove the two bolts **(1)** from the bracket **(2)** using a **13 mm** wrench.



PTIL23CEX1047AB 3

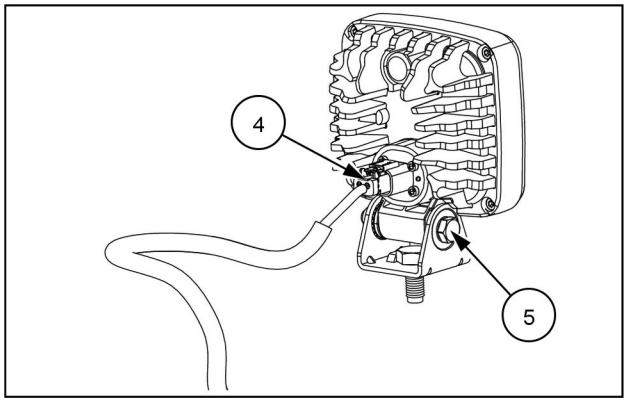
4. Remove the nut **(3)** with its relevant washer using a **17 mm** wrench.



PTIL23CEX1049AB 4

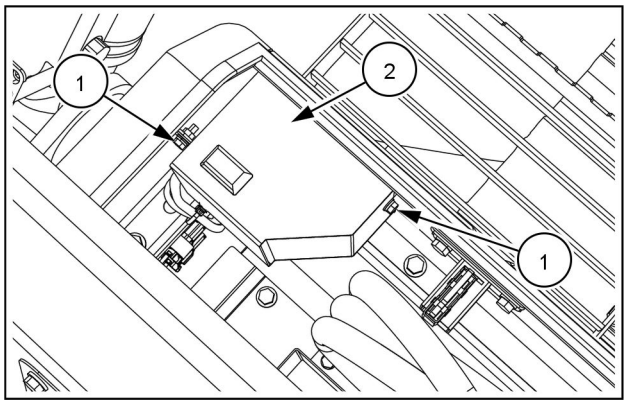
5. Disconnect the connector **(4)**.
6. Connect the connector **(4)** to the new front storage box work light.
7. Install the new front storage box work light on the bracket **(2)** with the nut **(3)** and its relevant washer. Tightening torque: **30 – 32 N·m** (**33.2 – 47.9 lb ft**).

NOTE: *The front storage box work light can be tilted by loosening the bolt* ***(5)*** *with a* ***13 mm*** *wrench. Once in position, the tightening torque must be:* ***25.0 – 27.0 N·m*** *(****18.4 – 19.9 lb ft****).*



PTIL23CEX1050AB 5

8. Put the bracket **(2)** back in position and install the two bolts **(1)**. Tightening torque: **18 – 22 N·m** (**13.3 – 16.2 lb ft**).



PTIL23CEX1047AB 6

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.*

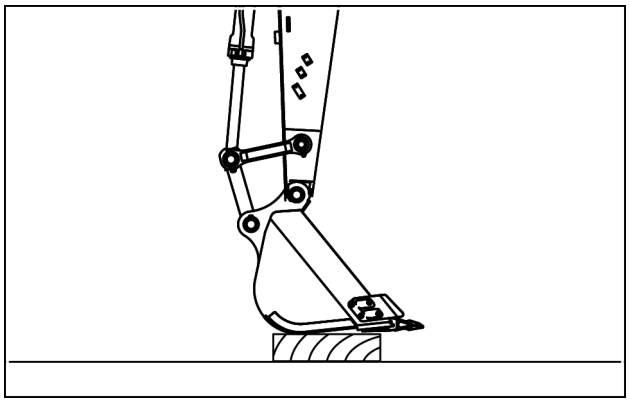
NOTICE: *some types of teeth have a symmetrical design that allows to flip them in case of uneven wear. Consult the CASE CONSTRUCTION DEALER or the bucket supplier and make sure to understand the proper practices to increase the service life of the teeth, as for example flipping and swapping.*

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.

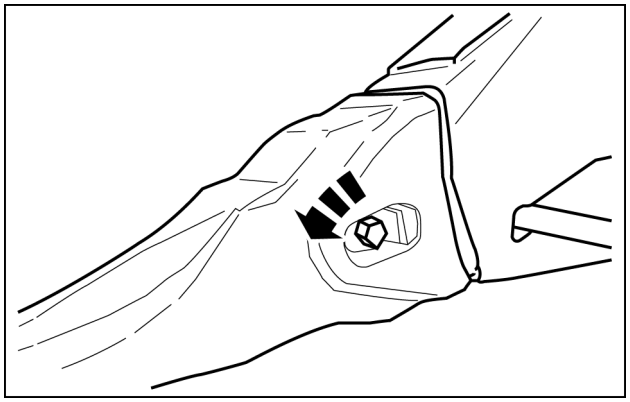
To replace a SMARTFIT bucket tooth proceed as follows:

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

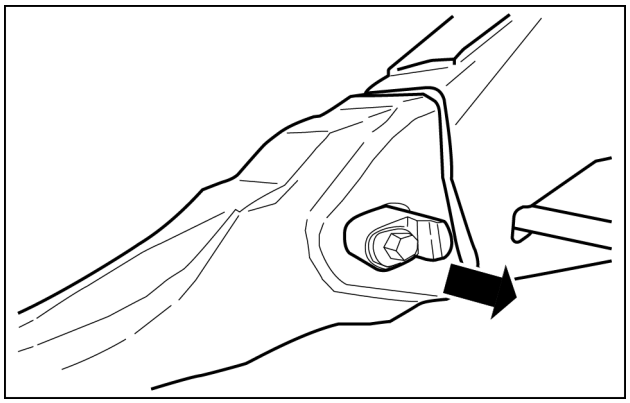
2. Place the gate lock lever in central position, stop the engine and remove the starter key.
3. Turn the locking stud of the mounting pin **90°** counterclockwise using an hexagonal wrench.



SMIL16CEX0461AA 2

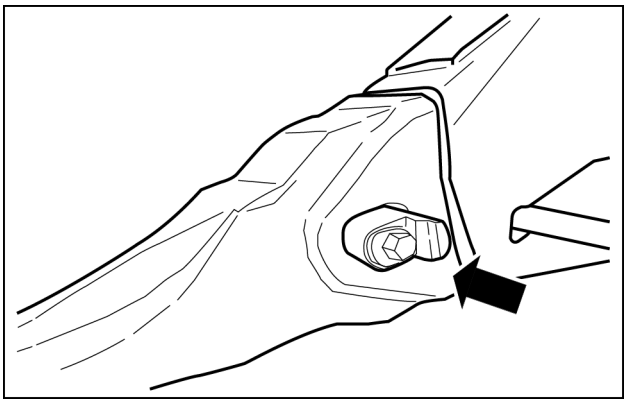
4. Extract the mounting pin.
5. Check the mounting pin for wear or damages.
6. Extract the tooth from the adapter on the bucket.

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.*



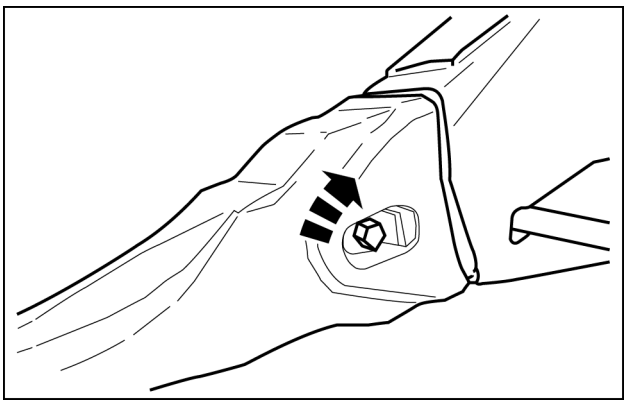
SMIL16CEX0462AA 3

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.
9. Insert the mounting pin. Push until the locking stud touches the aligning surface on the adapter.



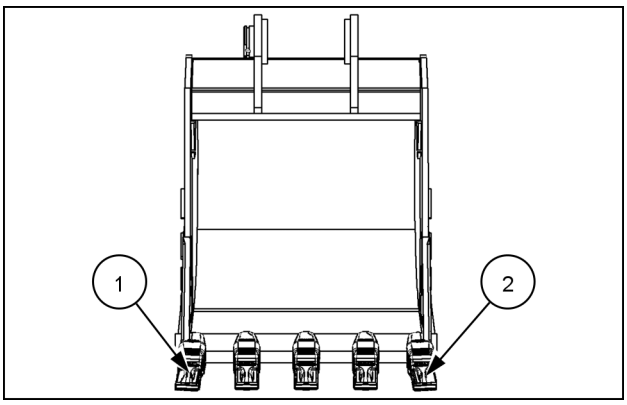
SMIL16CEX0462AA 4

10. Turn the locking stud **90°** clockwise using an hexagonal wrench in order to lock the mounting pin in position.
11. Make sure that the tooth is aligned with the adapter, and that it has no backlash.



SMIL16CEX0461AA 5

NOTE: *if all teeth have to be replaced, it is recommended to remove them starting from tooth* ***(1)*** *up to tooth* ***(2)****. It is also recommended to follow the same order from* ***(1)*** *to* ***(2)*** *to install the new teeth.*



SMIL16CEX0477AA 6

Cylinders

A cylinder rod should be slightly oily. Check that there are no leaks after a period of work, when the whole hydraulic system is at normal operating temperature.

1. Wipe clean the rod and bearing on the cylinder to be cleaned.
2. Operate normally for **5 – 10 min**.
3. Extend the cylinder rod.
4. Carry out the leak test.

ROD APPEARANCE	TEST	CONCLUSION
Dry	Slight traces of oil when a piece of paper is wiped over **20 cm** (**7.9 in**) of the rod.	Normal
Slightly greasy	Paper remains stuck to rod when run over rod.	Normal
Oily	Paper remains stuck when placed on rod.	Normal
Very oily or weeping	Each time the cylinder rod is extended, a ring of oil can be seen on the rod.	Consult your CASE CONSTRUCTION Dealer
Leakage	Each time the rod retracts, the excess oil drips from the gland.	

Plastic and resin parts

Use a soft, slightly humid, cloth to clean the panels, the consoles, and the switches. Use a soft, dry cloth to clean the instrument cluster.

NOTICE: *do not use gasoline, kerosene, paint solvents. The use of gasoline, kerosene, paint solvents, etc. will cause discoloration, cracks or deformation of the parts.*

Air-conditioning system

⚠ WARNING

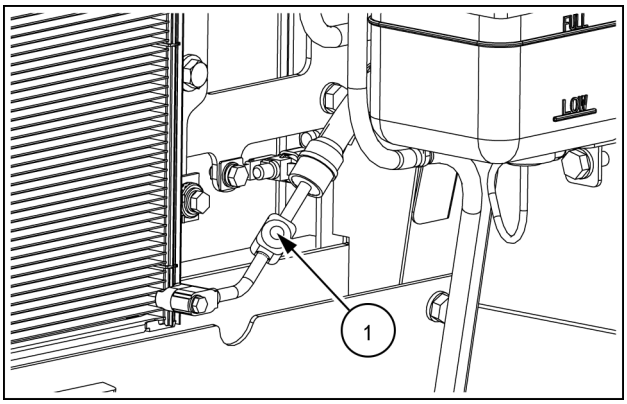
Escaping refrigerant may cause frostbite!
Always wear protective goggles when handling refrigerant. If you get refrigerant in your eye, immediately flush your eyes with water for 15 minutes. Seek medical assistance immediately.
Failure to comply could result in death or serious injury.

W0339A

System charge check

To check the charge of the air conditioning system, proceed as follows:

1. Open the rear left-hand door.
2. Remove the lower anti-dust net to access the sight glass **(1)**.
3. Start the engine and turn on the air-conditioning system. Set the engine speed to **1400 – 1600 RPM**.
4. Let the system operate for about **1 min**, then check the sight glass **(1)**.



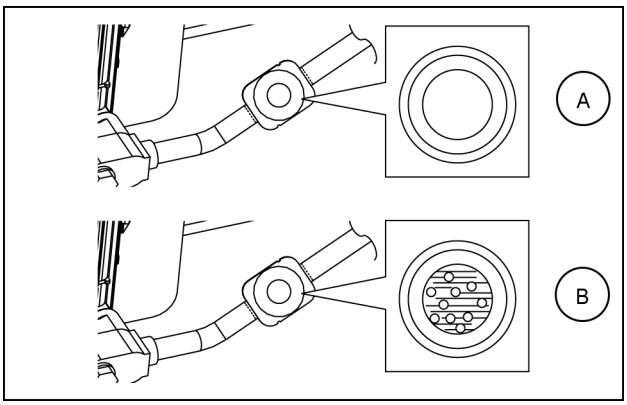
SMIL21CEX5001AA 1

Refer to the following conditions:

A. If after about **1 min** the sight glass shows no air bubbles **(A)**, the charge status is correct.

B. If the sight glass shows air bubbles **(B)** after the air-conditioning system is turned OFF and then immediately becomes clear **(A)**, the charge status is correct.

NOTE: *If the two conditions do not occur, the charge status is not appropriate. Consult your CASE CONSTRUCTION dealer.*



SMIL21CEX5002AA 2

5. Clean the lines and the connections of the air-conditioning system.
6. Clean the condenser of the air-conditioning system with compressed air.

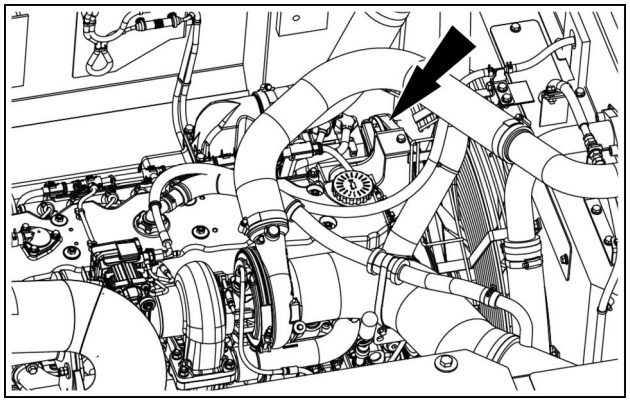
NOTE: *the condenser can be tilted in order to facilitate the cleaning procedure.*

NOTICE: *Operate the air conditioning at least once every **50 h** in order to keep the compressor's seals lubricated. The recommended practice is to set the cab temperature to the lowest level, to set the cab ventilation fan to the maximum speed and thus to let the system run for **15 – 20 min**.*

Compressor drive belt check

The drive belt of the air-conditioning compressor should be periodically checked in order to grant the proper operation of the air-conditioning system. To check the drive belt of the air-conditioning compressor, proceed as follows:

1. Stop the engine, and remove the starter key.
2. Raise and lock the engine hood.
3. Locate the compressor belt.



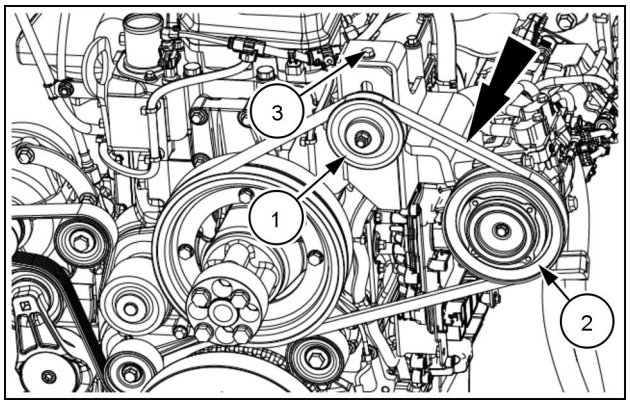
SMIL21CEX4997AA 3

4. Inspect the pulleys and the drive belt for excessive wear or damages. Make sure that the drive belt is correctly engaged to the grooves of the pulleys.

NOTICE: *The compressor drive belt should be replaced if it is stretched or cracked in order not to let it worn out.*

5. Check the tension of the drive belt between the tension pulley **(1)** and the compressor pulley **(2)** using a belt tension meter.
   Recommended belt tension: **363 – 461 N** (**82 – 104 lb**) (corresponding to a frequency of **112 – 125 Hz**).

NOTE: *when changing the drive belt, set the initial tension to* ***490 – 686 N*** *(****110 – 154 lb****) (corresponding to a frequency of* ***130 – 153 Hz****), than check that the belt has the recommended tension* ***5 min*** *after starting the engine.*



SMIL21CEX4998AA 4

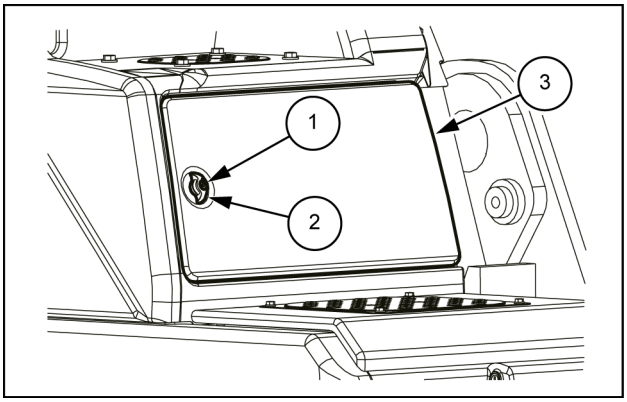
6. If needed, restore the proper tension by acting on the tensioning screw **(3)**.
7. Close the engine hood.

DEF/AdBlue® tank drain

Drainage may be required if the After Treatment System detects that the quality of **DEF/ADBLUE®** in the tank does not conform to the requirements. Refer to Chapter 3.

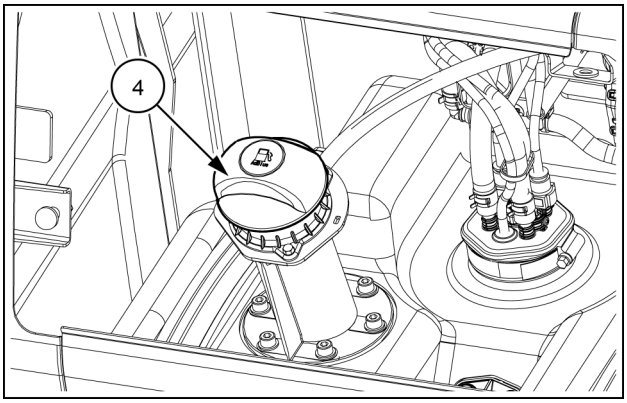
To drain **DEF/ADBLUE®** from the tank proceed as follows:

1. Park the machine on a hard and level ground. Orient the upper structure frame so that there is enough free space under the **DEF/ADBLUE®** tank to place a barrel of suitable capacity.
2. Stop the engine and remove the starter key. Wait **5 min** to allow the ATS system to suck **DEF/ADBLUE®** back into the tank.
3. Unlock the key cylinder **(1)** with the starter key, and turn the handle **(2)** to open the tank cover **(3)**.



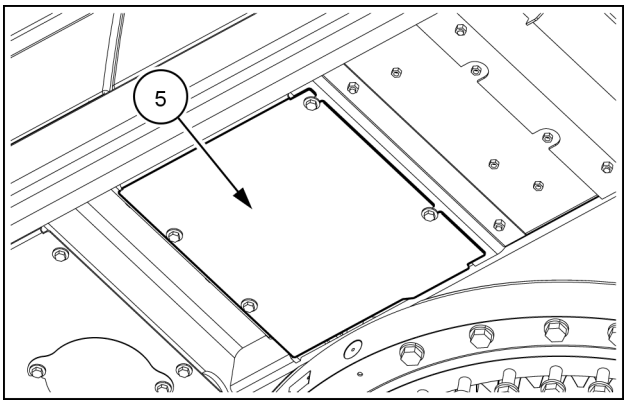
SMIL14CEX2768AB 1

4. Turn the cap **(4)** counterclockwise and open the filler neck.



SMIL21CEX3241AA 2

5. Remove the lower panel **(5)** below the **DEF/ADBLUE®** tank.



SMIL21CEX3240AA 3

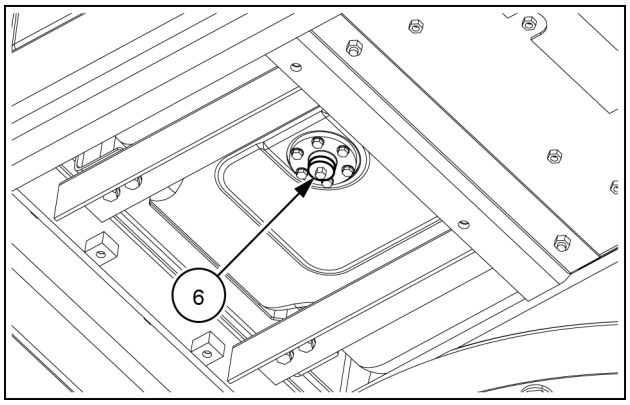
6. Remove the drain plug **(6)** to drain **DEF/ADBLUE®**.

NOTICE: *the drained **DEF/ADBLUE®** must be disposed according to the local Regulations for **DEF/ADBLUE®**.*

7. Install the drain plug **(6)**.
   Tightening torque: **50 N·m** (**36.9 lb ft**)
8. Install the lower panel **(5)** below the **DEF/ADBLUE®** tank.
9. Fill the tank with **DEF/ADBLUE®** that conforms with the quality requirements.

NOTICE: *Never refill **DEF/ADBLUE®** over the F (upper limit) mark on the level gauge.*

10. Put the cap **(4)** on the filler neck. Turn the cap clockwise to close the filler neck.
11. Wipe off the spilled **DEF/ADBLUE®** with a clean cloth, and then rinse the area with fresh water.
12. Close and lock the **DEF/ADBLUE®** tank cover **(3)**.

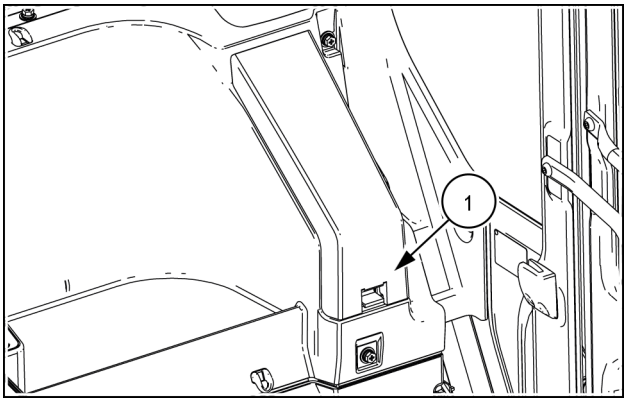


SMIL21CEX3239AA 4

Fuse and relay locations

Fuses

1. Turn the starter key to OFF position.
2. Remove the cover **(1)** located behind the operator's seat.



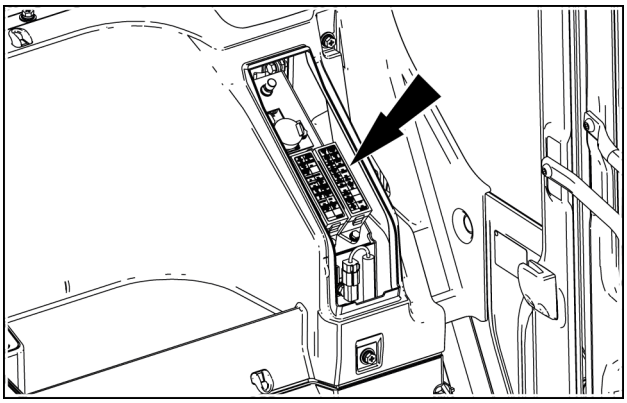
SMIL23CEX2557AA 1

3. Identify the fuse to be replaced. Refer to the fuse map on the following page.

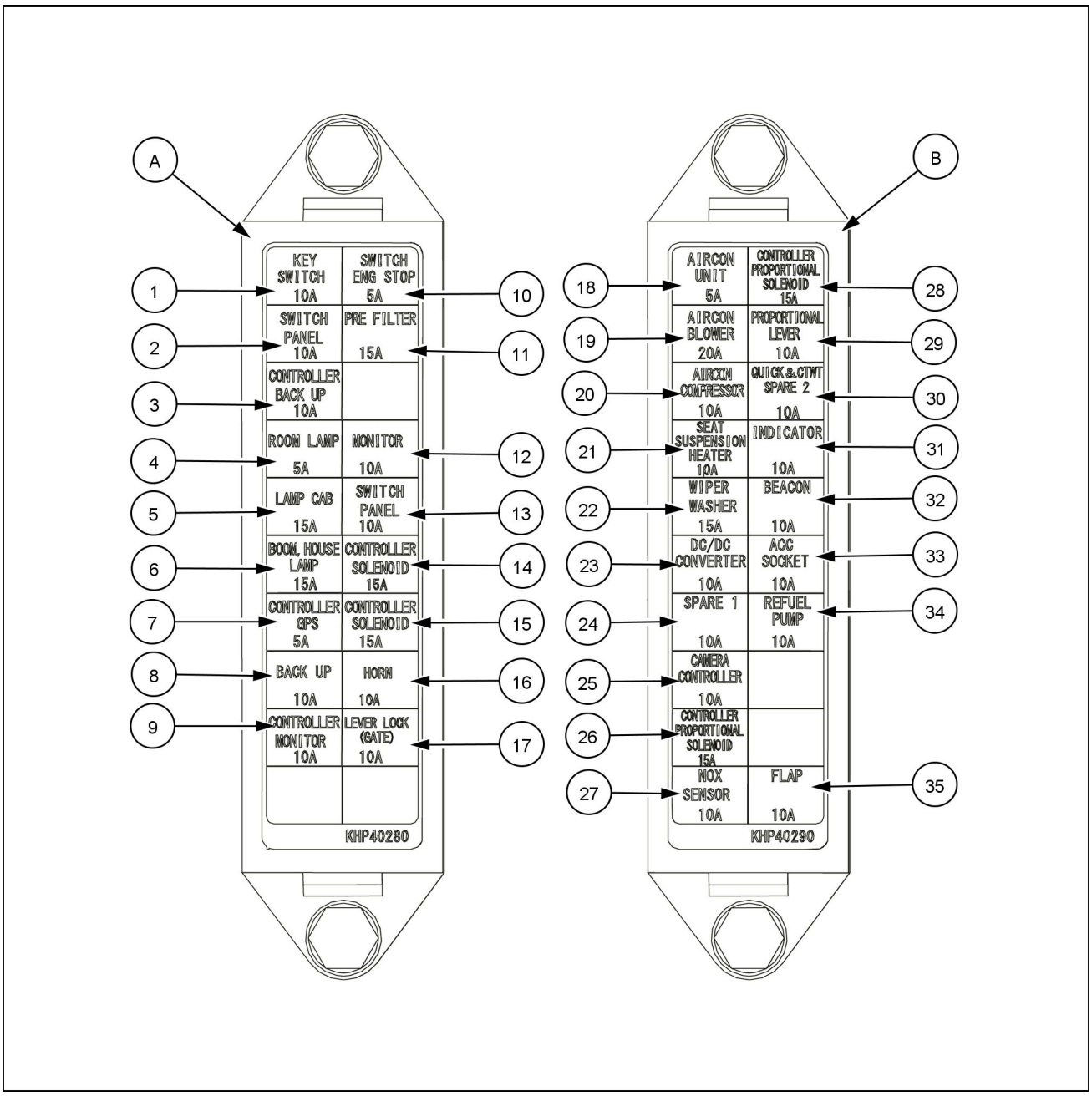
NOTE: *The fuse map is also reported on the labels applied on the fuse boxes.*

NOTICE: *Make sure to replace the failed fuse with one of the same amperage. Failing to comply will result in serious damages to the electric system of the machine.*

4. Open the fuse box that contains the fuse to be replaced.
5. Use the provided jigs to remove the failed fuse, and to install the new fuse.
6. Close the fuse box.
7. Install the cover **(1)**.



SMIL23CEX2558AA 2



SMIL21CEX3247GA 3

Fuse box **(A)**	Fuse box **(B)**
(1) Key switch **10 A**	**(18)** Air conditioner unit **5 A**
(2) Switch panel **10 A**	**(19)** Air conditioner blower motor **20 A**
(3) Back-up (computer) **10 A**	**(20)** Air conditioner compressor **10 A**
(4) Lamp (room) **5 A**	**(21)** Heated seat **10 A**
(5) Lamp (cab) **15 A**	**(22)** Wiper, washer **15 A**
(6) Lamp (boom, housing) **15 A**	**(23)** DC converter **10 A**
(7) GPS computer **5 A**	**(24)** Spare **10 A**
(8) Back-up **10 A**	**(25)** Camera computer **15 A**
(9) Monitor computer **10 A**	**(26)** Computer (proportional valve) **15 A**
(10) Engine stop switch **5 A**	**(27)** NOx sensor **10 A**
(11) Pre-filter **15 A**	**(28)** Computer (proportional valve) **15 A**
(12) Monitor **10 A**	**(29)** Proportional lever (option line) **10 A**
(13) Switch panel **10 A**	**(30)** Quick coupler/spare **10 A**
(14) Computer (switchover valve) **15 A**	**(31)** Indicator **10 A**
(15) Computer (switchover valve) **15 A**	**(32)** Rotating warning light **10 A**
(16) Horn **10 A**	**(33)** ACC socket **10 A**
(17) Gate lock lever **10 A**	**(34)** Fuel tank feed pump **10 A**
	(35) Exhaust flap **10 A**

Storage

Preparing for storage

- The following procedure applies when the machine is to be stored for a month or more. Store the machine on flat, level ground, inside a building or, if not possible, outside and covered with a tarpaulin. Before storing the machine, carry out the following operations:

1. Clean the machine.
2. Make sure that the machine has no damaged or missing parts. Replace them if necessary.
3. Retract the cylinder rods as for as possible and lower the boom until the attachment is resting on the ground. Lower the dozer blade (if equipped) to the ground.
4. Grease the machine thoroughly. The exposed surfaces of the cylinder rods should be greased or covered with a protective film. Consult your CASE CONSTRUCTION Dealer.

NOTE: *When the machine resumes service, the film will disappear automatically.*

5. While the engine is still warm, drain the oil sump, replace the oil filter and fill with specified oil. Check the oil level and add more if necessary.
6. Clean or replace the air filter element.
7. Check the level of coolant solution. If the machine is within **100 h** of the next scheduled coolant change, change the coolant now.
8. **DEF/ADBLUE®** needs to be drained from the tank if the machine is subject to long-term storage.
9. Turn the battery disconnect switch to OFF position. Remove the batteries, clean the battery housing, and check that there is no adhesion of battery fluid. Store the batteries safely in a cool and dry place where temperature is **0 °C** (**32 °F**) or more.

NOTICE: *Never turn the battery disconnect switch to OFF position when the LED indicator above the switch is lit up in yellow. The machine control system and the engine control system will be severely damaged.*

10. Apply a coating if it has any flaws or peelings.
11. Plug the air cleaner inlet and the exhaust pipe.
12. Remove the starter key, put the "Do not operate" tag on the right console, and set the gate lock lever to the central position.
13. Lock the hood, the side door, and the cab door.

Periodic checks

⚠ WARNING

Inhalation hazard! Risk to operators and bystanders.
Avoid running the engine in confined areas. Make sure there is adequate ventilation at all times.
Failure to comply could result in death or serious injury.

W0156A

Every month, check:

1. The battery charge and recharge the batteries if required.
2. The levels and top up if necessary.
3. The condition of all lines, connectors and clamps (rust). Grease if necessary.
4. The condition of the paintwork. Apply a coat of anti-rust treatment where necessary.
5. Unplug the air filter inlet and the exhaust pipe.
6. Run the engine at low speed following the starting up procedure and operate the attachment, swing and travel controls.
7. The grease on the cylinder rods.
8. Plug the air filter inlet and the exhaust pipe.

Starting up the machine

⚠ WARNING

Unexpected machine movement!
Before starting the engine, make sure all controls are in the neutral position.
Failure to comply could result in death or serious injury.

W0311A

⚠ WARNING

Inhalation hazard! Risk to operators and bystanders.
Avoid running the engine in confined areas. Make sure there is adequate ventilation at all times.
Failure to comply could result in death or serious injury.

W0156A

1. Drain the fuel tank, the pre-filter and the fuel filter, replace the filter elements if necessary.
2. Fill the fuel tank with suitable fuel.
3. Install the batteries or reconnect the cable to the negative (-) terminal.
4. Grease the machine thoroughly.
5. Check the condition of the fan drive belt and replace it if necessary.
6. Check the condition of the air conditioning drive belt and replace it if necessary.
7. Check the cooling system level and add more coolant if necessary.
8. Check the hydraulic fluid level, and supply it as necessary.
9. Check the **DEF/ADBLUE®** level, and supply it as necessary.
10. Check the gear oil level of the travel reduction gear and that of the swing reduction gear, and supply it as necessary.
11. Clean the cylinder rod.
12. Remove the lid of the air cleaner inlet and that of the exhaust pipe.
13. When starting the engine after long-term storage (one month or more), you need to check whether the turbocharger has run out of an oil film and make preparations for starting the engine.Be sure to consult our authorized service shop. For details of work, refer to the attached engine manual.
14. Remove the "Do not operate" tag, and start the engine following the engine starting procedure.
15. Check all the indicators and lamps carefully.

NOTICE: *check the machine and the engine for leaks or for any parts that are broken, defective or missing.*

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

Problem	Possible Cause	Correction
Excessive consumption of fuel	Wrong fuel	Replace with the correct fuel
	Poor suction	Clean or replace the element
	Defect in fuel injection pump	Consult the CASE CONSTRUCTION dealer
	Poor injection of fuel injection nozzle	Consult the CASE CONSTRUCTION dealer
	Incorrect fuel injection timing	Consult the CASE CONSTRUCTION dealer
	Low compression	Consult the CASE CONSTRUCTION dealer
Excessive consumption of engine oil	Excess oil	Drain the oil down to the correct level
	Low oil viscosity	Replace with the oil of suitable viscosity for temperature
	Oil leaks	Retighten and, as necessary, replace
	Wear on cylinder piston ring	Consult the CASE CONSTRUCTION dealer
Abnormal noise (from fuel or mechanical system)	Low-quality fuel	Replace
	Damage inside muffler	Replace
Engine overheat (Too high coolant temperature)	Low coolant level	Add
	Coolant leaks	Repair
	Wear or damage on belt	Replace
	Wrong mixing ratio of anti-freeze	Replace
	Problems with radiator	Consult the CASE CONSTRUCTION dealer
	Damaged fan	Consult the CASE CONSTRUCTION dealer
	Problems with thermostat	Consult the CASE CONSTRUCTION dealer
	Problems with water pump	Consult the CASE CONSTRUCTION dealer
	Problems with coolant temperature gauge	Consult the CASE CONSTRUCTION dealer
Problems with battery charge	Incorrect belt tension	Adjust
	Problems with electric wires	Repair
	Problems with battery	Replace
	Problems with regulator	Consult the CASE CONSTRUCTION dealer
	Defect in alternator	Consult the CASE CONSTRUCTION dealer

8 - SPECIFICATIONS

Machine specifications

Engine

Manufacturer and model	FPT NEF6
Injection	Electronic-controlled High-pressure common rail
Number of cylinders	6
Bore x stroke	**104 mm** (**4.1 in**) x **132 mm** (**5.2 in**)
Displacement	**6728 cm³/rev** (**411 in³/rev**)
Rated speed	**1800 RPM**
Rated power **ISO 9249**	**120.4 kW** (**164 hp**)
Rated power **ISO 14396**	**124 kW** (**169 hp**)
Cooling	Water-cooled
Batteries	2 x **12 V**, **110 A·h**
Voltage	**24 V**
Alternator	**90 A**
Starter motor	**24 V**, **4 kW**

Hydraulic system

Maximum flow of the main pump	2 x **211 L/min** (**55.7 US gpm**) at **1800 RPM**
Rated working pressure	**34.3 MPa** (**4975.2 psi**)
Maximum working pressure (Power boost)	**37.3 MPa** (**5410.4 psi**)
Maximum flow of the pilot pump	**18 L/min** (**4.8 US gpm**) at **1800 RPM**
Rated pilot pressure	**3.9 MPa** (**565.7 psi**)

Swing performance

Swing speed	**7.8 RPM**
Swing torque	**64000 N·m** (**47204 lb ft**)

Travel performance

Low speed	**0 – 3.4 km/h** (**0 – 2.1 mph**)
High speed	**0 – 5.6 km/h** (**0 – 3.5 mph**)
Drawbar pull	**181000 N** (**40690 lb**)
Grade ability	**70%** (**35°**)

Digging performance

Power boost engaged

Bucket digging force	**15400 daN** (**34621 lbf**)
Arm digging force **2.40 m** (**94.49 in**)	**13300 daN** (**29900 lbf**)
Arm digging force **2.94 m** (**115.75 in**)	**11200 daN** (**25179 lbf**)

Tracks

Steel track	**600 mm** (**24 in**) (Standard and HD version)
	700 mm (**28 in**)
	800 mm (**31 in**)
	900 mm (**35 in**) (*)

NOTICE: *(*) for application on swampy ground.*

Work LED lights

One on upper structure (Standard version)	**25 W**, 1700 lumen
One on boom (Standard version)	**25 W**, 1700 lumen
Two on cab (Standard version)	**25 W**, 1700 lumen

One on upper structure (Deluxe version)	**50 W**, 3700 lumen
Two on boom (Deluxe version)	**50 W**, 3700 lumen
Four on cab (Deluxe version)	**50 W**, 3700 lumen
One between boom cylinders (Deluxe version)	**50 W**, 3700 lumen

Fluids and lubricants

By using appropriate fluids and lubricants the excavator can operate in ambient temperatures ranging from **-20 °C** (**-4 °F**) to **45 °C** (**113 °F**). Refer to the list of fluids and lubricants contained in this manual.

NOTICE: *When operating the machine in ambient temperatures outside the above mentioned range, consult your CASE CONSTRUCTION Dealer for specific machine provision and for specific fluids and lubricants to be used.*

Application	Capacity	Product name	Specifications
Fuel tank	**410 L** (**108 US gal**)	—	**EN 590**
DEF/ADBLUE® tank	**84 L** (**22 US gal**)	—	**ISO 22241-1**
Engine	**14.6 L** (**3.9 US gal**)	**AKCELA UNITEK PLUS SAE 10W-40**	**SAE 10W40** **ACEA E9** **API CK-4**
Swing reduction unit	**6 L** (**2 US gal**)	**AKCELA GEAR 135H EP 85W-140**	**SAE 85W-140** **API GL-5**
Travel reduction unit	**4.75 L** (**1.25 US gal**)	**AKCELA GEAR 135H EP 85W-140**	**SAE 85W-140** **API GL-5**
Engine cooling system	**30 L** (**8 US gal**)	**AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT** CONCENTRATE (*)	**ASTM D6210** TYPE I-FF
		AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT 50/50 PREMIXED	**ASTM D6210** TYPE III-FF
Hydraulic oil tank (**)	**162 L** (**43 US gal**)	**AKCELA HYDRAULIC EXCAVATOR FLUID**	**ISO 11158** L-HV46
Grease	—	**AKCELA MOLY GREASE**	**NLGI 2**

(*) Concentrate antifreeze to be mixed 50/50 with distilled (deionized) water.

(**) The total capacity (without optional circuits) of the hydraulic oil system is:

280 L (**74.0 US gal**)

Engine coolant

AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT is the reference genuine product for machine service.

NOTICE: *Never add Supplemental Coolant Additives (SCA) when using* ***AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT****.*

AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT has to be used if refilling of the cooling system is needed. Refer to the dedicated procedure and recommendations described in Chapter 6.

AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT shall be used for the replacement of engine coolant according to the maintenance program of the machine. The replacement shall also be tackled in case of repair or replacement of components of the cooling system. Refer to the dedicated procedure described in Chapter 6.

The engine cooling system shall always be refilled with coolant solution made by mixture of antifreeze and distilled (deionized) water.

NOTICE: *Never refill the cooling system with only antifreeze. Never refill the cooling system with only water.*

Using **AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT**, a 50/50 mixture of antifreeze and distilled (deionized) water grants proper performance of the engine cooling system in the above mentioned operating temperature range of the machine.

AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT is available as:

- 50/50 PREMIXED coolant solution ready for usage.
- CONCENTRATE antifreeze to be mixed 50/50 with distilled (deionized) water.

NOTICE: *If operating in extreme winter climate, a coolant solution made by 60/40 antifreeze/distilled (deionized) water mixture shall be used in order to grant proper performance of the engine cooling system.*

NOTICE: *Never use coolant solution with more than* ***60%*** *of antifreeze. This affects the cooling capacity of the mixture.*

When the coolant solution is prepared starting from the CONCENTRATE product, the antifreeze concentration in the mixture of antifreeze and distilled (deionized) water can be determined with a refractometer designed to measure ethylene glycol content.

If distilled (deionized) water is not available, use water for dilution with the following properties:

Property	Maximum limit
Total Solids	**340 ppm**
Total Hardness	**170 ppm**
Chloride (Cl)	**40 ppm**
Sulfate (SO4)	**100 ppm**
Acidity pH	5.5 to 9.0

NOTICE: *Never use hard water, sea water and softened sea water that has been conditioned with salt. The minerals and salts present in potable water can cause corrosion and deposits resulting in shortened engine life.*

Fuel

Use only Ultra-Low Sulphur Diesel (S10) that meets **EN 590** specifications.

Using other types of fuel may lead to stalled engine output or deterioration in fuel economy.

NOTICE: *The warranty shall be invalid if any serious defect is caused by usage of any other fuel. Using any fuel other than the prescribed type will cause damages to the fuel supply system, to the fuel injection system, to the engine block, and to the exhaust after treatment system. CASE CONSTRUCTION will not be responsible to any of such damages.*

If the temperature drops below the fuel cloud point, output deficiency or engine start problems may occur due to wax crystals.

NOTICE: *If operating in severe winter climate, consult the fuel supplier or the CASE CONSTRUCTION dealer for specific diesel fuel according to the* ***EN 590*** *to be used.*

The diesel fuel to be used on the machine shall:

- be free from dust particles, even minute ones.
- have the proper viscosity.
- have a high cetane number.
- present great fluidity at low temperatures.
- have low sulphur content.
- have very little residual carbon.

NOTICE: *Never use a mix of diesel fuel and old engine oil. The fuel injection system and the exhaust after treatment system will be severely damaged.*

NOTICE: *consult the fuel supplier or the CASE CONSTRUCTION Dealer regarding appropriate use of fuel additives.*

NOTICE: *in order to prevent condensation during cold weather, fill the fuel tank to full after completing the day's work.*

Fuel storage:

Long storage can lead to the accumulation of impurities and condensation in the fuel. Engine trouble can often be traced to the presence of water in the fuel. The storage tank must be placed outside and the temperature of the fuel should be kept as low as possible. Drain off water and impurities regularly.

Disposal of fluids, lubricants, and spare parts

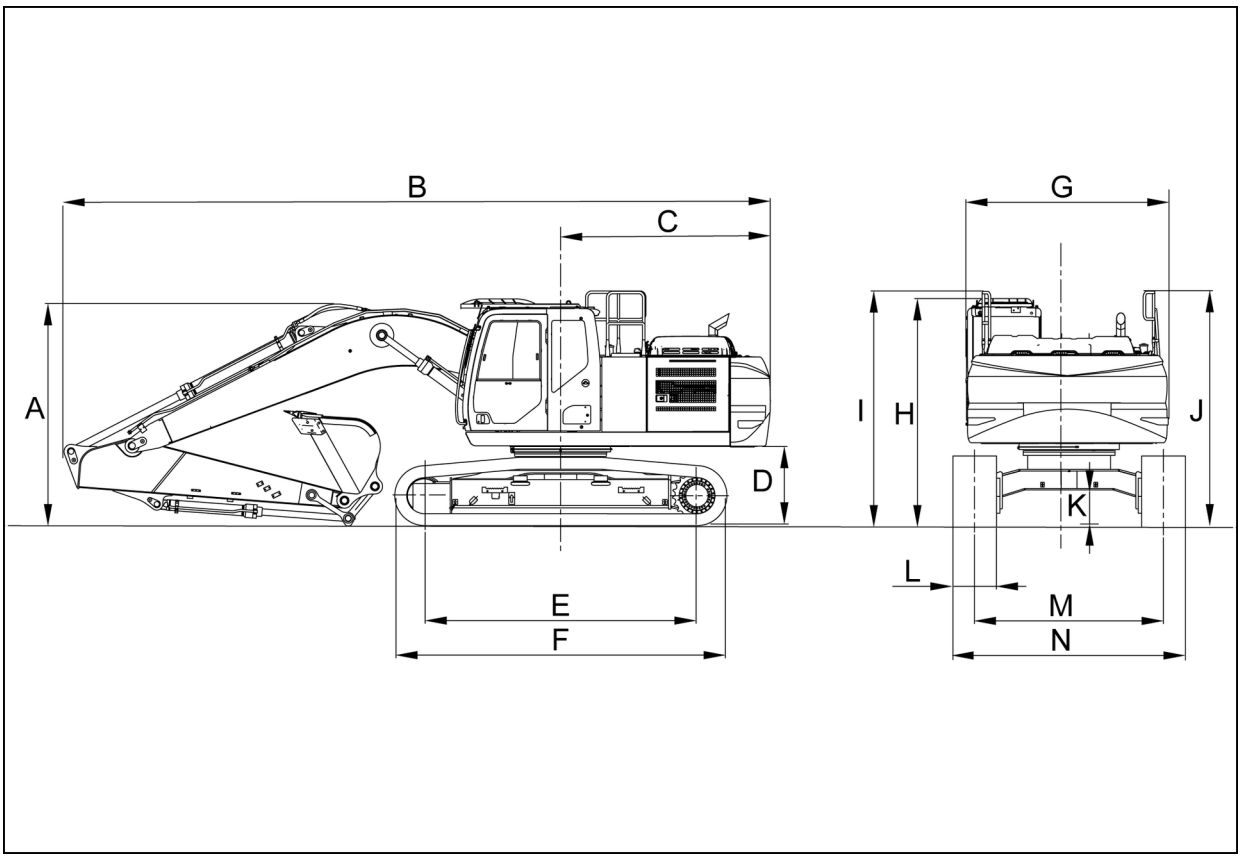
Fluids, lubricants and spare parts used on the machine are not fully compatible with the environment. Make sure to carry out all maintenance operations using appropriate tools, in order to avoid any risk of damaging the environment.

NOTE: *for example, make sure that the receptacle for collecting oil to be replaced is not leaking.*

Never spread fluids or lubricants on the ground or into water. Consult the CASE CONSTRUCTION Dealer or the Local Environmental Agency in order to obtain information on the correct method of disposing fluids and lubricants used on the machine.

Never throw away spare parts as filters or batteries. Consult the CASE CONSTRUCTION Dealer or the Local Environmental Agency in order to obtain information on the correct method of disposing filters, batteries or other spare parts used on the machine.

Dimensions

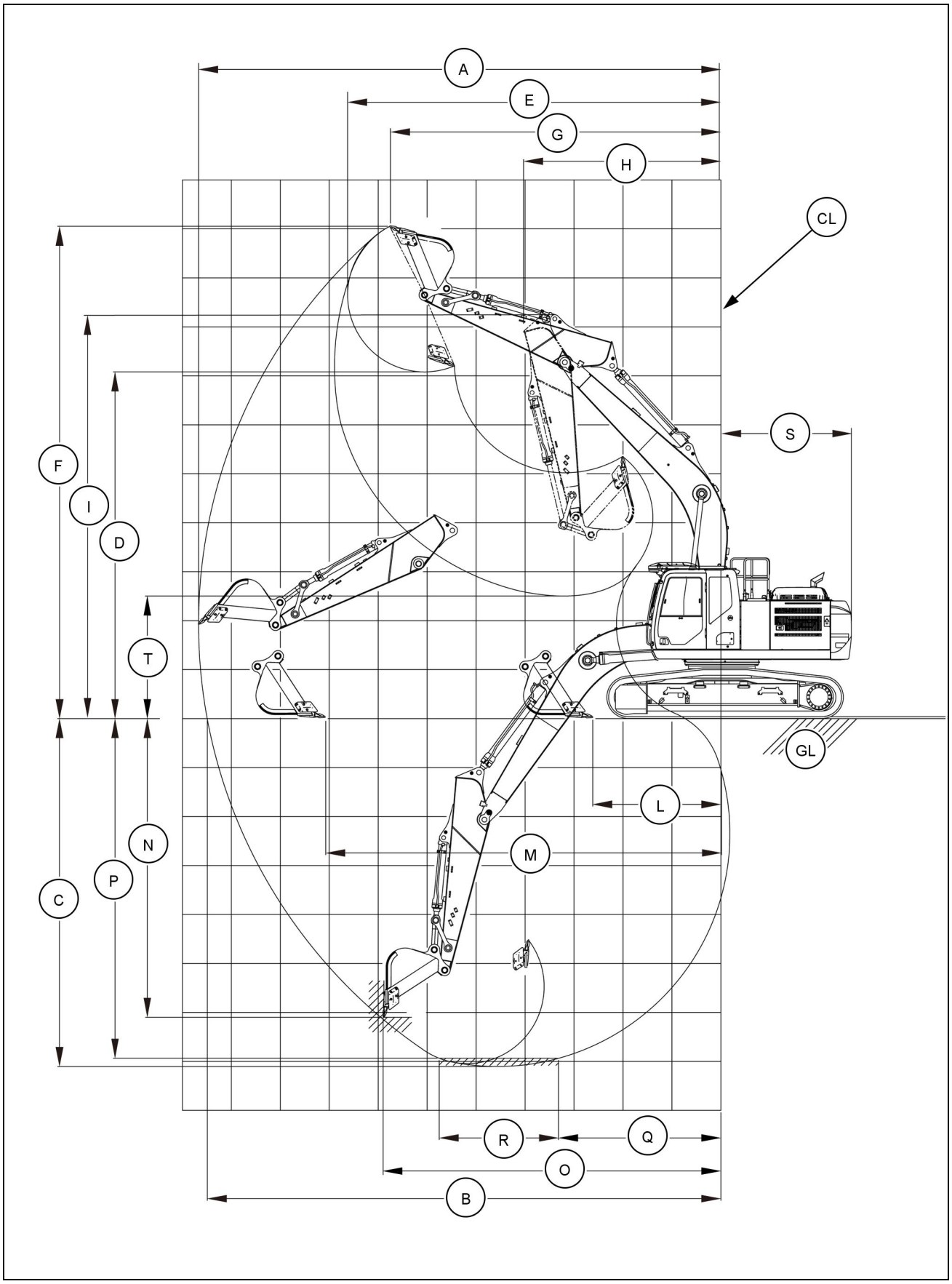


SMIL22CEX3184FA 1

Arm	2.40 m (94.49 in)	2.94 m (115.75 in)
(A)	3.20 m (125.98 in)	2.98 m (117.32 in)
(B)	9.55 m (375.98 in)	9.47 m (372.83 in)
(C)	2.81 m (110.63 in)	
(D)	1.04 m (40.94 in)	
(E)	3.66 m (144.09 in)	
(F)	4.47 m (175.98 in)	
(G)	2.76 m (108.66 in)	
(H)	3.07 m (120.87 in)	
(I)	3.15 m (124.02 in)	
(J)	3.15 m (124.02 in)	
(K)	0.44 m (17.32 in)	
(L) (standard track)	0.60 m (23.62 in)	
(M)	2.39 m (94.09 in)	
(N) 600 mm (23.6 in) track	2.99 m (117.72 in)	
(N) 700 mm (27.6 in) track	3.09 m (121.65 in)	
(N) 800 mm (31.5 in) track	3.19 m (125.59 in)	
(N) 900 mm (35.4 in) track	3.29 m (129.53 in)	

Boom length: **5.70 m** (**224.41 in**)

Working ranges



SMIL21CEX4331HA 2

Arm	2.40 m (94.49 in)	2.94 m (115.75 in)
(A) Max digging reach	**9.42 m** (**370.87 in**)	**9.90 m** (**389.76 in**)
(B) Max digging reach at ground level **(GL)**	**9.24 m** (**363.78 in**)	**9.73 m** (**383.07 in**)
(C) Max digging depth	**6.11 m** (**240.55 in**)	**6.64 m** (**261.42 in**)
(D) Max dump height	**6.59 m** (**259.45 in**)	**6.81 m** (**268.11 in**)
(E) Max dump distance	**6.38 m** (**251.18 in**)	**6.87 m** (**270.47 in**)
(F) Max working height	**9.41 m** (**370.47 in**)	**9.61 m** (**378.35 in**)
(G) Reach at max working height	**5.39 m** (**212.20 in**)	**5.95 m** (**234.25 in**)
(H) Min equipment swing radius	**3.62 m** (**142.52 in**)	**3.66 m** (**144.09 in**)
(I) Height at min equipment swing radius	**7.70 m** (**303.15 in**)	**7.64 m** (**300.79 in**)
(L) Min clean up distance	**3.03 m** (**119.29 in**)	**2.32 m** (**91.34 in**)
(M) Max clean up distance	**7.05 m** (**277.56 in**)	**7.54 m** (**296.85 in**)
(N) Max digging depth on a vertical face	**5.48 m** (**215.75 in**)	**5.96 m** (**234.65 in**)
(O) Reach at max digging depth on a vertical face	**5.79 m** (**227.95 in**)	**5.96 m** (**234.65 in**)
(P) Max flat-bottomed trenching depth	**5.90 m** (**232.28 in**)	**6.47 m** (**254.72 in**)
(Q) Distance of flat-bottomed trench	**2.84 m** (**111.81 in**)	**2.84 m** (**111.81 in**)
(R) Flat-bottomed trench reference lenght	**2.44 m** (**96.06 in**)	
(S) Swing tail radius	**2.83 m** (**111.42 in**)	
(T) Min dump height	**2.85 m** (**112.20 in**)	**2.42 m** (**95.28 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.*

Operating weights

With mono-block boom, **2.40 m** (**94.49 in**) arm, **1.08 m³** (**1.41 yd³**) Heavy Duty bucket, **600 mm** (**23.6 in**) track, operator, fluids, full fuel tank, and FOPS level 2 guard.	**22080 kg** (**48678 lb**)
Average ground contact pressure	**46 kPa** (**7 psi**)

Heavy counterweight

With mono-block boom, **2.40 m** (**94.49 in**) arm, **1.08 m³** (**1.41 yd³**) Heavy Duty bucket, **600 mm** (**23.6 in**) track, operator, fluids, full fuel tank, and FOPS level 2 guard.	**22580 kg** (**49780 lb**)
Average ground contact pressure	**47 kPa** (**7 psi**)

With mono-block boom, **2.94 m** (**115.75 in**) arm, **1.08 m³** (**1.41 yd³**) Heavy Duty bucket, **600 mm** (**23.6 in**) track, operator, fluids, full fuel tank, and FOPS level 2 guard.	**22240 kg** (**49031 lb**)
Average ground contact pressure	**46 kPa** (**7 psi**)

Heavy counterweight

With mono-block boom, **2.94 m** (**115.75 in**) arm, **1.08 m³** (**1.41 yd³**) Heavy Duty bucket, **600 mm** (**23.6 in**) track, operator, fluids, full fuel tank, and FOPS level 2 guard.	**22740 kg** (**50133 lb**)
Average ground contact pressure	**47 kPa** (**7 psi**)

9 - ACCESSORIES

Direct fit buckets

CASE CONSTRUCTION buckets are designed to optimize the operating performance of the CASE CONSTRUCTION excavators in main construction works and in special jobsites.

CASE CONSTRUCTION General Purpose buckets ensure excavating performance and payload for light duty construction works. They are recommended for digging and trenching in dry, uncompacted and not abrasive soil. They are also suitable for scoop loading of topsoil and dirt.

CASE CONSTRUCTION Heavy Duty buckets ensure excavating performance and payload for most of construction works. They are recommended for digging and trenching in compacted and slightly abrasive soil. They are also suitable for scoop loading of sand and gravel.

CASE CONSTRUCTION Rock buckets feature reinforced frames and thicker wear bars for tough construction and quarry works. They are recommended for digging and trenching in packed and abrasive soil mixtures. They are also suitable for scoop loading of stones and shot rocks.

CASE CONSTRUCTION Grading buckets feature a wide front, a deep shell and a bolt-on straight cutting edge. They are recommended for leveling or fine grading of slopes or beds, and for loading of the rehandled light soil.

CASE CONSTRUCTION Ditch Cleaning buckets feature a wide front, a compact shell and a bolt-on straight cutting edge. They are recommended for dredging of rivers, ditches or ponds, and for cleaning of banks.

CASE CONSTRUCTION defines application rules in order to match each bucket type and size with the most suitable configuration of the machine, and to refer bucket application to specific working conditions.

NOTE: *CASE CONSTRUCTION buckets can be readily adapted to match with the CASE CONSTRUCTION pin grabber coupler. Refer ahead in this Chapter.*

Direct fit buckets application as function of the arm

Heavy Duty buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.45 m³ (**0.59 yd³**)	**600 mm** (**24 in**)	**560 kg** (**1235 lb**)	○	○
0.60 m³ (**0.78 yd³**)	**750 mm** (**30 in**)	**640 kg** (**1411 lb**)	○	○
0.76 m³ (**0.99 yd³**)	**900 mm** (**35 in**)	**730 kg** (**1609 lb**)	○	○
0.85 m³ (**1.11 yd³**)	**1000 mm** (**39 in**)	**760 kg** (**1676 lb**)	○	○
0.92 m³ (**1.20 yd³**)	**1050 mm** (**41 in**)	**800 kg** (**1764 lb**)	○	○
0.96 m³ (**1.26 yd³**)	**1100 mm** (**43 in**)	**830 kg** (**1830 lb**)	○	○
1.08 m³ (**1.41 yd³**)	**1200 mm** (**47 in**)	**880 kg** (**1940 lb**)	○	●
1.24 m³ (**1.62 yd³**)	**1350 mm** (**53 in**)	**970 kg** (**2138 lb**)	●	▲
1.40 m³ (**1.83 yd³**)	**1500 mm** (**59 in**)	**1040 kg** (**2293 lb**)	▲	■

Rock buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.44 m³ (**0.58 yd³**)	**600 mm** (**24 in**)	**710 kg** (**1565 lb**)	○	○
0.59 m³ (**0.77 yd³**)	**750 mm** (**30 in**)	**800 kg** (**1764 lb**)	○	○
0.75 m³ (**0.98 yd³**)	**900 mm** (**35 in**)	**880 kg** (**1940 lb**)	○	○
0.85 m³ (**1.11 yd³**)	**1000 mm** (**39 in**)	**940 kg** (**2072 lb**)	○	○
0.91 m³ (**1.19 yd³**)	**1050 mm** (**41 in**)	**980 kg** (**2161 lb**)	○	○
0.96 m³ (**1.26 yd³**)	**1100 mm** (**43 in**)	**1010 kg** (**2227 lb**)	○	●
1.07 m³ (**1.40 yd³**)	**1200 mm** (**47 in**)	**1060 kg** (**2337 lb**)	●	▲
1.23 m³ (**1.61 yd³**)	**1350 mm** (**53 in**)	**1150 kg** (**2535 lb**)	▲	■

Grading buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass (*)	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.97 m³ (**1.27 yd³**)	**1800 mm** (**71 in**)	**680 kg** (**1499 lb**)	○	○
1.17 m³ (**1.53 yd³**)	**2100 mm** (**83 in**)	**740 kg** (**1631 lb**)	○	●
1.35 m³ (**1.77 yd³**)	**2400 mm** (**94 in**)	**830 kg** (**1830 lb**)	●	▲

Ditch cleaning buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass (*)	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.86 m³ (**1.12 yd³**)	**1830 mm** (**72 in**)	**650 kg** (**1433 lb**)	○	○
0.94 m³ (**1.23 yd³**)	**2130 mm** (**84 in**)	**710 kg** (**1565 lb**)	○	○

(*) with bolt-on edge

○ Density of material up to 2 t/m^3
● Density of material up to 1.6 t/m^3
▲ Density of material up to 1.4 t/m^3
■ Density of material up to 1.2 t/m^3

Direct fit buckets application as function of the arm (Heavy counterweight)

Heavy Duty buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.45 m³ (**0.59 yd³**)	**600 mm** (**24 in**)	**560 kg** (**1235 lb**)	○	○
0.60 m³ (**0.78 yd³**)	**750 mm** (**30 in**)	**640 kg** (**1411 lb**)	○	○
0.76 m³ (**0.99 yd³**)	**900 mm** (**35 in**)	**730 kg** (**1609 lb**)	○	○
0.85 m³ (**1.11 yd³**)	**1000 mm** (**39 in**)	**760 kg** (**1676 lb**)	○	○
0.92 m³ (**1.20 yd³**)	**1050 mm** (**41 in**)	**800 kg** (**1764 lb**)	○	○
0.96 m³ (**1.26 yd³**)	**1100 mm** (**43 in**)	**830 kg** (**1830 lb**)	○	○
1.08 m³ (**1.41 yd³**)	**1200 mm** (**47 in**)	**880 kg** (**1940 lb**)	○	○
1.24 m³ (**1.62 yd³**)	**1350 mm** (**53 in**)	**970 kg** (**2138 lb**)	●	●
1.40 m³ (**1.83 yd³**)	**1500 mm** (**59 in**)	**1040 kg** (**2293 lb**)	●	▲

Rock buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.44 m³ (**0.58 yd³**)	**600 mm** (**24 in**)	**710 kg** (**1565 lb**)	○	○
0.59 m³ (**0.77 yd³**)	**750 mm** (**30 in**)	**800 kg** (**1764 lb**)	○	○
0.75 m³ (**0.98 yd³**)	**900 mm** (**35 in**)	**880 kg** (**1940 lb**)	○	○
0.85 m³ (**1.11 yd³**)	**1000 mm** (**39 in**)	**940 kg** (**2072 lb**)	○	○
0.91 m³ (**1.19 yd³**)	**1050 mm** (**41 in**)	**980 kg** (**2161 lb**)	○	○
0.96 m³ (**1.26 yd³**)	**1100 mm** (**43 in**)	**1010 kg** (**2227 lb**)	○	○
1.07 m³ (**1.40 yd³**)	**1200 mm** (**47 in**)	**1060 kg** (**2337 lb**)	○	●
1.23 m³ (**1.61 yd³**)	**1350 mm** (**53 in**)	**1150 kg** (**2535 lb**)	●	▲

Grading buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass (*)	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.97 m³ (**1.27 yd³**)	**1800 mm** (**71 in**)	**680 kg** (**1499 lb**)	○	○
1.17 m³ (**1.53 yd³**)	**2100 mm** (**83 in**)	**740 kg** (**1631 lb**)	○	○
1.35 m³ (**1.77 yd³**)	**2400 mm** (**94 in**)	**830 kg** (**1830 lb**)	●	●

Ditch cleaning buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass (*)	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.86 m³ (**1.12 yd³**)	**1830 mm** (**72 in**)	**650 kg** (**1433 lb**)	○	○
0.94 m³ (**1.23 yd³**)	**2130 mm** (**84 in**)	**710 kg** (**1565 lb**)	○	○

(*) with bolt-on edge

○ Density of material up to 2 t/m^3
● Density of material up to 1.6 t/m^3
▲ Density of material up to 1.4 t/m^3

Auxiliary hydraulic circuits

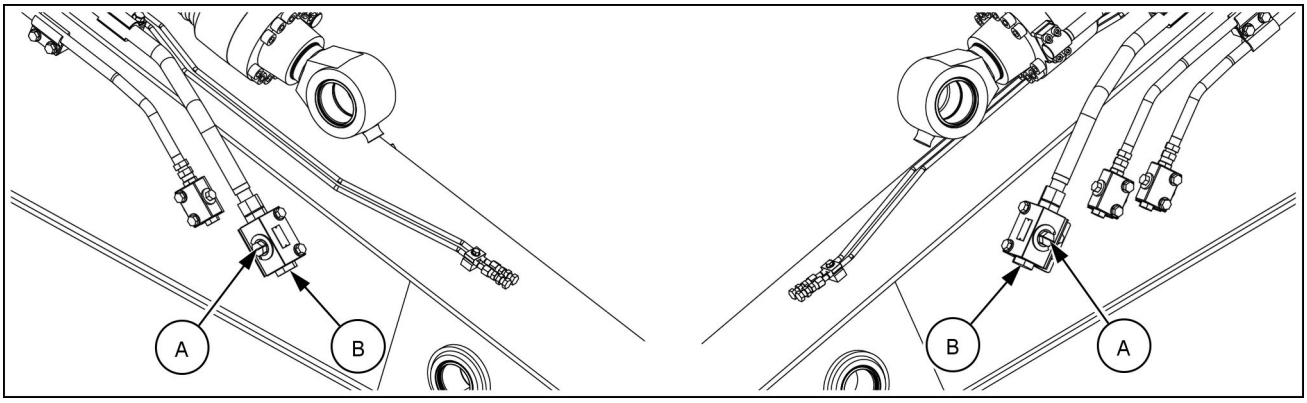
Auxiliary high-flow hydraulic circuit

The machine can be equipped with one of the following auxiliary high-flow hydraulic circuits:

- Single-acting auxiliary high-flow hydraulic circuit intended for usage of attachments such as a hydraulic breaker.
- Multi-function auxiliary high-flow hydraulic circuit. This type of circuit can be alternatively set as a single-acting circuit to operate attachments such as a hydraulic breaker, or as a double-acting circuit to operate attachments such as a hydraulic sorting grab or a hydraulic demolition crusher.

Hydraulic connections

The stop valves on both sides of the arm allow to install properly and safely the hoses to connect the hydraulic attachment to the lines of the auxiliary high-flow hydraulic circuit.



SMIL21CEX5015EA 1

Open/Close tool **(A)**	**27 mm** wrench
Open/Close tool **(B)**	**41 mm** wrench
Hydraulic connection **(B)**	G 1” female port with O-Ring seat

NOTICE: *Always keep each connecting hose on the same side of the arm. Never cross-over the connecting hoses between the two sides of the arm.*

Operational settings

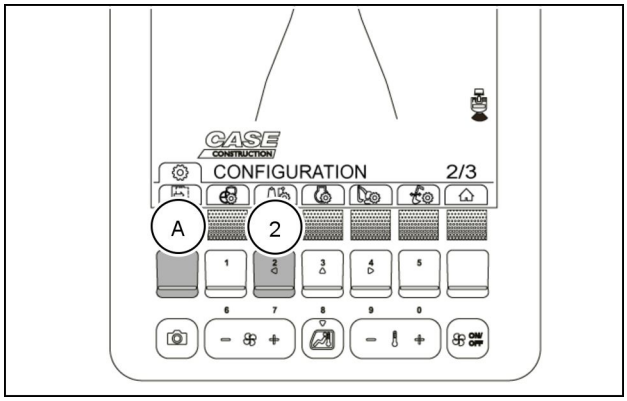
The specifications of the auxiliary high-flow hydraulic circuit can be set and stored according to the type and attachment to be used.

NOTE: *once the specifications are stored, they can be directly selected pressing the attachment selector button. Refer ahead in this Section.*

NOTICE: *before operating any hydraulic attachment be sure to set the proper attachment mode (ONE WAY or TWO WAY) and the proper hydraulic flow rate/pressure characteristic. If the attachment mode or the hydraulic flow rate/ pressure characteristic are not properly set, malfunction or failure may occur to the machine or damage may occur to the hydraulic attachment.*

Press twice the button **(A)** to access the CONFIGURATION screen 2/3.

Press the button **(2)** to access the AUXILIARY HYDRAULICS main screen.



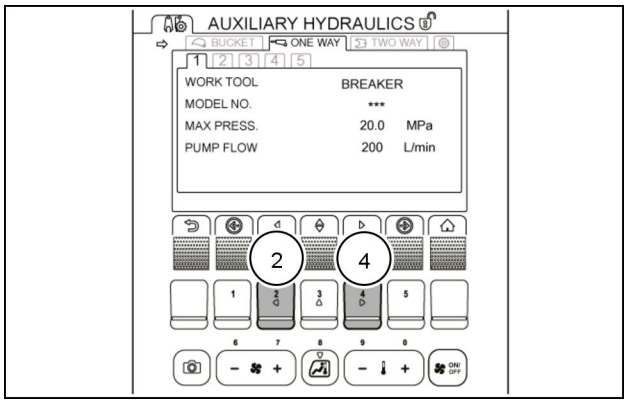
SMIL21CEX5033AA00 2

Press the button **(2)** or **(4)** to switch between the AUXILARY HYDRAULICS pages:

BUCKET

ONE WAY

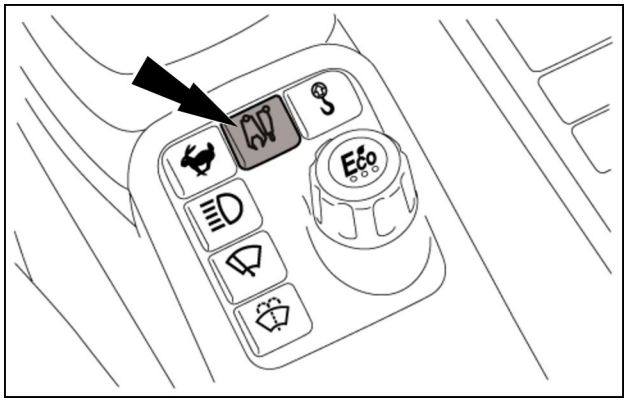
TWO WAY



SMIL21CEX5034AA01 3

Alternatively, keep pressed the attachment selector button for **1 s** to access directly to the AUXILIARY HYDRAULICS main screen.

NOTE: *the dedicated pages for operational settings of the auxiliary high-flow hydraulic circuit are not active if the machine is not equipped with any auxiliary high-flow hydraulic circuit.*



SMIL21CEX5028AA 4

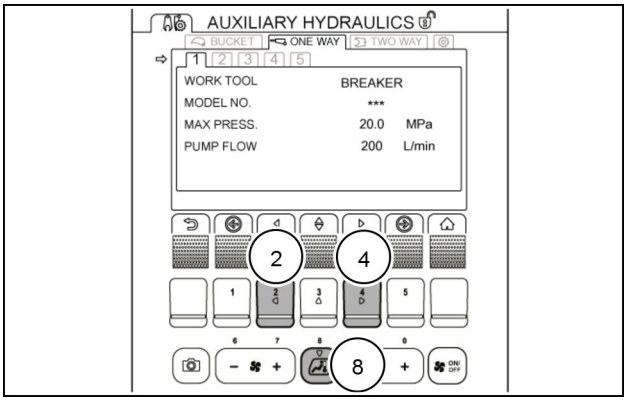
ONE WAY

Before operating a hydraulic breaker or any other single-acting hydraulic attachment, select the ONE WAY page (breaker icon) to set and store the proper specifications.

Five specifications sheets can be set and stored for usage of single-acting hydraulic attachments.

Press the button **(8)** to move the cursor to the five tabs.

Press the button **(2)** or **(4)** to switch between the tabs.



SMIL21CEX5035AA02 5

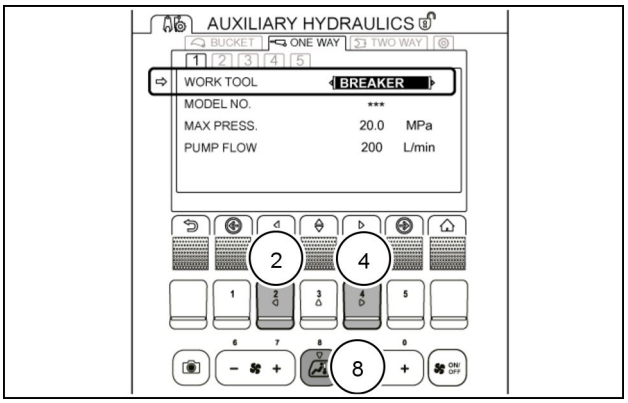
Press the button **(8)** to move the cursor to the first row of the page.

Press the button **(2)** or **(4)** to select the type of attachment:

BREAKER

COMPACTOR

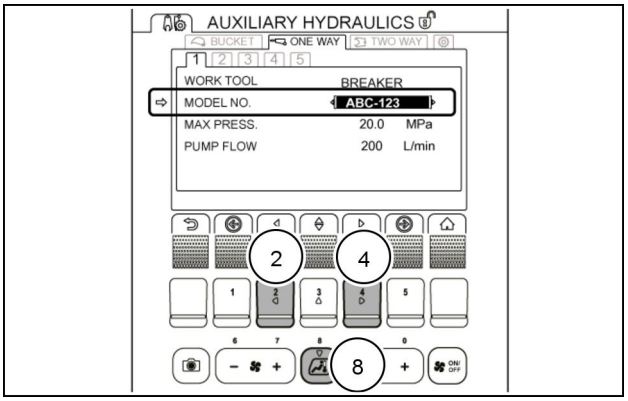
OTHER



SMIL21CEX5036AA03 6

Press the button **(8)** to move the cursor to the second row of the page.

Press the button **(2)** or **(4)** to enter the model number edit mode.



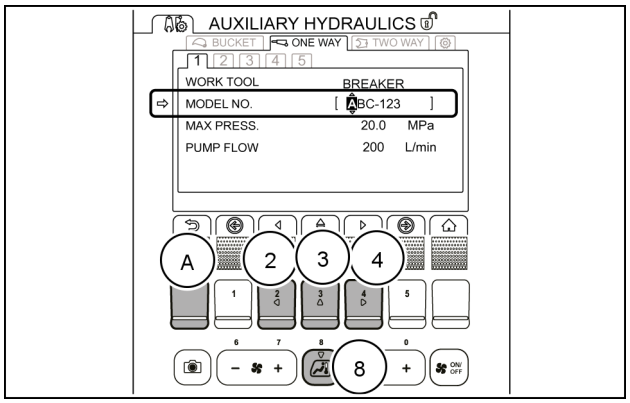
SMIL21CEX5037AA04 7

The selected digit is highlighted in yellow.

Press the button **(3)** or **(8)** to change the digit.

Press the button **(2)** or **(4)** to switch horizontally between the digits.

Press the button **(A)** to exit the edit mode.



SMIL21CEX5495AA 8

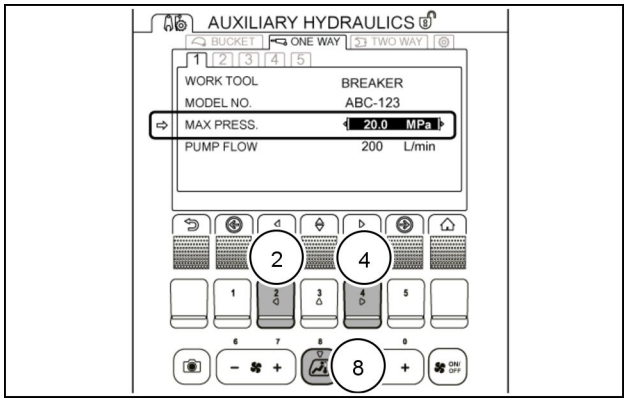
Press the button **(8)** to move the cursor to the third row of the page to set the maximum working pressure of the auxiliary high-flow hydraulic circuit.

Press the button **(4)** to increase the maximum pressure.

Press the button **(2)** to decrease the maximum pressure.

NOTICE: *the maximum pressure can be set from the instrument cluster only for the Multi-function auxiliary high-flow hydraulic circuit. If the machine is equipped with the Single-acting auxiliary high-flow hydraulic circuit, the maximum pressure should be set manually, and the the third row of the page is thus not active.*

NOTICE: *the maximum pressure of the Single-acting auxiliary high-flow hydraulic circuit should be set manually by the relief valve located behind the boom foot. The factory setting is **18.0 MPa** (**2610.9 psi**). The maximum setting is **30.0 MPa** (**4351.5 psi**).*

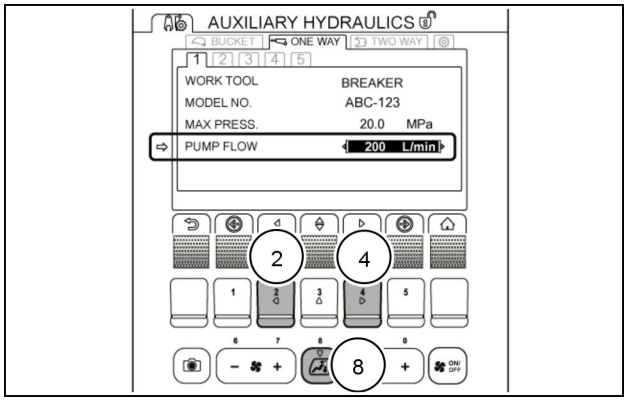


SMIL21CEX5038AA05 9

Press the button **(8)** to move the cursor to the fourth row of the page to set the pump flow rate of the auxiliary high-flow hydraulic circuit.

Press the button **(4)** to increase the pump flow rate.

Press the button **(2)** to decrease the pump flow rate.



SMIL21CEX5039AA06 10

Pump flow rate

The pump flow rate can be selected within the range indicated below:

Pump flow rate	Factory setting
50 – 211 L/min (**13 – 56 US gpm**) (in **5 L/min** (**1 US gpm**) increments)	**50 L/min** (**13 US gpm**)

Maximum pressure

The maximum pressure can be selected within the range indicated below:

Maximum pressure	Factory setting
14 – 34.3 MPa (**2030 – 4975 psi**) (in **0.1 MPa** (**14 psi**) increments)	**14 MPa** (**2030 psi**)

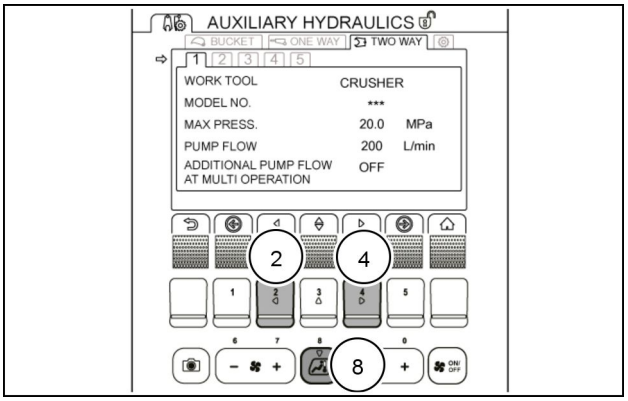
TWO WAY

Before operating a hydraulic crusher or any other double-acting hydraulic attachment, select the TWO WAY page (crusher icon) to set and store the proper specifications.

Five specifications sheets can be set and stored for usage of double-acting hydraulic attachments.

Press the button **(8)** to move the cursor to the five tabs.

Press the button **(2)** or **(4)** to switch between the tabs.

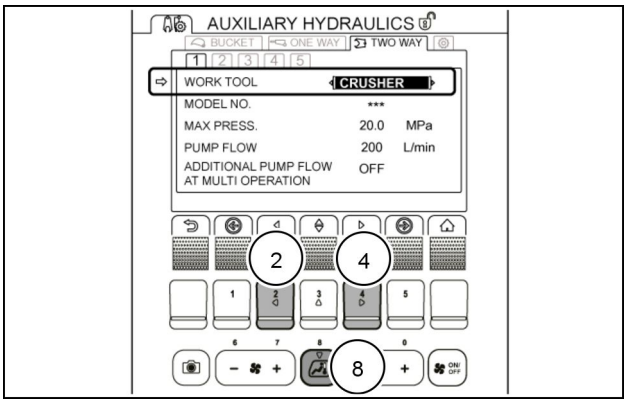


SMIL21CEX5040AA07 11

Press the button **(8)** to move the cursor to the first row of the page.

Press the button **(2)** or **(4)** to select the type of attachment:

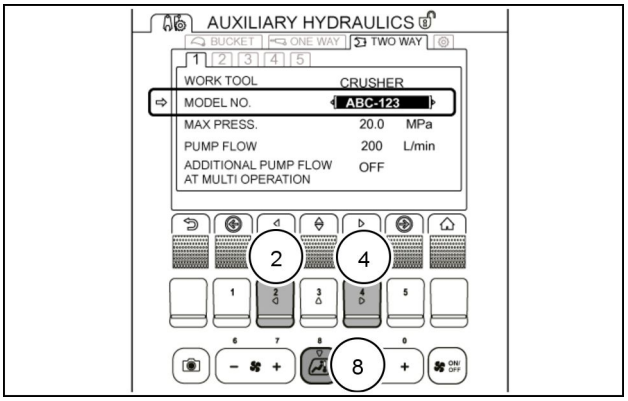
- CRUSHER
- GRAPPLE
- BUCKET THUMB
- TILT BUCKET
- TILT ROTATOR
- AUGER
- OTHER



SMIL21CEX5041AA08 12

Press the button **(8)** to move the cursor to the second row of the page.

Press the button **(2)** or **(4)** to enter the model number edit mode.



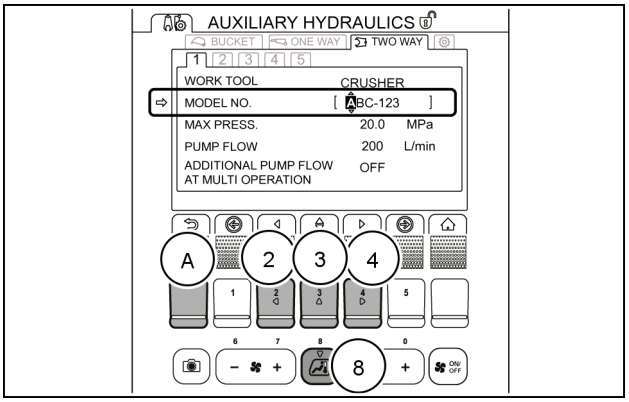
SMIL21CEX5042AA 13

The selected digit is highlighted in yellow.

Press the button **(3)** or **(8)** to change the digit.

Press the button **(2)** or **(4)** to switch horizontally between the digits.

Press the button **(A)** to exit the edit mode.

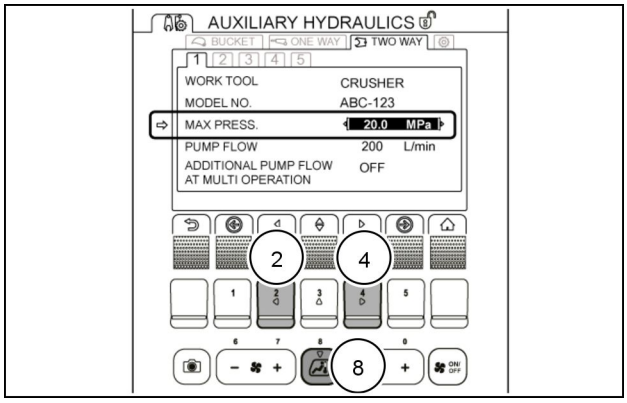


SMIL21CEX5494AA 14

Press the button **(8)** to move the cursor to the third row of the page to set the maximum working pressure of the auxiliary high-flow hydraulic circuit.

Press the button **(4)** to increase the maximum pressure.

Press the button **(2)** to decrease the maximum pressure.

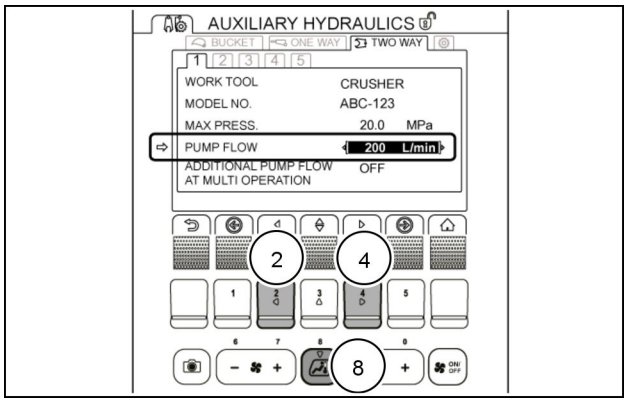


SMIL21CEX5043AA 15

Press the button **(8)** to move the cursor to the fourth row of the page to set the pump flow rate of the auxiliary high-flow hydraulic circuit.

Press the button **(4)** to increase the pump flow rate.

Press the button **(2)** to decrease the pump flow rate.



SMIL21CEX5044AA 16

Pump flow rate

The pump flow rate can be selected within the range indicated below:

Pump flow rate	Factory setting
50 – 422 L/min (**13 – 111 US gpm**) (in **5 L/min** (**1 US gpm**) increments)	**215 L/min** (**57 US gpm**)

Maximum pressure

The maximum pressure can be selected within the range indicated below:

Maximum pressure	Factory setting
16.5 – 34.3 MPa (**2393 – 4975 psi**) (in **0.1 MPa** (**14 psi**) increments)	**16.5 MPa** (**2393 psi**)

Press the button **(8)** to move the cursor to the fifth row of the page.

This function defines the allowed increase of the pump output as the attachment is operated in combined movements.

Pump output is increased during combined movements. So, in some operating conditions, overflow may go to the work tool. For motor-driven hydraulic attachments excessive overflow will generate overspeeding and may cause serious damage to the motor.

As this function is set to OFF, the pump output is anyway limited to the PUMP FLOW set on the fourth row. Therefore, any overflow could go to the attachment. Rather, as this function is set to OFF, multi-operation may slow down as pump output is overall limited.

Pressing the button **(4)**, the function is set to ON and defines the allowed increase of pump output in multi-operation.

Press the button **(4)** to allow bigger increase of pump output.

Press the button **(2)** to limit the increase of pump output.

The allowed increase of pump output depends upon the PUMP FLOW set on the fourth row. Each segment indicates a value of flow rate defined according to the following relation:

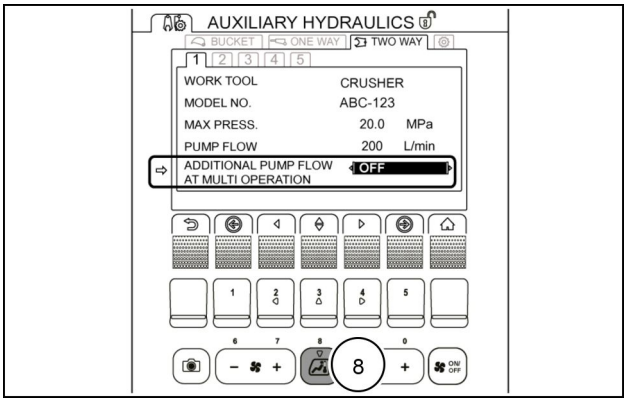
Additional flow rate per segment: (Maximum flow rate value — Set value of “PUMP FLOW”) / 5

The maximum flow rate value is **211 L/min** (**56 US gpm**) for single-pump output.

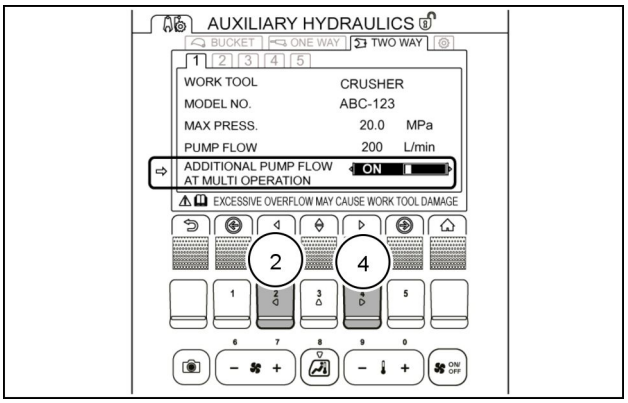
The maximum flow rate value is **422 L/min** (**111 US gpm**) for double-pump output.

NOTE: *when PUMP FLOW is changed, the function is reset to OFF.*

NOTE: *when PUMP FLOW is set to the max pump output, the function cannot be set to ON.*



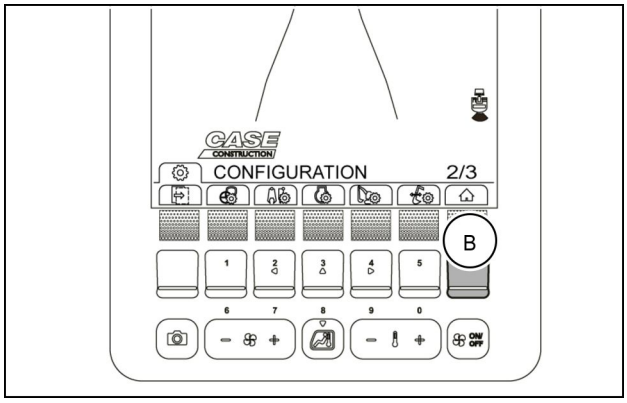
SMIL21CEX5503AA 17



SMIL21CEX5504AA 18

Attachment selection

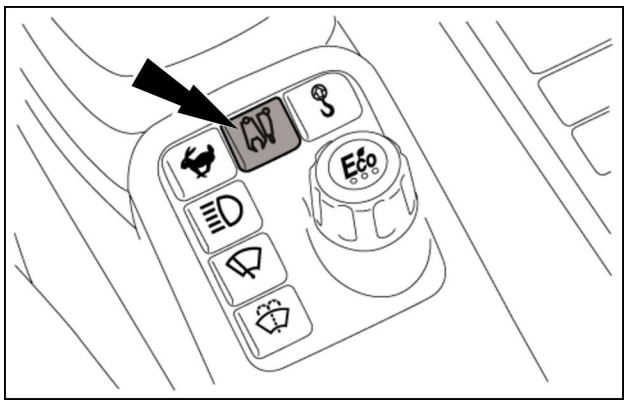
Press the button **(B)** to return to the normal display mode of the monitor.



SMIL21CEX5501AA 19

Press the attachment select button to select the attachment to be used.

Each time the attachment select button is pressed, the system switches between the specifications of the stored attachments.



SMIL21CEX5028AA 20

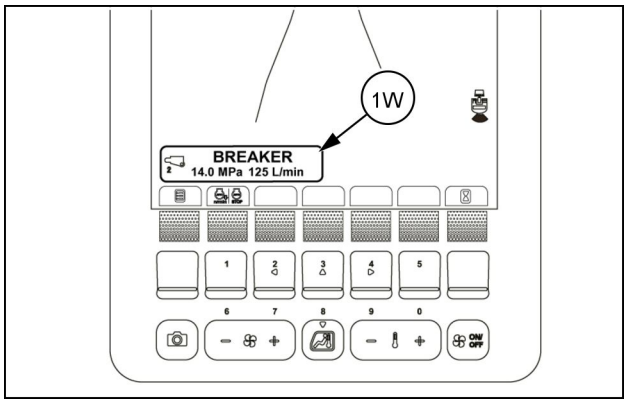
A message on bottom left corner of the screen indicates the following specifications:

The stored tab number (1 to 5) with its relevant icon.

The type of attachment.

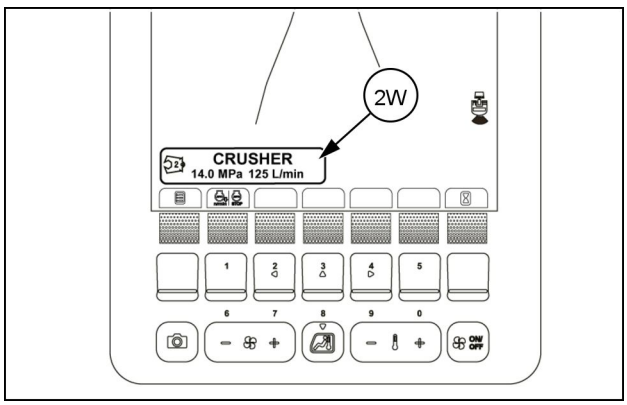
The preset pattern of maximum pressure/flow rate.

Message in case of ONE WAY attachment selection **(1W)**.



SMIL21CEX5502AA 21

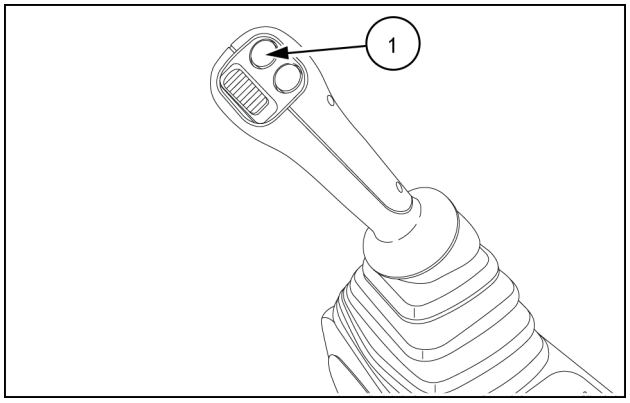
Message in case of TWO WAY attachment selection **(2W)**.



SMIL21CEX5500AA 22

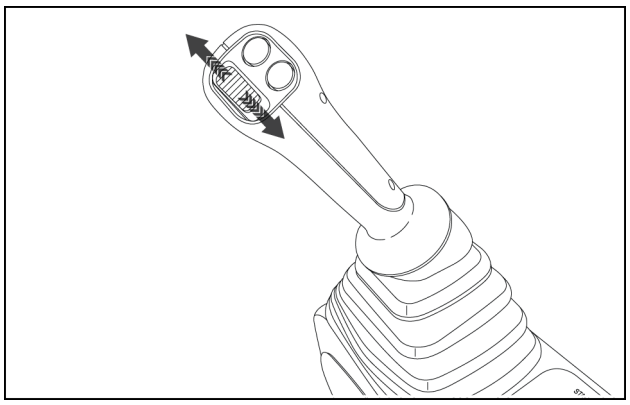
Operating Controls

Use the ON/OFF button **(1)** located on the right-hand control lever to operate a single-acting hydraulic attachment with a continuous flow.



SMIL15CEXZ396AB 23

Use the proportional switch located on the right-hand control lever to operate a double-acting hydraulic attachment with a variable power.

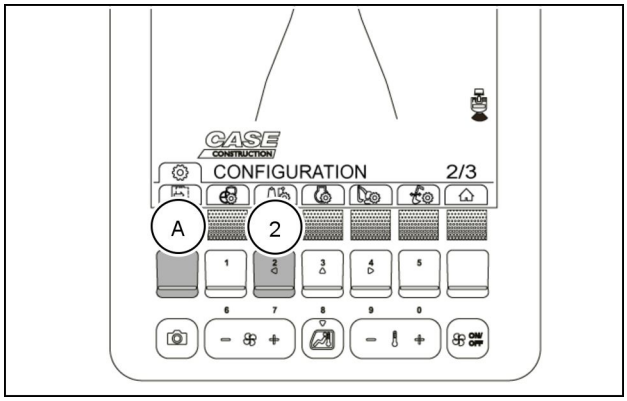


SMIL15CEXY965AB 24

Settings management

Press twice the button **(A)** to access the CONFIGURATION screen 2/3.

Press the button **(2)** to access the AUXILIARY HYDRAULICS main screen.

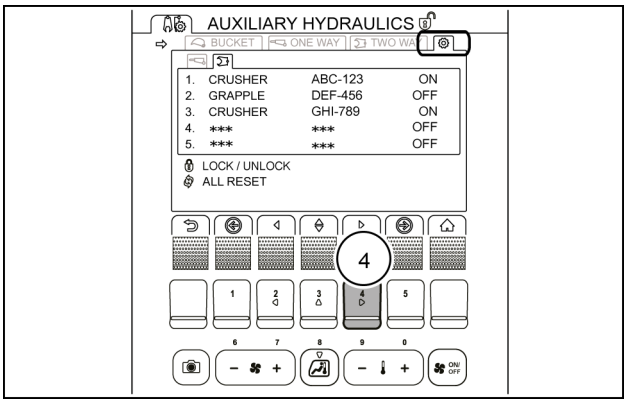


SMIL21CEX5033AA00 25

Press the button **(4)** until the last page is selected (gear icon).

The setting management page allows the following operations:

- Switch the attachment tab ON or OFF.
- Reset one attachment tab.
- Reset all attachment tabs.
- Lock or unlock the auxiliary pages.

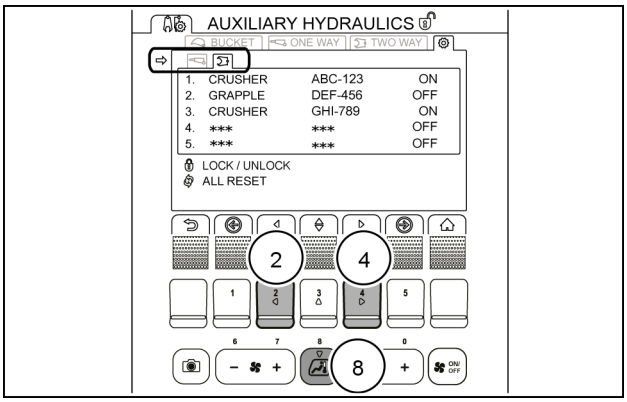


SMIL21CEX5046AA 26

SWITCH THE ATTACHMENT TAB ON OR OFF.

Press the button **(8)** to move the cursor to the sets of stored attachments tabs.

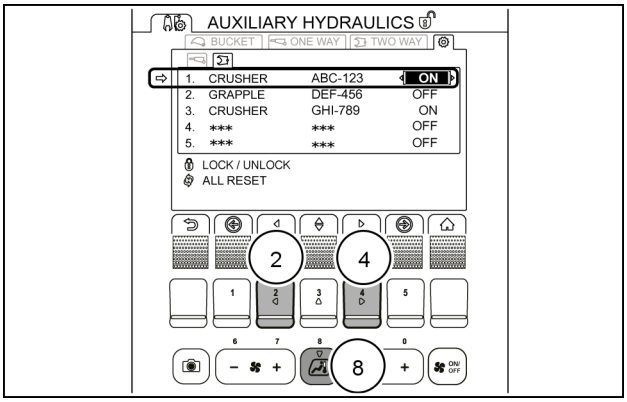
Press the button **(2)** or **(4)** to select the set of stored attachments tab.



SMIL21CEX5047AA 27

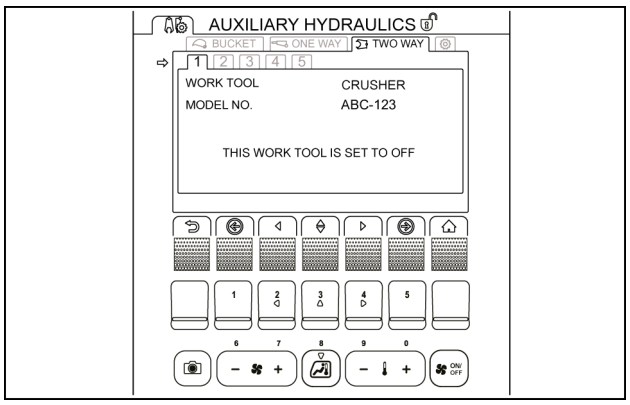
Press the button **(8)** to select the stored attachment tab.

Press the button **(2)** or **(4)** to switch ON or OFF the stored attachment tab.



SMIL21CEX5048AA 28

When the attachment tab is switched OFF, the message "THIS WORK TOOL IS SET TO OFF" is displayed on the screen.

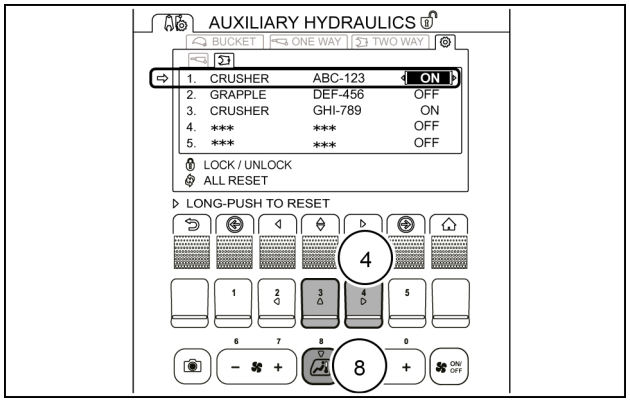


SMIL21CEX5049AA 29

RESET ONE ATTACHMENT TAB

Press the button **(8)** to move the cursor to the attachment tab to be reset.

Keep pressed the button **(4)** for **3 s** to reset the attachment tab.

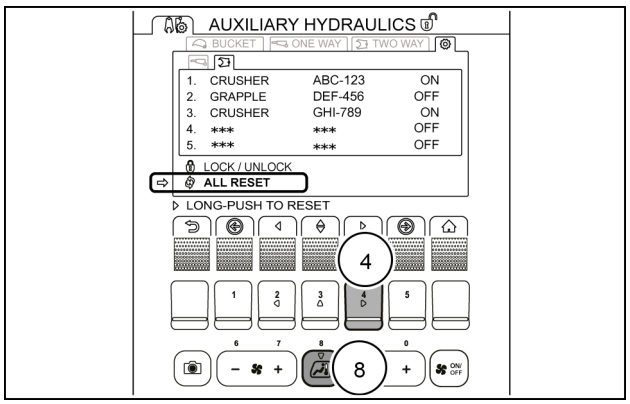


SMIL21CEX5489AB 30

RESET ALL ATTACHMENT TABS

Press the button **(8)** to move the cursor to the ALL RESET function.

Keep pressed the button **(4)** for **3 s** to reset all the stored attachment tabs.

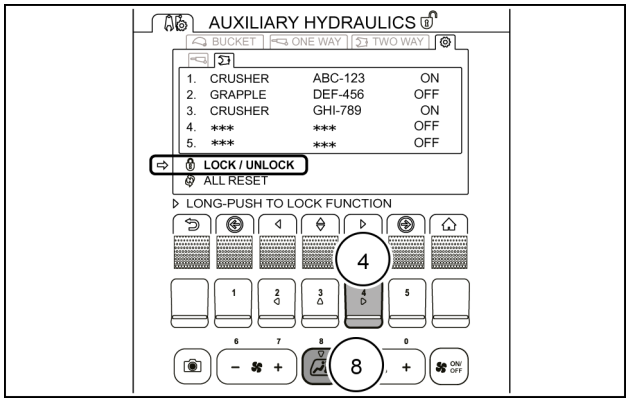


SMIL21CEX5490AA 31

LOCK OR UNLOCK THE AUXILIARY PAGES

Press the button **(8)** to move the cursor to the LOCK/UN-LOCK function.

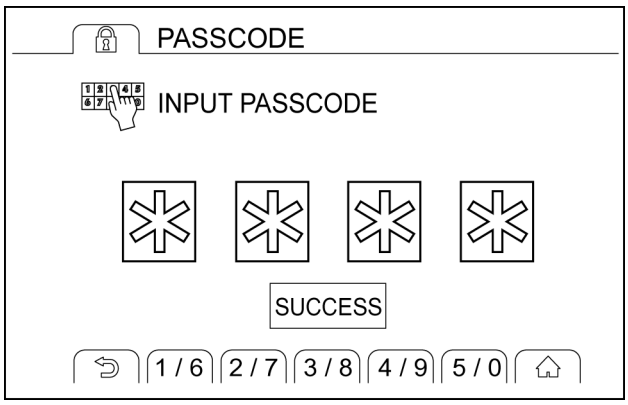
Keep pressed the button **(4)** for **3 s** to access the pass-code screen.



SMIL21CEX5491AA 32

Enter the passcode.

NOTE: *the factory setting for the passcode is 1560.*



SMIL21CEX5492AA 33

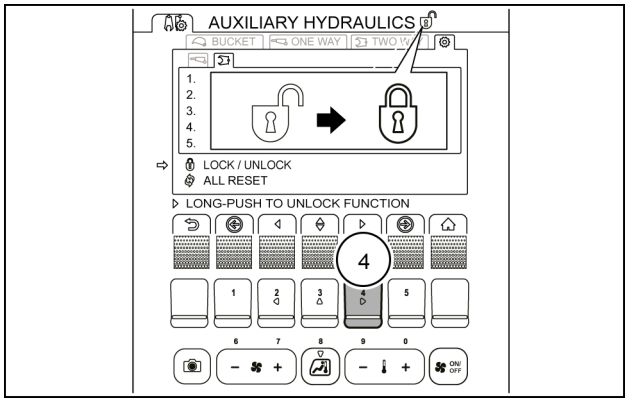
After the passcode is successfully entered, an alarm sounds and the AUXILIARY HYDRAULICS screen is locked so that changes cannot be made to the settings.

To unlock the screen, select the LOCK/UNLOCK function.

Keep pressed the button **(4)** for **3 s** to access the password screen.

Enter the passcode.

After the passcode is successfully entered, an alarm sounds and the AUXILIARY HYDRAULICS screen is unlocked.



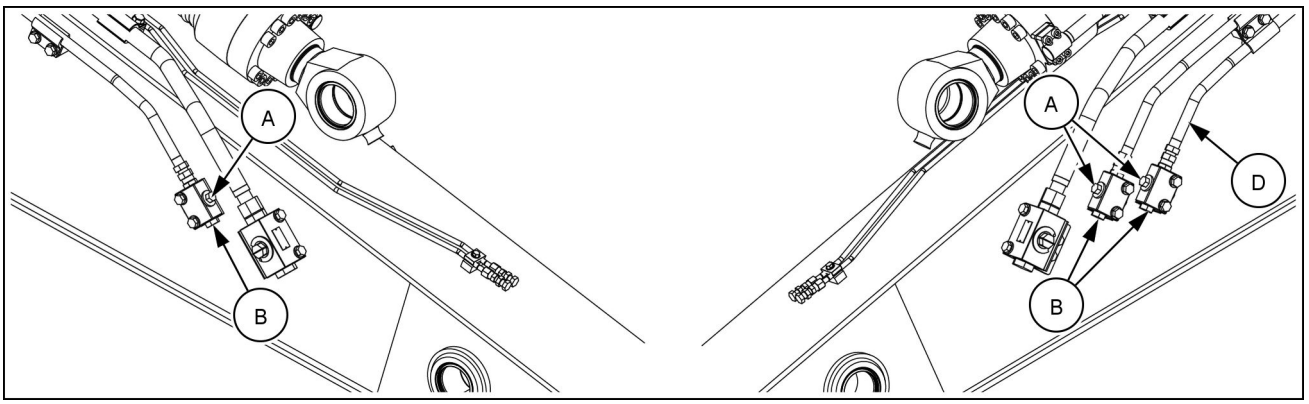
SMIL21CEX5493AA 34

Auxiliary low-flow hydraulic circuit

The machine can be equipped with an additional auxiliary low-flow hydraulic circuit to operate attachments featuring secondary hydraulic actuation for positioning, such as rotating grabs or tiltable buckets.

Hydraulic connections

The stop valves on both sides of the arm allow to install properly and safely the hoses to connect the hydraulic attachment to the lines of the auxiliary low-flow hydraulic circuit.



SMIL21CEX5015EA 35

Open/Close tool **(A)**	**19 mm** wrench
Open/Close tool **(B)**	**26 mm** wrench
Hydraulic connection **(B)**	G 1/2” female port with O-Ring seat

NOTE: *the maximum flow rate of the auxiliary low-flow hydraulic circuit using the SP work mode is* ***59 L/min*** *(****15.6 US gpm****). The maximum working pressure of the auxiliary low-flow hydraulic circuit is* ***20.6 MPa*** *(****2988 psi****).*

NOTE: *an additional drainage line* ***(D)*** *is located on the left side of the arm. The drainage line* ***(D)*** *is intended to allow external drainage from the hydraulic motor which rotates the grab or the crusher.*

NOTICE: *Always keep each connecting hose on the same side of the arm. Never cross-over the connecting hoses between the two sides of the arm.*

Operating controls

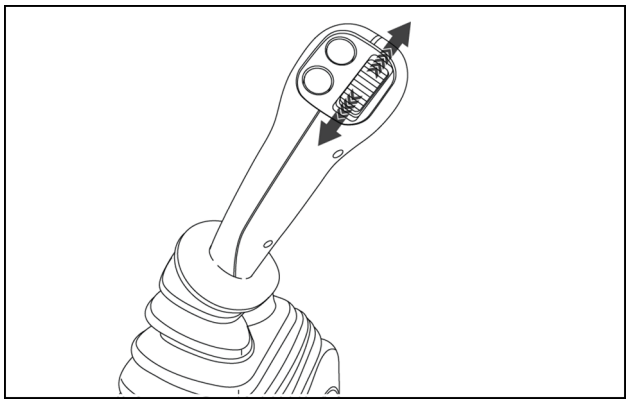
Use the proportional switch located on the left-hand control lever to operate the grab rotation or the bucket tilt with a variable power.

Make sure that the control pattern of the positioning actuation is as intended. Slide up and down the proportional switch and confirm the control directions (e.g. left/right).

NOTICE: *If control directions for the positioning actuation are not as intended, check for an alternative set up of the hydraulic connections between the attachment and the machine.*

NOTICE: *Always keep each connecting hose on the same side of the arm. Never cross-over the connecting hoses between the two sides of the arm.*

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



SMIL15CEXY964AB 36

Operating guidelines for usage of hydraulic attachments

Always select the hydraulic attachment which is suitable for installation on the machine, in order to avoid severe damages to the machine frames and to the machine systems. Make sure to select an hydraulic attachment which does not compromise the overall machine stability. Make sure to select the hydraulic attachment which properly matches the capacity of the auxiliary hydraulic circuit of the machine.

NOTICE: *make sure to know the maximum working pressure allowed by the attachment. Look for "Relief pressure range" or "Maximum pressure range" information into the specification sheet of the attachment. Set the maximum working pressure of the auxiliary hydraulic circuit according to this specification. The attachment will operate properly and effectively, and serious damages will be avoided to the attachment and to the machine.*

Contact your CASE CONSTRUCTION dealer for selection and provision of the mounting bracket for the attachment, and for selection and provision of the connecting hoses between the auxiliary hydraulic circuits and the attachment.

Make sure to read and understand the Operator's Manual of the hydraulic attachment.

Always refer to the Operator's Manual of the hydraulic attachment for proper and safe installation of the attachment to the machine.

Always refer to the Operator's Manual of the hydraulic attachment and to the following instructions in this manual for proper and safe usage of the attachment.

Always refer to the Operator's Manual of the hydraulic attachment for proper maintenance of the attachment. Always refer to the Operator's Manual of the machine for specific maintenance schedule related to the usage of any attachment other than a bucket (refer to the next page).

If not using any hydraulic attachment, make sure to apply the blanking plugs on the stop valves and on the connecting hoses to the attachment in order to avoid the penetration of foreign bodies.

Maintenance

A specific maintenance schedule shall be adopted for the machine if any hydraulic attachment is used over a significant period of time. In particular, the maintenance of the hydraulic system shall be more frequent because the usage of hydraulic attachments severely affects the properties of the hydraulic fluid.

The following table prescribes the required intervals for the maintenance operations to be performed on the hydraulic system of the machine depending upon the percentage of the usage of the attachment.

<table>
<tr><th></th><th>10%</th><th>20%</th><th>40%</th><th>100%</th></tr>
<tr><td>Hydraulic oil level check</td><td>10 h</td><td>10 h</td><td>10 h</td><td>10 h</td></tr>
<tr><td>Hydraulic oil suction filter cleaning</td><td rowspan="4">800 h</td><td rowspan="4">600 h</td><td rowspan="4">300 h</td><td rowspan="4">100 h</td></tr>
<tr><td>Hydraulic oil return filter replacement</td></tr>
<tr><td>Pilot filter replacement</td></tr>
<tr><td>Hydraulic oil analysis</td></tr>
<tr><td>Hydraulic oil and filters replacement</td><td>4000 h</td><td>3000 h</td><td>1500 h</td><td>600 h</td></tr>
</table>

Moreover, the following operations shall be performed every **10 h** if any attachment other than a bucket is used:

- lubricate the bucket pins and the whole bucket linkage.
- check the tightening torques, in particular if the machine is used in demolition applications.
- check the frames and the structures for damages or cracks, in particular if the machine is used in demolition applications.
- if the hydraulic attachment is used, check the hydraulic lines and connections towards the attachment.

Auxiliary hydraulic circuits pressure release

⚠ WARNING

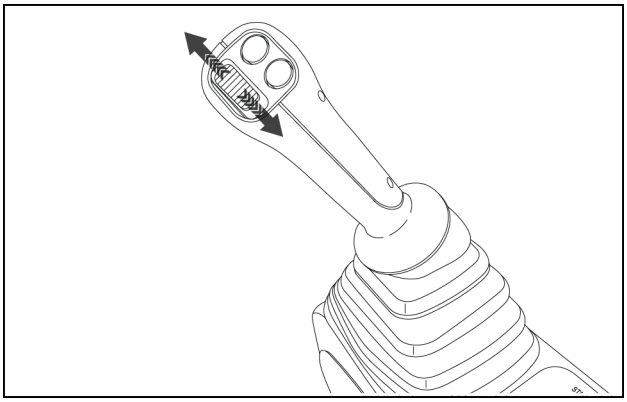
Escaping fluid!
Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.
Failure to comply could result in death or serious injury.

W0178A

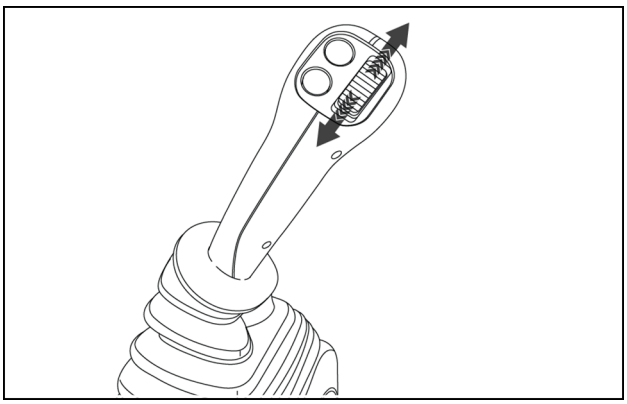
Auxiliary hydraulic circuits are high pressure hydraulic systems. Always release the pressure before connecting or disconnecting the hydraulic hoses between the machine and the attachment.

Proceed as follows:

1. Place the machine on flat and level ground.
2. Lower the attachment to the ground and stop the engine.
3. Turn the starter key to ON position.
4. Push the gate lock lever in forward position.
5. Slide the right proportional switch and the left proportional switch up and down three times approximately to release the pressure.
6. Turn the starter key to OFF position.



SMIL15CEXY965AB 37



SMIL15CEXY964AB 38

Operation with the hydraulic breaker

The hydraulic breaker is a single-acting hydraulic attachment, and shall be connected to a high-flow hydraulic circuit.

Therefore, to operate with a hydraulic breaker the machine shall be equipped with the Single-acting auxiliary high-flow hydraulic circuit or with the Multi-function auxiliary high-flow hydraulic circuit.

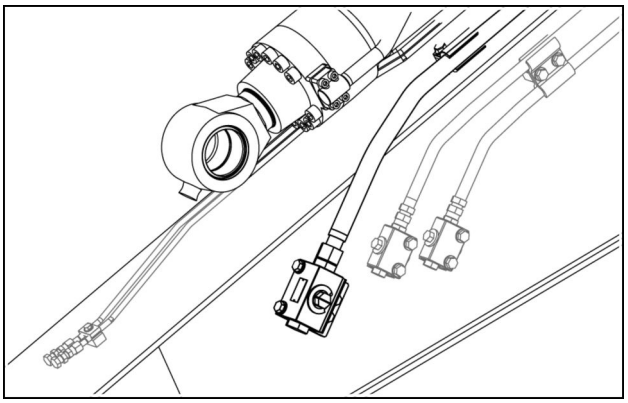
NOTICE: *The working pressure of the Single-acting auxiliary high-flow hydraulic circuit shall be set manually by the relief valve located behind the boom foot.*

1. Make sure that the machine and the attachment to be installed are on flat and level ground.
2. Make sure to read and understand the installation procedure described in the Operator's Manual of the attachment.

   NOTICE: *The maximum working pressure of the auxiliary high-flow hydraulic circuit shall be set according to the specification of the breaker.*
3. Operate the controls of boom, arm and bucket in order to install the hydraulic breaker to the bucket linkage at the top of the arm.
4. Stop the engine. Release pressure inside the auxiliary high-flow hydraulic circuit.
5. Close the stop valves at the top of the arm. Install the connecting hoses between the attachment and the stop valves.

   NOTICE: *make sure to identify on the breaker the supply port (IN or P) and the return port to tank (OUT or T). The hose for breaker supply shall always be connected to the feed valve on the left side of the arm. If the supply port on the breaker is not aligned to the feed valve on the left side of the arm, check for an alternative set up of the hydraulic ports on the attachment.*

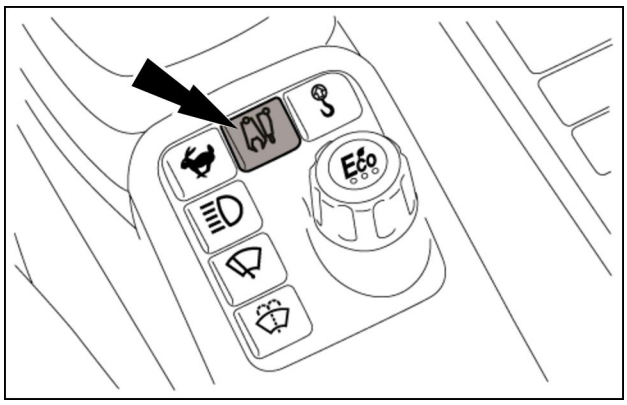
   NOTICE: *Always keep each connecting hose on the same side of the arm. Never cross-over the connecting hoses between the two sides of the arm.*
6. Open the stop valves and check the fixing clamps for looseness, and the tubes and hoses fittings for leakages.



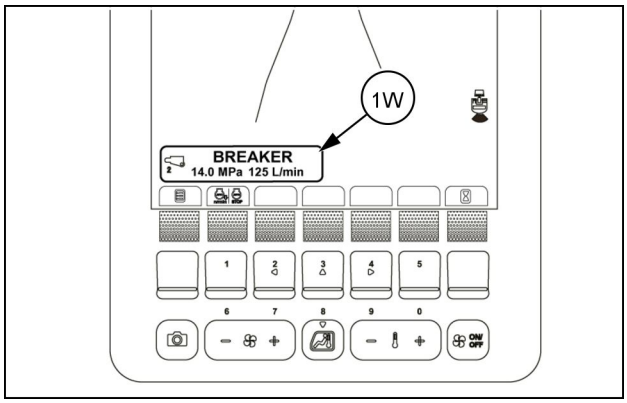
SMIL21CEX5506AA 39

7. Start the engine. Press the attachment selector button until the message **(1W)** featuring the required flow rate/pressure combination (1 to 5) appears on the bottom left corner of the display. If a different setting is necessary, or in case of forgotten settings, refer to the Operational settings paragraph previously in this Section.

   NOTICE: *If operation with the hydraulic attachment is attempted without making any setting, a warning buzzer sounds and the message AUXILIARY SET UP REQUIRED is displayed.*



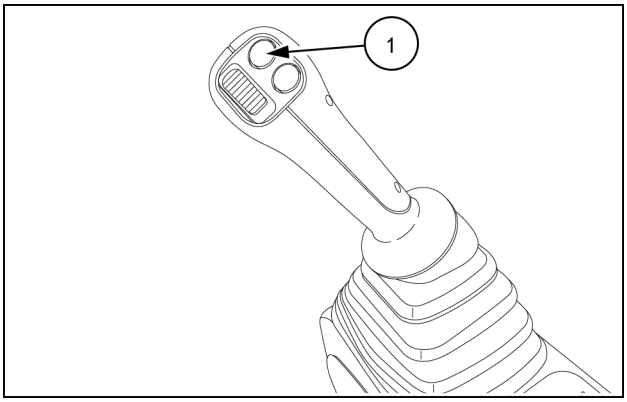
SMIL21CEX5028AA 40



SMIL21CEX5502AA 41

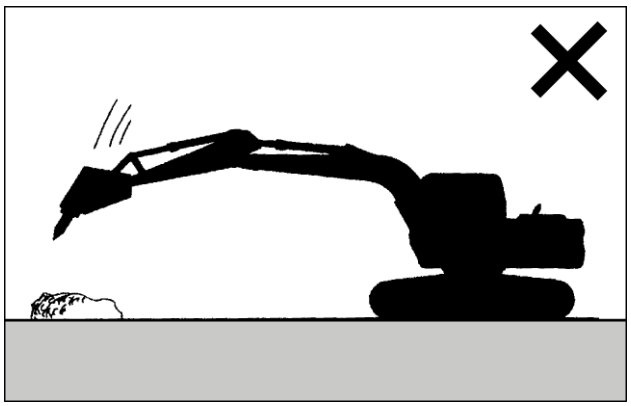
8. Select the SP work mode.
9. Set the gate lock lever in forward position.
10. Operate the controls of boom, arm and bucket in order to position the breaker right to the structure or to the object to be crushed.
11. Press and hold the ON/OFF button **(1)** to operate the hydraulic breaker with the continuous 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.*



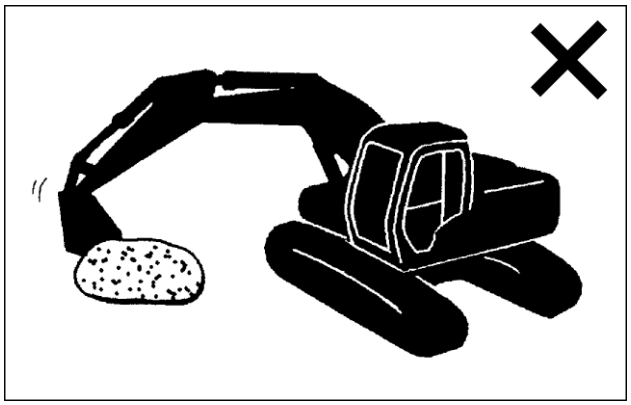
SMIL15CEXZ396AB 42

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.



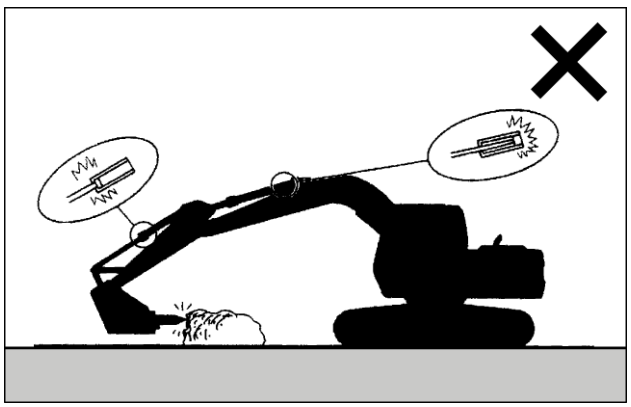
NH0195 43

Do not use the hydraulic breaker and/or swing function to push objects as damages to the attachment may result.



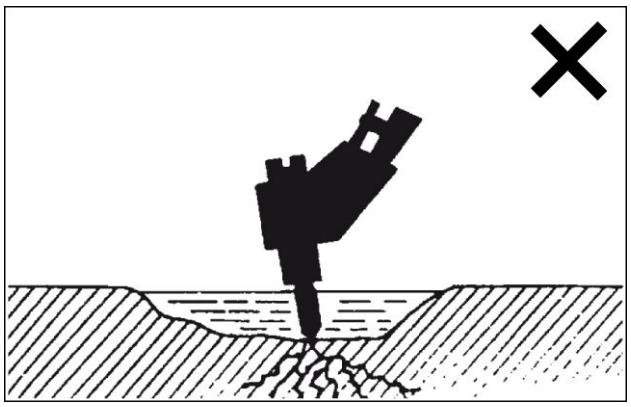
NH0196 44

Do not operate the breaker with the excavator cylinders fully extended or retracted to avoid attachment and/or cylinder damage.



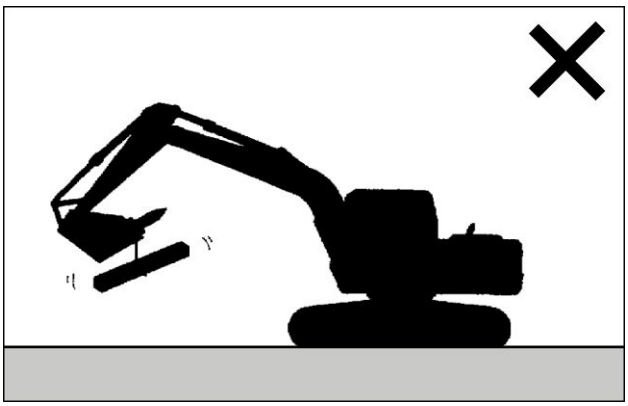
NH0197 45

Do not operate the hydraulic breaker in water. Doing so will cause rust and seal damage, resulting in damage to the hydraulic system components.



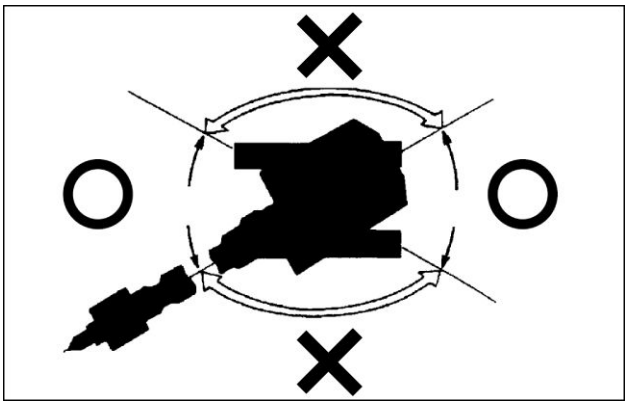
NH0199 46

Do not use the hydraulic breaker to move objects. The excavator might overturn and/or the hydraulic breaker may be damaged.



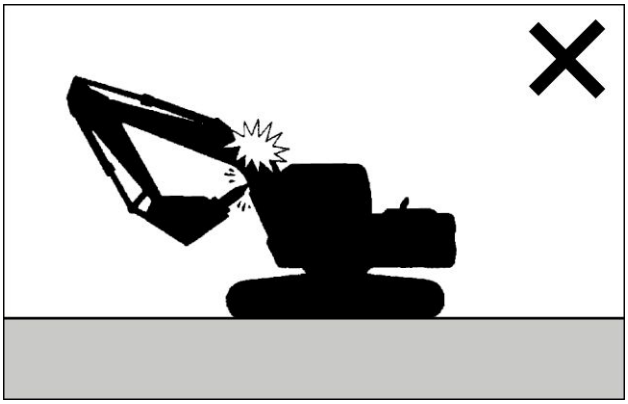
NH0200 47

Do not operate the breaker to the side of the machine. The machine may become unstable and undercarriage components life may be reduced.



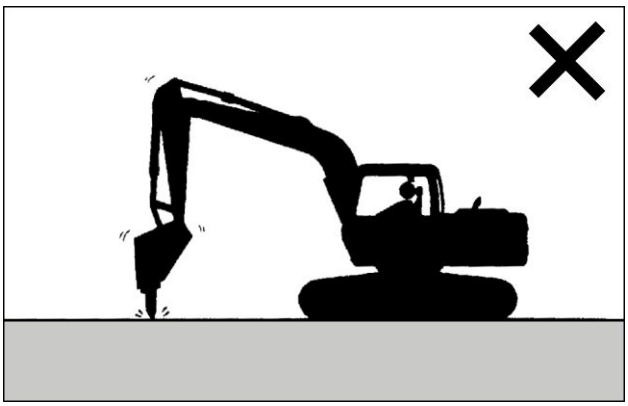
NH0201 48

Operate the excavator carefully to avoid hitting the boom with the hydraulic breaker.



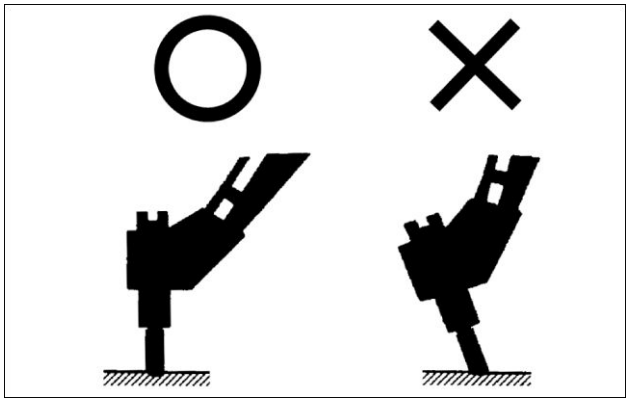
NH0202 49

Do not operate the breaker with the arm positioned vertically. Excessive vibration to the arm cylinder may cause oil leakage.



NH0203 50

Press the breaker so that the chisel point thrust is square (perpendicular) to the object to be broken.

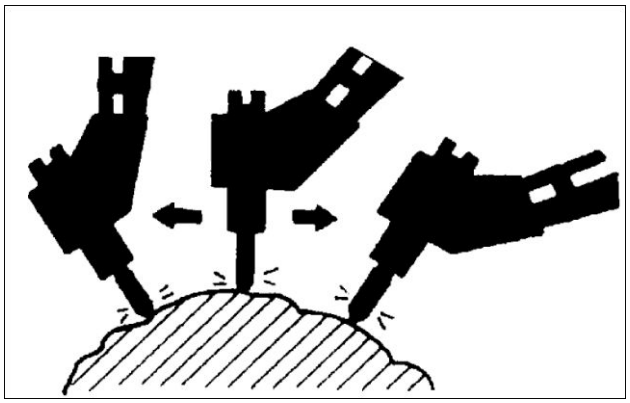


NH0204 51

Do not operate the hydraulic breaker continuously longer than **15 s**. Excessive chisel wear will result. If an object could not be broken within **15 s**, apply chisel to other locations, less than **15 s** for each location.

If breaker operation is done with ambient temperature above **35 °C**, make sure to take a stand-by time between breaker strikes in order to allow the circulation of the hydraulic fluid.

NOTE: *If the machine will be used extensively in breaker operation with ambient temperature above **35 °C** (**95 °F**), contact your CASE CONSTRUCTION dealer to install the specific set of outside doors with larger openings for air inlet.*



NH0205 52

CASE CONSTRUCTION hydraulic breakers

CASE CONSTRUCTION CB hydraulic breakers are designed to optimize the operating performance of the CASE CONSTRUCTION excavators in light duty general construction works, as for example residential construction or utilities maintenance, and in tougher works as infrastructure and primary and secondary site demolition.

CASE CONSTRUCTION defines application rules in order to match each breaker model with the most suitable configuration of the machine, and to refer breaker application to specific working conditions.

Direct fit application as function of the arm

CB BREAKER					
Model	Install Weight	Reference machine settings		Arm	
		Flow	Relief Pressure	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
CB240S	**1150 kg** (**2535 lb**)	**115 L/min** (**30 US gpm**)	**19 – 21 MPa** (**2756 – 3046 psi**)	●	●
CB290S	**1500 kg** (**3307 lb**)	**145 L/min** (**38 US gpm**)	**21 – 22 MPa** (**3046 – 3191 psi**)	○	○

○ Applicable
● Applicable with condition (only for light duty works)

NOTICE: *for site demolition, the machine must be equipped with triple track guards, and should be equipped with* ***2.40 m*** *(****94.49 in****) arm.*

NOTICE: *CASE CONSTRUCTION will not take into account any condition of application that is out of the ones defined in the table above.*

Operation with the hydraulic crusher

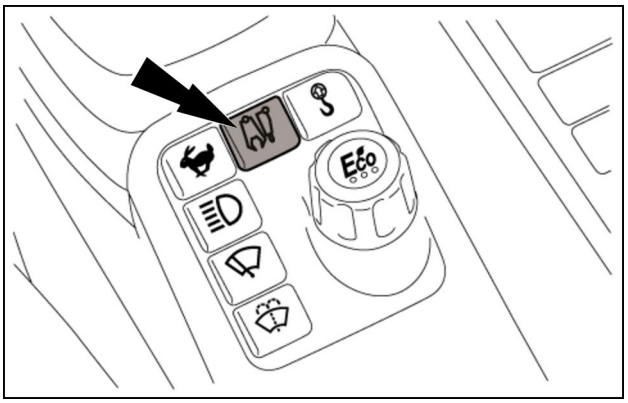
The hydraulic demolition crusher is a double-acting hydraulic attachment, and shall be connected to a high-flow hydraulic circuit.

Therefore, to operate with a hydraulic crusher the machine shall be equipped with the Multi-function auxiliary high-flow hydraulic circuit.

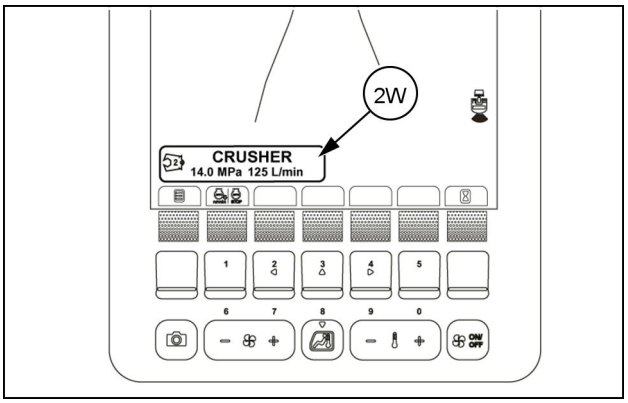
1. Make sure that the machine and the attachment to be installed are on flat and level ground.
2. Make sure to read and understand the installation procedure described in the Operator's Manual of the attachment.

   NOTICE: *The maximum working pressure of the auxiliary high-flow hydraulic circuit shall be set according to the specification of the crusher.*
3. Operate the controls of boom, arm and bucket in order to install the hydraulic crusher to the bucket linkage at the top of the arm.
4. Stop the engine. Release pressure inside the auxiliary high-flow hydraulic circuit.
5. Close the stop valves at the top of the arm. Install the connecting hoses between the attachment and the stop valves.
6. Open the stop valves and check the fixing clamps for looseness, and the tubes and hoses fittings for leakages.
7. Start the engine. Press the attachment selector button until the message **(2W)** featuring the required flow rate/pressure combination (1 to 5) appears on the bottom left corner of the display. If a different setting is necessary, or in case of forgotten settings, refer to the Operational settings paragraph previously in this Section.

   NOTICE: *If operation with the hydraulic attachment is attempted without making any setting, a warning buzzer sounds and the message AUXILIARY SET UP REQUIRED is displayed.*



SMIL21CEX5028AA 53

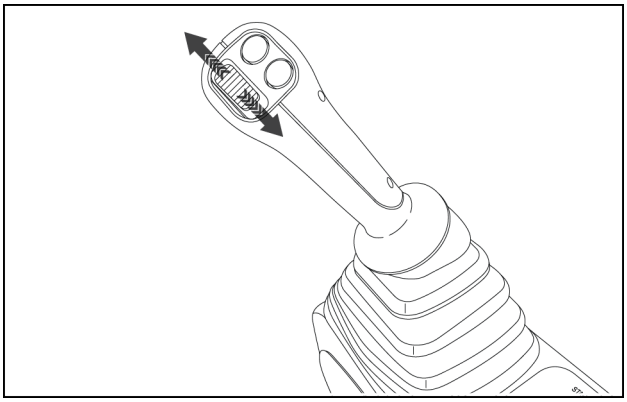


SMIL21CEX5500AA 54

8. Select the SP work mode.
9. Set the gate lock lever in forward position.
10. Make sure that the control pattern of the hydraulic crusher is as intended. Slide up and down the proportional switch located on the right-hand control lever, and confirm the control direction to open the crusher and the control direction to close the crusher.

    NOTICE: *if control directions for opening and closing are not as intended, check for an alternative set up of the connecting ports on the attachment.*

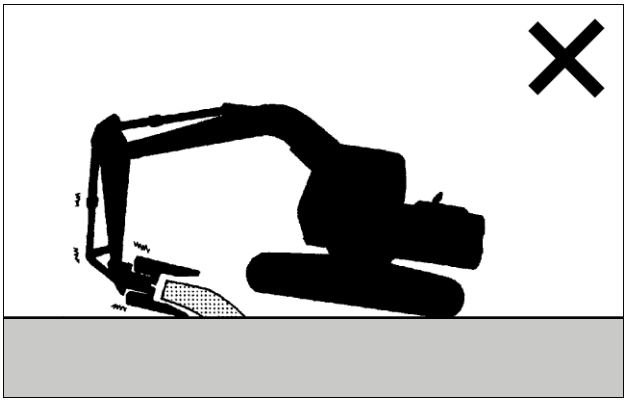
    NOTICE: *Always keep each connecting hose on the same side of the arm. Never cross-over the connecting hoses between the two sides of the arm.*
11. Operate the controls of boom, arm and bucket in order to position the crusher right to the structure or to the object to be crushed.
12. Operate the hydraulic crusher according to the control pattern defined at the step 10. The crushing force increases with the sliding of the proportional switch in the closing direction. Release the switch to hold the crusher jaws in position.



SMIL15CEXY965AB 55

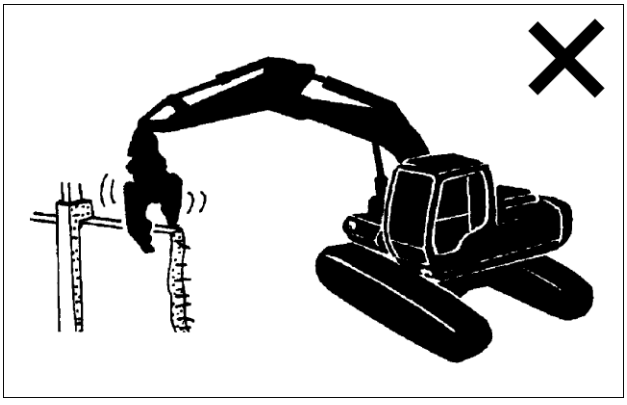
Do not allow the machine weight to be supported by prying with the crusher and cylinders fully extended or retracted. Doing so may damage the front attachment. In particular, avoid doing so with the crusher cylinder fully extended as the front attachment will be more easily damaged.

Do not use the crusher to haul or move crushed scraps.



NH0212A 56

Do not perform crushing on either side of the machine, always do so at front or rear, parallel with tracks. Otherwise, the machine may overturn.



NH0213A 57

When operating the crusher up high with the boom fully raised, be careful of falling objects.

NH0214 58

Operation with the tiltable ditch cleaning bucket

The tiltable ditch cleaning bucket is a double-acting hydraulic attachment, and should be connected to a low-flow hydraulic circuit.

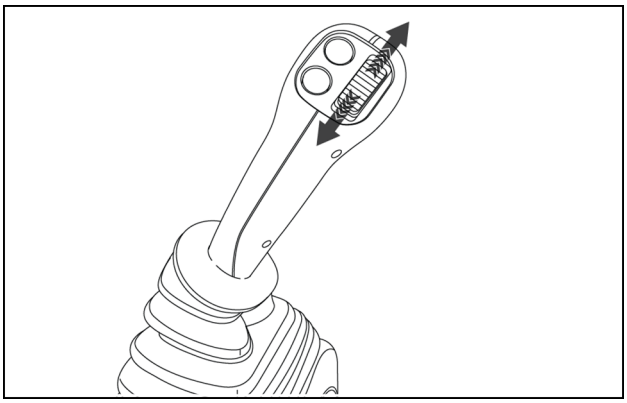
Therefore, to operate with a tiltable ditch cleaning bucket the machine should be equipped with the auxiliary low-flow hydraulic circuit.

1. Make sure that the machine and the attachment to be installed are on flat and level ground.
2. Make sure to read and understand the installation procedure described in the Operator's Manual of the attachment.
3. Operate the controls of boom, arm and bucket in order to install the tiltable bucket to the linkage at the top of the arm.
4. Stop the engine. Release pressure inside the auxiliary low-flow hydraulic circuit.
5. Close the stop valves at the top of the arm. Install the connecting hoses between the attachment and the stop valves.
6. Open the stop valves and check the fixing clamps for looseness, and the tubes and hoses fittings for leakages.
7. Start the engine and select the E work mode.
8. Set the gate lock lever in forward position.
9. Make sure that the control pattern of the tiltable bucket is as intended. Slide up and down the proportional switch located on the left-hand control lever, and confirm the control direction to tilt the bucket leftward and the control direction to tilt the bucket rightward.

   NOTICE: *if control directions for tilting are not as intended, check for an alternative set up of the connecting ports on the attachment.*

   NOTICE: *Always keep each connecting hose on the same side of the arm. Never cross-over the connecting hoses between the two sides of the arm.*
10. Set the tilt angle that is suitable for the intended application, as for example leveling, grading, or finishing. If a different tilt angle is needed, make sure to stop the machine operation, unload the bucket, and set the required angle. Then start operation again.

    NOTICE: *Never change the tilt angle under pressure, neither do any operation that requires a power tilting. Failing to comply will cause severe damages to the frames of the bucket, to the frames of the machine, and to the machine systems.*



SMIL15CEXY964AB 59

Direct fit application as function of the arm

Tiltable ditch cleaning buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.68 m³ (**0.89 yd³**)	**1800 mm** (**71 in**)	**770 kg** (**1698 lb**)	○	○
0.76 m³ (**0.99 yd³**)	**2000 mm** (**79 in**)	**810 kg** (**1786 lb**)	○	○
0.83 m³ (**1.09 yd³**)	**2200 mm** (**87 in**)	**880 kg** (**1940 lb**)	○	○
0.91 m³ (**1.19 yd³**)	**2400 mm** (**94 in**)	**920 kg** (**2028 lb**)	○	●
0.95 m³ (**1.24 yd³**)	**2500 mm** (**98 in**)	**950 kg** (**2094 lb**)	●	●

Heavy counterweight

Tiltable ditch cleaning buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.68 m³ (**0.89 yd³**)	**1800 mm** (**71 in**)	**770 kg** (**1698 lb**)	○	○
0.76 m³ (**0.99 yd³**)	**2000 mm** (**79 in**)	**810 kg** (**1786 lb**)	○	○
0.83 m³ (**1.09 yd³**)	**2200 mm** (**87 in**)	**880 kg** (**1940 lb**)	○	○
0.91 m³ (**1.19 yd³**)	**2400 mm** (**94 in**)	**920 kg** (**2028 lb**)	○	○
0.95 m³ (**1.24 yd³**)	**2500 mm** (**98 in**)	**950 kg** (**2094 lb**)	○	●

○ Density of material up to 2 t/m^3
● Density of material up to 1.6 t/m^3
▲ Density of material up to 1.4 t/m^3

NOTICE: *Before loading the machine onto a transport trailer, set the tiltable ditch cleaning bucket in straight position. If the bucket is left in tilted position, it may hit the tracks or the trailer bed, and can cause serious damages.*

Hydraulic quick coupling system

⚠ WARNING

Crushing hazard!
Never put your hands inside the quick coupler when the engine is running. Turn off the engine and wait for all movement to stop.
Failure to comply could result in death or serious injury.

W0252A

⚠ WARNING

Hazard to bystanders!
ALWAYS make sure the work area is clear of bystanders and domestic animals before starting this procedure. Know the full area of movement of the machine. Do not permit anyone to enter the area of movement during this procedure.
Failure to comply could result in death or serious injury.

W0245A

NOTICE: *The CASE CONSTRUCTION quick coupling system is supplied by the high pressure hydraulic system of the machine. Refer to Chapter 8 for the maximum working pressure of the hydraulic system. Make sure to use a quick coupler that is suitable for proper and safe operation with high pressure hydraulics. For information consult the CASE CONSTRUCTION dealer.*

NOTICE: *Make sure to read and understand the Operator's Manual of the hydraulic quick coupler for proper installation, usage and maintenance.*

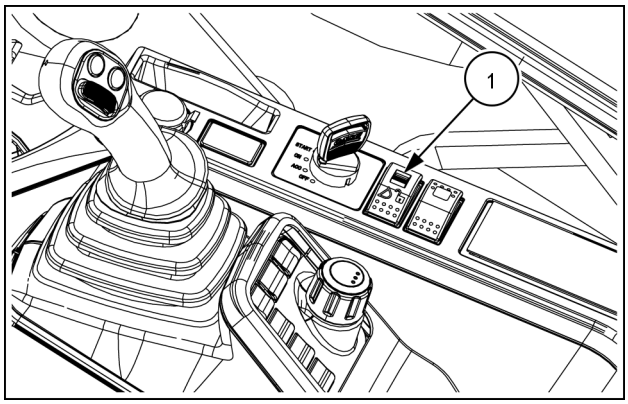
NOTICE: *The quick coupler extends the length of the arm. Make sure to check the operating range of the coupled attachment in order to avoid risk of hitting the cab or the machine frame.*

NOTICE: *Never operate with a quick coupled hydraulic breaker over a long period of time, in order to reduce the risk of premature wear, failures or breakage of the quick coupler. Never use the breaker as a lever, as the stress would be borne by the quick coupler cylinder.*

Attachment engagement

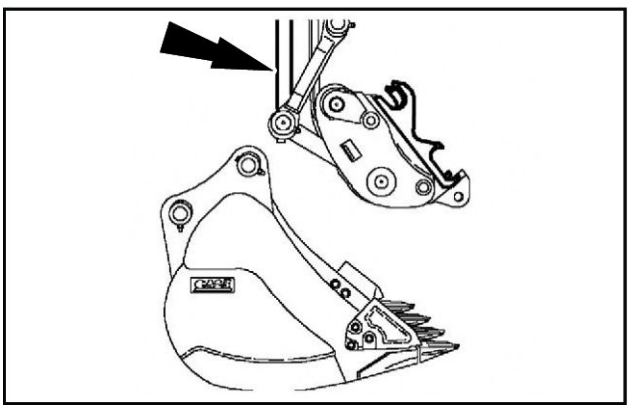
To perform the attachment engagement, CASE CONSTRUCTION recommends to set the engine speed throttle to level 8.

1. Make sure the attachment to be installed is laying safely on flat and level ground.
2. Slide the lock device and press the back side of the quick coupler switch **(1)** to set the unlocking status of the quick coupling system. The audible alarm device starts sounding.



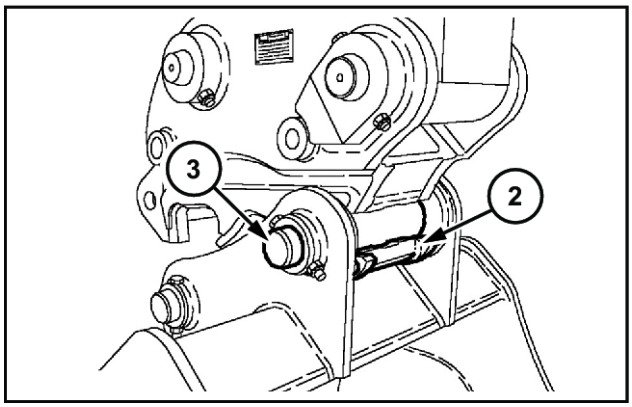
SMIL21CEX5000AA 1

3. Operate the arm and bucket controls so that the arm is practically vertical, sloping slightly towards the cab to release the safety device. Extend the bucket cylinder rod completely and maintain the hydraulic pressure for approximately **5 – 10 s** so that the latching hook retracts.



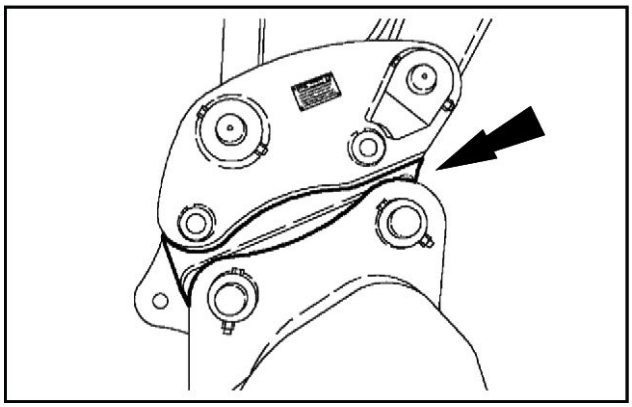
SMIL13CEX2697AB 2

4. Operate the arm and bucket controls so as to bring the quick coupler hook **(2)** around the attachment pin **(3)**.



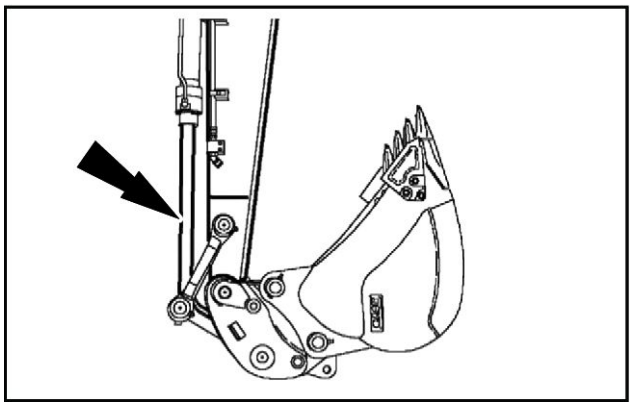
SMIL13CEX2698AB 3

5. Operate the bucket control lever so that the pin is completely engaged in the quick coupler hook.



SMIL13CEX2699AB 4

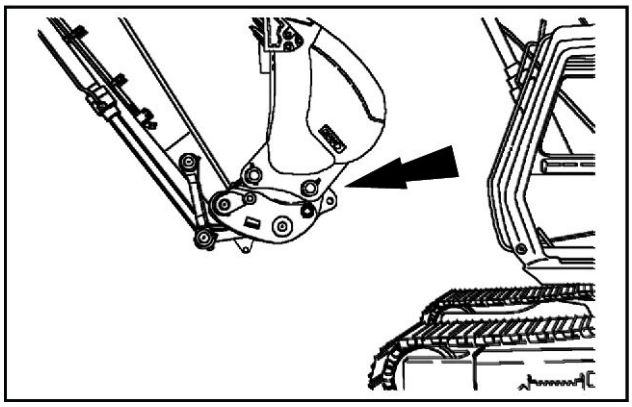
6. Operate the arm control to raise the arm and operate the bucket control to extend the bucket cylinder rod completely.



SMIL13CEX2700AB 5

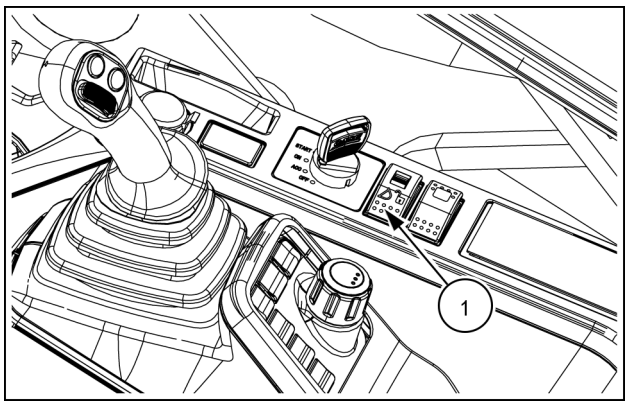
7. Raise the arm until the attachment pin is visible from the operator's seat.

NOTICE: *The quick coupler extends the length of the arm and with certain attachments there is the risk to hit the cab in some operating positions. With this kind of attachments, it may not be possible to raise the arm until the attachment pin is visible from the operator's seat.*



SMIL13CEX2701AB 6

8. 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.

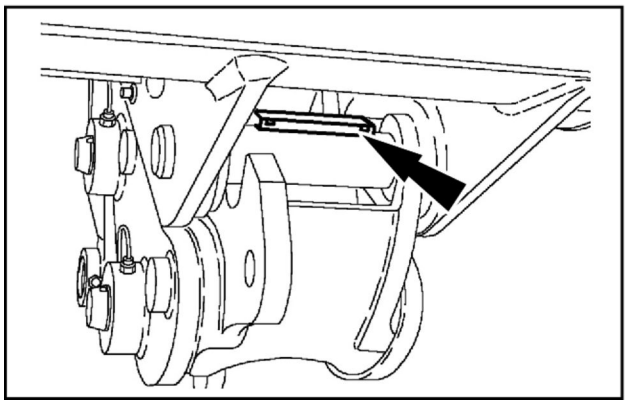


SMIL21CEX5000AA 7

9. Maintain the hydraulic pressure in the bucket cylinder for approximately **5 – 10 s** to allow the latching hook to close.
10. 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.*

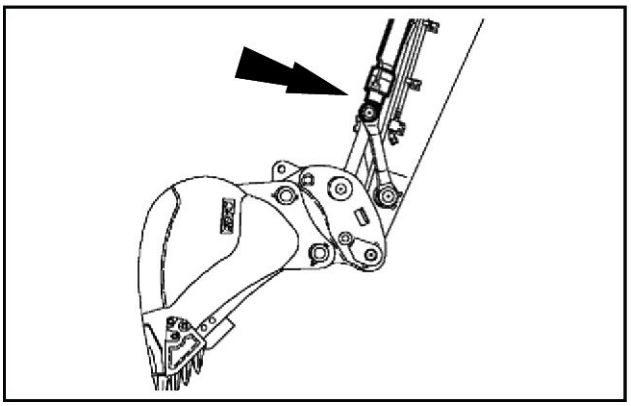


SMIL13CEX2702AB 8

11. Operate the bucket control to retract the cylinder rod and allow the safety device to engage.
12. 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.*

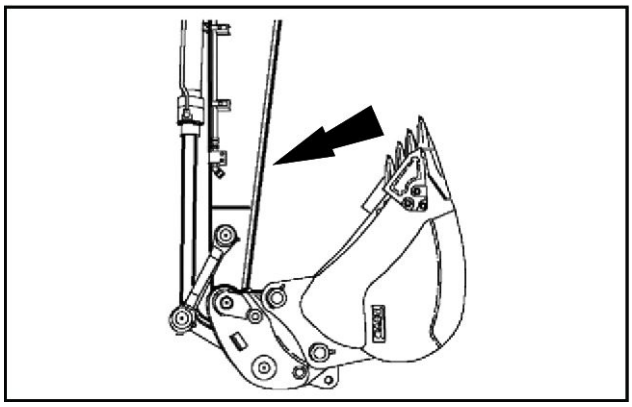


SMIL13CEX2703AB 9

Attachment disengagement

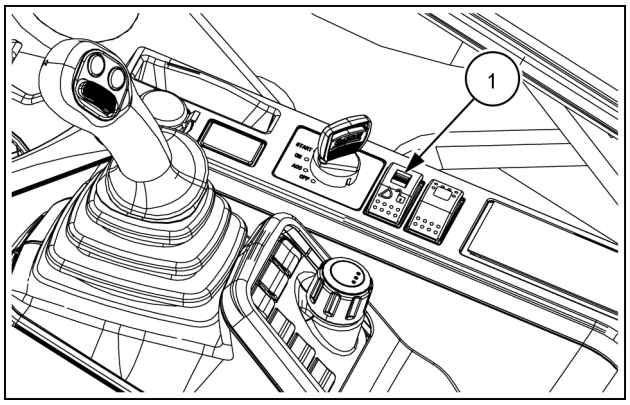
To perform the attachment disengagement, CASE CONSTRUCTION recommends to set the engine speed throttle to level 8.

1. Operate the arm and bucket controls so that the arm is practically vertical, sloping slightly towards the cab, to release the safety device.



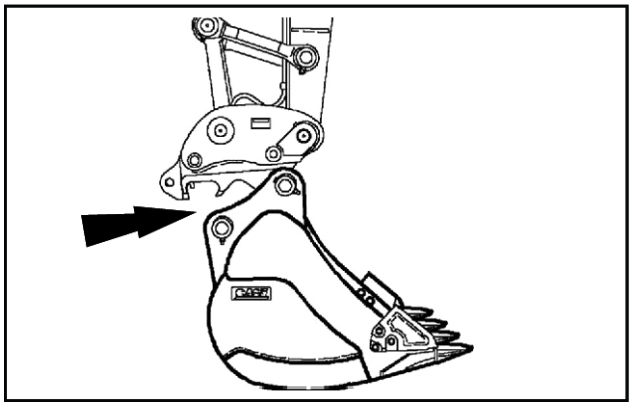
SMIL13CEX2704AB 10

2. Slide the lock device and press the back side of the quick coupler switch **(1)** to set the unlocking status of the quick coupling system. The audible alarm device starts sounding.
3. Extend the bucket cylinder rod completely and maintain the hydraulic pressure for approximately **5 – 10 s** so that the latching hook retracts.



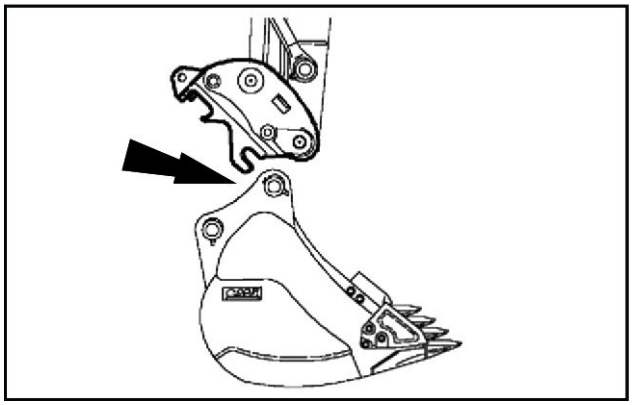
SMIL21CEX5000AA 11

4. Operate the bucket and arm controls to lay the attachment safely on flat, level ground.



SMIL13CEX2705AB 12

5. Operate the arm control to unhook the attachment.
6. 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.



SMIL13CEX2706AB 13

Quick coupler buckets

CASE CONSTRUCTION buckets can be readily adapted to match with the CASE CONSTRUCTION pin grabber coupler. Contact your CASE CONSTRUCTION dealer for adapting the CASE CONSTRUCTION buckets intended for usage.

CASE CONSTRUCTION pin grabber coupler may be used also with buckets other than CASE CONSTRUCTION buckets, provided that the bucket hangers match with the reference dimensions of the CASE CONSTRUCTION pin grabber coupler. Contact your CASE CONSTRUCTION dealer for checking the buckets intended for usage.

NOTICE: *A bucket mounted on the quick coupler has a longer overall teeth radius. Always check the operating range of the machine before start working. Avoid abrupt operation in order to keep proper clearance between the bucket and the cab or boom or other significant parts of the machine.*

NOTICE: *A bucket mounted on the quick coupler has a longer overall teeth radius. Therefore, the bucket cannot be fully curled after the arm has been fully retracted, and the overall height of the machine in the transport position is increased. The recommended operating practice is to remove the bucket from the coupler before any transport operation in order not to increase the overall height of the machine.*

NOTICE: *A bucket mounted on the quick coupler has a longer overall teeth radius. Therefore, digging and breakout performance are lower than if the bucket is fit directly on the excavator arm. Direct fit of a digging bucket should be thus preferred for productive applications that require top digging and breakout action.*

Quick coupler buckets application as function of the arm

Heavy Duty buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.45 m³ (**0.59 yd³**)	**600 mm** (**24 in**)	**560 kg** (**1235 lb**)	○	○
0.60 m³ (**0.78 yd³**)	**750 mm** (**30 in**)	**640 kg** (**1411 lb**)	○	○
0.76 m³ (**0.99 yd³**)	**900 mm** (**35 in**)	**730 kg** (**1609 lb**)	○	○
0.85 m³ (**1.11 yd³**)	**1000 mm** (**39 in**)	**760 kg** (**1676 lb**)	○	○
0.92 m³ (**1.20 yd³**)	**1050 mm** (**41 in**)	**800 kg** (**1764 lb**)	○	●
0.96 m³ (**1.26 yd³**)	**1100 mm** (**43 in**)	**830 kg** (**1830 lb**)	●	●
1.08 m³ (**1.41 yd³**)	**1200 mm** (**47 in**)	**880 kg** (**1940 lb**)	●	▲
1.24 m³ (**1.62 yd³**)	**1350 mm** (**53 in**)	**970 kg** (**2138 lb**)	▲	■
1.40 m³ (**1.83 yd³**)	**1500 mm** (**59 in**)	**1040 kg** (**2293 lb**)	■	x

Rock buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.44 m³ (**0.58 yd³**)	**600 mm** (**24 in**)	**710 kg** (**1565 lb**)	○	○
0.59 m³ (**0.77 yd³**)	**750 mm** (**30 in**)	**800 kg** (**1764 lb**)	○	○
0.75 m³ (**0.98 yd³**)	**900 mm** (**35 in**)	**880 kg** (**1940 lb**)	○	○
0.85 m³ (**1.11 yd³**)	**1000 mm** (**39 in**)	**940 kg** (**2072 lb**)	○	●
0.91 m³ (**1.19 yd³**)	**1050 mm** (**41 in**)	**980 kg** (**2161 lb**)	●	●
0.96 m³ (**1.26 yd³**)	**1100 mm** (**43 in**)	**1010 kg** (**2227 lb**)	●	▲
1.07 m³ (**1.40 yd³**)	**1200 mm** (**47 in**)	**1060 kg** (**2337 lb**)	▲	■
1.23 m³ (**1.61 yd³**)	**1350 mm** (**53 in**)	**1150 kg** (**2535 lb**)	■	x

Grading buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass (*)	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.97 m³ (**1.27 yd³**)	**1800 mm** (**71 in**)	**680 kg** (**1499 lb**)	○	●
1.17 m³ (**1.53 yd³**)	**2100 mm** (**83 in**)	**740 kg** (**1631 lb**)	●	▲
1.35 m³ (**1.77 yd³**)	**2400 mm** (**94 in**)	**830 kg** (**1830 lb**)	▲	■

Ditch cleaning buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass (*)	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.86 m³ (**1.12 yd³**)	**1830 mm** (**72 in**)	**650 kg** (**1433 lb**)	○	○
0.94 m³ (**1.23 yd³**)	**2130 mm** (**84 in**)	**710 kg** (**1565 lb**)	○	●

(*) with bolt-on edge

○ Density of material up to 2 t/m^3
● Density of material up to 1.6 t/m^3
▲ Density of material up to 1.4 t/m^3
■ Density of material up to 1.2 t/m^3
x Not applicable

Quick coupler buckets application as function of the arm (Heavy counterweight)

Heavy Duty buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.45 m³ (**0.59 yd³**)	**600 mm** (**24 in**)	**560 kg** (**1235 lb**)	○	○
0.60 m³ (**0.78 yd³**)	**750 mm** (**30 in**)	**640 kg** (**1411 lb**)	○	○
0.76 m³ (**0.99 yd³**)	**900 mm** (**35 in**)	**730 kg** (**1609 lb**)	○	○
0.85 m³ (**1.11 yd³**)	**1000 mm** (**39 in**)	**760 kg** (**1676 lb**)	○	○
0.92 m³ (**1.20 yd³**)	**1050 mm** (**41 in**)	**800 kg** (**1764 lb**)	○	○
0.96 m³ (**1.26 yd³**)	**1100 mm** (**43 in**)	**830 kg** (**1830 lb**)	○	○
1.08 m³ (**1.41 yd³**)	**1200 mm** (**47 in**)	**880 kg** (**1940 lb**)	●	●
1.24 m³ (**1.62 yd³**)	**1350 mm** (**53 in**)	**970 kg** (**2138 lb**)	●	▲
1.40 m³ (**1.83 yd³**)	**1500 mm** (**59 in**)	**1040 kg** (**2293 lb**)	▲	■

Rock buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.44 m³ (**0.58 yd³**)	**600 mm** (**24 in**)	**710 kg** (**1565 lb**)	○	○
0.59 m³ (**0.77 yd³**)	**750 mm** (**30 in**)	**800 kg** (**1764 lb**)	○	○
0.75 m³ (**0.98 yd³**)	**900 mm** (**35 in**)	**880 kg** (**1940 lb**)	○	○
0.85 m³ (**1.11 yd³**)	**1000 mm** (**39 in**)	**940 kg** (**2072 lb**)	○	○
0.91 m³ (**1.19 yd³**)	**1050 mm** (**41 in**)	**980 kg** (**2161 lb**)	○	●
0.96 m³ (**1.26 yd³**)	**1100 mm** (**43 in**)	**1010 kg** (**2227 lb**)	○	●
1.07 m³ (**1.40 yd³**)	**1200 mm** (**47 in**)	**1060 kg** (**2337 lb**)	●	▲
1.23 m³ (**1.61 yd³**)	**1350 mm** (**53 in**)	**1150 kg** (**2535 lb**)	▲	■

Grading buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass (*)	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.97 m³ (**1.27 yd³**)	**1800 mm** (**71 in**)	**680 kg** (**1499 lb**)	○	○
1.17 m³ (**1.53 yd³**)	**2100 mm** (**83 in**)	**740 kg** (**1631 lb**)	●	●
1.35 m³ (**1.77 yd³**)	**2400 mm** (**94 in**)	**830 kg** (**1830 lb**)	●	▲

Ditch cleaning buckets			Arm	
Capacity **ISO 7451** (Heaped)	Width	Mass (*)	**2.40 m** (**94.49 in**)	**2.94 m** (**115.75 in**)
0.86 m³ (**1.12 yd³**)	**1830 mm** (**72 in**)	**650 kg** (**1433 lb**)	○	○
0.94 m³ (**1.23 yd³**)	**2130 mm** (**84 in**)	**710 kg** (**1565 lb**)	○	○

(*) with bolt-on edge

○ Density of material up to 2 t/m^3
● Density of material up to 1.6 t/m^3
▲ Density of material up to 1.4 t/m^3
■ Density of material up to 1.2 t/m^3

Loads handling

⚠ WARNING

Crushing hazard!
During load handling operations, it is very important to adhere strictly to the instructions given in this manual and local legislation.
Failure to comply could result in death or serious injury.

W0257A

⚠ WARNING

Improper operation or service of this machine can result in an accident.
When lifting a load the machine must be equipped with:
- safety valves,
- an overload indicator,
- a load fixing point,
- a load handling chart corresponding to the type of machine and to its attachment.
Failure to comply could result in death or serious injury.

W1168A

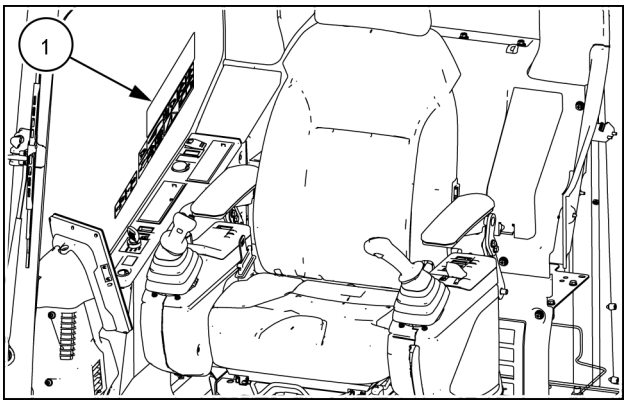
NOTICE: *the machine has been specifically designed to perform digging/loading works. To handle suspended loads the machine shall be equipped with the appropriate optional provision including safety valves, load handling eye, rated lift capacity chart and overload warning alarm. Make sure to handle suspended loads following strictly all current Regulations regarding this application, as well as the rules described in the SAFETY INFORMATION chapter.*

NOTICE: *Make provision for lifting devices that comply with current Regulations for lifting applications. Make sure that the lifting devices (hooks, chains etc.) are in perfect conditions without any sign of excessive wear. Make sure to use selflocking hooks in order to avoid unintended opening during lift operation. The lifting devices can be used exclusively for the lifting of parts not anchored to the ground. Never use them for towing operations, uprooting or tearing apart.*

NOTICE: *a suspended load can swing freely, and it can thus hit persons or the cab of the machine. Make sure that all bystanders are moved away from the field of action of the machine, and make sure to handle the load slowly. If the load starts to swing during the handling, lower it slowly to the ground and sling it in a way that avoid unintended swinging as much as possible.*

1. Make sure to know the mass of the object to be handled and compare it with the data listed in the rated lift capacity chart **(1)** located in the cab. Do not lift loads exceeding the maximum values prescribed by the chart.

NOTICE: *The weight of all lifting accessories and the weight of all other working attachment such as buckets and couplers must be deducted from the maximum lifting values prescribed by the chart.*



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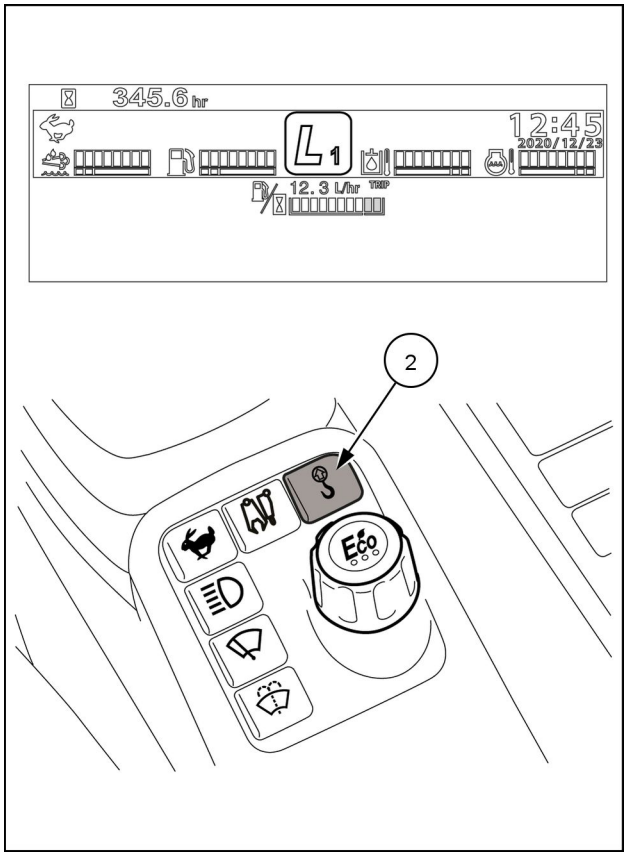
2. Press the button **(2)** to activate the L work mode. The L work mode activates the overload warning alarm to avoid lifting of excessive loads. If an overload condition is detected during the handling of the load, the message OVER LOAD appears on the top of the display and the overload warning alarm sounds.

NOTICE: *if an overload condition is detected during the handling of the load, place the load onto the ground and check the load conditions making reference to the rated lift capacity chart.*

3. Secure the load with the load handling eye **(3)** located on the bucket linkage rod, using slinging devices and chains adequate for the load to be lifted. In order to limit the swinging of the load, avoid slinging it with cables and/or chains too long.
4. Set the engine speed throttle to the desired level (from 1 to 6).
5. Extend the bucket cylinder to mid stroke.
6. Check the surrounding working area and make sure that the path that may be travelled with the load is free from obstacles.
7. Lift slowly the load, avoiding sharp movements which could cause swinging of the load. Keep the load near the machine, to improve the stability and operate, preferably, along its longitudinal axis, rather than crossways. Lift the load from the ground the minimum height required.
8. Position and place the load where desired, making sure that it is resting on a solid base appropriate for its mass.
9. Remove the chains.



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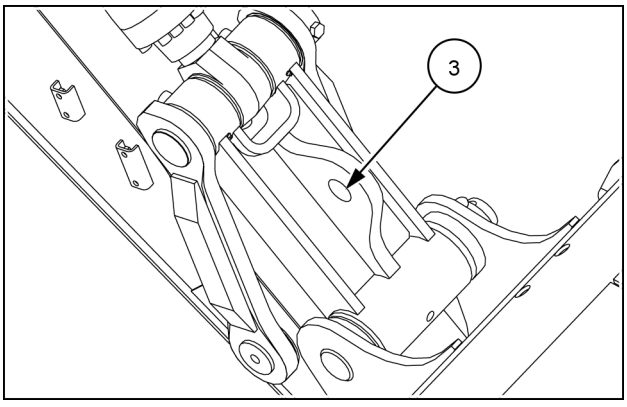


SMIL21CEX1362AA 3

Rated lift capacity chart

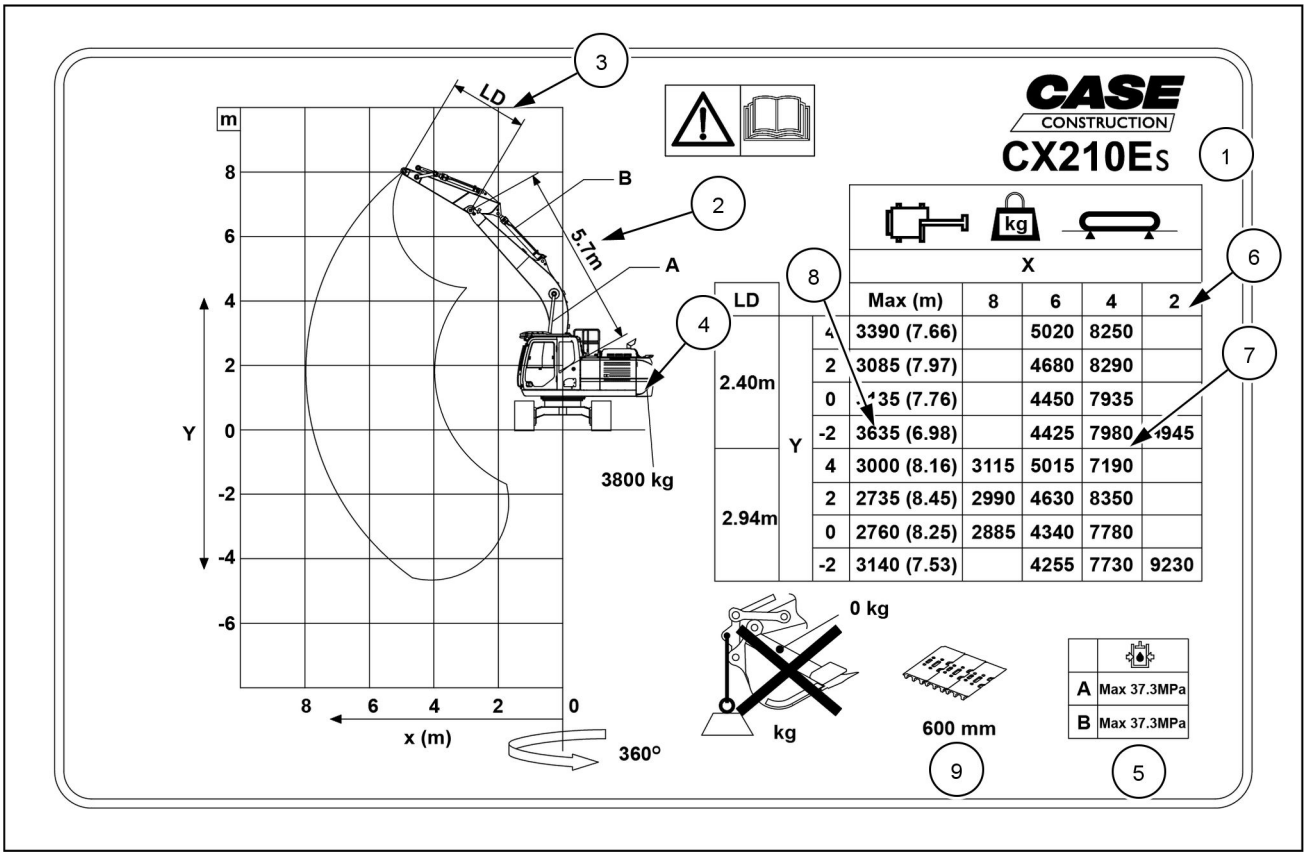
The chart indicates the rated lift capacity values that shall be considered at different distances from the swing axis.

For each distance from the swing axis **(X)**, a rated lift capacity value is indicated for a specific height **(Y)**.

The rated lift capacity is defined according to **ISO 10567** as the smaller value of either the rated tipping load (**75%** of the tipping load) or the rated hydraulic lift capacity (**87%** of the hydraulic lift capacity).

The values given in the rated lift capacity chart (distances and load values) have been established under the following working conditions:

- Machine on a compact, flat and level ground.
- No attachment installed.
- Upper structure in a transverse position of the travel direction.
- Stabilization on both tracks.
- With retracted bucket cylinder.



PTIL24CEX0093FB 4

1. Model identification.
2. Boom length (m).
3. LD: arm length (m).
4. Counterweight mass (kg).
5. Maximum hydraulic working pressure of the boom cylinder **(A)** and the arm cylinder **(B)** (MPa).
6. Distance of the load from the swing axis (m).
7. Rated lift capacity values (kg).
8. Rated lift capacity values (kg) at maximum reach.
9. Track shoe width (mm).

Safety valves

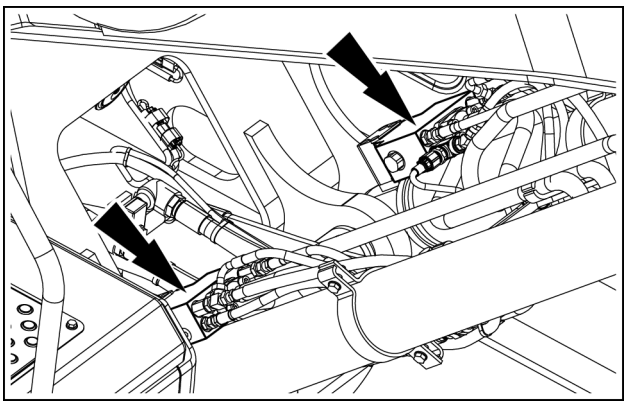
The safety valves are intended to prevent the front equipment from dropping down in the event of a breakage or burst of a hose in the hydraulic lines of boom and arm. The safety valves keep the front equipment in the position at the time of breakage, and thus allow the operator to slowly lower the attachment to the ground using the left and right control levers.

Moreover, the safety valves allow to keep the front equipment in the selected operating position reducing the leakages that occur in the neutral position of the boom spool and the arm spool in the main control valve.

NOTICE: *prior to starting any handling of suspended loads check that the valves do not show clear evidence of damages or abnormal noises. In the event abnormal conditions are found, contact the CASE CONSTRUCTION. dealer.*

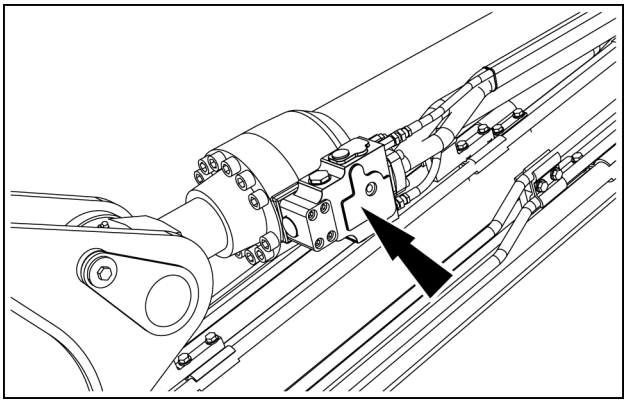
NOTICE: *the pressure setting of the safety valves must be checked every 6 months. Consult the CASE CONSTRUCTION dealer.*

On boom cylinders



SMIL21CEX5011AA 5

On arm cylinder



SMIL21CEX4372AA 6

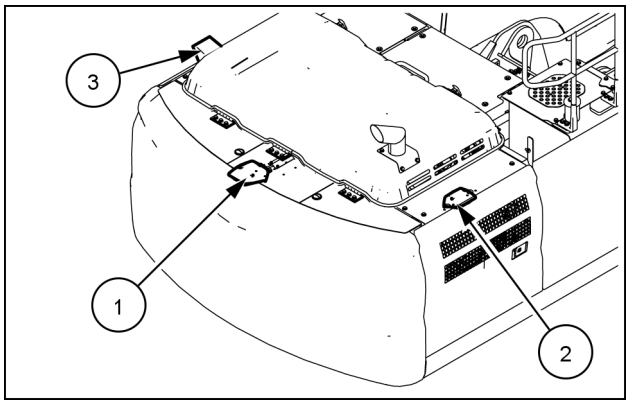
Field view monitor

The CASE CONSTRUCTION Field View Monitor (FVM) is a system that ensure proper visibility during operation by displaying a comprehensive visualization of the area around the machine.

The comprehensive visualization is based on the combination of the views of three external cameras: a rear camera **(1)** installed on the counterweight, a right-side camera **(2)** installed above the right-hand door, a left-side camera **(3)** installed above the rear left-hand door.

NOTICE: *Never operate the machine while only looking at the images on the display. Make sure to check the area around the machine by the direct view or through the mirrors.*

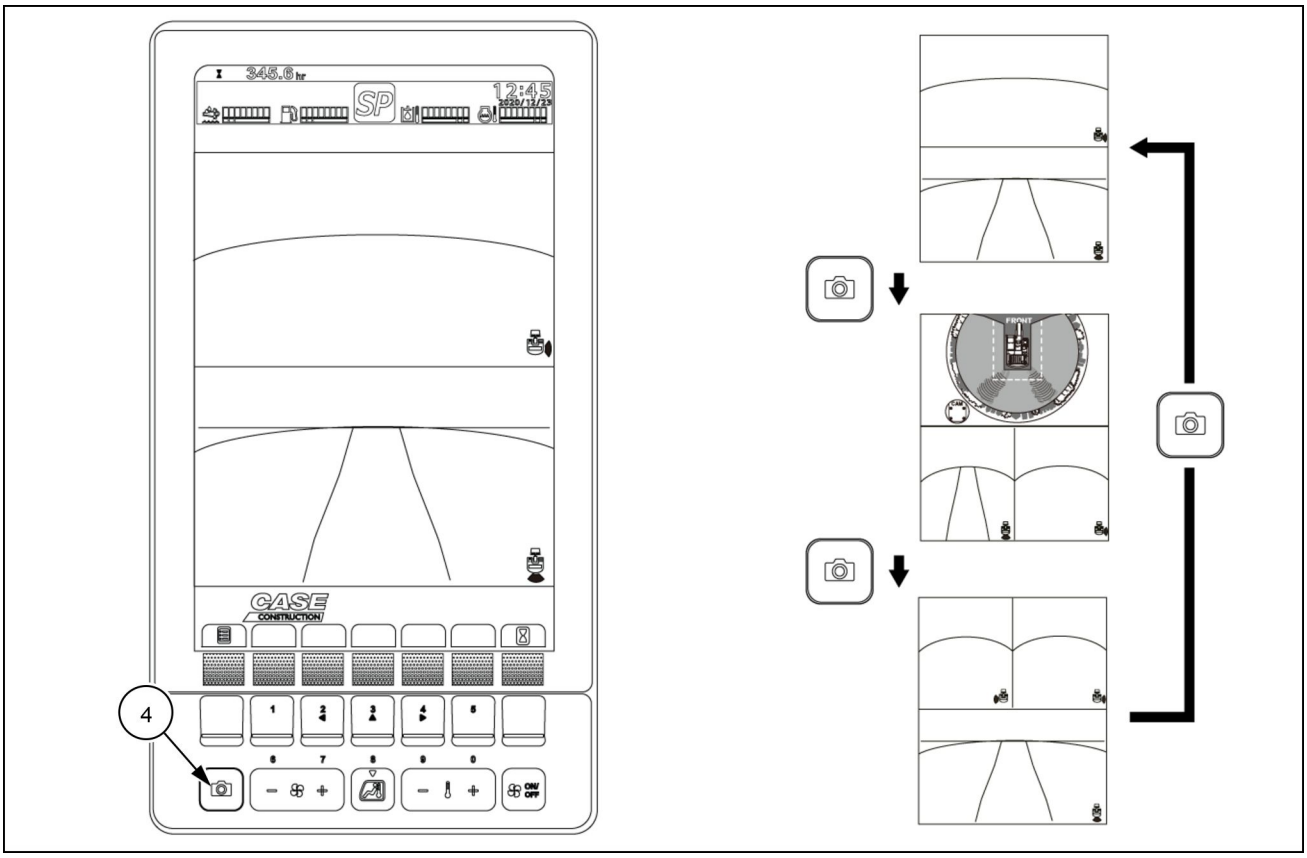
NOTICE: *If any mud, raindrops, snow, etc. are adhered to the camera lens, the images on the display are deteriorated. Wipe away dirt with a wet and soft cloth, and then wipe it with a dry and soft cloth. Make sure not to scratch the cameras.*



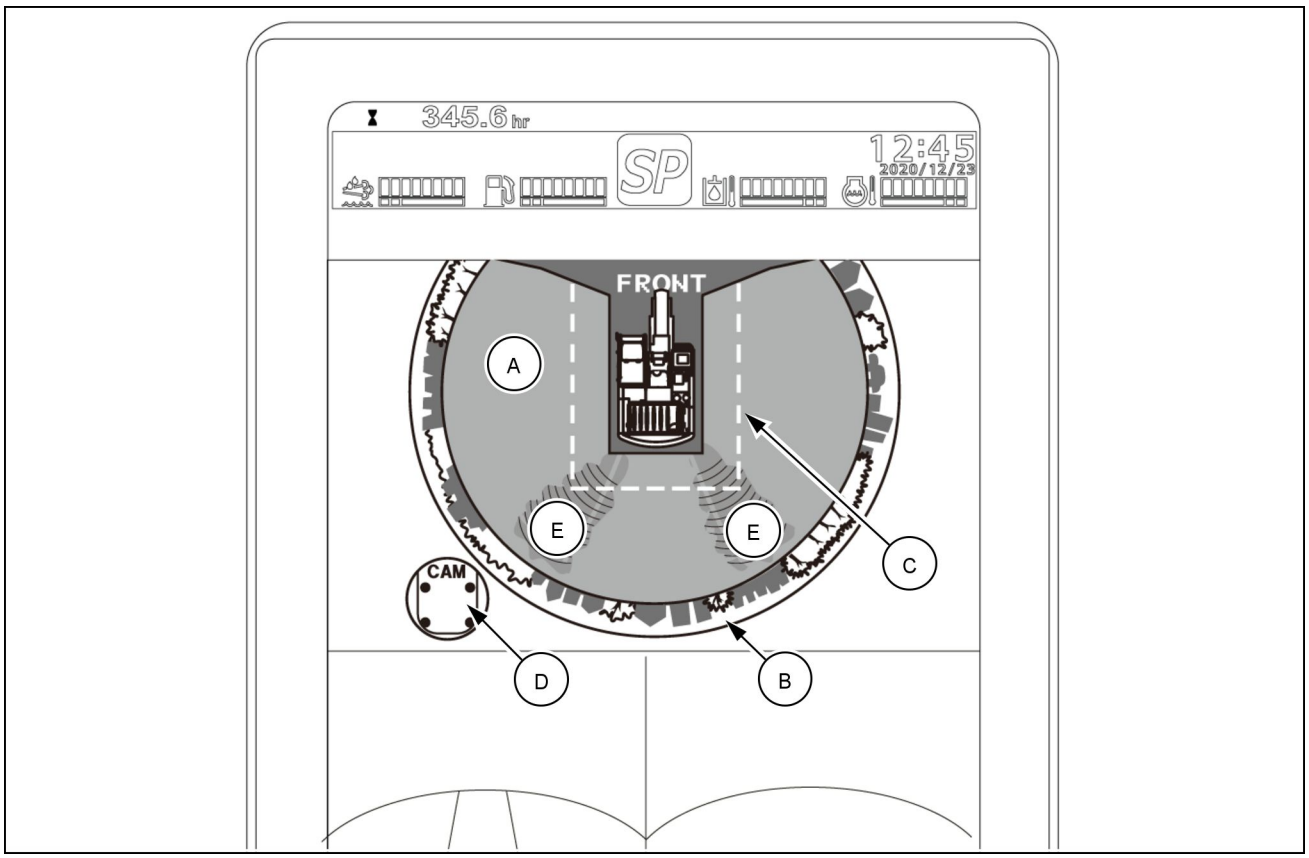
SMIL21CEX4358AA 1

FVM mode of the display

The FVM mode of the display is alternative to the normal operating mode. Press the camera view selector button **(4)** on the instrument cluster to select the FVM mode. The operating mode of the display toggles every time the button is pressed.



SMIL21CEX5030FA 2



SMIL21CEX5031FA 3

A. Around view area (light gray background)
B. Panoramic view strip
C. Machine Periphery Guideline
D. Camera position monitor

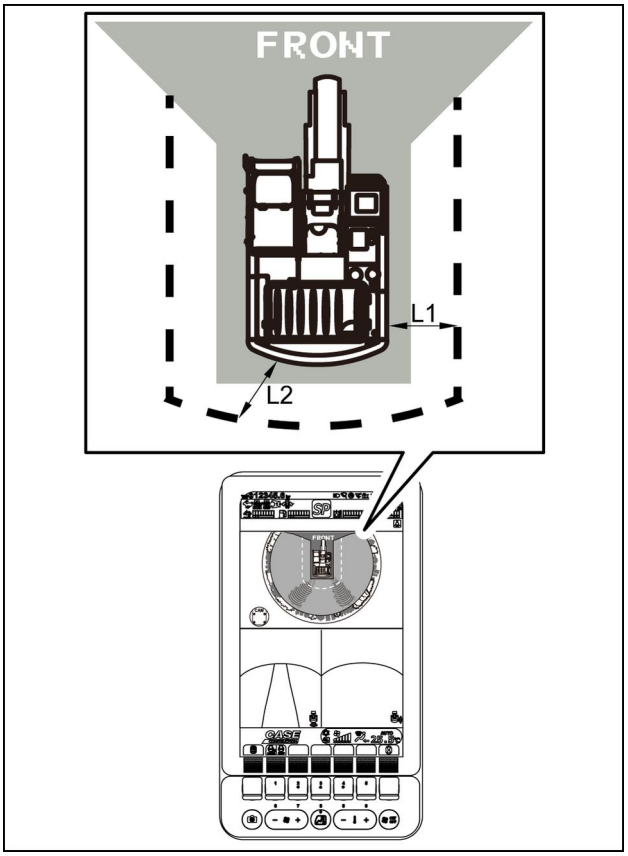
NOTE: *The zones* ***(E)*** *where the view of the rear camera is combined with the views of the side cameras are affected by a slight distortion of the image due to the matching process of the single views.*

A guideline is displayed on the around view area to set a reference for the periphery of the machine.

The distance from the side of the upperframe up to the guideline **(L1)** is **2.0 m** (**78.7 in**).

The distance from the counterweight up to the guideline **(L2)** is **2.0 m** (**78.7 in**).

NOTICE: *The FVM system does not ensure visibility on the closest area around the machine. Approximately* ***30 cm*** *(**11.8 in**) of the machine periphery is not covered by the cameras (dark grey background). Make sure to check the closest area around the machine by the direct view or through the mirrors.*



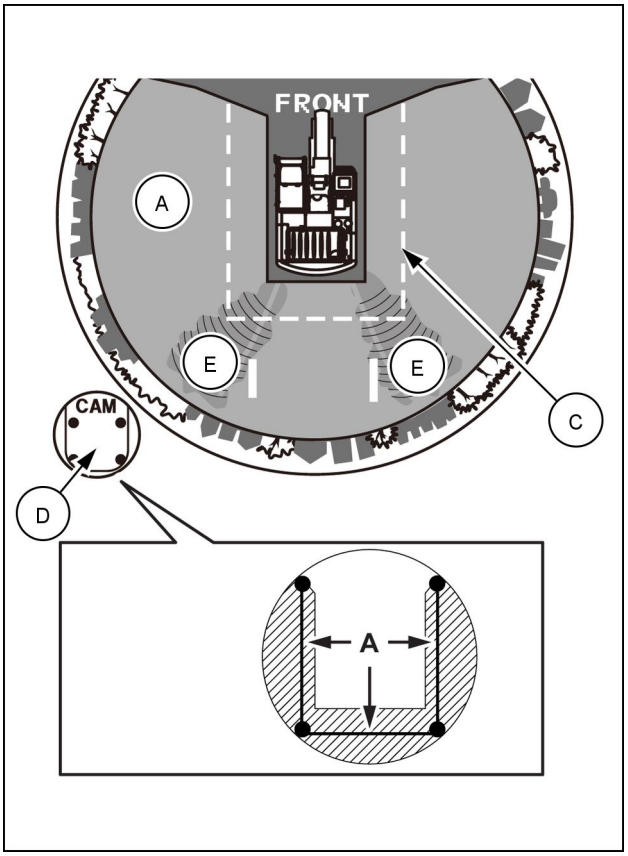
SMIL21CEX4320BA 4

The camera position monitor allows to check if the cameras are properly fixed and oriented to ensure the comprehensive visualization of the area around the machine.

If the lines **(A)** are projected over the hatched area, the cameras are properly fixed and oriented.

If any of the lines **(A)** is not projected over the hatched area, the cameras are not properly fixed and oriented. Stop machine operation, and request the CASE CONSTRUCTION dealer to adjust the cameras.

NOTICE: *Never operate the machine if the cameras are not properly fixed and oriented. Operating in such condition may lead to serious injuries to the bystanders.*



SMIL21CEX4318BA 5

Front Guard Protective System

The Front Guard Protective Structure (FGPS) must be installed if the machine is operated in conditions where there is a risk of projection of rocks or debris towards the front of the cab, or a risk of collision of heavy objects with the front of the cab.

One type of FGPS is available: FGPS compliant to Level 2 as defined by ISO 10262.

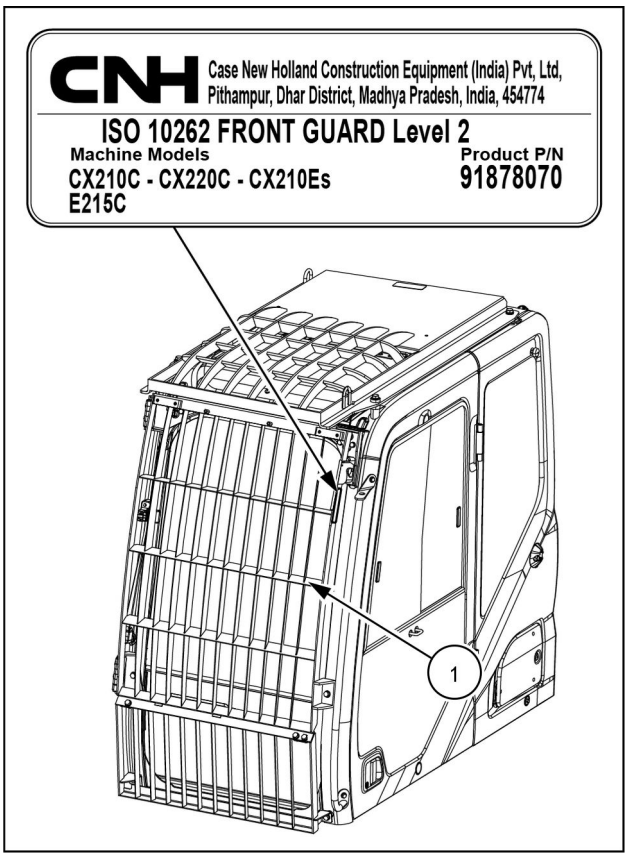
Level 2 FGPS **(1)** is intended for protection from heavy stones, rock or concrete blasts, steel scrap, logs and other heavy objects encountered in applications such as quarry, mining, primary and secondary demolition, scrap loading, log stacking.

The protective structures, the fitting supports and fastening elements on the machine are all parts of an integrated protective system.

Never make modifications, or drill holes, or weld parts on protective structures. Doing so will result in death or serious injury.

Never attach any device to the protective structures for pulling purposes. Doing so will lead to serious damages to the protective structures.

After a fire, a collision, or a tip-over, or in case of corrosion, the cab protective structures shall be carefully checked for damages by specialised and qualified personnel. Moreover, all damaged parts must be replaced with genuine spare parts, in order to return the protective system to its original condition. Make sure to match the part number of each protective structure. Immediately call the CASE CONSTRUCTION dealer for inspection of the conditions of the cab's protective structures, or to get parts or entire structures replaced.



PTIL24CEX0097BB 1

10 - FORMS AND DECLARATIONS

EC Declaration of Conformity

An original of this EC Declaration of Conformity is supplied with each machine and must be kept carefully by the owner.

NOTE: *The official documents supplied with the machine must be kept by the owner so as to be able to present them to any inspecting authority which may request them.*

On the following page is provided copy of the EC Declaration of Conformity (EC Declaration of Conformity). The EC Declaration of Conformity is the manufacturer's declaration about equipment compliance to relevant EU provisions. Please keep the original document in a safe place. Local authorities may require you to show this document in order to assure compliance of your equipment.

Translation of this declaration in your own country language is provided on the front page and the reverse page of the original document.

The EC Declaration of Conformity contains the following information:

1. Manufacturer
2. Commercial name and model
3. Denomination
4. Type (Specify any variant/version)
5. Planning key
6. Serial number
7. 2006/42/EC Machinery Directive. European harmonized standards according to which conformity is declared
8. Name and address of the person authorised to compile the technical file
9. 2014/30/EU EMC Directive (if applicable). European harmonized standards according to which conformity is declared
10. 2000/14/EC Outdoor Noise Directive (if applicable). Category
11. Conformity assessment procedure followed
12. Name and address of the Notified Body
13. Measured sound power level LWA
14. Guaranteed sound power level LWA
15. Engine power (as defined by ISO 14396)
16. Holder of the technical documentation
17. Place of the declaration
18. Date of the declaration
19. Signature of the person empowered to draw up the EC Declaration of Conformity
20. Name of the person empowered to draw up the EC Declaration of Conformity
21. Position of the person empowered to draw up the EC Declaration of Conformity

FACSIMILE

BG
ЕО/ЕС Декларация за съответствие

Ние, [1]

декларираме под своя собствена отговорност, че изделието:

Търговско наименование и модел: [2]
Обозначение: [3]
Тип (посочете вариант/версия): [4]
Вътрешнопроизводствен код: [5]
Сериен номер: [6]

до който се отнася тази декларация, отговаря на всички съответни разпоредби на следните европейски директиви съгласно поправките и предписанията, изпълняващи ги в рамките на националните закони:

№ 2006/42/ЕО директива за машини
Европейски хармонизирани стандарти, съгласно които се декларира съответствие: [7]
Име и адрес на лицето, упълномощено да състави техническото досие [8]

№ 2014/30/ЕС директива за електромагнитна съвместимост (ако е приложимо)
Европейски хармонизирани стандарти, съгласно които се декларира съответствие: [9]

№ 2000/14/ЕО директива за шума на открито (ако е приложимо)
Категория: [10]
Следвана процедура за оценка на съответствието: [11]
Име и адрес на нотифицирания орган: [12]
Измерено ниво на звукова мощност LWA (етал. 1 pW): [13]
Гарантирано ниво на звукова мощност LWA (етал. 1 pW): [14]
Мощност на двигателя (както е определено от ISO 14396): [15]
Приносител на техническата документация: [16]

Място: [17]
и дата: [18]
на съставяне на декларацията.

Подпис: [19]
Име: [20]
и длъжност: [21]
на лицето, оправомощено да състави ЕО Декларацията за съответствие.

CS
ES/EU Prohlášení o shodě podle

My, [1]

prohlašujeme na vlastní odpovědnost, že výrobek:

Obchodní název a model: [2]
Označení: [3]
Typ (uveďte kteroukoli variantu/verzi): [4]
Kód modelu: [5]
Výrobní číslo: [6]

ke kterému se toto prohlášení vztahuje, splňuje všechna příslušná ustanovení následujících evropských směrnic v platném znění a nařízení, kterými se tyto směrnice provádějí do vnitrostátních právních předpisů:

2006/42/ES směrnice o strojních zařízeních
Evropské harmonizované normy, podle kterých je prohlášena shoda: [7]
Jméno a adresa osoby oprávněné k sestavení technické dokumentace [8]

2014/30/EU směrnice o elektromagnetické kompatibilitě (pokud se použije)
Evropské harmonizované normy, podle kterých je prohlášena shoda: [9]

2000/14/ES směrnice o hluku ve venkovním prostředí (pokud se použije)
Kategorie: [10]
Použitý postup posuzování shody: [11]
Název a adresa oznámeného subjektu: [12]
Naměřená hladina akustického výkonu LWA (ref. 1 pW): [13]
Zaručená hladina akustického výkonu LWA (ref. 1 pW): [14]
Výkon motoru (podle definice ISO 14396): [15]
Držitel technické dokumentace: [16]

Místo: [17]
a datum: [18]
prohlášení.

Podpis: [19]
Název: [20]
a pracovní zařazení: [21]
osoby, která je zmocněná k sepsání textu prohlášení o shodě ES.

DA
EF/EU-overensstemmelseserklæring

Vi, [1]

erklærer herved at nedenstående beskrevne produkt:

Kommercielt navn og Model: [2]
Betegnelse: [3]
Type (angiv variant/version): [4]
Modelkode: [5]
Serienummer: [6]

som denne erklæring relaterer til, opfylder alle relevante forordninger i de følgende europæiske direktiver, som redigeret, samt de bestemmelser der er angivet som nationale lovgivninger:

2006/42/EC maskindirektiv
Europæiske harmoniserede standarder som denne overensstemmelseserklæring relaterer til: [7]
Navn og adresse på den person, der er autoriseret til at samle den tekniske fil [8]

2014/30/EU EMC-direktiv (hvis relevant)
Europæiske harmoniserede standarder som denne overensstemmelseserklæring relaterer til: [9]

2000/14/EC Udendørs støjdirektiv (hvis relevant)
Kategori: [10]
Procedure for vurdering af overensstemmelse fulgt: [11]
Navn og adresse på tilsynsførende myndighed: [12]
Målt lydeffektniveau LWA (ref. 1 pW): [13]
Garanteret lydeffektniveau LWA (ref. 1 pW): [14]
Motoreffekt (som defineret af ISO 14396): [15]
Indehaver af den tekniske dokumentation: [16]

Sted: [17]
og dato: [18]
for erklæringen.

Underskrift: [19]
Navn: [20]
og stilling: [21]
på den person der har bemyndigelse til at udfærdige denne EU-overensstemmelseserklæring.

DE
EG/EU Konformitätserklärung

Wir, [1]

erklären hiermit in eigener Verantwortung, dass das Produkt:

Handelsbezeichnung und Modell: [2]
Bezeichnung: [3]
Typ (Eine beliebige Variante/Version angeben): [4]
Planungsschlüssel: [5]
Seriennummer: [6]

auf das sich diese Erklärung bezieht, erfüllt alle einschlägigen Bestimmungen der folgenden europäischen Richtlinien, in ihrer geänderten Fassung, und den Verordnungen, mit denen diese in nationales Recht umgesetzt werden:

Maschinenrichtlinie # 2006/42/EG
Harmonisierte europäische Normen, nach denen die Konformität erklärt wird: [7]
Name und Adresse der mit der Erarbeitung der technischen Akte beauftragten Person [8]

Richtlinie 2014/30/EU über die elektromagnetische Verträglichkeit (falls zutreffend)
Harmonisierte europäische Normen, nach denen die Konformität erklärt wird: [9]

Lärmschutzrichtlinie 2000/14/EG (falls zutreffend)
Kategorie: [10]
Durchgeführtes Verfahren zur Prüfung der Konformität: [11]
Name und Anschrift der benannten Stelle: [12]
Gemessener Schallleistungspegel LWA (Ref. 1 pW): [13]
Garantierter Schallleistungspegel LWA (Ref. 1 pW): [14]
Motorleistung (Definition nach ISO 14396): [15]
Inhaber der technischen Dokumentation: [16]

Ort: [17]
und Datum: [18]
der Erklärung.

Unterschrift: [19]
Name: [20]
und Position: [21]
der Person, die zur Ausstellung der EG-Konformitätserklärung bevollmächtigt ist.

EL
ΕΚ/ΕΕ Δήλωση συμμόρφωσης

Εμείς, [1]

δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι το προϊόν:

Εμπορική ονομασία και μοντέλο: [2]
Ονομασία: [3]
Τύπος (Καθορίστε κάθε παραλλαγή / έκδοση): [4]
Κωδικός σχεδιασμού: [5]
Σειριακός αριθμός: [6]

με το οποίο σχετίζεται η παρούσα δήλωση, πληροί όλες τις σχετικές διατάξεις των ακόλουθων Ευρωπαϊκών Οδηγιών, όπως έχουν τροποιηθεί, και των κανονισμών που έχουν μεταφερθεί στην εθνική νομοθεσία:

2006/42/ΕΚ σχετικά με τα μηχανήματα
Ευρωπαϊκά εναρμονισμένα πρότυπα σύμφωνα με τα οποία δηλώνεται η συμμόρφωση: [7]
Όνομα και διεύθυνση του ατόμου που έχει εξουσιοδοτηθεί για την κατάρτιση του τεχνικού φακέλου [8]

Οδηγία # 2014/30/ΕΕ για την ΗΜΣ (κατά περίπτωση)
Ευρωπαϊκά εναρμονισμένα πρότυπα σύμφωνα με τα οποία δηλώνεται η συμμόρφωση: [9]

Οδηγία # 2000/14/ΕΚ σχετικά με την εκπομπή θορύβου σε εξωτερικούς χώρους (κατά περίπτωση)
Κατηγορία: [10]
Διαδικασία αξιολόγησης συμμόρφωσης που ακολουθείται: [11]
Επωνυμία και διεύθυνση του Κοινοποιημένου Οργανισμού: [12]
LWA μετρούμενης στάθμης ακουστικής ισχύος (αναφ. 1 pW): [13]
LWA εγγυημένης στάθμης ακουστικής ισχύος (αναφ. 1 pW): [14]
Ισχύς κινητήρα (όπως ορίζεται από το ISO 14396): [15]
Κάτοχος της τεχνικής τεκμηρίωσης: [16]

Τοποθεσία: [17]
και ημ/νία: [18]
της δήλωσης.

Υπογραφή: [19]
Όνομα: [20]
και θέση: [21]
του προσώπου που είναι αρμόδιο για τη σύνταξη της δήλωσης συμμόρφωσης ΕΚ.

EN
EC/EU Declaration of Conformity

We, [1]

declare under our sole responsibility, that the product:

Commercial Name and Model: [2]
Denomination: [3]
Type (Specify any variant/version): [4]
Planning key: [5]
Serial Number: [6]

to which this declaration relates, fulfills all the relevant provisions of the following European Directives, as amended, and the regulations transposing them into national laws:

2006/42/EC Machinery Directive
European harmonized standards according to which conformity is declared: [7]
Name and address of the person authorised to compile the technical file [8]

2014/30/EU EMC Directive (if applicable)
European harmonized standards according to which conformity is declared: [9]

2000/14/EC Outdoor Noise Directive (if applicable)
Category: [10]
Conformity assessment procedure followed: [11]
Name and address of the Notified Body: [12]
Measured sound power level LWA (ref. 1 pW): [13]
Guaranteed sound power level LWA (ref. 1 pW): [14]
Engine power (as defined by ISO 14396): [15]
Holder of the technical documentation: [16]

Place: [17]
and date: [18]
of the declaration.

Signature: [19]
Name: [20]
and position: [21]
of the person empowered to draw up the EC Declaration of Conformity.

ES
Declaración CE/UE de conformidad

Nosotros, [1]

declaramos bajo nuestra única responsabilidad, que el producto:

Nombre comercial y modelo: [2]
Denominación: [3]
Tipo (especifique la variante/versión): [4]
Clave de planificación: [5]
Número de serie: [6]

a lo que se refiere esta declaración, cumple todas las disposiciones pertinentes de las siguientes directivas europeas, en su versión modificada, y de los reglamentos que las incorporan a la legislación nacional:

Directiva sobre maquinaria: 2006/42/EC
Normas europeas armonizadas según las cuales se declara el cumplimiento: [7]
Nombre y dirección de la persona autorizada para elaborar el expediente técnico [8]

Directiva EMC: 2014/30/EU (si procede)
Normas europeas armonizadas según las cuales se declara el cumplimiento: [9]

Directiva sobre el ruido en exteriores: 2000/14/CE (si procede)
Categoría: [10]
Procedimiento de evaluación del cumplimiento seguido: [11]
Nombre y dirección del organismo notificado: [12]
Nivel de potencia del sonido medido LWA (ref. 1 pW): [13]
Nivel de potencia del sonido garantizado LWA (ref. 1 pW): [14]
Potencia del motor (según la definición de la norma ISO 14396): [15]
Titular de la documentación técnica: [16]

Lugar: [17]
y fecha: [18]
de la declaración.

Firma: [19]
Nombre: [20]
y puesto: [21]
de la persona apoderada para redactar la declaración CE de conformidad.

EÜ
EÜ/EL-i vastavusdeklaratsioon

Meie, [1]

kinnitame ainuisikuliselt vastutades, et toode:

kaubanduslik nimi ja mudel: [2]
Nimetus: [3]
Tüüp (täpsustage variant/versioon): [4]
Mudeli kood: [5]
Seerianumber: [6]

see deklaratsioon kohaldub, täidab kõikiEuroopa direktiivide vastavaidsätteid muudetud kujul ja eeskirjad, mis võtavad need üle siseriiklikesse seadustesse:

2006/42/EC Masinadirektiiv.
Euroopa harmoneeritud standardid, mille kohaselt vastavus deklareeritakse: [7]
Tehnilise toimiku koostamiseks volitatud isiku nimi ja aadress [8]

2014/30/EU EMC Direktiiv (kui on kohaldatav)
Euroopa harmoneeritud standardid, mille kohaselt vastavus deklareeritakse: [9]

2000/14/EC: Välimüra direktiiv (kui on kohaldatav)
Kategooria: [10]
Järgitii vastavushindamismenetlust: [11]
Teavitatud asutuse nimi ja aadress: [12]
Mõõdetud müratase: LWA (vt. 1 pW): [13]
Garanteeritud helivõimsuse tase LWA (vt. 1 pW): [14]
Mootor võimsus (defineeritud ISO 14396 poolt): [15]
Tehnilise dokumentatsiooni omanik: [16]

Asukoht: [17]
ja kuupäev: [18]
kus ja millal deklaratsioon koostati.

Allkiri: [19]
Isiku nimi: [20]
ja amet: [21]
kes on volitatud EÜ vastavusdeklaratsiooni koostama.

FI
EY/EU-vaatimustenmukaisuusvakuutus

Me, [1]

vakuutamme omalla vastuullamme, että tuote:

Kaupallinen nimi ja malli: [2]
Yleisnimike: [3]
Tyyppi (määritä varianttiversio): [4]
Mallitunnus: [5]
Sarjanumero: [6]

johon tämä vakuutus viittaa, täyttää kaikki olennaiset vaatimukset seuraavista Euroopanlaisista direktiiveistä, sellaisena kuin ne on muutettu, sekä asetuksista, jotka saattavat ne osaksi kansallista lainsäädäntöä:

2006/42/EY konedirektiivi
Eurooppalaiset yhdenmukaistetut standardit, joiden perusteella vaatimustenmukaisuusvakuutus annetaan: [7]
Teknisen tiedoston laatimiseen oikeutetun henkilön nimi ja osoite [8]

2014/30/EU EMC-direktiivi (jos soveltuu)
Eurooppalaiset yhdenmukaistetut standardit, joiden perusteella vaatimustenmukaisuusvakuutus annetaan: [9]

2000/14/EY Ulkona käytettävien laitteiden aiheuttamaa melua koskeva direktiivi (jos soveltuu)
Luokka: [10]
Vaatimusten mukaisuuden arvioinnin toimenpiteitä noudatettu: [11]
Ilmoitetun laitoksen nimi ja osoite: [12]
Mitattu äänitehotaso: LWA (viite 1 pW): [13]
Taattu äänitehotaso LWA (viite 1 pW): [14]
Moottorin teho (määritelty ISO 14396 -standardissa): [15]
Teknisen dokumentaation haltija: [16]

Vakuutuksen
aika: [17]
ja paikka: [18]

Sen henkilön
Allekirjoitus: [19]
Nimi: [20]
ja asema: [21]
joka on valtuutettu laatimaan EY-vaatimustenmukaisuusvakuutus.

FR
CE/UE Déclaration de Conformité

Nous [1]

déclarons sous notre seule responsabilité, que le produit:

Dénomination Commerciale et Modèle : [2]
Dénomination : [3]
Type (Spécifier toutes les variantes/versions) : [4]
Code modèle : [5]
Numéro de série : [6]

auquel cette déclaration se rapporte, remplit toutes les dispositions pertinentes des directives européennes suivantes, telles que modifiées, et des règlements les transposant dans les lois nationales :

Directive machines n° 2006/42/CE
Normes européennes harmonisées selon lesquelles la conformité est déclarée : [7]
Nom et adresse de la personne habilitée à constituer le dossier technique [8]

Directive n° 2014/30/UE sur la CEM (le cas échéant)
Normes européennes harmonisées selon lesquelles la conformité est déclarée : [9]

Directive n° 2000/14/CE (le cas échéant) sur le bruit dans l'environnement
Catégorie : [10]
Procédure d'évaluation de la conformité suivie : [11]
Nom et adresse de l'organisme notifié : [12]
Niveau de puissance acoustique mesuré LWA (réf. 1 pW) : [13]
Niveau de puissance acoustique garanti LWA (réf. 1 pW) : [14]
Puissance du moteur (telle que définie par la norme ISO 14396) : [15]
Détenteur de la documentation technique : [16]

Lieu : [17]
et date : [18]
de la déclaration.

Signature : [19]
Nom : [20]
et position : [21]
de la personne habilitée à rédiger la déclaration de conformité CE.

CASE CONSTRUCTION

[1] Case New Holland Construction Equipment India Pvt Ltd
Plot No. 157, Ind. Area III
Pithampur, Dhar District
Madhya Pradesh, 454774, INDIA

[2]

[3] Hydraulic Excavator

[4]

[5]

[6]

[7] EN 474-1:2022
Excluding point: 4.18.2

EN 474-5:2022

[8] CNH Industrial Italia S.p.A.
Engineering Department
Strada Settimo, 323
10099 S. Mauro
ITALY

[9] EN ISO 13776-1:2018

[10] Hydraulic Excavator

[11]

[12]

[13]

[14]

[15]

[16] CNH Industrial Italia S.p.A.
Engineering Department
Strada Settimo, 323
10099 S. Mauro - ITALY

[17] Pithampur, India

[18]

[19]

[20]

[21]

90438776 rev.B

UKCA Declaration of Conformity

An original of this UKCA Declaration of Conformity is supplied with each machine and must be kept carefully by the owner.

NOTE: *The official documents supplied with the machine must be kept by the owner so as to be able to present them to any inspecting authority which may request them.*

On the following page is provided copy of the UKCA Declaration of Conformity. The UKCA Declaration of Conformity is the manufacturer's declaration about equipment compliance to relevant UK provisions. Please keep the original document in a safe place. Local authorities may require you to show this document in order to assure compliance of your equipment.

The UKCA Declaration of Conformity contains the following information:

1. Manufacturer
2. Commercial name and model
3. Denomination
4. Type (Specify any variant/version)
5. Planning key
6. Serial number
7. Supply of Machinery (Safety) Regulations 2008 n.1597 and its amendments. Designed standards according to which conformity is declared
8. Name and address of the person authorised to compile the technical file
9. Electromagnetic Compatibility Regulations 2016 n.1091 (if applicable) and its amendments. Designed standards according to which conformity is declared
10. Noise Emission in the Environment for use outdoor 2001 n.1701 (if applicable) and its amendments. Category
11. Conformity assessment procedure followed
12. Name and address of the Notified Body
13. Measured sound power level LWA
14. Guaranteed sound power level LWA
15. Engine power (as defined by ISO 14396)
16. Holder of the technical documentation
17. Place of the declaration
18. Date of the declaration
19. Signature of the person empowered to draw up the UKCA Declaration of Conformity
20. Name of the person empowered to draw up the UKCA Declaration of Conformity
21. Position of the person empowered to draw up the UKCA Declaration of Conformity
22. Name and address of the UK Authorised Representative/Importer

UKCA Declaration of Conformity of the Machinery

We, [1]

declare under our sole responsibility, that the product:

Commercial Name and Model: [2]
Denomination: [3]
Type (Specify any variant/version): [4]
Planning key: [5]
Serial Number: [6]

to which this declaration relates, fulfills all the relevant provisions of the following Regulations:

Supply of Machinery (Safety) Regulations 2008 n.1597 and its amendments
Designated standards according to which confomity is declared: [7]
Name and address of the person authorised to compile the technical file [8]

Electromagnetic Compatibility Regulations 2016 n.1091 (if applicable) and its amendments
Designated standards according to which confomity is declared: [9]

Noise Emission in the Environment for use outdoor 2001 n.1701 (if applicable) and its amendments
Category: [10]
Conformity assessment procedure followed: [11]
Name and address of the Notified Body: [12]
Measured sound power level LWA (ref. 1 pW): [13]
Guaranteed sound power level LWA (ref. 1 pW): [14]
Engine power (as defined by ISO 14396): [15]
Holder of the technical documentation: [16]

Place: [17]
and date: [18]
of the declaration.

Signature: [19]
Name: [20]
and position: [21]
of the person empowered to draw up the UKCA Declaration of Conformity.

Name and address of the UK Authorised Representative/Importer: [22]

[1]	Case New Holland Construction Equipment India Pvt Ltd Plot No. 157, Ind. Area III Pithampur, Dhar District Madhya Pradesh, 454774, INDIA
[2]	
[3]	Hydraulic Excavator
[4]	
[5]	
[6]	
[7]	EN 474-1:2022 Excluding point: 4.18.2 EN 474-5:2022
[8]	CNH Industrial Italia S.p.A. Engineering Department Strada Settimo, 323 10099 S. Mauro ITALY
[9]	EN ISO 13766-1:2018
[10]	Hydraulic Excavator
[11]	
[12]	
[13]	
[14]	
[15]	
[16]	CNH Industrial Italia S.p.A. Engineering Department Strada Settimo, 323 10099 S. Mauro - ITALY
[17]	Pithampur, India
[18]	
[19]	
[20]	
[21]	
[22]	

FACSIMILE

90498853 rev.B

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Dealer's stamp

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Availability of some models and equipment builds varies according to the country in which the equipment is being used. For exact information about any particular product, please consult your CASE CONSTRUCTION dealer.

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