Tigercat®

470 MULCHER
OPERATOR'S MANUAL
SERIAL NUMBER 4701001–4702000

ISSUE 2.2, JUNE 2018

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Tigercat 470 Mulcher

SECTION 1–SAFETY

Read and understand the entire contents of this manual, and all manuals for any attachments or accessories associated with this machine, prior to operating or servicing this equipment.

CONTENTS–SECTION 1

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CAB EXITS

There are three ways to exit the cab in case of an emergency.

Left door–This is also the main point of entry and is the only door that should be used under normal operating conditions to enter or leave the cab. This door is also equipped with a safety interlock switch. Refer to INTERLOCK DOOR AND ARMREST SWITCHES in THIS SECTION.

Right door–This door should be used for emergency exits only. Do not use this door to routinely enter or leave the cab. This door is also equipped with a safety interlock switch. Turn OFF the engine before using the right door exit.

Escape hatch–This is a third cab exit for use if the cab door exits become blocked. The hatch is not equipped with an interlock switch and therefore, when left open, will not deactivate the interlock system. Turn OFF the engine before using the escape hatch exit.

IMPORTANT!
The operator of the machine must be familiar with these emergency exits and how to use them.

All operators should practice using all the cab exits to become familiar with escape procedures should they need to perform them in the dark, when the machine is in a rolled position, or other possible adverse conditions.

All three exits must be checked to ensure they are operational and will function in an emergency. The interlock door switch on the cab doors and the escape hatch retaining mechanisms must not be tampered with or defeated.

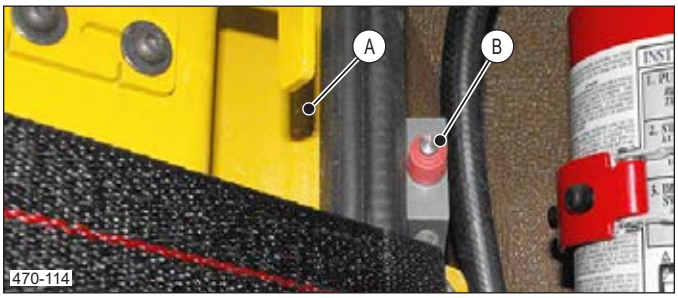
IMPORTANT!
Unlock both doors before operating the machine to allow opening from the outside in case of an emergency. Make sure the doors are operational. Open the doors twice; once using the exterior latch handle and once using the interior handle.

For additional information, refer to EMERGENCY EXITS in SECTION 3.

⚠ CAUTION

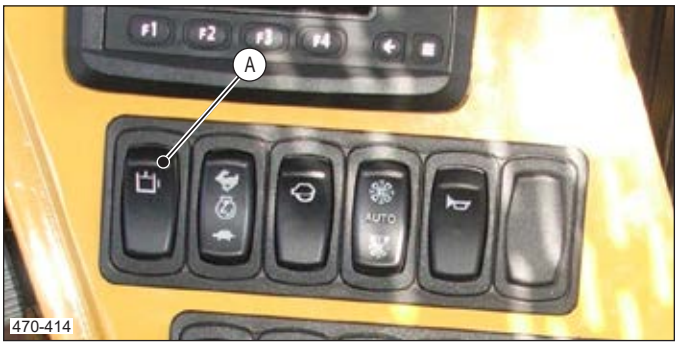
Do not use the steering joystick to assist entering or leaving the cab.

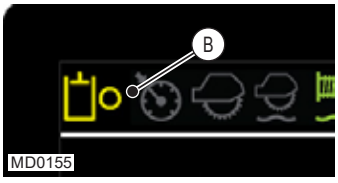
INTERLOCK DOOR AND ARMREST SWITCHES

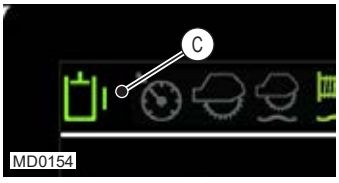


A Actuator Plate
B Interlock Door Switch (Left Door Shown)

Both doors and the left armrest are equipped with an interlock switch to prevent the machine from being operated with the doors open and the left armrest in the raised position (interlock system is deactivated).







A Interlock Reset Switch
B Interlock System OFF (Yellow)
C Interlock System ON (Green)

To operate the machine, close both doors, lower the left armrest and press and release the interlock reset switch. The interlock system icon on the computer display will change from yellow to green.

Once the interlock system has been activated, the safety of both the operator and all persons outside the cab becomes the responsibility of the operator.

NOTE: The engine can be started but the machine functions cannot be operated with the doors open.

⚠ WARNING

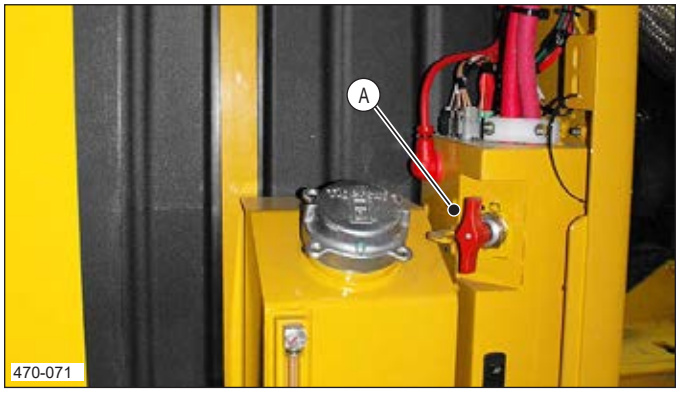
The interlock door and armrest switches and the interlock reset switch are safety features and their function must not be defeated in any way.

PRIOR TO WELDING

Prior to welding on any part of the machine, the repair area should be cleaned and a fire extinguisher placed nearby. Remove all paint from the area to be welded. Heated paint gives off toxic fumes.

1. Place the welding machine ground clamp as close to the work area as possible.

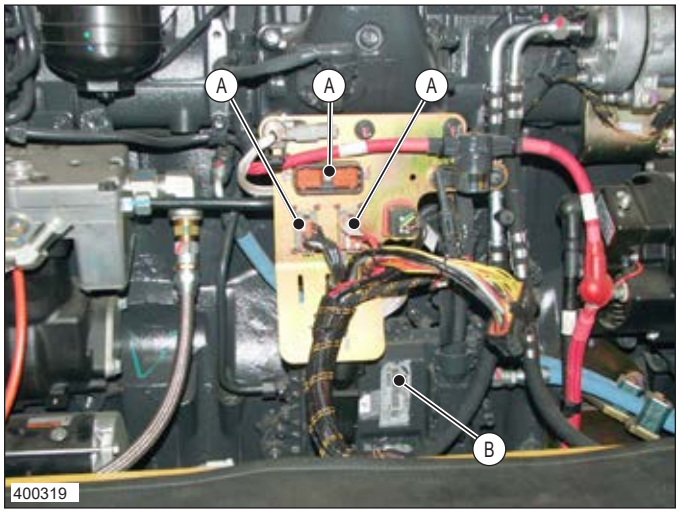
   Stray current can pass through bearings.



A Battery Disconnect Switch (Right Rear Storage Compartment)

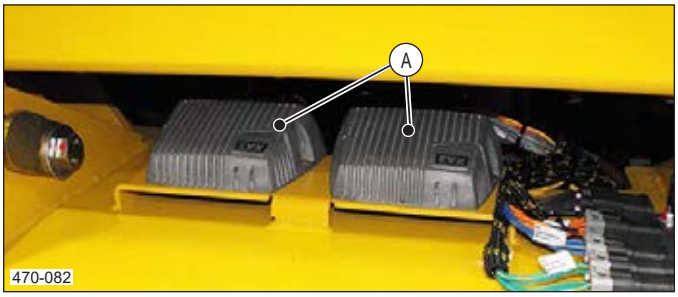
2. Turn OFF the battery disconnect switch.
3. Disconnect the negative (−) battery cable (connected to the starter motor) from the battery.

Due to the sensitive electronics on this machine, the following additional precautions must be taken:



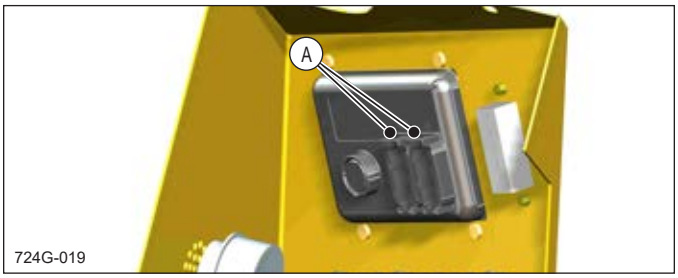
A Multi-Pin Connectors
B Engine Electronic Control Unit (ECU)

4. Disconnect the engine electronic control unit (ECU) by unplugging the three multi-pin connectors on the left side of the engine.



A Expansion Modules (Under Left Cab Door)

5. Disconnect the multi-pin connectors from the expansion modules.



A Computer Display Connectors

6. Disconnect the two multi-pin connectors from the back of the computer in the cab.

A DEF Supply Module Multi-pin Connector

7. Disconnect the DEF supply module (rear pump compartment) by unplugging the multi-pin connector.
8. When welding is complete, reconnect the multi-pin connectors and connect the negative (−) battery terminal cable.
9. Turn ON the battery disconnect switch.

- Ensure the machine and all components have cooled down sufficiently after a fire to prevent re-ignition from occurring.
- Remain with the machine until help arrives.

WHAT TO DO AFTER A MACHINE FIRE HAS OCCURRED

Before returning the machine to work:

1. Ensure the cause of the fire is determined and all appropriate repairs are completed.
2. Ensure the fire detection system* or the fire suppression system** is properly serviced and in working order (if applicable).
3. Replace or recharge all extinguishers used in fighting the fire.

- Notify your equipment dealer and/or Tigercat Industries Inc. by completing an incident report, Tigercat form number 5101.

***NOTE:** Fire detection systems are offered by Tigercat as an optional installation on some Tigercat product lines. Please disregard any references made to fire detection systems if not installed on your machine.

****NOTE:** Dry chemical fire suppression systems are offered by Tigercat as an optional installation on some Tigercat product lines. Please disregard any references made to fire suppression systems if not installed on your machine.

DRY CHEMICAL CLEANUP PROCEDURES

Both ABC dry chemical fire extinguishers and fire suppression systems discharge a chemical powder to extinguish the fire. The chemical makeup and the small particle size of the powder as well as the force of the discharge all contribute to the fire fighting capability. These same characteristics also permit the powder to penetrate into and fully cover all components in the vicinity of the discharge.

The following are recommendations for the cleanup and neutralizing of areas exposed to dry chemical powder:

NOTE: Workers performing this work must wear protective clothing, safety goggles and a fine particle dust mask to minimize their personal exposure to the dry chemical powder.

- All electrical systems must be completely de-energized prior to any cleanup.
- In areas of the machine that remained cool and dry during the fire, the dry chemical will stay in powder form. Be certain to clean these areas immediately to prevent any settled residual powder from coming into contact with moisture whether through direct contact or humidity in the air. Remove the powder residue by blowing off with air, sweeping, dusting or vacuuming using a HEPA filter capable of trapping the small dry chemical particles. Then wipe all surfaces with a damp cloth.
- In areas exposed to moisture, the dry chemical powder will combine with water to form a mildly acidic paste.

  NOTE: All surfaces covered by this dry chemical paste including electrical contacts are vulnerable to corrosive attack.

  To neutralize the acidic paste on large surfaces, spray or wash these areas with a mixture of three parts hot water to one part baking soda. Allow this mixture to stand for several minutes before rinsing with warm water. Wash the area with a mild soap and water solution. Rinse thoroughly with water. Blow-dry to remove all residual water. Cleaning electrical contacts with an electrical contact cleaner that has no flash or fire point and is non-corrosive and non-conductive such as CRC Contact Cleaner 2000.
- In areas exposed to heat during the fire, the dry chemical powder will melt forming a coating that cakes or crusts on all surfaces. To break down the caked dry chemical, spray or wash these areas with a 50/50 mixture of hot water and Isopropyl alcohol. Allow this mixture to stand in place for several minutes. The caked dry chemical when exposed to moisture is also mildly acidic. Therefore when the break down procedure has been completed, follow this immediately with the neutralizing procedure as described in step 2.

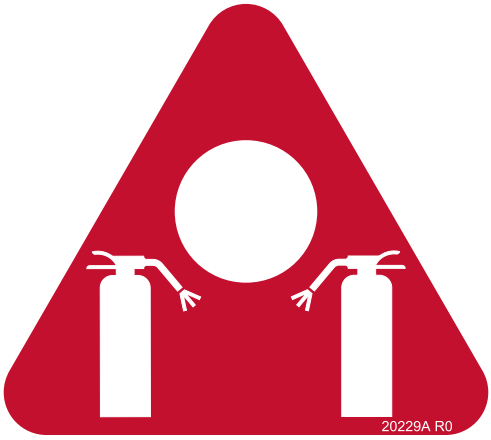
CHECK DAILY

This label underscores daily fire prevention checks for combustible debris, fluid leaks, damaged wiring or hoses, and properly functioning fire-fighting equipment.

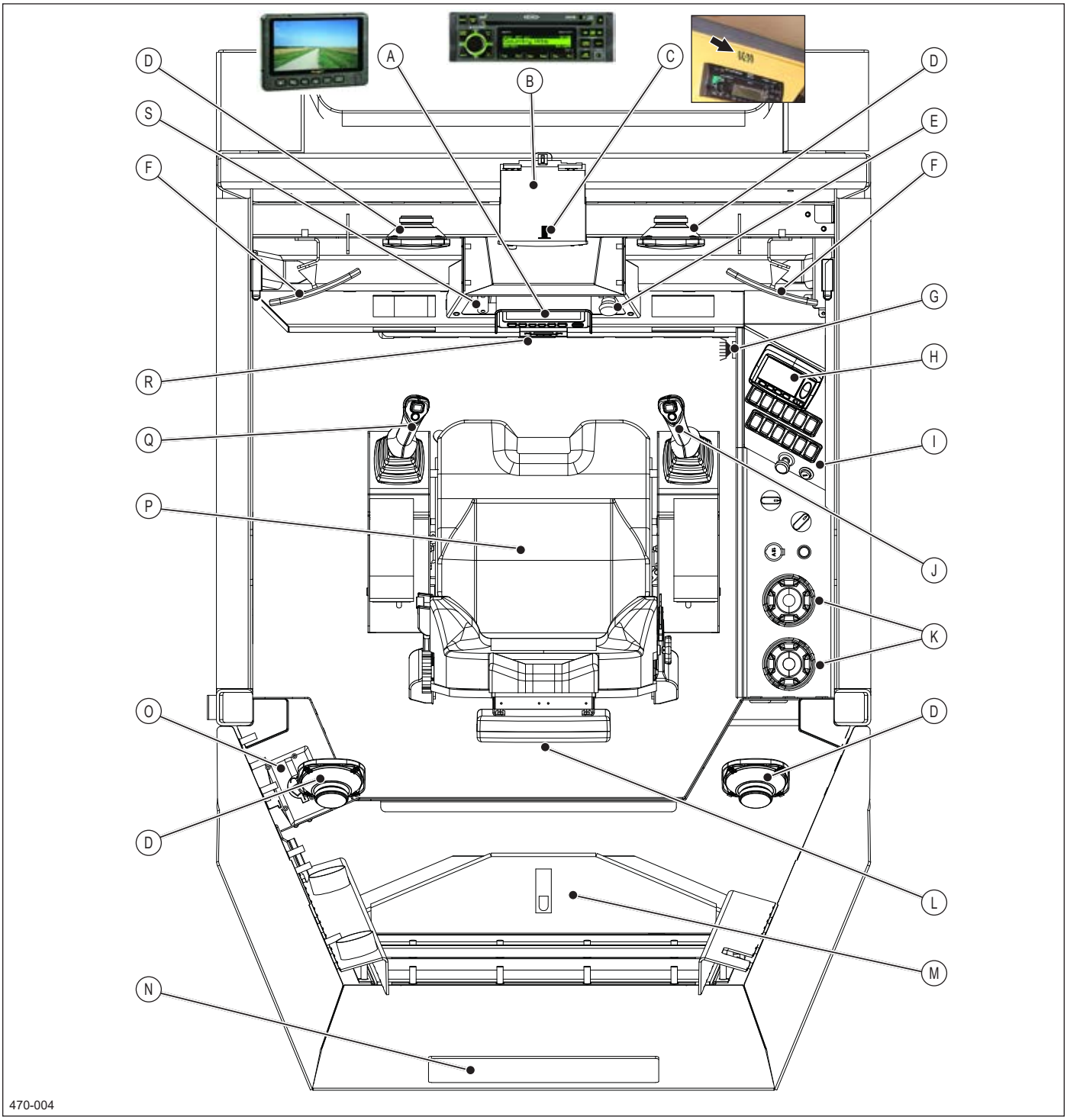
PORTABLE FIRE EXTINGUISHER

This label indicates portable fire extinguisher storage locations.

FIRE EXTINGUISHER ACCESS PORT



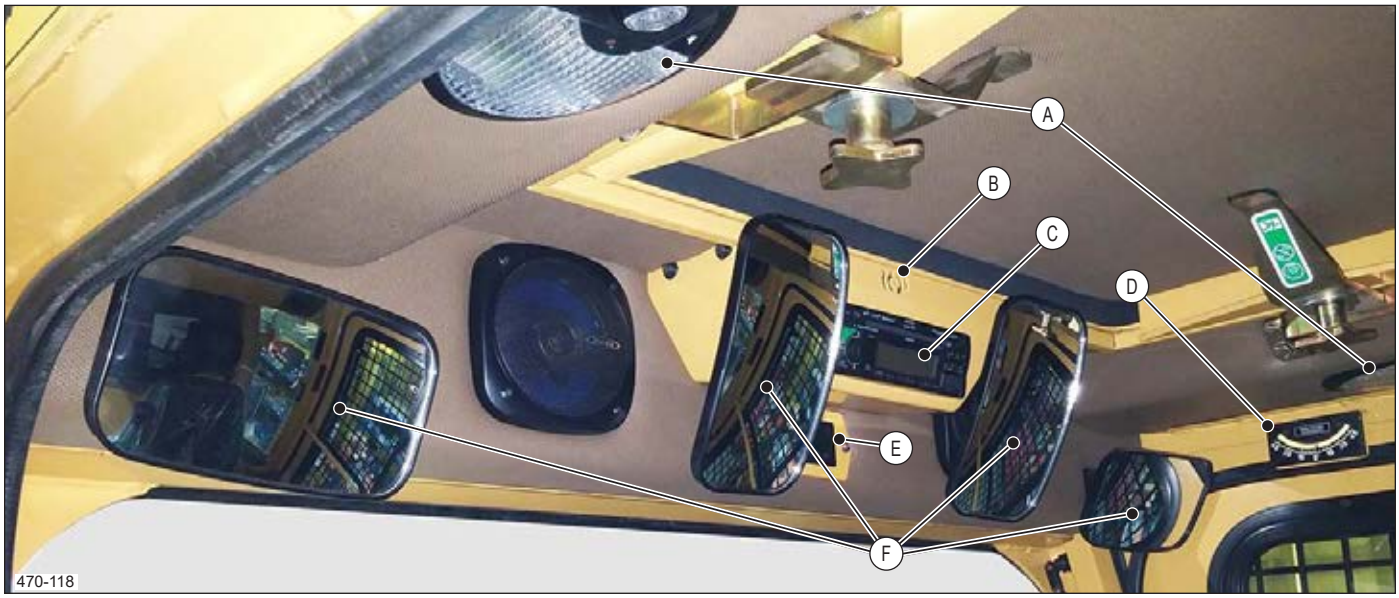
This label appears at each fire extinguisher access port.



Top View of Cab Controls, Accessories and Instrument Panel

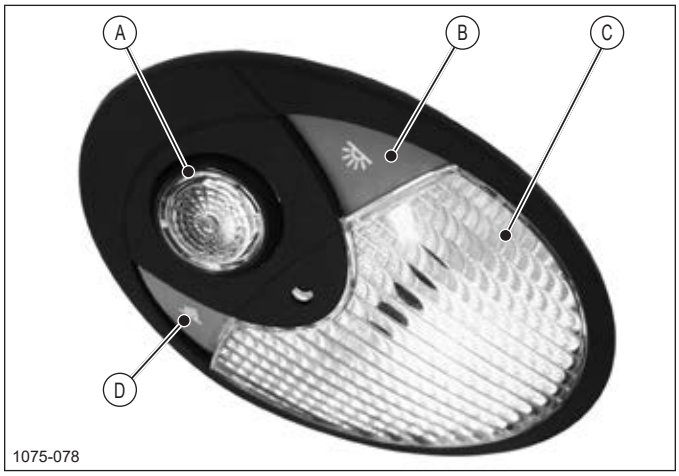
A Camera Monitor	K Cup Holder
B AM/FM Radio/CD Player	L Operator's Manual Storage
C Hands-free Microphone	M Storage Compartment
D Speaker	N Cab Fresh Air Filter Compartment
E Emergency Shut-off switch	O Windshield Washer Fluid Bottle
F Convex Rear View Mirror	P Air Ride Seat
G Alarm	Q Steer/Track Drive Joystick
H Computer and Display	R 45° Level
I Instrument Panel	S Alarm Light
J Right Joystick	

FEATURES, CAB



A Interior Lighting	D Slope Indicator
B Hands-free Bluetooth	E Engine Coolant Heater Control Panel (Optional)
C AM/FM Stereo Radio CD Player	F Rear View Mirrors

INTERIOR LIGHTING



A Pivoting Reading Light	
B Light Switch	
C Light	
D Reading Light Switch	

Two light assemblies mounted in the roof inside the cab are used for cab interior lighting and reading lights.

Press on the corresponding light switch to turn on the desired light. To aim the reading light press on the reading light lens and pivot the light in the socket to the desired location.

AM/FM STEREO RADIO CD PLAYER

The AM/FM stereo radio CD player is located in the front of the cab roof above the front windshield. The system has four 2 way 5.25 inch speakers (2 front-mounted and 2 rear-mounted).

Refer to the MANUFACTURER'S DOCUMENTATION for complete operation instructions.

BLUETOOTH FUNCTIONS

The radio includes built in Bluetooth technology that allows you to connect it to Bluetooth devices for streaming audio playback and hands free calling. The hands free microphone is located in the radio enclosure and is connected to the radio.

Refer to the MANUFACTURER'S DOCUMENTATION for complete operation instructions.

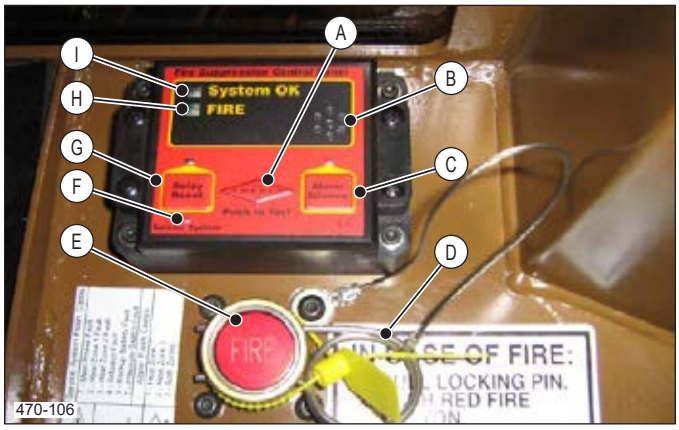
SLOPE INDICATORS

Two level indicators are provided, one on the side of the cab interior roof frame (shown above) for indicating fore/aft level and one on the front console (not shown) for indicating side to side level.

REAR VIEW MIRRORS

Four, 4×8 inch convex rear view mirrors are located in the front of the roof to assist in the view out the rear windows. Use the mirrors along with the camera monitor when driving the machine in reverse.

AMEREX FIRE SUPPRESSION SYSTEM (OPTIONAL)



Control Panel	
A	'Push to Test' Button
B	Audible Alarm
C	'Alarm Silence' Button and LED
D	Locking Pin
E	Manual Actuator Button
F	Service System LED
G	'Relay Reset' button and LED
H	Fire Alarm LED
I	'System OK' LED

The machine leaves the factory with the AMEREX fire suppression system fully deactivated to prevent accidental discharge. The in-line fuse for the power lead wire to the battery (in the battery compartment) is removed and the nitrogen bottle is not installed.

The system is not certified for use. Certification must be performed by a local AMEREX approved dealer.

NOTE: A pre-delivery inspection of the fire suppression system must be carried out to ensure the system is fully operational. This involves performing all daily and weekly inspection steps. Refer to FIRE SUPPRESSION SYSTEM–INSPECTION in THIS SECTION and FIRE EXTINGUISHER in THIS SECTION.

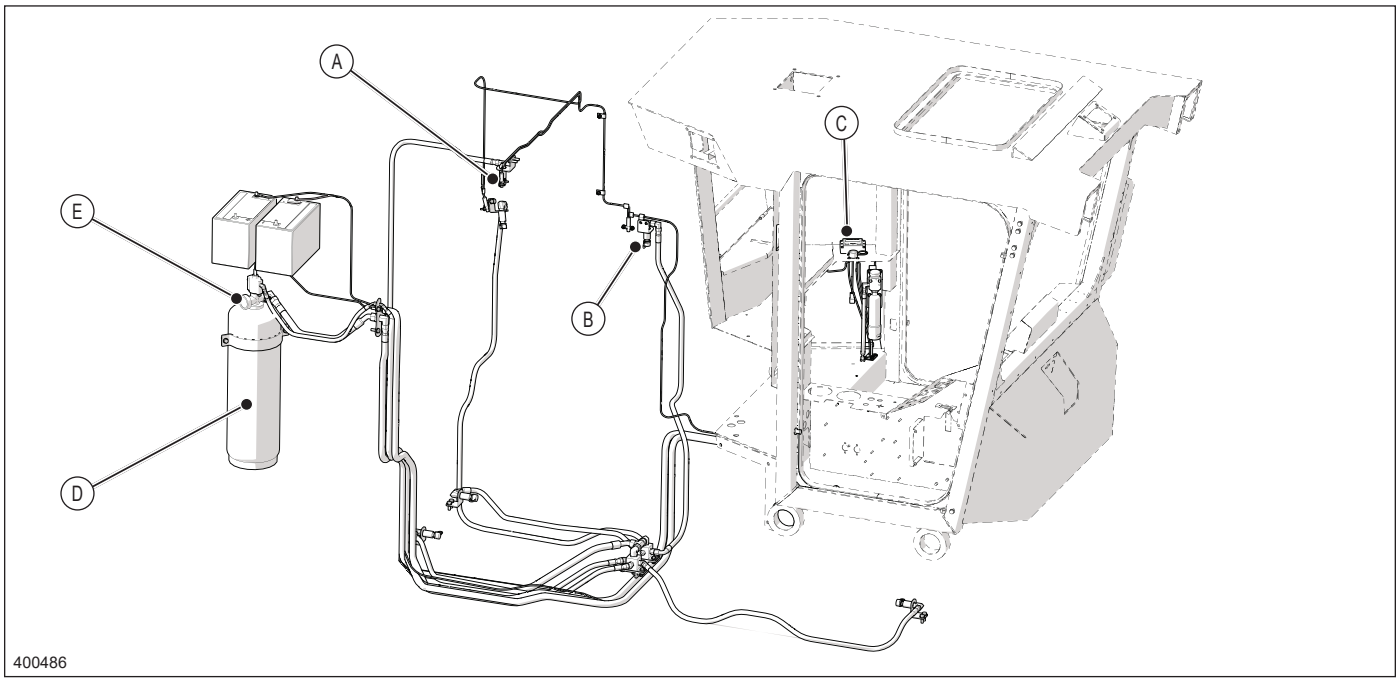
Read the owners manual applicable to the system installed on this machine for additional information on operation, service and AMEREX warranty requirements.

All machines are equipped with a fire detection system. For information about the fire detection system refer to FIRE DETECTION SYSTEM (OPTIONAL) in THIS SECTION.

The fire suppression system uses a dry chemical powder which is stored in a 23 kg (50 lb) pressurized cylinder. It is discharged through 6 nozzles strategically placed in the engine compartment and hydraulic areas. The discharge is activated either automatically by the fire detection thermostats or manually by the operator.

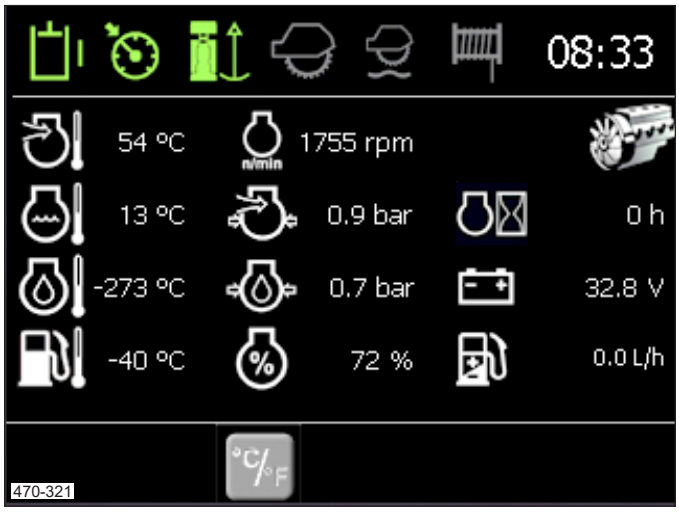
The control panel mounted in the cab provides continuous monitoring of the system. It also, automatically actuates the suppression system when signalled by the thermostats.

When the panel is plugged into an operational configuration the system will illuminate the green 'System OK' LED.



A	Thermostat	D	Pressure Gauge
B	Nozzle	E	Cylinder (Contains Dry Chemical Powder)
C	Control Panel		

ENGINE FUNCTIONS



Press the F2 button to toggle between metric and Imperial units of measure.

Press the back button to return to the main screen.

CHARGE AIR TEMPERATURE

This display indicates the charge air cooler temperature reading.

If temperature rises above the recommended temperature, alarm will sound, check the following:

- Plugged cooler package air intake screens in doors access panel.
- Plugged charge air cooler.

Do not continue to operate the machine.

Refer to CLEANING COOLER PACKAGE in SECTION 3 and COMPUTER–MESSAGES in THIS SECTION.

ENGINE COOLANT TEMPERATURE

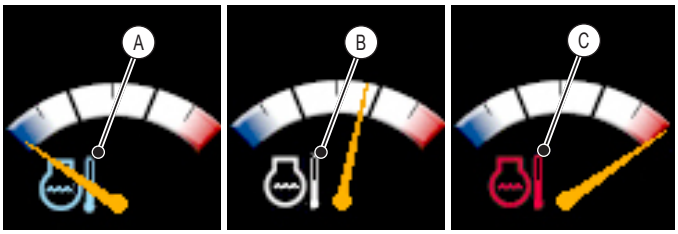
This display indicates the current engine coolant temperature.

If temperature rises above the recommended temperature, alarm will sound, check the following:

- Plugged cooler package air intake screens in doors and access panels.
- Plugged radiator.

Do not continue to operate machine.

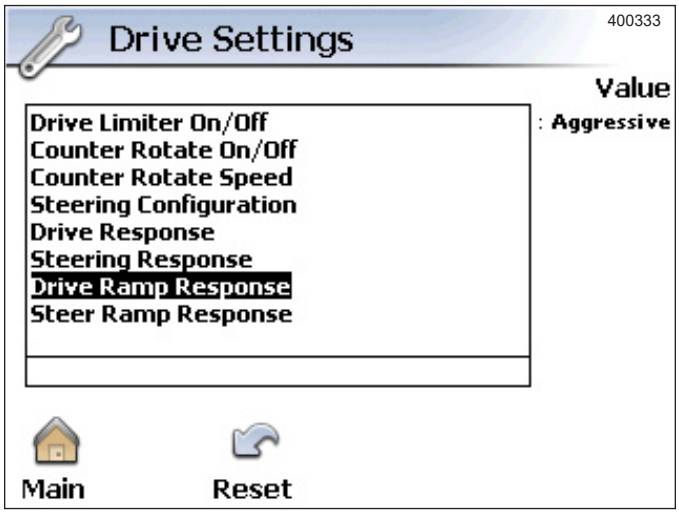
Refer to CLEANING COOLER PACKAGE in SECTION 3 and COMPUTER–MESSAGES in THIS SECTION.



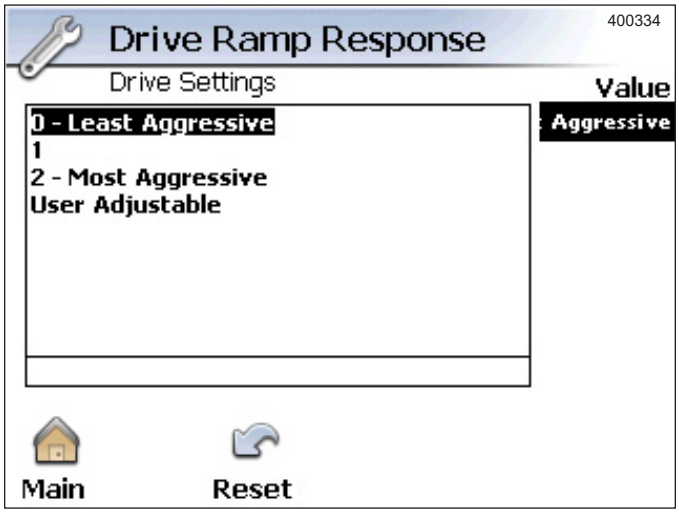
A	Engine Temperature Low
B	Engine Temperature Normal
C	Engine Temperature High

NOTE: Coolant temperature can also be monitored using the engine coolant temperature gauge on the main screen. The changes in gauge symbol colour indicate temperature range (BLUE=low, WHITE=normal, RED=high).

DRIVE RAMP RESPONSE



Press the UP or DOWN arrow buttons to select Drive Ramp Response, then press the OK button to make adjustments.



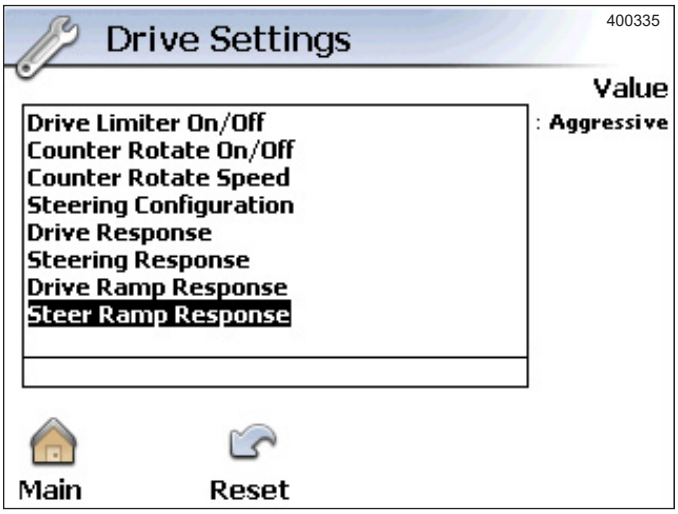
Four choices are given: 0 Least Aggressive through to 2 Most Aggressive and User Adjustable.

Press the UP or DOWN arrow buttons to select the desired selection, then press the OK button to confirm the selection.

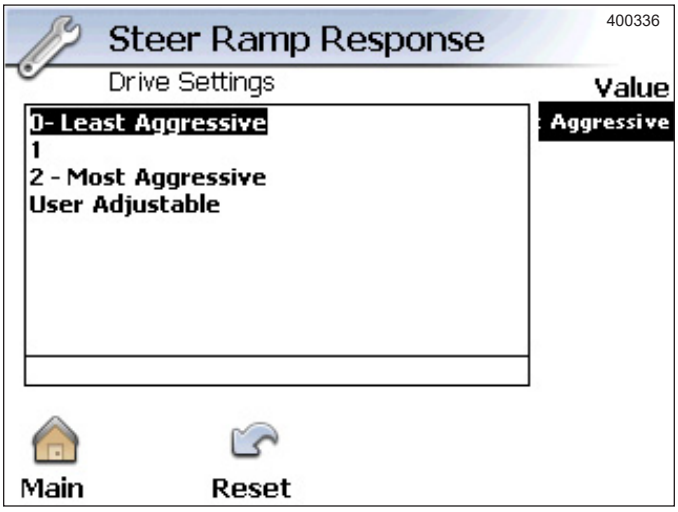
Press the BACK button to return to the Drive Settings menu or press the BACK button twice to return to the adjustment menu.

Press the BACK button again to return to the Main screen.

STEER RAMP RESPONSE



Press the UP or DOWN arrow buttons to select Steer Ramp Response, then press the OK button to make adjustments.



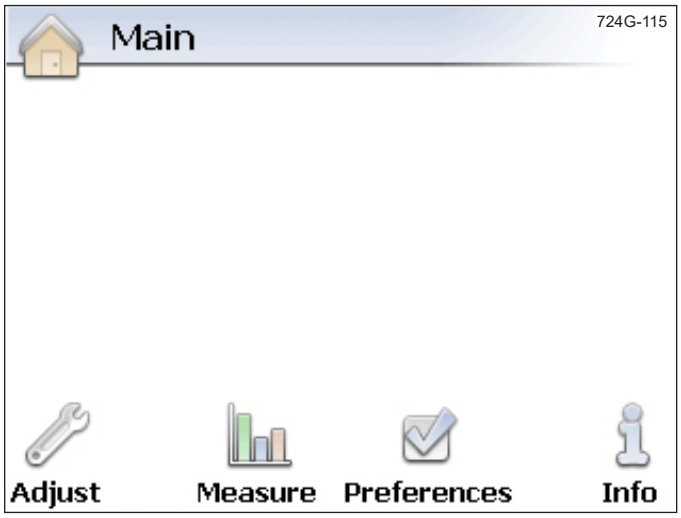
Four choices are given: 0 Least Aggressive through to 2 Most Aggressive and User Adjustable.

Press the UP or DOWN arrow buttons to select the desired selection, then press the OK button to confirm the selection.

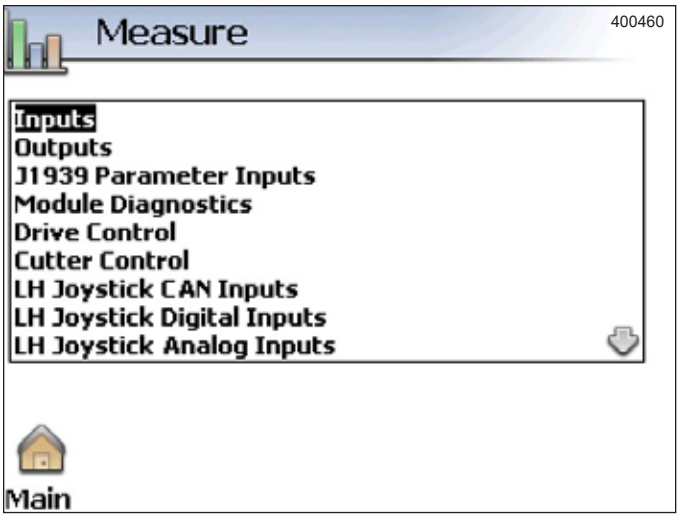
Press the BACK button to return to the Drive Settings menu or press the BACK button twice to return to the adjustment menu.

Press the BACK button again to return to the Main screen.

MEASURE MENU



Press the F2 button to access the Measure menu.



The following menu items can be selected.

- Inputs
- Outputs
- J1939 Parameter Inputs
- Module Diagnostics
- Digital Outputs
- Drive Control
- Cutter Control
- LH Joystick CAN Inputs
- LH Joystick Digital Inputs
- LH Joystick Analog Inputs
- RH Joystick CAN Inputs
- RH Joystick Digital Inputs
- RH Joystick Analog Inputs
- Boom Float
- Fan Control
- Fault Management
- Options

This menu is used by Tigercat service technicians. Refer to SECTION 6 of the SERVICE MANUAL for more information.

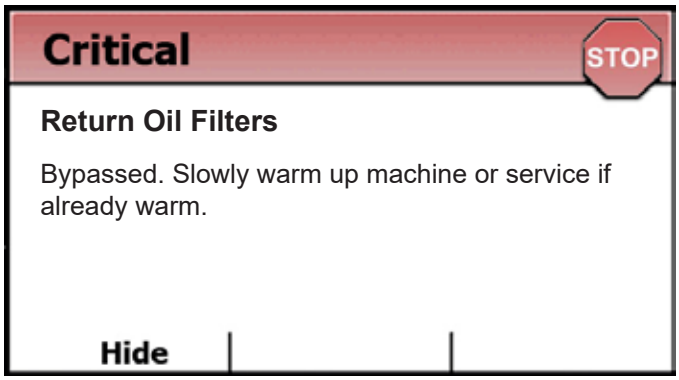
Press the UP or DOWN arrow buttons to select the menu item.

Press the OK button to view the information from the menu item.

Press the back button to return to the Measure menu or press the F1 button to return to the Main menu.

Press the back button again to return to the main screen.

HYDRAULIC OIL RETURN FILTERS BYPASSED



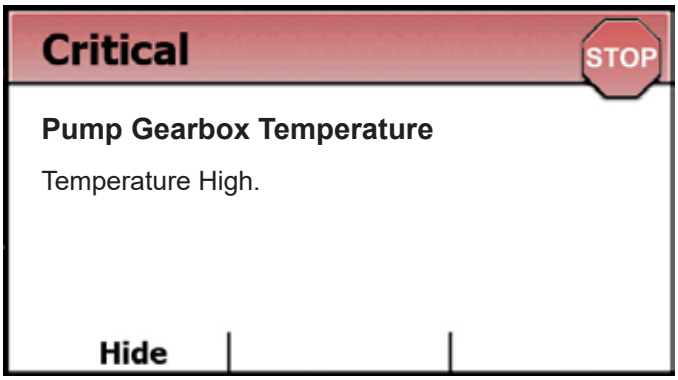
This message will be displayed, alarm light will flash and alarm will sound to inform the operator the hydraulic oil is bypassing the return filters.

This message may appear if the machine is cold. If the machine has already been warmed up, then the machine should be service immediately.

NOTE: When hydraulic oil is at operating temperature, the hydraulic oil filter bypass icon will be illuminated RED. When the hydraulic oil temperature is low the icon will be illuminated YELLOW.

Refer to HYDRAULIC OIL RETURN FILTERS in SECTION 3 for more information.

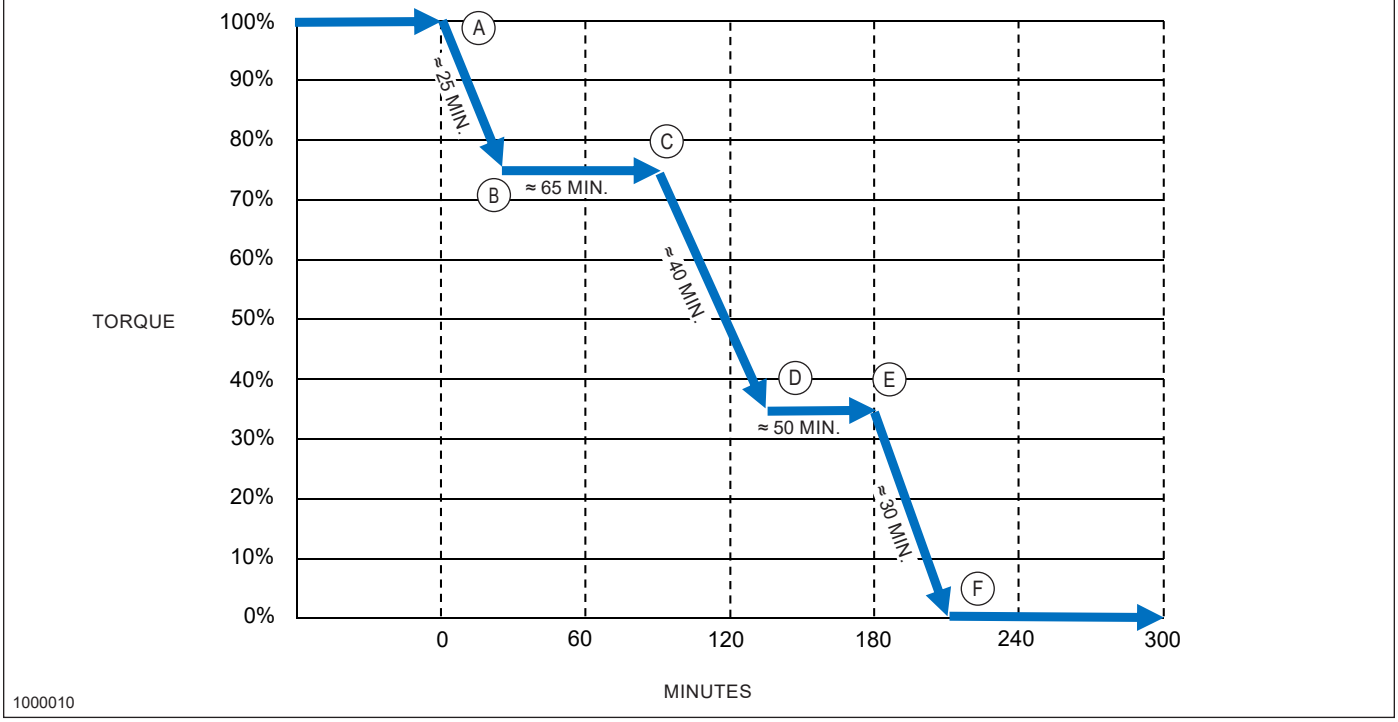
PUMP GEARBOX TEMPERATURE HIGH



This message will be displayed, alarm light will flash and alarm will sound to inform the operator the pump gearbox temperature is high.

Stop the machine immediately when this alarm is activated and check the gearbox for proper operation.

AFTERTREATMENT SYSTEM TECHNICAL FAILURE–ENGINE DERATE SEQUENCE



A Critical Message: Aftertreatment System–Technical Failure Severe. Engine torque begins to reduce.

B Engine torque reduced to 75% after 25 minutes.

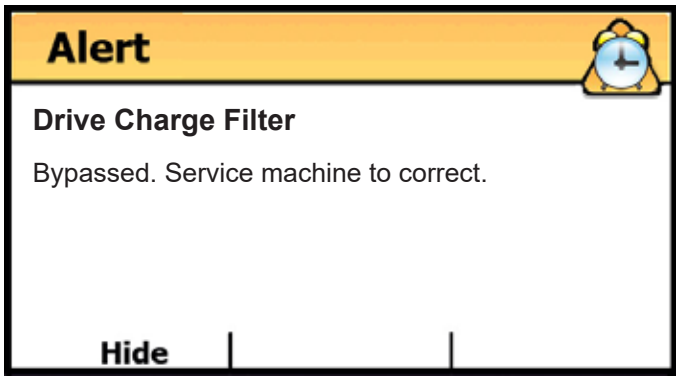
C Engine torque begins to reduce further after 65 minutes.

D Engine torque reduced to 35% after 40 minutes.

E Engine torque begins to reduce further after 50 minutes.

F Engine speed reduced to LOW after 30 minutes.

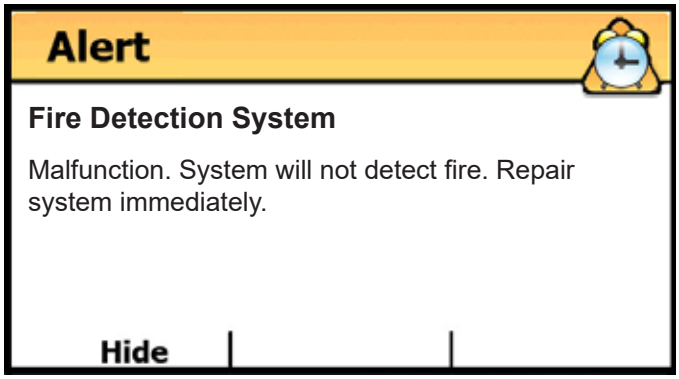
DRIVE CHARGE FILTER BYPASS



This message will be displayed when an alert level active fault related to the DRIVE CHARGE FILTER BYPASS has been activated.

Service machine alert message is an example of the type of fault that triggers this message. The charge pressure filter is restricted and requires service, or the oil temperature is cold allowing the oil to bypass the filter.

FIRE DETECTION SYSTEM MALFUNCTION

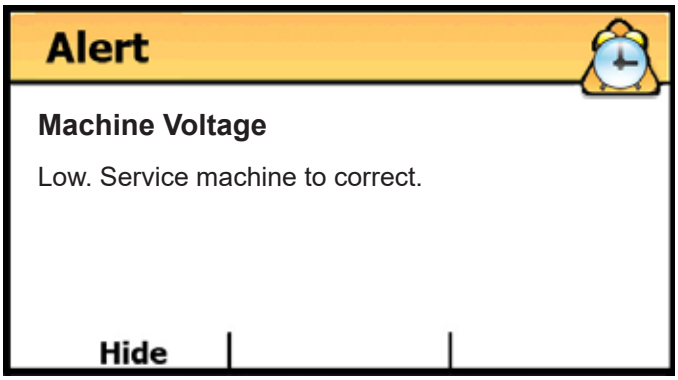


This message will be displayed when an alert level malfunction is detected in the fire detection system

Refer to FIRE DETECTION SYSTEM in THIS SECTION for more information.

Refer to WHAT TO DO IN CASE OF A MACHINE FIRE and WHAT TO DO AFTER A FIRE in SECTION 1.

MACHINE VOLTAGE LOW

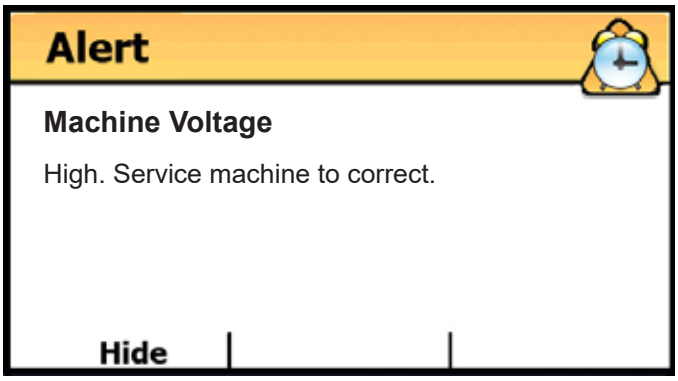


This message will be displayed when machine voltage readings of less than 20 volts are detected.

Machine voltage readings indicate voltage levels in the electrical system.

When this alarm is activated investigate the cause immediately.

MACHINE VOLTAGE HIGH



This message will be displayed when machine voltage readings of greater than 30 volts are detected.

Machine voltage readings indicate voltage levels in the electrical system.

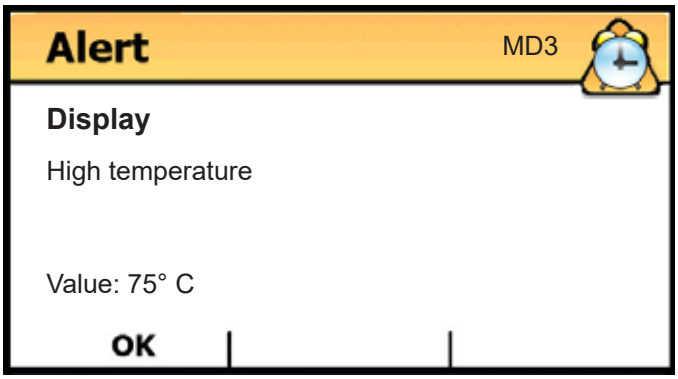
When this alarm is activated investigate the cause immediately.

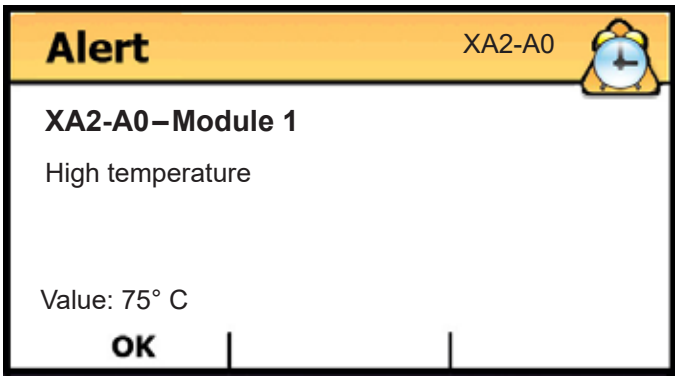
MODULE HIGH TEMPERATURE–ALERT

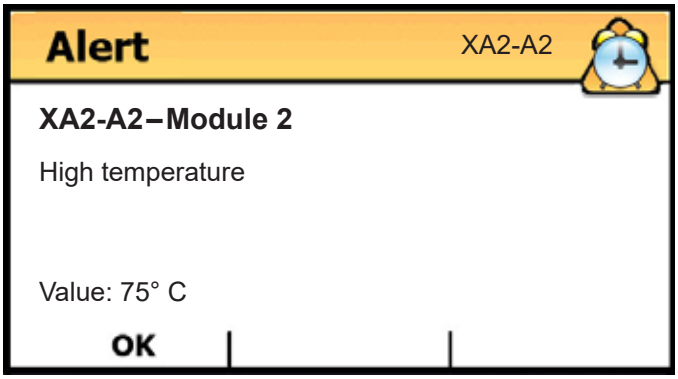
Module high temperature alert message is displayed to indicate the computer control system has detected high temperature readings in a system module.

The module is identified on the display screen. The temperature reading value is also displayed.

Once acknowledged this message will be replaced with a hardware fault message for the corresponding module when active faults are recalled to the screen. Refer to COMPUTER–MESSAGES–ALERT–HARDWARE FAULT in THIS SECTION.







OPERATING THE MACHINE

Before operating the machine, follow the PERIODIC MAINTENANCE instructions in SECTION 3. Refer to the ENGINE OPERATION AND MAINTENANCE MANUAL supplied with this machine.

PRESTART CHECKS

1. Unlock cab doors, engine enclosure doors and hydraulic compartment doors.

A Ignition Key Switch
B Attachment Switch

2. Set the ignition key switch and the attachment switch to the OFF position.

A Portable Fire Extinguisher

3. Check portable fire extinguisher for sufficient charge.

A System OK LED

4. Check the fire suppression cylinder for sufficient charge. Refer to FIRE SUPPRESSION SYSTEM (OPTIONAL) in THIS SECTION.

A Fuel Level Gauge
B DEF Level Gauge (Tier 4f Machines Only)

5. Turn the ignition key switch to the RUN position to check fuel and DEF levels on the computer display main screen. Fill fuel and DEF to the required levels. Refer to REFUELLING PROCEDURE in SECTION 3 and DIESEL EXHAUST FLUID TANK–FILLING in SECTION 3.

NOTE: The DEF level indicator is applicable to Tier 4f machines only.

Tigercat 470 Mulcher

SECTION 3–LUBRICATION AND MAINTENANCE

Read and understand the entire contents of this manual, and all manuals for any attachments or accessories associated with this machine, prior to operating or servicing this equipment.

CONTENTS–SECTION 3

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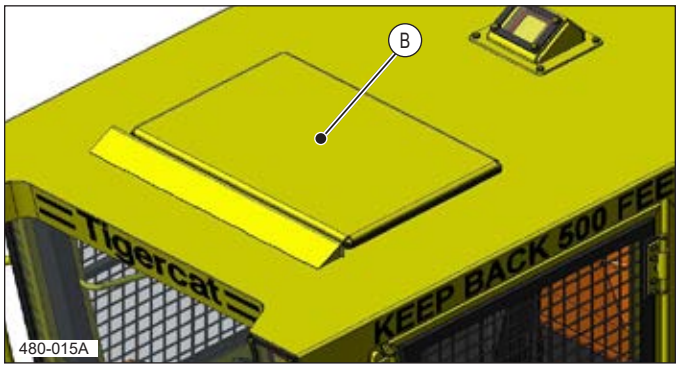
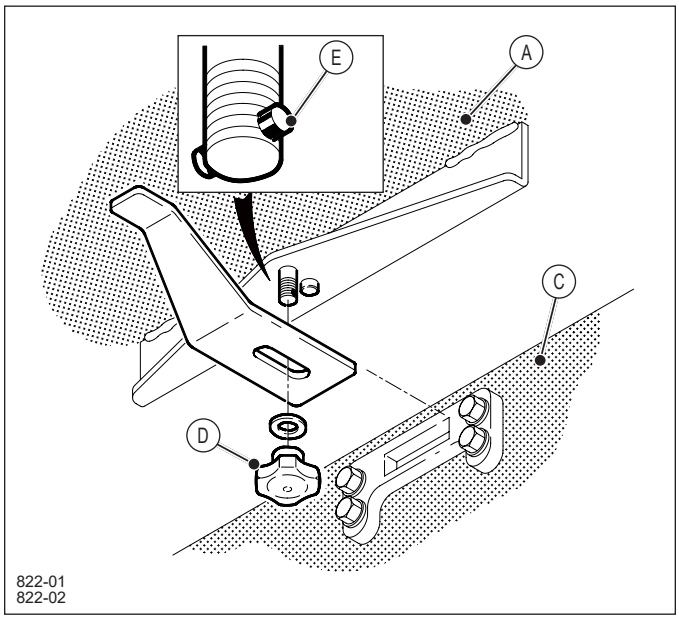
ESCAPE HATCH REPLACEMENT





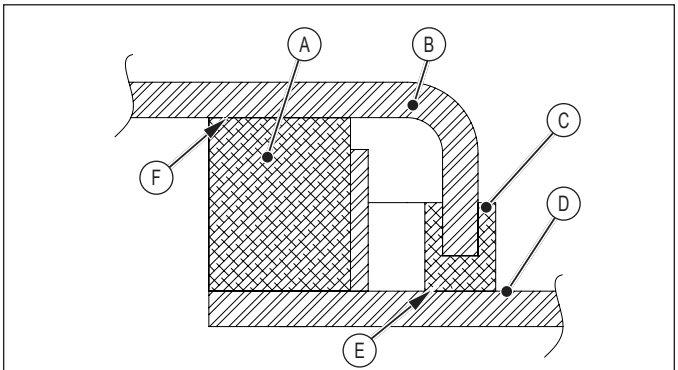
A	Escape Hatch (Interior View)
B	Escape Hatch (Exterior View)
C	Cab
D	Retaining Knob
E	Nylon Insert

NOTE: Centre mirrors have been removed for clarity.

NOTE: Do not apply silicone sealant between the Escape Hatch and the Cab Roof

Silicone sealant in these areas can bond the escape hatch to the cab, preventing removal of the escape hatch.

1. Clean all mating surfaces on both the escape hatch and cab roof, remove any silicone residue that may have been used to seal the joint.
2. The escape hatch gasket must be in good condition; replace if damaged.
3. Replace the nylon inserts in each stud, leaving approximately 3 mm (0.125 in) protruding at each end. These are to prevent the hand knobs from becoming loose under vibration.
4. Apply an anti-seize compound to the stud threads on the escape hatch and engage the hand knob threads three revolutions with washer and clamp bracket in place as illustrated.



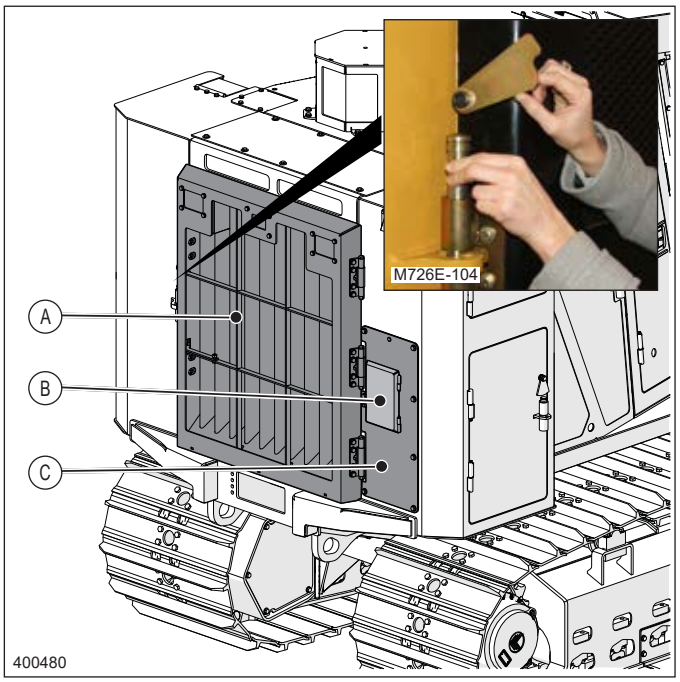
Cross-Section of Escape Hatch Seal	
A	Foam Seal
B	Escape Hatch
C	'C' Channel Rubber
D	Cab Roof
E	Apply Lubricant to 'C' Channel Rubber
F	Apply Lubricant to Top Surface of the Foam Seal

5. To prevent foam seal or rubber 'C' channel from sticking to escape hatch or roof over time, apply a thin film of Tigercat part number AM926 dielectric non-curing silicone lubricant to the contact surfaces of foam seal and rubber 'C' channel. Remove excess spray with a dry rag so no build up remains.

   IMPORTANT!
   Too much lubricant will cause the roof escape hatch to stick to the cab roof.
6. Install the escape hatch on the roof and engage the clamp bracket in the slot of the cab roof bracket.
7. Hand-tighten the knobs.

SERVICE COMPARTMENTS, ACCESS DOORS AND COVERS

REAR DOOR AND ACCESS COVERS



A Rear Door–Cooler Package
B DEF Tank Fill Cap Door–Hinged
C DEF Tank Access Cover–Removable (Bolted)

The rear door provides access to the debris screen and the cooler package heat exchangers. The door is perforated and acts as the first stage of debris screening for the air entering the cooler package.

To open the door, swing the latch pin stop to the side, lift up the latch pin and swing open the door. Lift the door lock from the storage location and place the door lock bolt in the hole provided in the door ledge to brace the door open. Reverse this procedure to close doors.

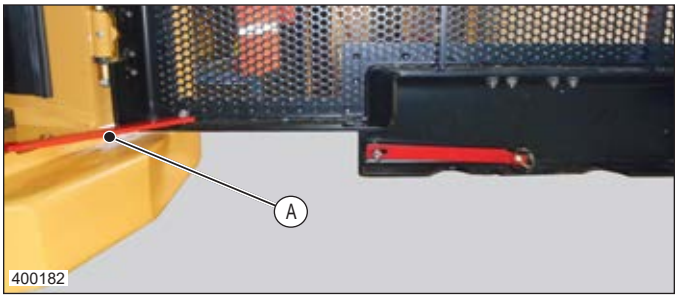
DEF TANK FILL CAP DOOR

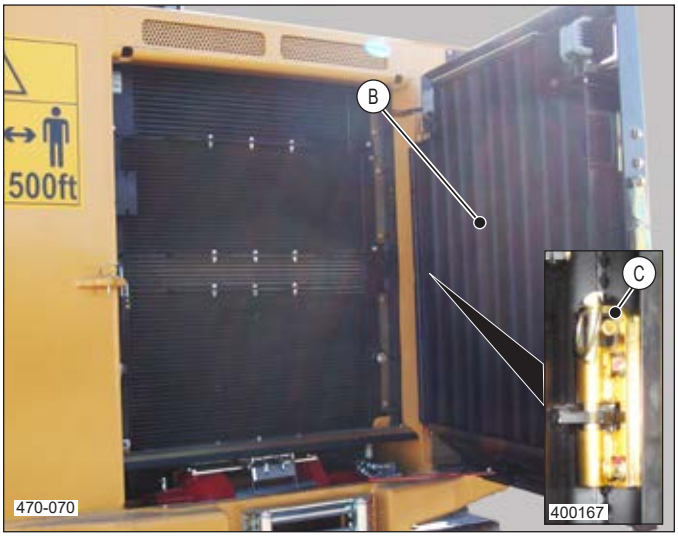
NOTE: The aftertreatment systems and its related components are applicable to Tier 4f machines only)

The DEF tank fill cap door provides access to fill the DEF tank. Remove the lynch pin and open the door to access the fill cap.

DEF TANK ACCESS COVER

The DEF tank access cover provides access to the DEF tank compartment. Remove the fasteners securing the access cover in place to access the DEF tank.





A Door Lock
B Debris Screen
C Debris Screen Latch

DEBRIS SCREEN

The debris screen is located inside the rear door. Open the rear door as previously instructed. Remove the lynch pin and swing open the debris screen for cleaning.

HYDRAULIC SYSTEM

NOTICE

Tigercat does not recommend the pre-filling of spin-on filters due to the risk of damage to the hydraulic system caused by unfiltered oil. Unfiltered oil used to pre-fill filters enters directly into the hydraulic circuit. Contaminants in unfiltered oil can cause significant and costly damage to hydraulic system components. The cleanliness of hydraulic oil cannot be guaranteed unless it is pre-filtered before use.

Use of filters other than genuine Tigercat replacement filters is not recommended. Replace filters at the recommended time intervals. Refer to SCHEDULED MAINTENANCE in THIS SECTION.

⚠ WARNING

WARNING: HOT HYDRAULIC OIL AND HOT MACHINE SURFACES CAN CAUSE SERIOUS BURNS!

- **Before servicing the machine, allow the engine cooling system, fuel system, exhaust system, hydraulic system and machine surfaces to cool down.**
- **Use a thermometer to check surface and system temperatures to ensure it is safe to begin service work.**
- **Do not begin service work until the surface or system temperature has cooled down to below 38°C (100°F).**

IMPORTANT!
Before servicing the hydraulic system, park the machine on level ground. Refer to PARKING THE MACHINE in SECTION 1.

ENGINE COOLANT HEATER UNIT PREVENTIVE MAINTENANCE

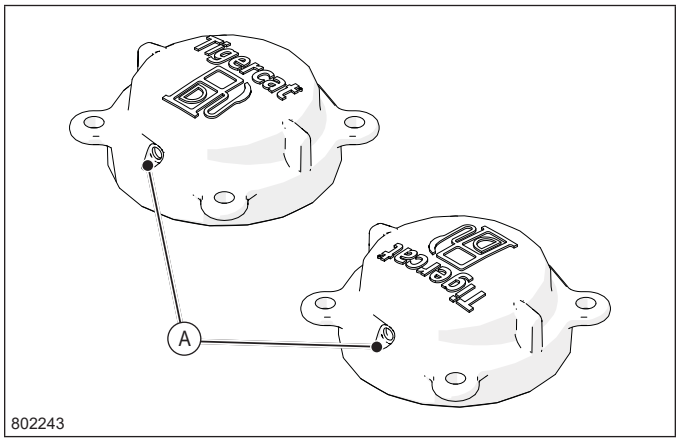
The following preventive maintenance schedule keeps the engine coolant heater unit in proper working order. Refer to the manufacturer's operation manual for further information.

DAILY MAINTENANCE

Complete the following preventive maintenance items once per day:

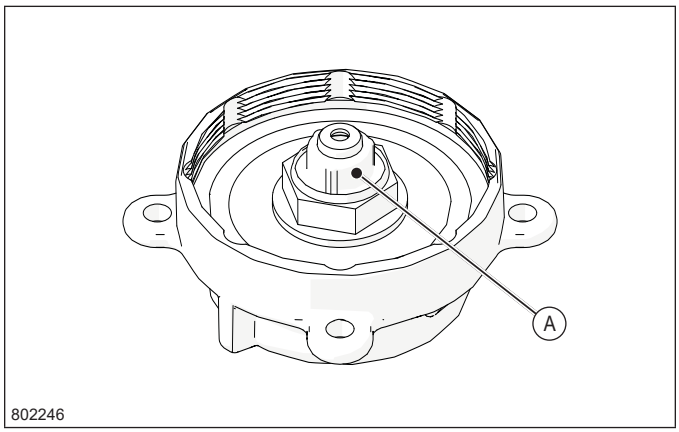
MACHINE FUEL TANK

If the engine coolant heater unit draws fuel directly from the machine fuel tank:



Fuel Tank Fill Cap
A Vent Ports

Remove any debris, snow, or ice around the fuel tank fill cap. Keep the vent ports clear to prevent a vacuum inside the fuel tank.

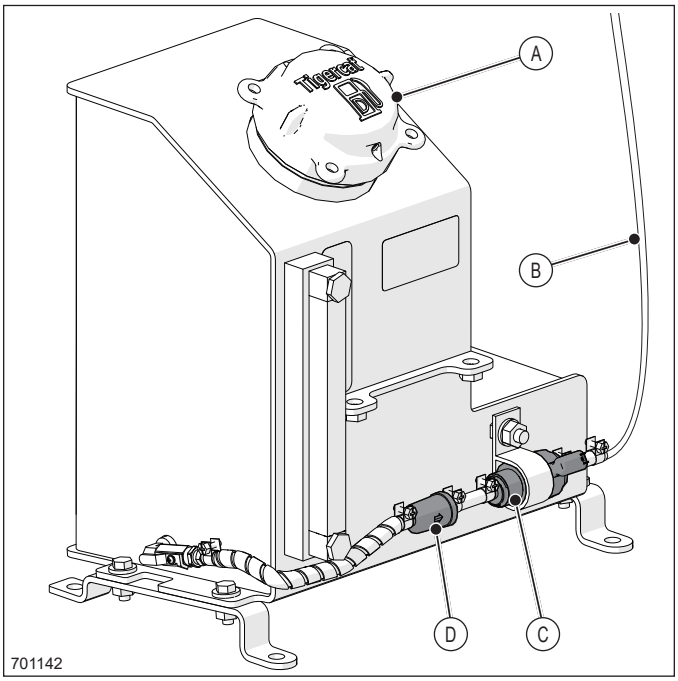


Fuel Tank Fill Cap
A Venting Valve

Inspect the fuel tank fill cap venting valve for proper operation in freezing temperatures. If the valve may freeze while the machine is parked overnight, leave the cap loose to prevent a vacuum inside the fuel tank.

REMOTE FUEL TANK

If the engine coolant heater unit draws fuel from a remote fuel tank:



Typical Remote Fuel Tank
A Fill Cap
B Fuel Line
C Fuel Pump
D Fuel Filter

Remove any debris, snow, or ice around the fill cap.

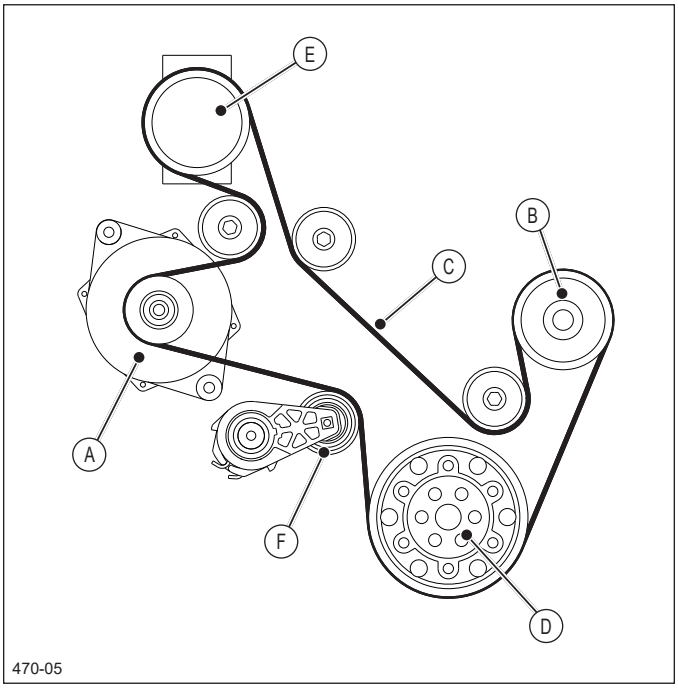
Inspect the tank vent line for free flow of air.

Inspect the fuel line and fittings for damage or leaks.

Refer also to REMOTE FUEL TANK FILLING in THIS SECTION.

SERPENTINE BELT

The serpentine belt is accessible through either of the engine compartment side doors.

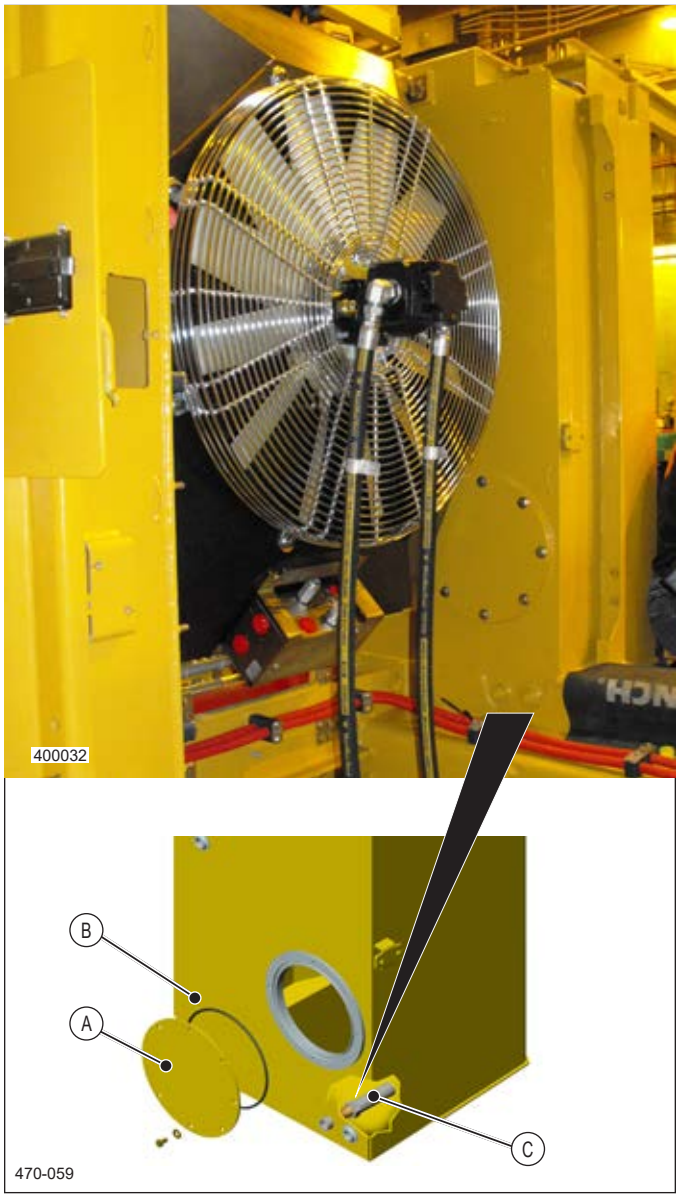


A	Alternator
B	Water Pump Pulley
C	Serpentine Belt
D	Crankshaft Pulley
E	A/C Compressor
F	Belt Tensioner

The serpentine belt is automatically tightened by a spring loaded tensioner. Check the condition and tension of the serpentine belt every 1000 hours.

Refer to ENGINE OPERATION AND MAINTENANCE MANUAL for inspection and replacement information for the serpentine belt.

IN-TANK FUEL STRAINER



A	Fuel Tank Cover Plate
B	O-ring
C	Fuel Tank Strainer

The fuel tank strainer is threaded onto the inlet pipe of the engine fuel feed line, located inside the bottom of the fuel tank.

CHANGING OR CLEANING THE STRAINER

1. Park the machine on level ground. Refer to PARKING THE MACHINE in SECTION 1.
2. Remove the fuel tank drain plug in the bottom of the tank and drain the fuel into a suitable container.
3. Remove the round fuel tank cover plate and O-ring from the access hole. Discard the O-ring.
4. Remove the fuel strainer using the hex collar on the end of strainer.
5. Clean any debris from the fuel tank and wipe all accessible surfaces clean.
6. Clean the strainer carefully (it can easily be damaged by rough handling).
7. Check for a buildup of foreign materials where the strainer threads on to the pipe and elbow.
8. Reinstall the strainer.
9. Reinstall the fuel tank cover plate with a new O-ring.
10. Refuel and check for leaks.
11. Turn ON the battery disconnect switch.
12. Check that all personnel are clear of the machine before starting engine.
13. Sound horn to warn personnel of machine start-up
14. Start the engine.
15. Check for leaks again.

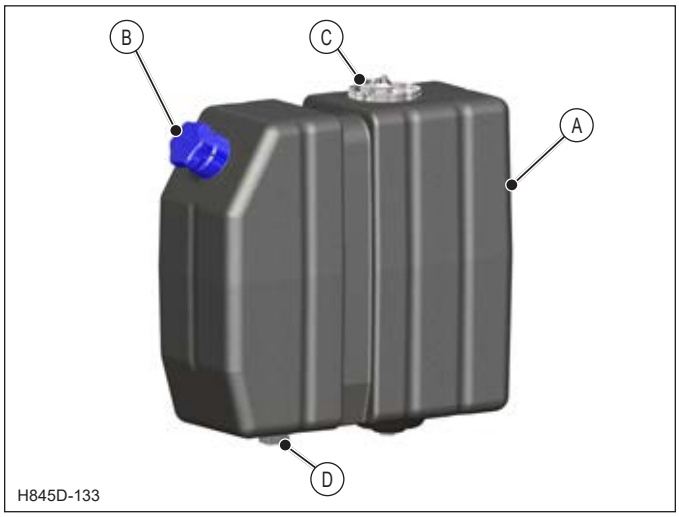
DIESEL EXHAUST FLUID (DEF) TANK

A DEF Tank Fill Cap

The DEF tank is located behind an access door in the compartment below the battery/storage compartment in the right rear corner of the machine. The DEF tank fill point is equipped with a strainer to prevent contaminants from entering the tank. Do not remove this strainer when filling the DEF tank.

DEF tank capacity is 80 L (21 US gals). Do not overfill tank. This tank is equipped with an expansion capacity of 7% required to allow for the expansion of DEF in cold temperature conditions. DEF freezes at −11°C (12°F).

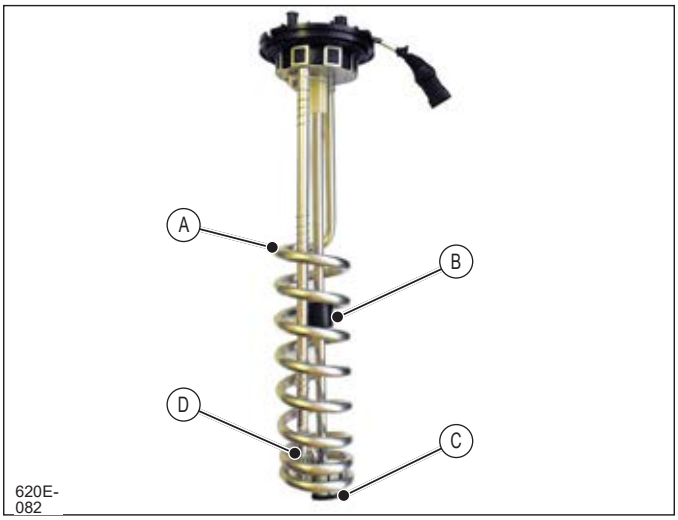
A DEF level indicator is shown on the computer display main screen, below the fuel gauge.



A DEF Tank
B DEF Tank Fill Cap/Strainer
C Sending Unit
D DEF Quality Sensor

The DEF tank includes a fill cap/strainer, a sending unit and DEF quality sensor.

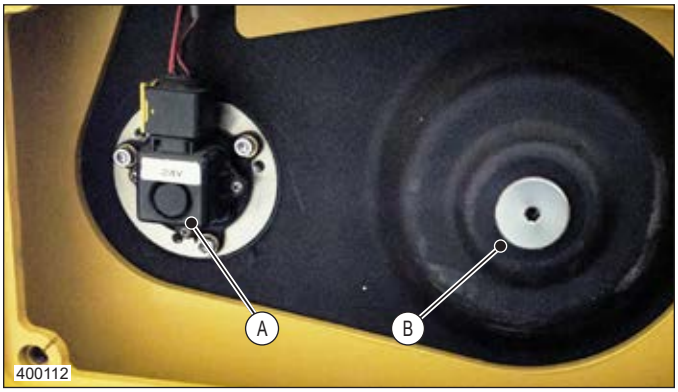
SENDING UNIT



A Coolant Heater Coil
B Level Sensor
C Strainer
D Temperature Sensor

The sending unit incorporates a heater coil, vent port, level sensor, strainer, temperature sensor, heating system inlet/outlet connections, DEF inlet/outlet connections and an electrical connector.

DEF QUALITY SENSOR



A DEF Quality Sensor
B DEF Tank Drain Plug

The DEF quality sensor is located on the bottom of the DEF tank. It does not have be removed when draining the tank.

DIESEL OXIDATION CATALYST (DOC)

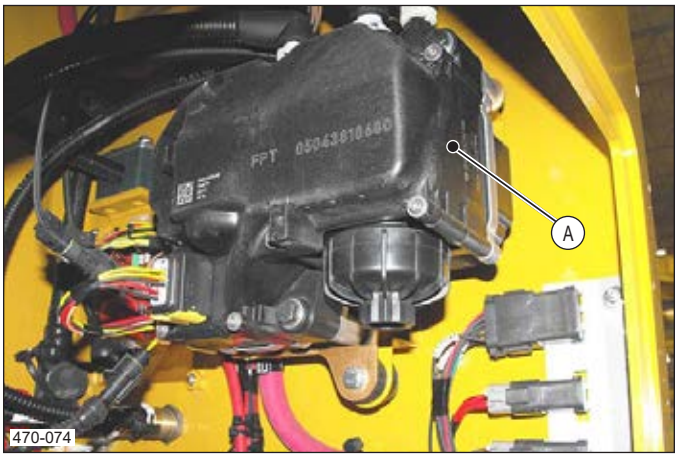
A Diesel Oxidation Catalyst

The diesel oxidation catalyst (DOC) is located in the engine compartment upstream of the catalytic converter (SCR/CUC) and at its outlet incorporates the mixer tube and the mounting for the dosing module.

The DOC uses oxidation at high temperatures to convert carbon monoxide (CO), hydrocarbons (HC) and the soluble organic fraction (SOF) of diesel particulates into inert compounds, carbon dioxide (CO_2) and water vapour (H_2O).

In addition the DOC converts nitrogen oxide (NO) into nitrogen dioxide (NO_2). Increased NO_2 levels enhance the performance of the SCR catalyst at low temperatures and increase the effectiveness of the DOC/SCR aftertreatment system as a whole.

DEF SUPPLY MODULE

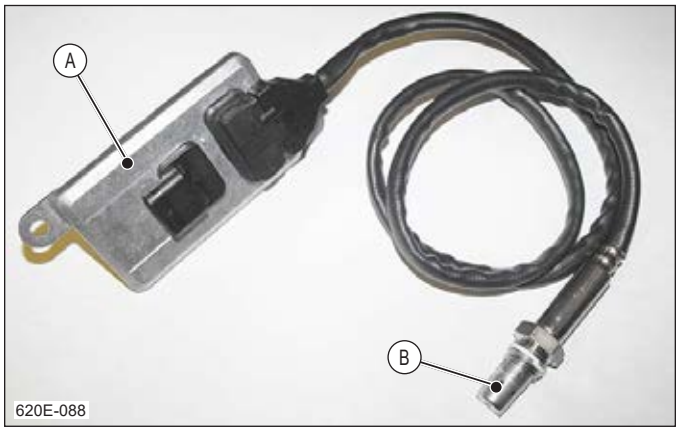


A DEF Supply Module

The supply module is located in the battery/storage compartment at the right rear of the machine.

The supply module pump picks up the DEF solution from the tank and sends it under pressure to the dosing module, mounted on the DOC. DEF is injected into the exhaust at the outlet of the diesel oxidation catalyst and upstream of the catalytic converter.

NOx SENSORS



A Electronic Control Unit
B NOx Sensor

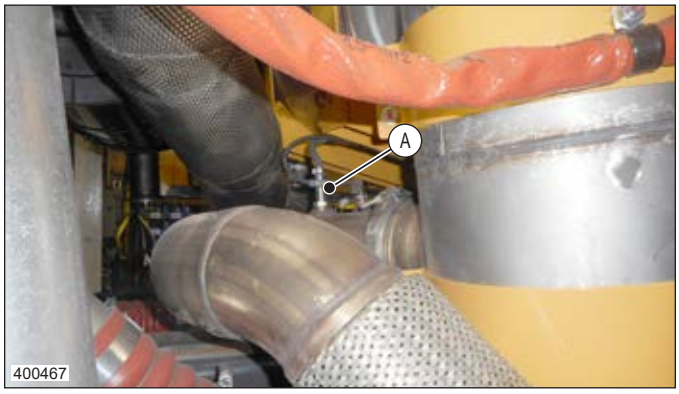
There are two NOx sensors and two NOx sensor ECU's in the aftertreatment system.

The NOx sensors detect and send information about the dosing of DEF solution and the efficiency of the catalytic converter to the DENOX 2.2 control system. This information is used to calculate the amount of DEF to be injected into the system and to monitor DOC/SCR aftertreatment system operation.

Each NOx sensor consists of a ceramic sensor and an electronic control unit linked by a cable. The sensor detects the concentration of nitrogen oxides in the exhaust.

The sensor, cable and control unit are considered to be one part for service/replacement purposes.

NOTE: Cable length cannot be changed as this will affect the proper operation of the sensor.

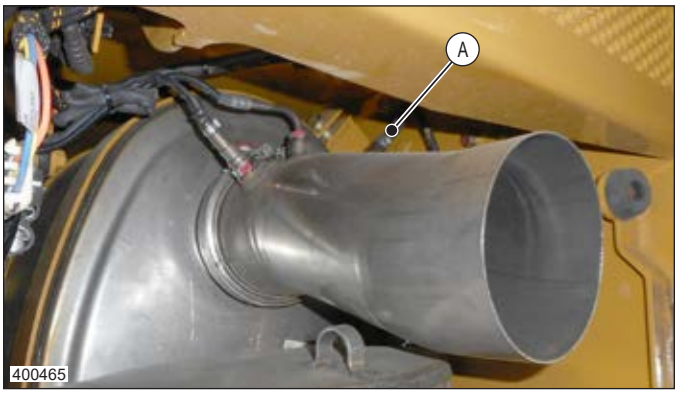


A Inlet NOx Sensor

The inlet NOx sensor is mounted on the tube between the turbo charger and the DOC inlet.

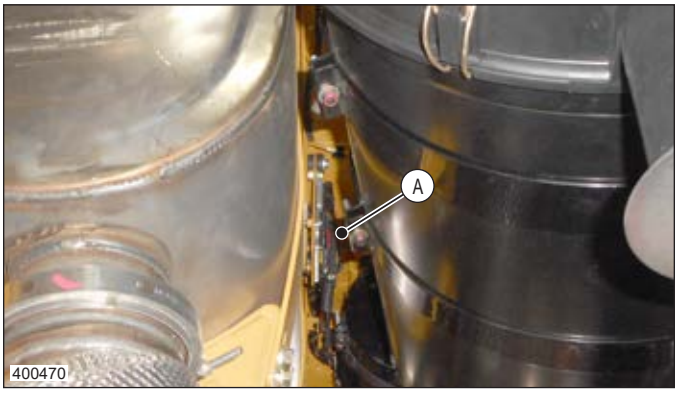
A Inlet NOx Sensor ECU

The inlet NOx sensor ECU is mounted on the wall at the front of the engine compartment next to the A/C receiver-drier.



A Outlet NOx Sensor

The outlet NOx sensor is mounted at the outlet of the catalytic converter.



A Outlet NOx Sensor ECU

The outlet NOx sensor ECU is mounted on a bracket between the air cleaner and the catalytic converter.

If an oil leak occurs in this area it should be thoroughly power-washed with a mild soap to ensure that all of the oil is removed. The presence of oil causes dust and dirt to cling to surfaces which impairs the ability of the reversible fan to remove dust and dirt particles.

Take care when cleaning, as the components can be damaged by careless handling and cleaning.

⚠ CAUTION

Avoid the risk of fire caused by debris accumulating on surfaces that may become hot during machine operation. Use care when cleaning to ensure debris removed from one area of the machine does not accumulate on other areas of the machine.

USING THE FAN CLEAN FUNCTION TO REMOVE DEBRIS DURING OPERATION

The hydraulic fan circuit has a CLEAN function for use in cleaning debris from the charge air cooler, radiator, oil cooler, A/C condenser, pump drive gearbox cooler, and air intake door screens during operation. By reversing the direction of the fan, air flows in the opposite direction, thereby forcing dust and debris off the charge air cooler, radiator, oil cooler, A/C condenser, pump drive gearbox cooler, and air intake door screens. Be sure no personnel are standing directly to the left of the machine when performing this operation. Dust and debris will fly out. Refer to FAN SWITCH (ENGINE COOLING) in SECTION 2 for more information.