Tigercat®

760B MULCHER
OPERATOR'S MANUAL
SERIAL NUMBER 7600501–7601000

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Exhaust after treatment Devices (if applicable)

- Diesel Oxidation Catalyst (DOC)
- Diesel Particulate Filter (DPF)
- Selective Catalytic Reduction (SCR)
- Diesel Exhaust Fluid (DEF) tank and dispensing systems

Exhaust Gas Recirculation Systems (EGR)

- EGR valve assembly
- EGR cooler

Cold Start Enrichment Systems

Electronic Control Units, Sensors, Solenoids, and Wiring harnesses used in above systems

Emissions warranty does not cover

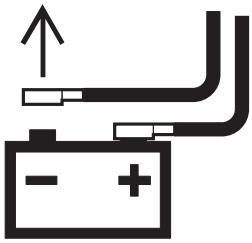
- Repairs arising from storage deterioration, failure to maintain the equipment, negligence, alteration, improper use of the equipment, collision or other accident, vandalism, or other casualty, or operation beyond rated capacity or specification.
- Repairs arising from abuse or neglect, including but not limited to: operation without adequate coolant or lubricants, adjustments to the fuel system outside equipment specifications, over-speeding, improper storage, starting, warm-up, or shutdown practices, incorrect fuel or contaminated fuel, oil or other fluids.
- Normal maintenance services, such as engine tune-ups, engine fuel system cleaning, checks, adjustments, shimming, etc.
- Items replaced due to customer demand.
- Labor charges performed by anyone except a dealer authorized by contract to repair the equipment, unless they qualify under special provisions (i.e. outside labor).
- Any and all travel costs for items such as towing, service calls, or transporting a unit to and from the place where the warranty service is performed. Unless otherwise specified on the standard engine warranty certificate.
- Normal maintenance costs, including but not limited to: lubricants, coolants, fluids, fuel, filters, and associated labor.
- Claims involving the inspection or reconditioning of units after storage or prior use.
- Repairs arising from service performed by agents not approved by Tigercat.
- Repairs arising from any unauthorized modification to the product or the use of non-Tigercat parts, implements or attachments.
- Removal, replacement, or installation of non-Tigercat optional equipment, attachments or components.
- Premiums charged for overtime labor costs or out of shop expenses.
- Economic loss including lost profits, crop loss, equipment rental, or other expense.
- Unauthorized modification or updating machines without a warrantable failure.
- Any and all costs of dealer shop supplies incurred with repairs, including but not limited to: solvents, cleaners, anti-seize lubricants, loctite, sealant, adhesive, oil-dry, shop towels, etc.
- Failure of the machine, its implements or attachments caused by improper field application or loading.
- Any and all costs for coolant, fuel, or lube (oil) analysis including supplies and lab recommendations.
- Cost associated with cleaning of machine in preparation for servicing.

⚠ CAUTION

Lead-acid batteries contain sulfuric acid which can severely damage eyes or skin on contact. Wear a safety face shield, rubber gloves and protective clothing to reduce risk of accidents.

Lead-acid batteries produce flammable and explosive gases. Keep arcs, sparks, open flames and lighted tobacco a safe distance from the batteries.

- If acid is accidentally splashed into your eyes, flush immediately with clean water and get medical attention.
- Do not attempt to charge a frozen battery. It can explode.



- Before servicing the machine, turn OFF the battery disconnect switch and remove the negative (−) battery terminal cable (to the starter motor) from the battery.
- When service is complete, connect the negative (−) battery terminal cable and turn ON the battery disconnect switch.
- Do not short out the battery terminals for any reason. Serious burns or an explosion can result.

AVOID INJURY FROM BACKOVER ACCIDENTS

- Before moving the machine, be sure all persons are clear of the area.
- Be alert for bystanders moving into the work area. Use the horn to warn bystanders before moving the machine.
- When using a signal person, keep the person in view at all times. Be sure the signal person is clear before backing up.
- To avoid backover accidents:
  - Look around the entire machine area before backing up the machine.
  - Keep the motion alarm in proper working order. The motion alarm must sound when the machine travels in forward or reverse.
  - Use a signal person when backing up if the view is obstructed. Keep the signal person in view.
  - Learn and understand the meaning of all flags, signs, and markings on the job site. Know who is responsible for signalling.
  - Keep windows, mirrors, lights, and cameras in proper working order.
  - Dust, rain, snow, and fog may reduce visibility. Reduce speed and use proper lighting.

- If the engine is running inside a building, make sure sufficient ventilation is available to prevent a build-up of toxic exhaust fumes. Run the engine only when it is necessary for testing or adjustments.
- Work in a ventilated area. If it is necessary to run an engine in an enclosed area, use an exhaust pipe extension to allow toxic exhaust fumes to be routed outdoors.
- If you don't have an exhaust pipe extension, either work outside, or open the shop doors.

- Dispose of fluids properly. Do not pour fluids into the ground, stream, pond or lake.
- Before draining any fluids, know the proper way to dispose of them.
- When performing required hydraulic checks and blade speed adjustments, install the saw blade guard or the push bar lock bars. Refer to the ATTACHMENT MANUFACTURER'S DOCUMENTATION.

- Keep your hands, feet, head, and loose clothing away from power driven parts. Tie long hair behind your head. Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.
- Be aware of machine pinch points that could cause injury. Do not place body parts within the range of motion of the working parts of the machine.
- Do not stand under an object supported with hydraulics. Use safety stands or a locking device.

⚠ WARNING

Follow the instructions and safety warnings provided by the attachment manufacturer before approaching the attachment to make adjustments.

⚠ WARNING

Do not work below or behind a machine parked on a grade.

⚠ WARNING

Failure to follow any of the above instructions could result in serious injury or death from crushing.

FIRE PREVENTION

When working in a forest environment combustible debris will collect in tight corners of the machine. Left unchecked, this debris may cause a fire; when mixed with fuel, oil, or grease in a hot or confined place, the danger of fire greatly increases.

The following fire prevention guidelines should be used to supplement the operator's fire prevention efforts. In no case should the guidelines be used, or assumed, as replacements for diligent operator efforts at preventing fires.

- Maintain a charged fire extinguisher on the machine at all times. Know how to use it.
- Remove dust and debris regularly from the air intake doors, cooling system components, and A/C condenser to prevent engine and hydraulic system overheating and to maintain efficient operation. Refer to CLEANING COOLER PACKAGE in SECTION 3 .
- Remove all forest debris and fine organic material around engine intake and exhaust components (turbocharger, exhaust manifold, exhaust pipes, muffler) at the end of each shift, or more frequently when working in conditions with high volumes of combustible forest debris. Check carefully in small pockets and cavities around the engine enclosure where smouldering debris may gather.

  NOTE: Minor debris accumulations near hot components can ignite and smoulder. Smouldering debris may shift and cause fire to spread.

- Clean out all accumulated forest debris (twigs, needles, branches, bark, leaves, saw dust, wood chips) and any other combustible materials from inside the machine belly pans, lower machine structures, and engine, hydraulic, and fuel system areas no less frequently than at the completion of each work shift.
- Inspect the machine regularly for evidence of diesel fuel or hydraulic system leakage. Check for worn or damaged hydraulic and fuel lines before turning on the engine.
- Clean up any grease, diesel fuel, or oil spillage (hydraulic or lubricating) immediately.
- Steam clean the engine, hydraulic pumps, transmission, brake, fuel and hydraulic oil tank compartments and all machine belly pans at least once each month, or more frequently when working in conditions with high volumes of forest debris
- Use only non-flammable solutions for cleaning the machine and components.
- Inspect the exhaust system daily for evidence of leakage. Check for worn, cracked, broken, or otherwise damaged pipes or muffler, and missing or damaged bolts or clamps. Make repairs immediately. Engine exhaust leaks can cause fires. Do not operate the machine until exhaust leaks are repaired.

  NOTE: Changes or increases in engine exhaust noise levels often indicate exhaust leaks. Do not ignore these warnings. Shut down the machine immediately and complete repairs.

- Park the machine at least 15 m (50 ft) away from other equipment at the end of each shift.
- Do not leave the machine parked with the boom raised off the ground. Should the hydraulic cylinder hoses burn through in a fire, hydraulic oil will escape and the boom will fall rapidly to the ground.
- Turn OFF the battery disconnect switch when parking the machine.
- Remain with the machine for at least 45 minutes at the end of operations while the machine cools.
- Remove the ignition key, and lock the cab and fuel cap at the end of shift to reduce the risk of vandalism or theft.
- Do not smoke in the vicinity of the machine.
- Do not smoke during fuelling operations, when the fuel system is open to the atmosphere, or when servicing the batteries. Exercise caution if smoking in the woods.
- After transporting a machine by road, open all doors and access panels; remove any debris that may have settled around the engine and exhaust system during the journey.
- Before undertaking repair work or welding, clean the surrounding area and place a fire extinguisher within easy reach.
- Store rags and other combustible materials safely in a fireproof location.
- Do not operate the machine near burning timber. Do not use the machine to push burning timber into a pile.
- There is no substitute for fire prevention. Time invested in prevention is repaid through productivity on the job site.

EXPLOSIVE RELEASE OF COOLING SYSTEM FLUID

This label warns of a pressure and fluid spray hazard when the coolant in the radiator is hot.

Do not loosen cap until cool. Explosive release of fluids from pressurized cooling system can cause serious burns.

Turn OFF the engine. Only remove coolant fill cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

EXPLOSION HAZARD

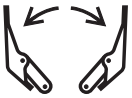
This label warns of an explosion hazard. The engine is equipped with a heater starting aid, do not use ether to assist in starting the engine.

Using ether could cause an explosion which could result in death or serious injury.

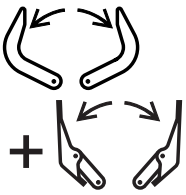
PICTOGRAM DESCRIPTIONS

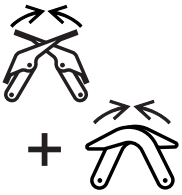
Diagrams in pictorial form are used to represent machine function operation. They are a simple universal language of symbols or pictograms that illustrate a function or component without the use of words.

Examples of these pictograms are the turtle and the rabbit that are often used to describe speed such as SLOW = or FAST = .


Accumulator Arms, OPEN


Accumulator Arms, CLOSE

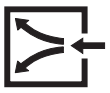

Accumulator Arms/Clamp Arms, Simultaneously OPEN


Accumulator Arms/Clamp Arms, Simultaneously CLOSE


Adjustment Menu


Air Conditioner OFF


Air Conditioner ON


Air Source, Fresh Air


Air Source, Recirculate

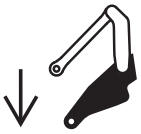

Alert Message

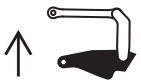
Auxiliary Power Outlet 12 V

Auxiliary Power Outlet 24 V

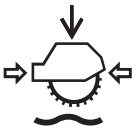

Battery


Battery, Disconnect


Boom DOWN


Boom UP


Boom FLOAT


Boom FLOAT PRESSURE


Boom Quick Connect LOCK


Boom Quick Connect UNLOCK


Boom Tilt BACK


Boom Tilt FORWARD


Brake

LEFT TOGGLE BUTTON– WINCH OPERATION OR BOOM FLOAT

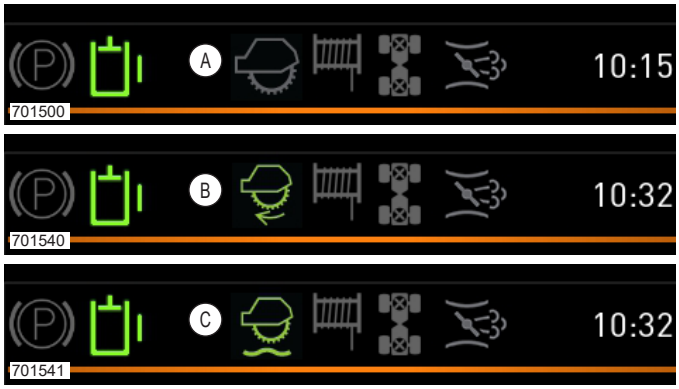
- Press and release to select winch or boom float operation.
- Press and release to turn OFF winch function.

TRIGGER SWITCH– BOOM FLOAT/WINCH FREE SPOOL ON/OFF

- Press and release to activate boom float operation or winch free spool operation.
- Press and release again to deactivate boom float operation or winch free spool operation.

NOTE: When machine is started, the trigger switch defaults to activating boom float until the toggle button is pressed to select winch function.

BOOM FLOAT OPERATION



A	Attachment Switch OFF
B	Attachment Switch ON
C	Boom Float ON

To operate boom float, the mulching head must be turned ON and the winch function turned OFF.

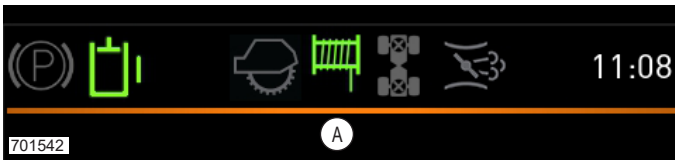
To turn ON boom float, press and release the trigger switch. The attachment switch ON icon will change to the boom float ON icon and illuminate GREEN.

To turn OFF the boom float function, press and release the trigger switch.

NOTE: The boom float ON icon will illuminate YELLOW if a faulty boom float pressure sensor is detected.

Boom float down pressure (% of maximum) can be adjusted. Refer to COMPUTER–MAIN MENU–ADJUST MENU– GENERAL SETTINGS in THIS SECTION.

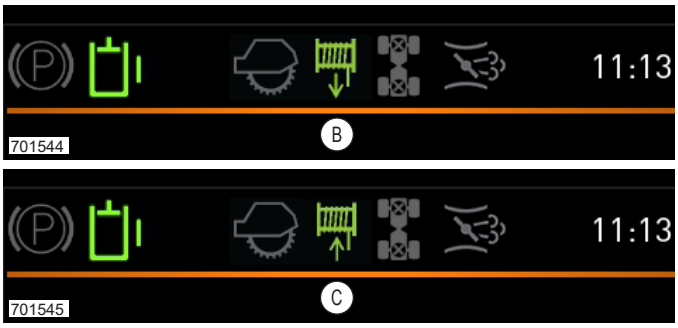
WINCH OPERATION



A	Winch ON

Press and release the left toggle button to activate the winch. The winch ON icon on the computer display will illuminate GREEN.

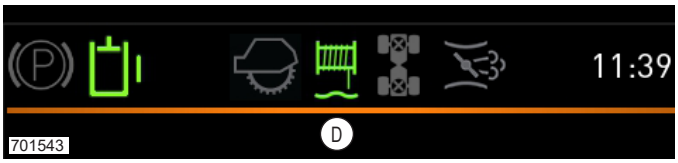
LEFT THUMB SLIDER– WINCH SPOOL IN/OUT



B	Winch Cable OUT
C	Winch Cable IN

Use the thumb slider to reel the winch cable IN/OUT. The winch icon will change to indicate the direction of the winch cable.

- Pull slider back to spool the winch cable IN.
- Push slider forward to spool the winch cable OUT.



D	Winch Free Spool

Press and release the trigger switch to free spool the winch cable. The icon will change to the winch free spool icon. The winch cable will now free spool off the winch reel.

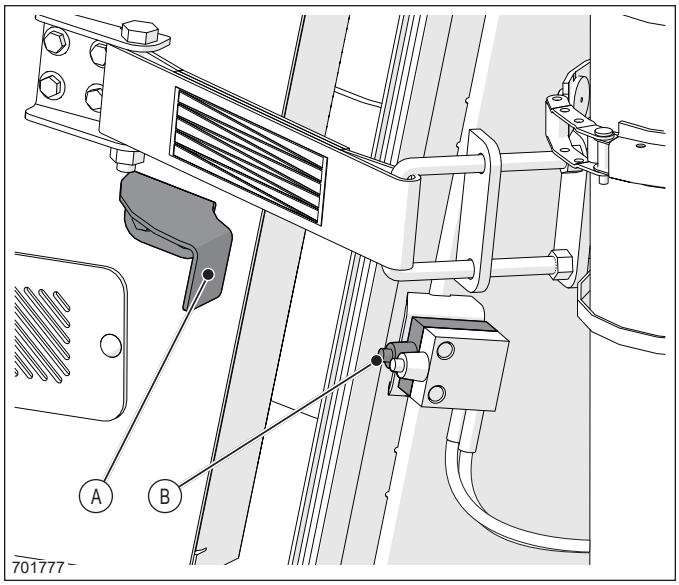
Using the thumb slider to reel the winch cable IN/OUT will turn OFF the free spool operation and return the winch to the winch IN/OUT mode. The winch icon will change to the winch IN or winch OUT icon based on the position of the thumb slider.

Press the left toggle button to turn OFF the winch function. The left thumb slider will now operate the attachment.

INTERLOCK RESET SWITCH

This switch is used to reset the interlock system after it is deactivated by opening either of the cab doors, or by turning the ignition key to the STOP position. This system prevents accidental or improper use of the controls from anywhere but the operator's seat.

With the engine running, and both cab doors closed, press and release the switch to reset the interlock system.



A Actuator (On Door)
B Interlock Door Switch (Left Cab Door Shown)

The left and right cab doors are equipped with an interlock door switch to prevent the machine from being operated with the doors open. To operate the machine, close both doors and press and release the interlock reset switch.

⚠ CAUTION

All functions on the machine can now be operated, either as intended or by accidentally touching them.

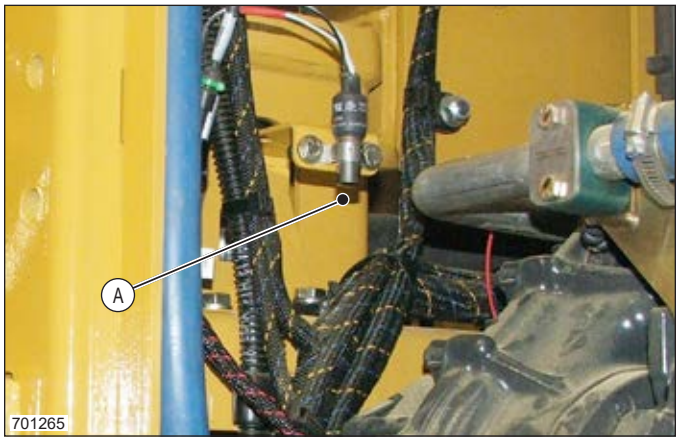
Once the interlock system has been activated, the safety of both the operator and all persons outside the cab becomes the responsibility of the operator.

⚠ WARNING

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

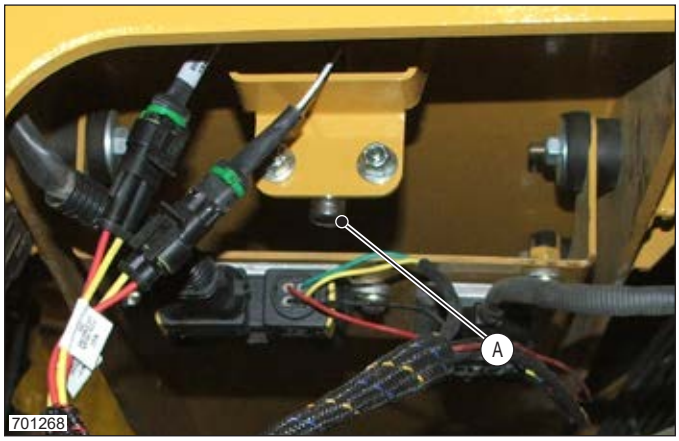
Press and release the switch again to turn OFF the interlock system while the engine is running.

THERMOSTAT LOCATIONS



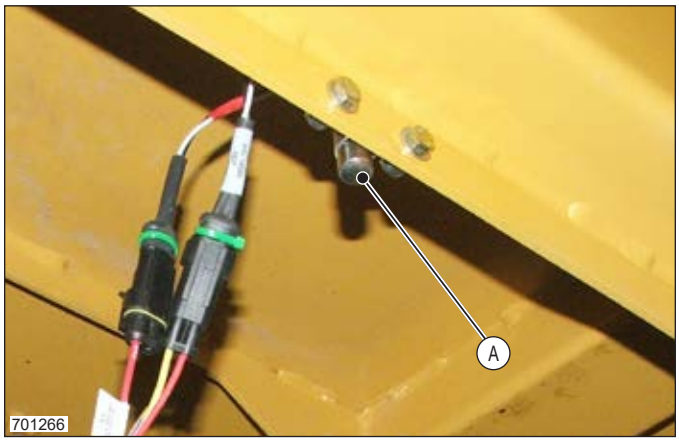
Left Hydraulic Compartment
A Thermostat

On front wall.



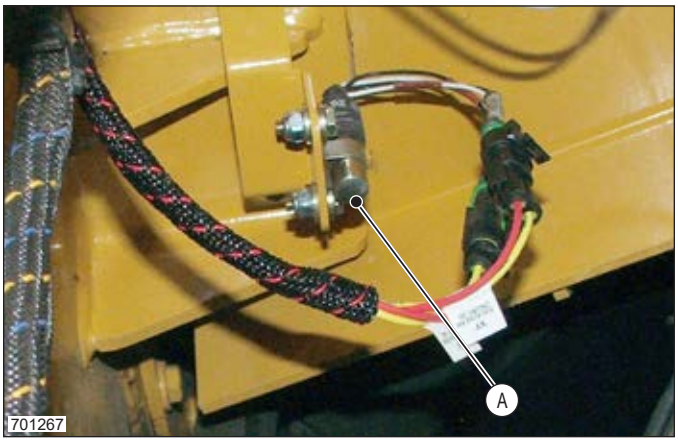
Left Engine Compartment
A Thermostat

Below catalytic converter.



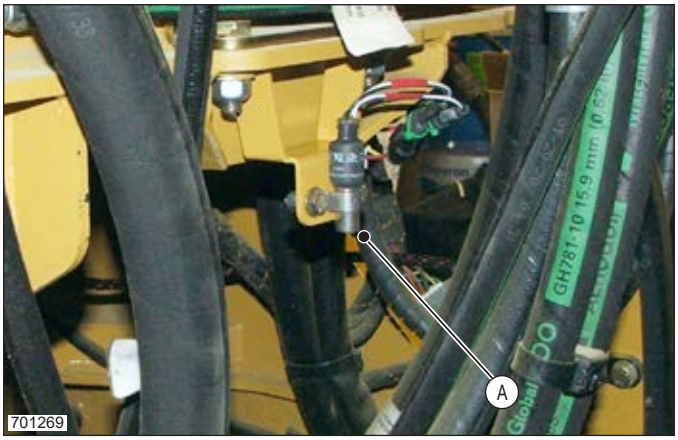
Right Hydraulic Compartment
A Thermostat

Above access door.



Right Engine Compartment
A Thermostat

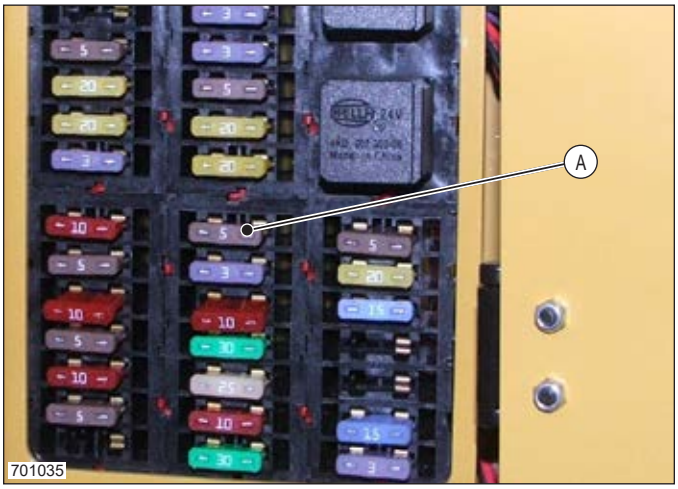
In front of cooler package.



Centre Hydraulic Compartment
A Thermostat

Below steer/winch valve.

ELECTRICAL POWER SUPPLY



Right Side of Cab
A Fire Detection System Fuse

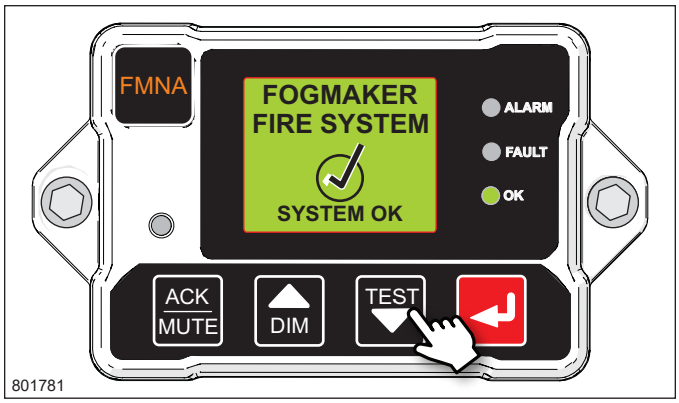
Power is supplied to the fire detection system by one 5A fuse at location 21 in the cab fuse and relay panel.

SYSTEM TEST

The control panel is equipped with a test feature to verify proper function of the audible alarm, fire warning, fault conditions, and fire relay features. The panel cycles as if in a true fire scenario except the system does not discharge.

To test the fire suppression system:

1. Park the machine. Refer to PARKING THE MACHINE in SECTION 1.
2. Apply the swing brake.



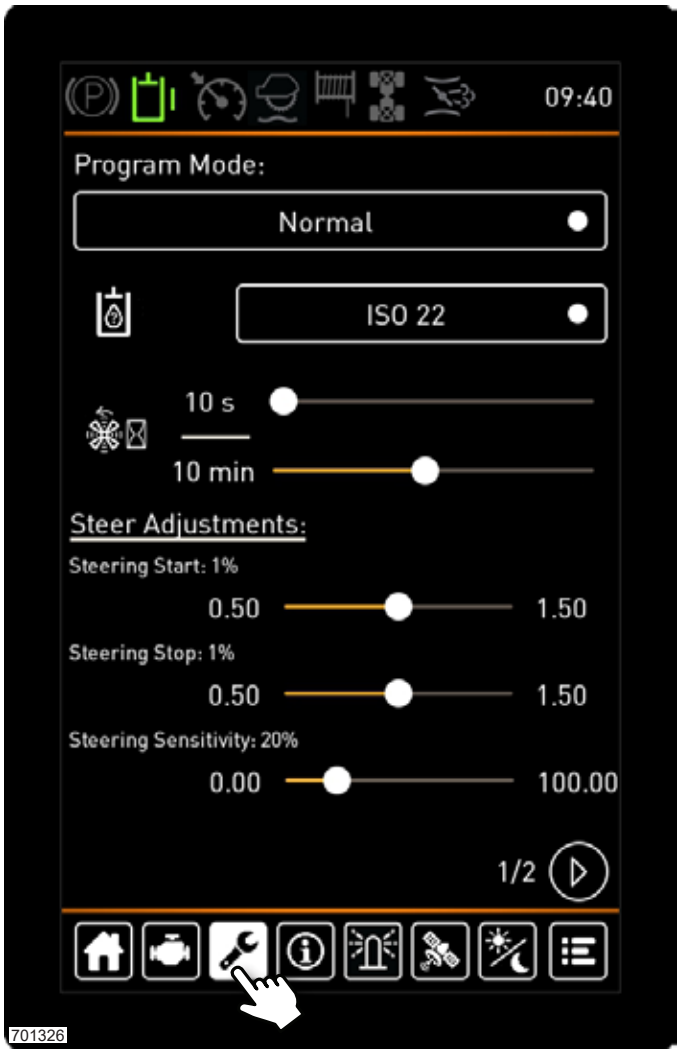
3. From the system status screen, press and hold the system test button.
4. Release the system test button once the test sequence begins.

NOTE: When the timer reaches zero, the engine rpm will change momentarily and any lights that are on will blink.

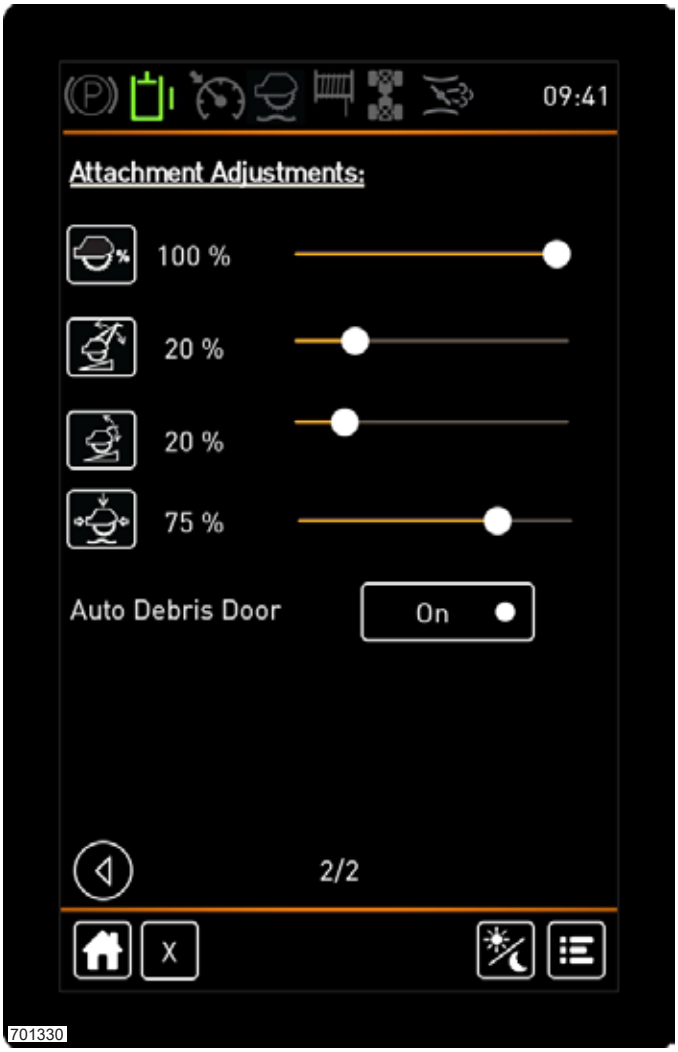
When the sequence is complete, the 'system OK' screen appears, indicating normal operations.

ADJUSTMENT MENU

SCREEN 1 OF 2



SCREEN 2 OF 2

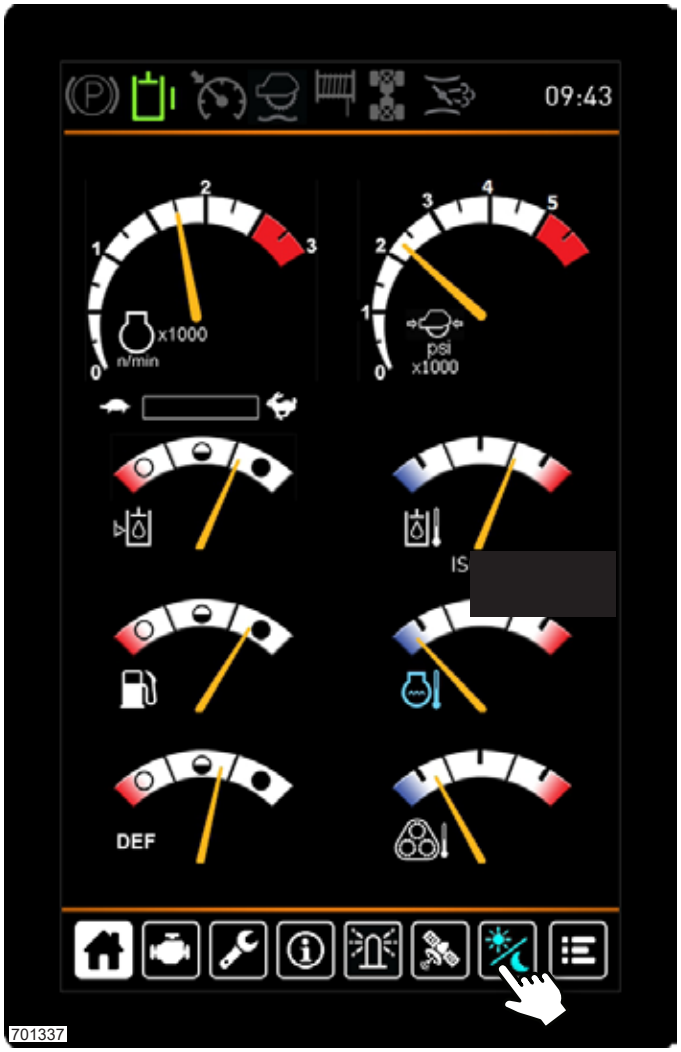


Home Screen–Adjustment Menu.

The Adjustment menu displays six options:

- Program Mode
- Hydraulic Oil Grade Selection
- Fan Clean Frequency/Duration
- Steer Adjustments
- Attachment Adjustments
- Auto Debris Door

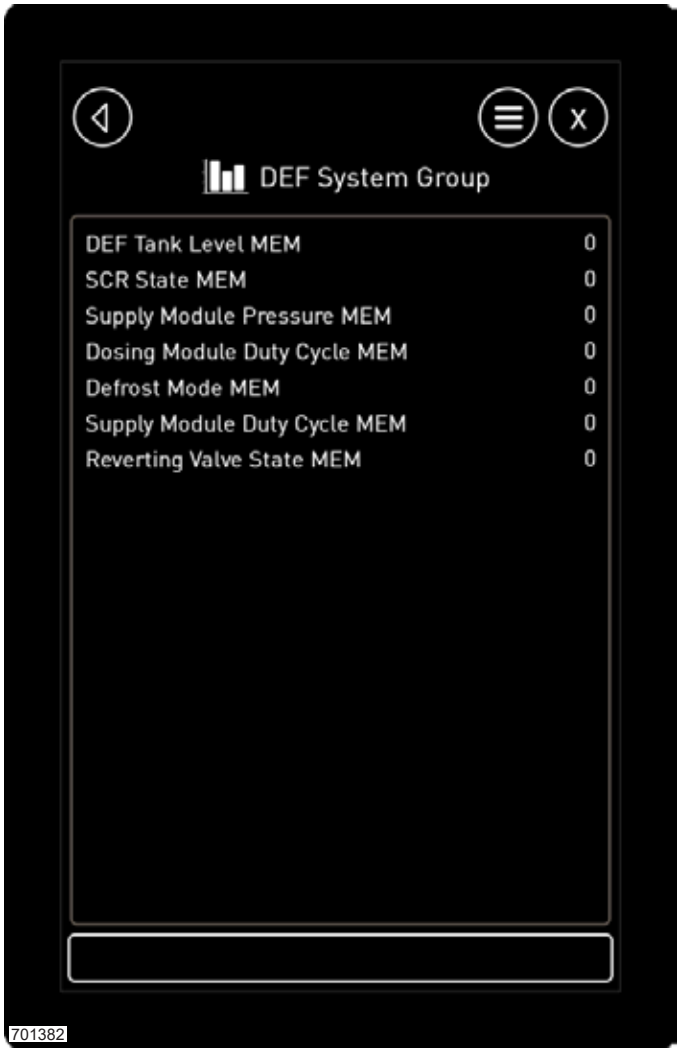
DAY/NIGHT SCREEN MODE



Home Screen – Day/Night Screen Mode.

Tap to toggle between day (bright) or night (dimmed) backlight displays.

DEF SYSTEM GROUP



Home Screen–Main–Measure–DEF System Group

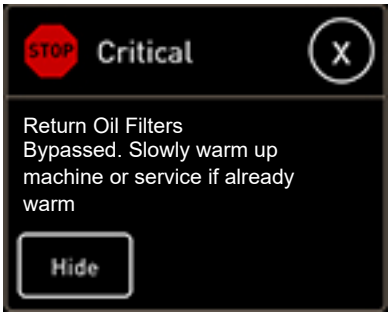
The DEF System Group menu displays the machine aftertreatment performance.

ENGINE OPERATIONS

Home Screen–Main–Adjust–Engine Operations

NOTE: This operation can only be performed by a trained service technician. A PIN is required.

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.

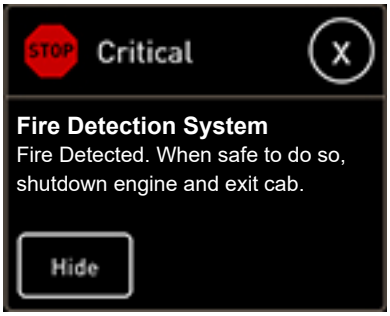
Refer to FILTERS–HYDRAULIC OIL RETURN in SECTION 3 for more information.

PUMP DRIVE GEARBOX TEMPERATURE HIGH

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

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

FIRE DETECTED

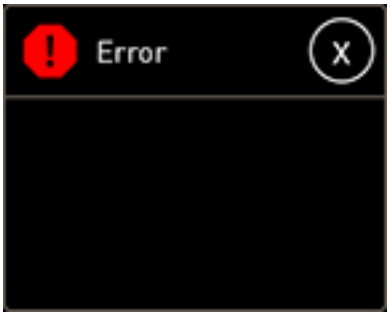


This message will be displayed, alarm light will flash and alarm will sound to inform the operator the fire detection system has detected a fire.

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

Refer to FIRE PREVENTION–WHAT TO DO WHEN A MACHINE FIRE OCCURS and FIRE PREVENTION–WHAT TO DO AFTER A MACHINE FIRE HAS OCCURRED in SECTION 1.

ERROR MESSAGES (RED)



Error messages advise the operator that a critical machine fault is about to occur or a system fault has occurred.

Error messages are activated when an electrical connection is broken/disconnected. Most error messages are due to computer system hardware or connection faults.

Error messages are the second highest priorities (after critical messages). The operator must take immediate to prevent damage to machine or to ensure operator safety.

When an error message displays, the master alarm sounds and the alarm light flashes continuously. The message remains on the screen until operator hides it.

The message gives brief details of the fault and advises what action is necessary.

When immediate action is necessary to correct the problem the operator must stop machine operation, turn OFF the engine, and service the machine to correct the problem.

If the machine cannot be stopped immediately for safety reasons, the operator can hide the message. In this instance the machine should be operated only long enough to move the machine to a safe location.

Messages can be hidden by tapping the Hide or Close button.

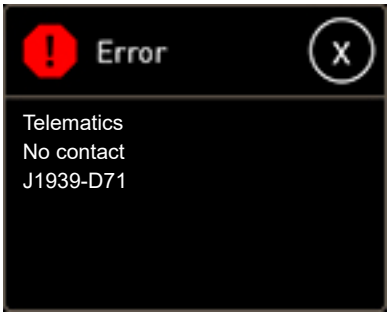
Error messages flash the critical symbol in the top icon bar at the top of the display when active messages are hidden. The symbol will continue to flash until the problem is resolved and fault becomes inactive.

Examples of error messages:

- Module No Contact Error
- Module VREF Error
- Voltage Input Error (VIN)
- Digital Input Error (DIN)
- Digital Output Error (DOUT)
- Current Output Error (COUT)

NOTE: Not all error messages are shown.

MODULE NO CONTACT ERROR



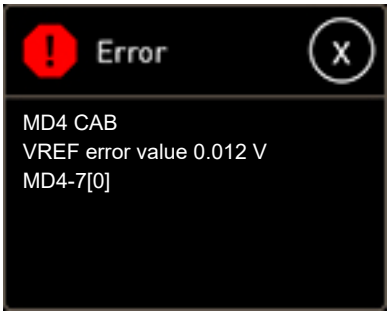
The module no contact error message indicates a loss of communication with, or power to, a module. The module is identified on the display screen.

When a module loses contact all machine functions controlled by that module cease and all messages associated with that module are activated. If the problem is with the CAN wires, all modules beyond the module in question will also be affected.

If the computer display module loses power or otherwise malfunctions, the screen may go blank and all machine functions controlled by the computer system will be affected.

When this message is acknowledged, hidden, and recalled to the screen, it will be replaced with a hardware fault message for the corresponding module.

MODULE VREF ERROR

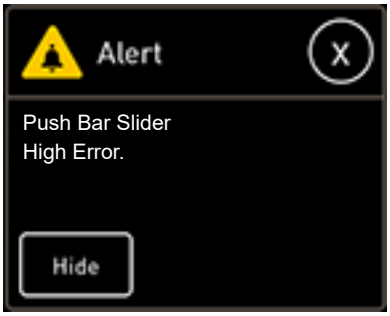


The module VREF message indicates a problem with the 5 V reference signal coming from the module. The source of the problem may involve a sensor, connecting wires, or the 5 V reference signal itself.

The module is identified on the display screen.

When this message is acknowledged, hidden, and recalled to the screen, it will be replaced with a hardware fault message for the corresponding module.

PUSH BAR SLIDER HIGH VOLTAGE

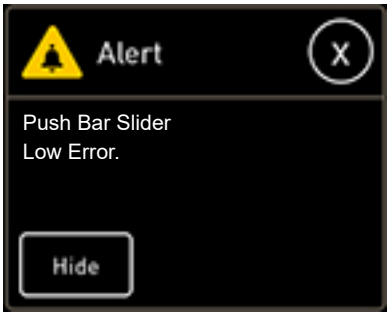


This message will be displayed when an alert level active fault related to the push bar slider voltage high has been activated.

SPEED CONTROL SLIDER HIGH VOLTAGE

This message will be displayed when an alert level active fault related to the push bar slider voltage high has been activated.

PUSH BAR SLIDER LOW VOLTAGE



This message will be displayed when an alert level active fault related to the push bar slider voltage low has been activated.

SPEED CONTROL SLIDER LOW VOLTAGE

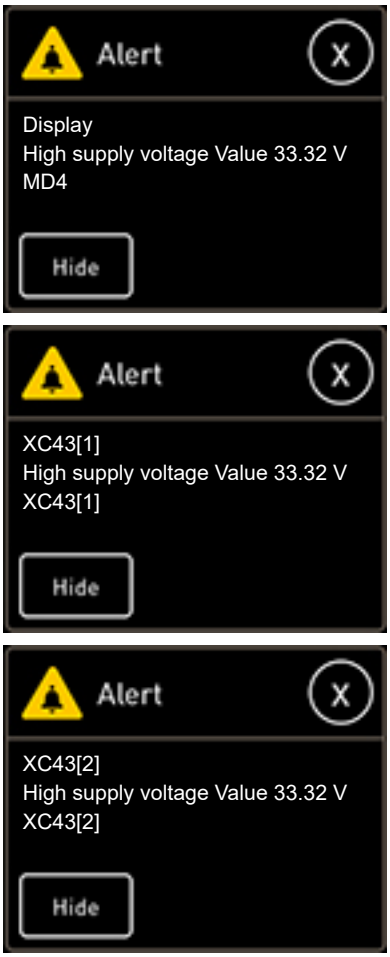
This message will be displayed when an alert level active fault related to the push bar slider voltage low has been activated.

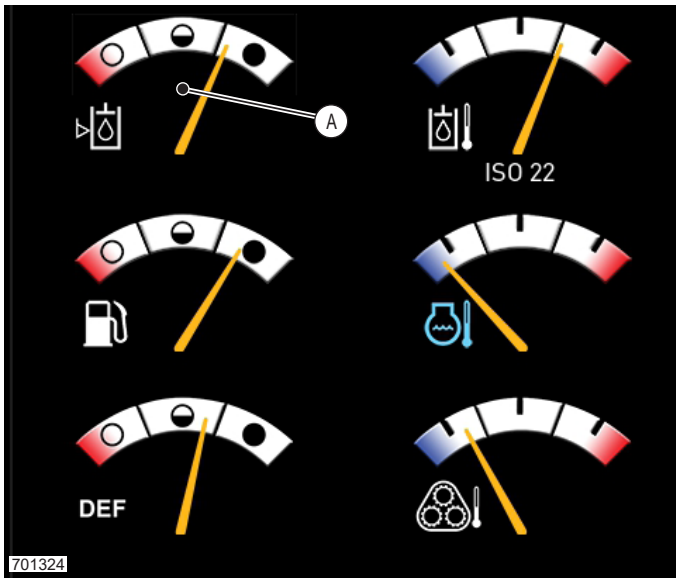
MODULE HIGH SUPPLY VOLTAGE–ALERT

Module high supply voltage alert message will be displayed to indicate the computer control system has detected high supply voltage readings in a system module.

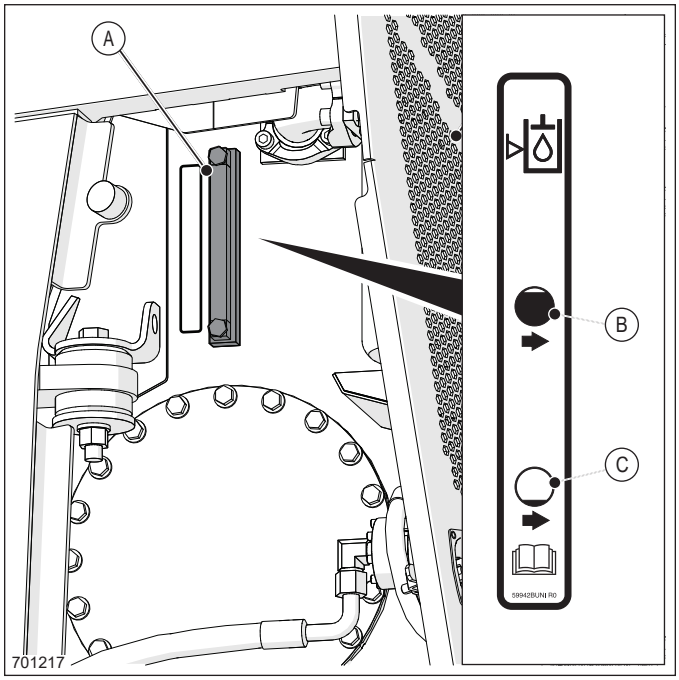
The module is identified on the display screen. The voltage reading value is also displayed.

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.





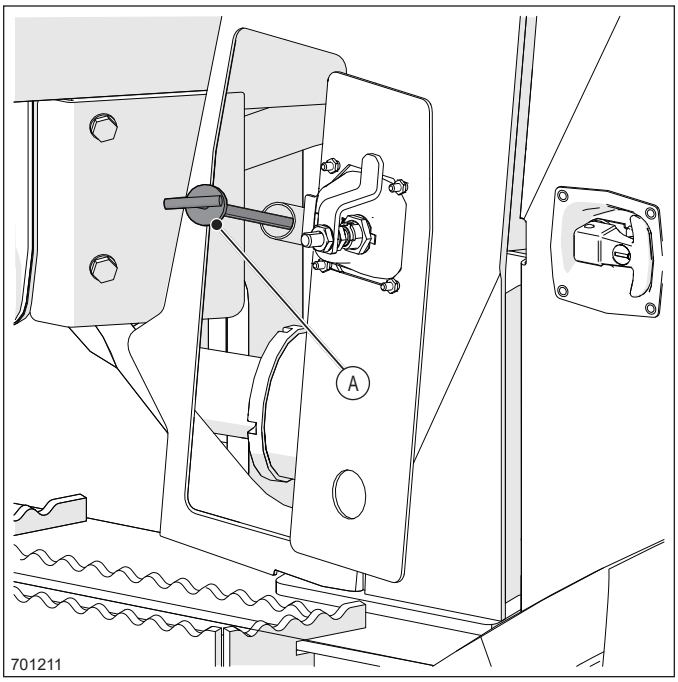
Computer Display Home Screen
A Hydraulic Oil Level Gauge



Upper Left Hydraulic Compartment
A Oil Level Sight Gauge
B Hydraulic Oil Level High Limit
C Hydraulic Oil Level Low Limit

6. Check the hydraulic oil level. The sight gauge is located in the left side hydraulic compartment.

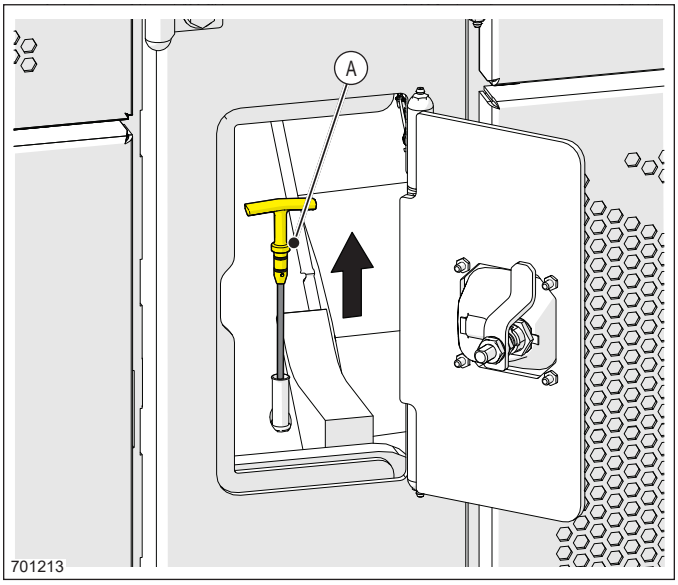
   The level should be between 70–100% on the computer display (between the HIGH and LOW level marks on the sight gauge label) with all cylinders fully retracted. Refer to HYDRAULIC SYSTEM–REFILLING in SECTION 3.



Left Side of Machine Behind Cab
A Transmission Oil Dipstick and Fill–Left Side

7. Check the transmission oil level. Dipstick is located on left side of the machine behind the cab.

   The level of the oil must be between the ADD and FULL marks on the dipstick. Refer to TRANSMISSION–CHECKING OIL LEVEL in SECTION 3.



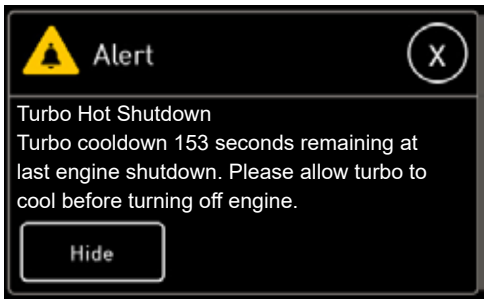
Left Side of Machine Behind Hydraulic Compartment
A Pump Drive Gearbox Dipstick

8. Check the pump drive gearbox oil level. Dipstick is located behind the pump gearbox access door on the left side of the machine.

   The level of the oil must be between the ADD and FULL marks on the dipstick. Refer to PUMP DRIVE GEARBOX–CHECKING OIL LEVEL in SECTION 3.

AFTER A HOT ENGINE SHUTDOWN

When a hot engine shutdown occurs, the following messages will be shown at the next engine start. Refer to HOT ENGINE SHUTDOWN in THIS SECTION.



The messages remind the operator to wait for the hot engine shutdown prevention strategy to proceed, allowing the engine and turbo to cool before turning off the engine.

TEMPERATE ENGINE SHUTDOWN

A temperate engine shutdown allows immediate engine shutdown when the following conditions are met.

TIER 4F MACHINES

- Aftertreatment system intake temperature reduced below the set temperature.
- Turbo boost has been below a set level for three minutes

  OR

- Aftertreatment system intake temperature never rose above the set temperature, regardless of turbo condition. For example, moving the machine a short distance without a load.

TIER 2 MACHINES

- Turbo boost has been below a set level for three minutes, when engine temperature is above a set temperature.

To perform a temperate engine shutdown:

1. Turn ignition key to the STOP position.
   - Engine shuts down immediately.
   - No event is logged.

HOT ENGINE SHUTDOWN

A hot engine shutdown bypasses the Hot Engine Shutdown Prevention Strategy when hot engine conditions are met.

A hot engine shutdown will be initiated when:

- Emergency Engine Stop Button is pressed. An emergency engine stop log will be created.
- Engine stall occurs under load (turbo boost > set let level). A stall log and hot shutdown log will be created.
- Operator bypasses the Hot Engine Shutdown Prevention Strategy after the ignition switch is turned off by using the Emergency Engine Stop Button.

A hot engine shutdown occurs when the following conditions are met:

TIER 4F MACHINES

- Aftertreatment system intake temperature is above a set temperature.
- Turbo boost is above a set level.

TIER 2 MACHINES

- Turbo boost is above a set level and engine coolant temperature is above a set temperature.

TIGERCAT FLUID SAMPLING PROGRAM

FLUID SAMPLE COLLECTION PROCEDURES

Fill out the Sample Information Form (SIF) completely and accurately. When taking multiple fluid samples, fill out all of the required SIF`s in their entirety, prior to taking any fluid samples. Then, immediately package each completed SIF together with the matching fluid sample in the black outer shipping container as each individual sample is taken. This will reduce the possibility of mixing up or incorrectly identifying the SIF`s and fluid samples. Incorrectly identified samples could result in a false warning alarm.

The accuracy of the lab analysis results is very dependent on the quality of the fluid sample taken. Collection of clean fluid samples that are representative of the main body of fluid are essential if meaningful lab results are to be obtained. Erroneous readings may result if proper collection, handling, packaging and shipping practices are not followed prior to the sample being tested by the lab. To be able to accurately compare and trend the lab results over time, all follow-up samples should be consistently taken from the same location using the same techniques as all previous samples.

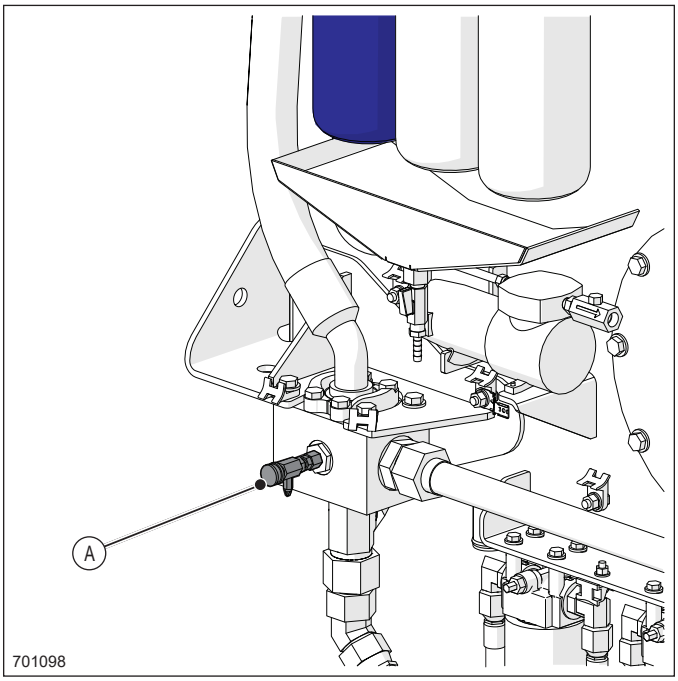
- All sample valves and drain plugs must be clean and free of debris.
- Remove the dust cover from the sample valve and attach the bleed hose (supplied with the machine) to the sample valve connection.
- Remove the sample bottle cap only when ready to obtain the sample. Keep the cap clean–do not put it in your pocket or let it get contaminated in any way.
- Do not allow any airborne dirt, etc., to enter the sample bottle.
- Avoid contamination of the sample–replace the sample bottle cap immediately after filling the bottle to approximately ¾ full.

All samples taken should be immediately forwarded to the lab for processing.

Contact your Tigercat dealer to purchase additional or replacement hydraulic sample valves or drain plugs.

In cases where fluid samples must be pumped or otherwise drawn out of a tank or housing, a hand operated fluid suction pump is also available from your Tigercat dealer.

HYDRAULIC OIL SAMPLES



Hydraulic Tank–Right Side

A Hydraulic Oil Sample Valve

- Hydraulic oil samples should be taken from the circulating oil flow at operating temperature, with no functions actuated, using sample valves that are permanently located on the machine whenever possible.
- Purge the bleed hose before taking a representative oil sample. Drain a minimum of 90–120 ml (3–4 oz) of oil into a separate container and discard this oil using approved recycling methods.
- Remove the bleed hose and replace the dust cover on the sample valve immediately after taking the oil sample and sealing the sample bottle.

TRANSMISSION, AXLE AND PUMP DRIVE GEARBOX SAMPLES

- These samples can be taken during the oil change process.
- To obtain a representative oil sample, the oil must be warm and must not have settled (within 30 minutes of shutdown).
- Place the required drain container under the machine to capture the used oil to be discarded using approved recycling methods.
- Remove the drain plug and allow approximately 50% of the oil to drain, then place the sample bottle in the stream of draining oil to obtain a representative sample.

EVERY 1000 HOURS

PERFORM

- FREQUENTLY Maintenance.
- 8 HOURS Maintenance.
- 48 HOURS Maintenance.
- 125 HOURS Maintenance.
- 250 HOURS Maintenance.
- 500 HOURS Maintenance.

CHECK

- In-tank fuel strainer.
- Centre joint for looseness.

  Refer to CENTRE JOINT MAINTENANCE AND INSPECTION in THIS SECTION for instructions. If a problem is found take corrective action immediately.

  Refer to CENTRE JOINT in SECTION 11 of the SERVICE MANUAL for more detailed checking and adjustment procedures.
- Accumulator charge valve strainer.

  Refer to SECTION 5 of the SERVICE MANUAL for accumulator charge valve strainer instructions.
- Winch mounting bolts and fasteners for tightness (if equipped).

REPLACE

- Engine serpentine belt.

DRAIN AND REFILL

- Oil in front and rear axles.

  Refer to SECTION 8 of the SERVICE MANUAL for axle oil change procedure.
- Oil in winch (if equipped).

  Refer to WINCH in THIS SECTION for grade of oil.

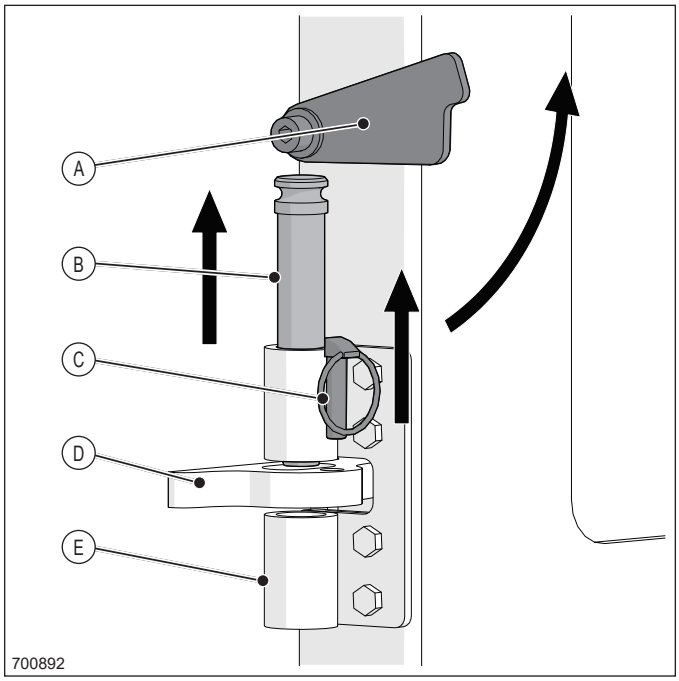
LUBRICATE

- Front and rear axle pinion grease seal: 1 fitting per axle–purge.

Refer to ENGINE OPERATION AND MAINTENANCE MANUAL and ATTACHMENT MANUFACTURER'S DOCUMENTATION for additional required maintenance at this scheduled time period.

Use of filters other than genuine Tigercat replacement filters is not recommended.

REAR DOOR LATCH



A	Latch Pin Swing Lock
B	Latch Pin
C	Lynch Pin
D	Latch Pin Lug
E	Door Pin Tube

To open the door, lift the lynch pin, swing the latch pin stop to the side, lift the latch pin and swing open the door.

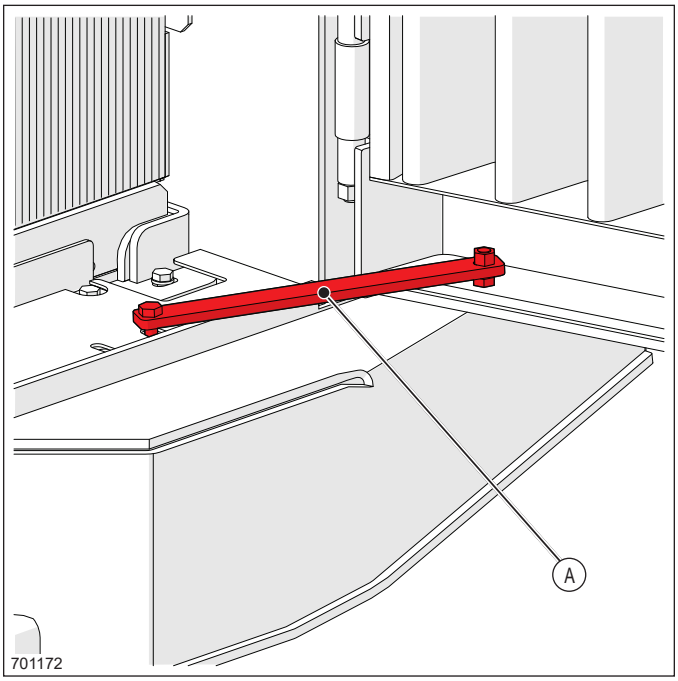
A swing latch secures the rear door. The latch is designed to prevent loss of the door pin.

To open the rear door:

1. Remove the lynch pin from the latch pin lug.
2. Swivel the latch pin swing lock to the rear.
3. Lift the latch pin free of the latch lug.
4. Open the door.
5. Reinstall the lynch pin in the latch lug.
6. Allow the latch pin to drop into the door tube. The latch pin swing lock will swing into position.

When closing the door, reinstall the lynch pin in the latch pin lug.

DOOR SAFETY STOP



Rear Door	
A	Door Safety Stop in Locked Position

The rear door is equipped with a door safety stop. To brace the door open, lift the door safety stop out of its storage position in the door and place the safety stop bolt in the hole provided in the door ledge. Store the safety stop back in the door before closing.

⚠ CAUTION

Install the door safety stop when opening the rear door to perform service in the pump compartment. If not used, the door could close unexpectedly causing personal injury or component damage.

TRANSMISSION

The transmission is mounted in the rear chassis behind the centre joint.

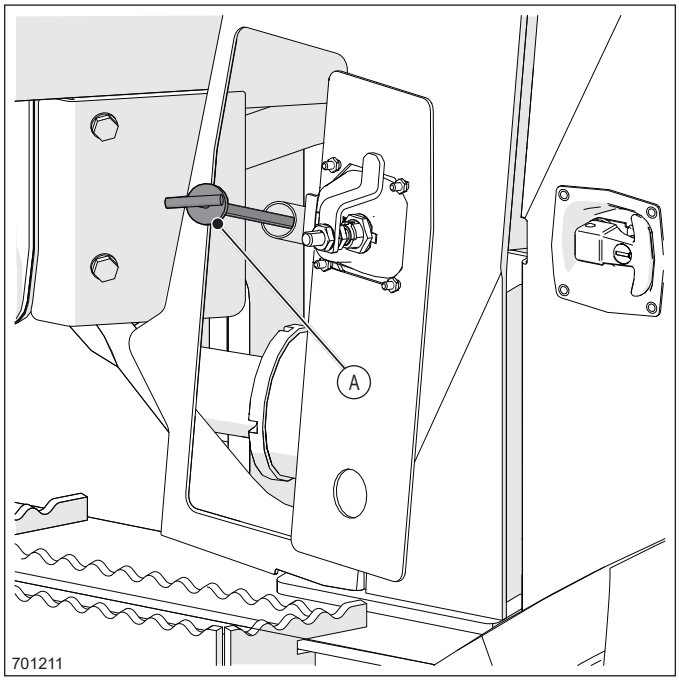
Check the transmission oil level every 8 hours. Drain and replace the transmission oil every 250 hours.

CHECKING TRANSMISSION OIL LEVEL

1. Park the machine as described in PARKING THE MACHINE in SECTION 1.

   NOTE: The machine must be level when checking transmission oil level.

2. Open the transmission access door behind the cab on the left side of the machine. Refer to ACCESS DOORS AND COVERS in THIS SECTION.



Left Side of Machine–Behind Cab	
A	Transmission Oil Dipstick and Fill

3. Clean around the transmission dipstick/fill tube.
4. Remove the dipstick and read the level.
5. If transmission oil level is low, add transmission oil checking the level regularly with the dipstick. Do not overfill.
6. Replace the dipstick.

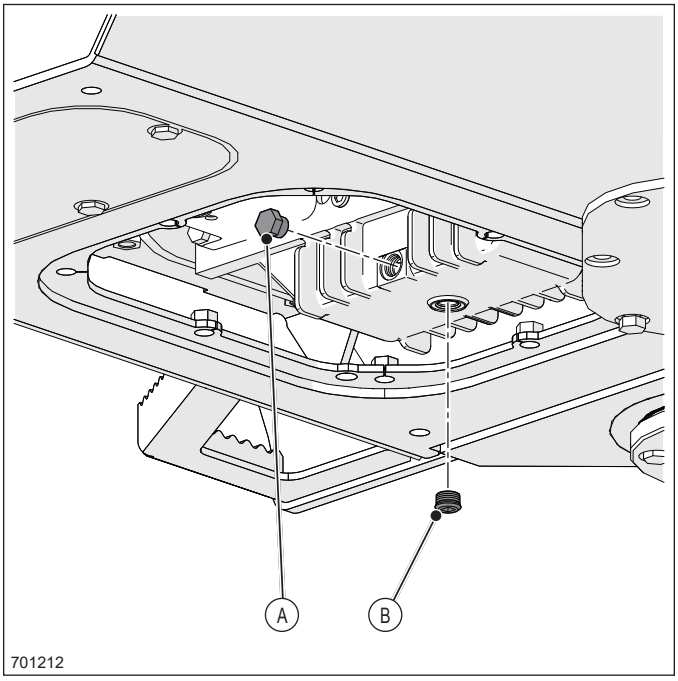
Refer to SERVICE AND LUBRICATION POINTS in THIS SECTION.

DRAINING AND REFILLING TRANSMISSION

1. Park the machine as described in PARKING THE MACHINE in SECTION 1.

   NOTE: The machine must be level when draining and refilling the transmission.

2. Clean around the dipstick/fill tube.
3. Remove the dipstick.
4. Open the large mid-chassis cover. Refer to ACCESS DOORS AND COVERS in THIS SECTION.

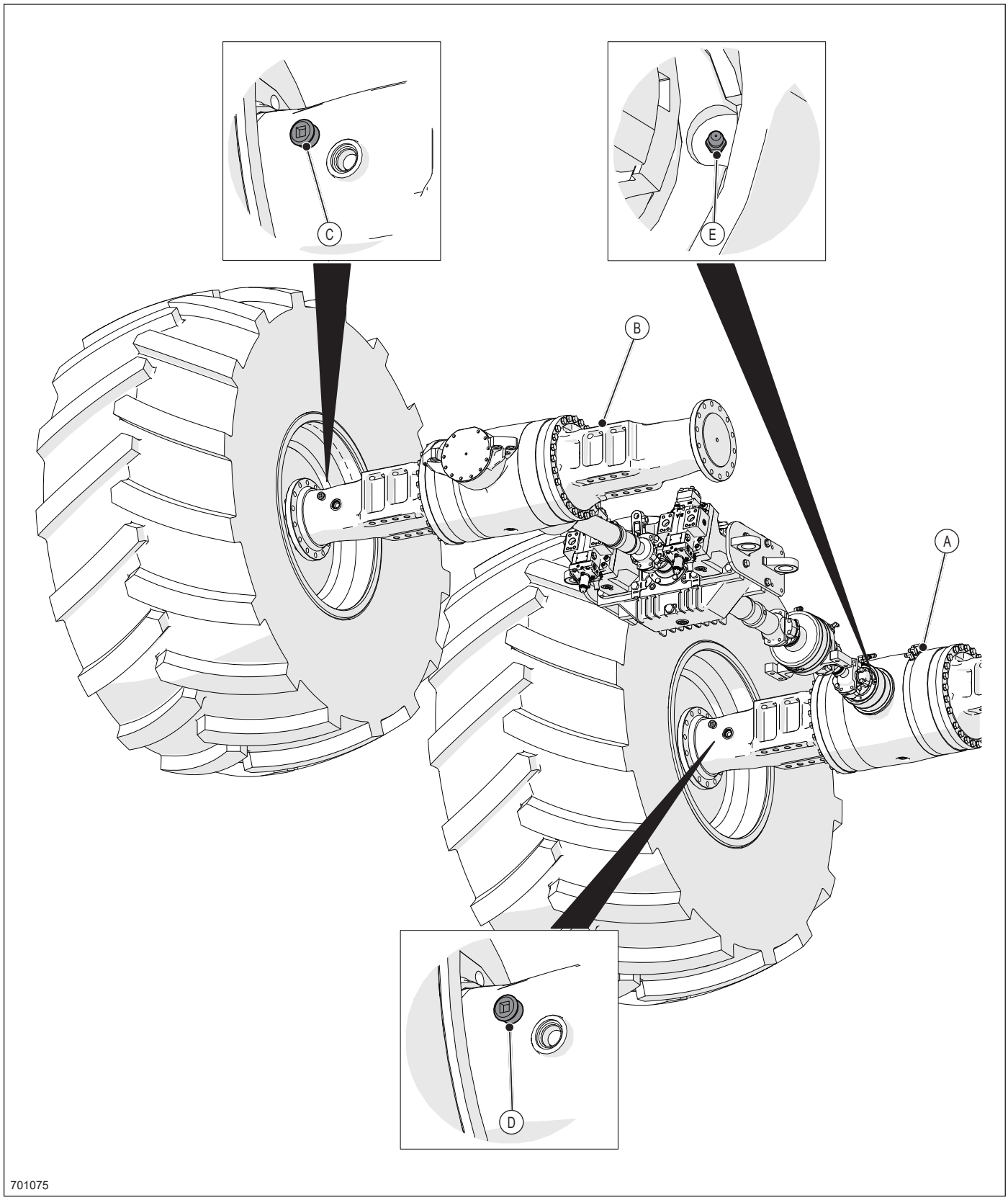


Underside of Machine–Behind Centre Joint	
A	wideRANGE™ Transmission Drain Plug–Rear
B	Magnetic Plug–Bottom

5. Remove the transmission drain plug and drain the oil into a suitable container for disposal.
6. Remove the magnetic drain plug and clean off any filings that have been collected.
7. Replace the drain and magnetic plugs.
8. Refill the transmission with the correct quantity of transmission fluid.

   Refer to SERVICE AND LUBRICATION POINTS in THIS SECTION for transmission oil capacity and recommended transmission oils.

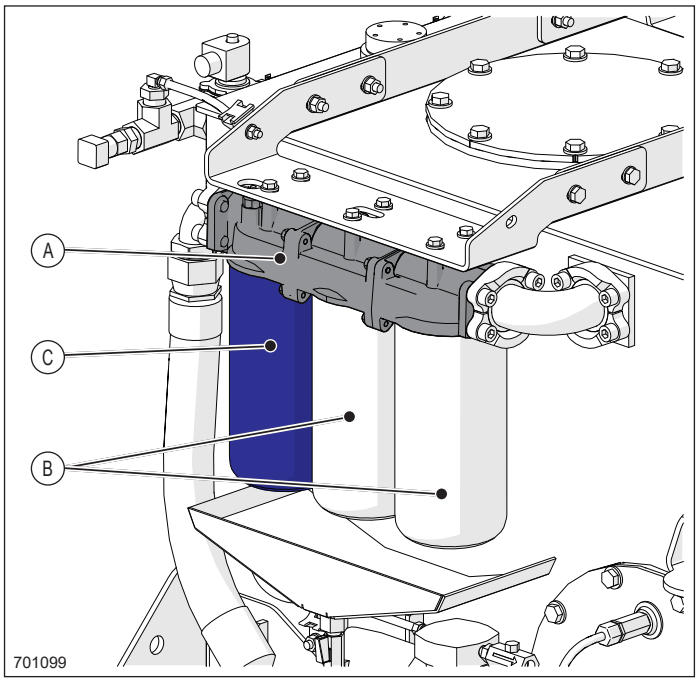
9. Replace the dipstick.

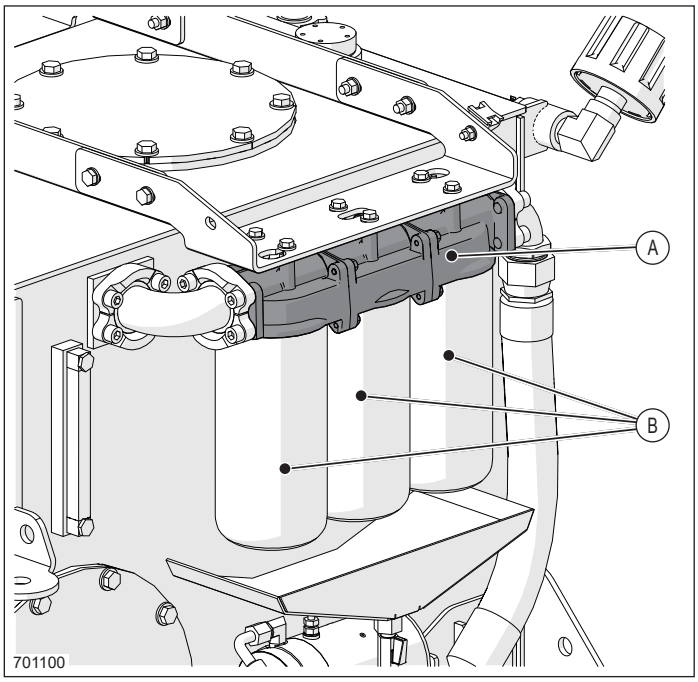


Axle Drain and Fill Locations–Viewing Rear of Machine

A Front Axle
B Rear Axle
C Rear Axle Fill/Level Plug–Left Rear
D Front Axle Fill/Level Plug–Left Rear
E Front Axle Pinion Seal

HYDRAULIC OIL RETURN FILTERS





Hydraulic Tank–Right Side	Hydraulic Tank–Left Side
A Filter Head	A Filter Head
B Hydraulic Oil Return Filters (White)–Quantity 2	B Hydraulic Oil Return Filters (White)–Quantity 3
C Water Absorbing Return Filter (Blue)–Quantity 1	

The return oil entering the hydraulic oil tank passes through three spin-on hydraulic oil return filters mounted on a filter head on each side of the hydraulic oil tank (total of six filters). One of the filters on the right side of the tank is a water absorbing (blue) filter in place to assist with the removal of unwanted moisture from the hydraulic oil.

For service and replacement intervals refer to SCHEDULED MAINTENANCE in THIS SECTION.

There is a bypass valve, preset at 1.7 bar (25 psi), built into both filter heads, which will open when the filters become restricted. Before the valve is activated, a filter restriction pressure switch will cause the Hydraulic Oil Filter Bypass icon on the computer display to illuminate RED. Refer to HYDRAULIC SYSTEM–FILTER RESTRICTION PRESSURE SWITCH in THIS SECTION.

If the Hydraulic Oil Filter Bypass icon illuminates RED between scheduled maintenance intervals, stop the machine and change the return filters immediately.

NOTE: The Hydraulic Oil Filter Bypass icon will illuminate YELLOW when the hydraulic oil temperature is low and the filter restriction switch is activated. Allow the hydraulic oil to warm to operating temperature and the icon should change to GREY. Refer to MACHINE PREPARATION in SECTION 2.

FILTER RESTRICTION PRESSURE SWITCH

A filter restriction differential pressure switch is installed on the one of the filter heads. When an oil pressure differential in excess of 1.4 bar (20 psi) is encountered at the return filters, this pressure switch closes and generates a critical message which appears on the computer display. The alarm will sound and the alarm light will flash continuously. Refer to COMPUTER–MESSAGES–CRITICAL–HYDRAULIC OIL RETURN FILTERS BYPASSED in SECTION 2.

FILTER/DIFFUSER SERVICE NOTE: The return filters should be checked/changed when the message appears on the computer display. If the message continues to display after the filters have been changed, the diffuser/strainer attached to the base of the return tube in the hydraulic tank should be examined for possible obstruction. Refer to HYDRAULIC SYSTEM–HYDRAULIC OIL TANK–RETURN DIFFUSER/STRAINERS in THIS SECTION.

IMPORTANT!
Do not use these warnings as a substitute for changing the hydraulic oil return filters at regular intervals as per SCHEDULED MAINTENANCE in THIS SECTION.

This information is assuming that operating conditions and running temperatures are normal.

LOW VOLTAGE DISCONNECT ADJUSTMENT

The low voltage disconnect (LVD) feature permits the operator to determine the battery voltage threshold at which the timer/controller shuts down the heater, or prevents it from starting.

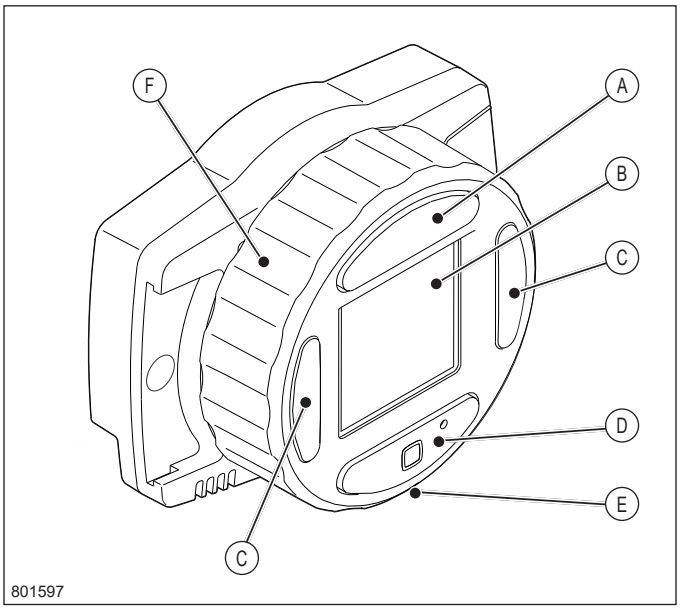
If the battery voltage is equal to or lesser than the low voltage disconnect threshold, plus 0.1 V, the heater will not operate.

For example, if the operator selects a 24.5 V threshold, the engine coolant heater unit cannot start unless the battery voltage is at least 24.7 V.

Before operating the engine coolant heater unit, verify the low voltage disconnect threshold is set to an appropriate value.

For a 24 V system, the engine coolant heater unit operating range is 21–25.5 V and the recommended LVD value is 22 V.

To check and/or set the low voltage disconnect threshold:



Engine Coolant Heater Timer/Controller	
A	On/Off Button
B	Display
C	Status Indicator Lights
D	Selection Button
E	Micro USB Service Port
F	Rotary Knob

1. Turn ON the engine coolant heater unit.
2. Press the selection button to access the main menu.
3. Turn the rotary knob clockwise by two or three clicks.

4. Turn the rotary knob counterclockwise to the highlight options link.

5. Press the selection button to enter the options page.

6. Turn the rotary knob to highlight the LVD link.

BATTERY CARE

Tigercat uses two types of batteries dependent on the machine application, model and design.

- Absorbed Glass Mat (AGM)
- Flooded Lead Acid (FLA).

NOTICE

Before charging, identify the type of battery installed. Read and follow the battery and charger manufacturer's instructions prior to connecting or charging a battery.

All batteries are sensitive to overcharging. Charging or maintaining AGM batteries requires the use of a smart charger with an AGM setting. The peak charging voltage for AGM batteries varies slightly between battery manufacturer's. Exceeding this voltage can cause permanent battery damage. Refer to BATTERY MANUFACTURER'S charging instructions for more information.

Refer to BATTERY MANUFACTURER'S instructions for charging or maintaining FLA batteries.

THE AFTERTREATMENT SYSTEM AND ITS RELATED COMPONENTS ARE APPLICABLE TO TIER 4F MACHINES ONLY.

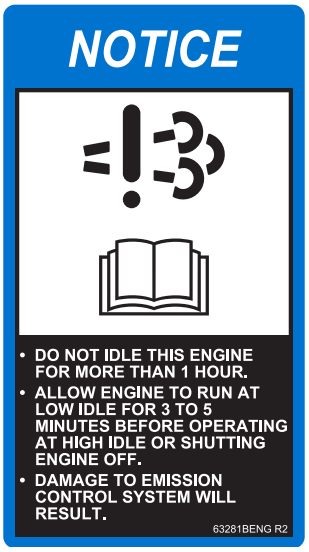
AFTERTREATMENT SYSTEM

Tier 4f machines are equipped with a combination Diesel Oxidation Catalyst (DOC) and high efficiency Selective Catalytic Reduction (SCR) aftertreatment system to limit the nitrogen oxide exhaust gas values (NOx) to meet Tier 4 final emission standard requirements with low fuel consumption. This process is electronically controlled by the DENOX 2.2 system.

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.

The high efficiency SCR process is based on a series of chemical reactions which involve the reaction of ammonia with the oxygen in the exhaust gas to reduce nitrogen oxides (NOx) in the exhaust gas by transforming it into inert compounds: free nitrogen (N_2) and water vapour (H_2O). In addition the high efficiency catalytic converter includes a clean up catalyst (CUC) which reduces any excess ammonia (NH_3) which may result from the SCR process.

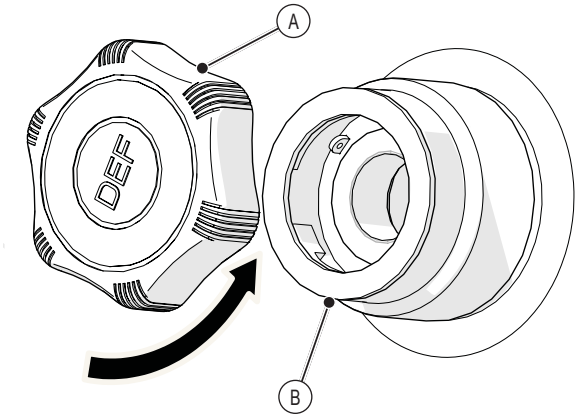
IMPORTANT!
When cleaning the machine with pressurized water it is important to avoid getting water directly or indirectly into the exhaust tube. Water in the exhaust tube will damage sensors and SCR system components and affect the proper operation of the aftertreatment system and the engine.



IMPORTANT!
Do not idle the engine longer than one hour. Damage to the emission control system will result. When this machine idles for an extended period, excess hydrocarbon buildup is created in the DOC/SCR aftertreatment system. Burn off of excess hydrocarbon, at full load, immediately after a long idle period, generates excess heat which causes damage to emission control system components.

FILLING THE DEF TANK

1. Park the machine as described in PARKING THE MACHINE in SECTION 1.
2. Clean the area around the top of the fill cap to prevent DEF contamination.



A	Fill Cap
B	Fill Neck

3. Remove the fill cap. Clean the area under the fill cap to prevent DEF contamination.

NOTICE

Do not remove the DEF fill strainer when filling the tank. Contamination of the DEF can occur.

IMPORTANT!
Avoid contamination of DEF when performing maintenance on the system as this may cause costly damage to SCR system components and will affect the proper operation of the aftertreatment system and the engine.

4. Insert the filling container spout into the flap on the top of the fill strainer and fill the tank. Do not remove the fill strainer to fill the tank.

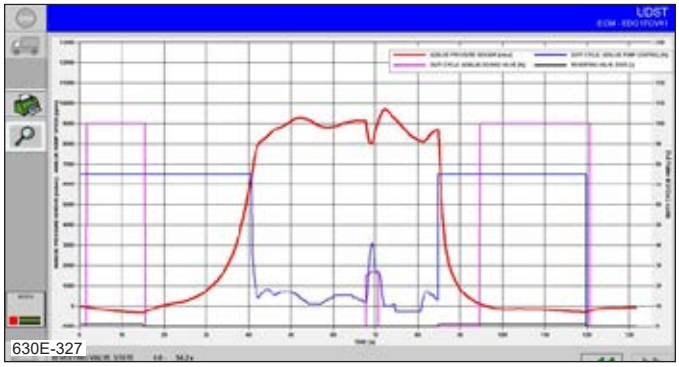
NOTE: To avoid contamination, do not re-use DEF. Fill the tank with new DEF only. Refer to DIESEL EXHAUST FLUID (DEF) in THIS SECTION for DEF specifications.

NOTE: A section of the DEF tank remains empty when the DEF level reaches the strainer to accommodate DEF expansion when it freezes.

5. Install the fill cap.

UDST (UREA DOSING SYSTEM TEST)

1. With the aid of an assistant run a UDST test from the laptop computer. Refer to PT BOX MANUAL for UDST test information.



2. If the supply module is functioning correctly the test should show a characteristic curve as shown above, DEF pressure (red line).
3. A confirmation screen will indicate System is OK if the supply module is functioning correctly.
4. Repeat the UDST test a second time to confirm results.

5. If the UDST test passes twice the supply module is OK.

6. If the UDST test fails twice note the error mode(s) and contact customer service.

PRESTART-UP AND FILLING

1. Check oil levels in the pump drive gearbox, engine, transmission and axles.
2. Check coolant level in the radiator/surge tank.
3. Do a final inspection of all fittings and clamps to make sure they are tight and will not leak.
4. Install the articulation lock bar and apply the parking brake. Refer to ARTICULATION LOCK BAR INSTALLATION in THIS SECTION for instructions.
5. Do not start the engine. Purge air from hydraulic system as follows**:**
   a. All filters must be in place.
   b. Loosen the fittings on the top case port of the attachment pump, main pump, fan pump and drive pump. These ports will assist in venting air as hydraulic oil is filling the system components.
   c. Loosen the fittings on the top case port of the drive motor and fan motor. These ports will assist in venting air as hydraulic oil is filling the system components.
   d. Tighten the fittings when hydraulic oil free of air begins to flow out all fittings.
6. Fill the hydraulic oil tank if the oil level is low, or if it has been drained.
7. Fill all pumps and motors with pre-filtered hydraulic oil through the highest case drain ports and close the port fittings.

   NOTE: If the axles were drained of oil, refer to AXLE LUBRICATION–DRAINING AND REFILLING AXLES in THIS SECTION and SECTION 8 of the SERVICE MANUAL.

   NOTE: Changing strainers, filters and replacing the hydraulic oil tends to aerate the oil. For maximum pump life, the machine should sit for one hour after servicing to allow entrained air to escape from the oil prior to applying working pressures to the pumps.
8. Proceed to the MACHINE START-UP procedure in THIS SECTION.

⚠ CAUTION

- **Do not use abusive cleaning procedures either by hand or pressure washing on polycarbonate windows.**
- **Do not use brushes, razor blades, scrapers, squeegees or other sharp tools on polycarbonate windows.**
- **Do not clean polycarbonate windows when the daytime temperature is high or in direct sunlight.**
- **Do not use abrasive or highly alkaline cleaners on polycarbonate windows.**
- **Do not use glass cleaners in either aerosol or non aerosol containers to clean polycarbonate windows.**

Failure to follow these cleaning instructions will shorten the service life of polycarbonate and may cause visual hazing, loss of light transmission and delamination of the polycarbonate hard surface coating.

CONCEALING HAIRLINE SCRATCHES

The appearance of scratches and minor abrasions on the surfaces of polycarbonate windows can be minimized by using a mild automotive polish such as:

- Johnson's Paste Wax
- Novus Plastic Polish #1 and #2
- Mirror Glaze Plastic Polish

Be certain to clean the polycarbonate window as outlined prior to application of an automotive polish. Refer to WINDOWS–CARE OF POLYCARBONATE WINDOWS–CLEANING INSTRUCTIONS in THIS SECTION.

GRAFFITI REMOVAL

- For removal of paints, marking pen inks, etc., the use of Butyl Cellosolve is generally effective. The use of masking tape, adhesive tape or lint removal tools works well for lifting off old weathered paints.
- To remove labels, stickers, etc., the use of kerosene, VM&P naphtha, or petroleum spirits is generally effective. When the solvent will not penetrate sticker material, apply heat (hair dryer) to soften the adhesive and promote removal.

Refer to WINDOWS–CARE OF POLYCARBONATE WINDOWS–RESISTANCE TO CHEMICALS in THIS SECTION for a list of chemicals which should not be permitted to come into contact with polycarbonate windows.

FIRE PRECAUTIONS

Polycarbonate window material will ignite when exposed to an ignition source in excess of 427°C (800°F). When working around polycarbonate windows, observe similar fire precautions to those in place for wood.