Tigercat®

S855C/LS855C SHOVEL LOGGER

OPERATOR'S MANUAL

SERIAL NUMBER 85550101 TO 85551000
SERIAL NUMBER 85500101 TO 85501000

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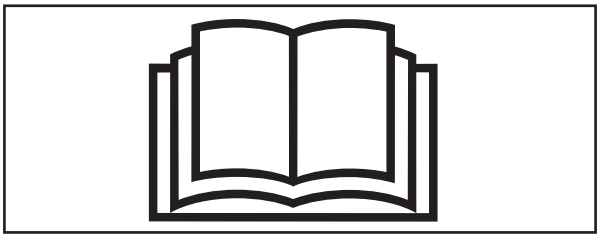
GENERAL SAFETY PRECAUTIONS

Remember that safety is a prime responsibility of all.

To minimize the risks and promote safety at all times, this section of the operator's manual details a number of safety rules which should always be followed and obeyed.

Always read the operator's manual before operating the machine. Pay close attention to WARNINGS and HAZARD identifications

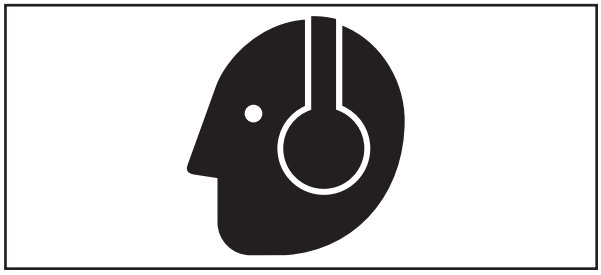


Follow all instructions from safety inspector and supervisors.

You must be fully trained to operate this piece of equipment. Know the capabilities and the limitations of the equipment. Learn the most efficient operating techniques.

Do not let untrained persons operate the machine.

Use recommended protective clothing and safety devices such as gloves, safety boots, safety hat, goggles, and ear protection when necessary. These safety rules highlight both general and specific measures that the operator should be familiar with and adhere to. More specific measures are illustrated with pictograms which may also be attached to the machine in locations pertinent to their respective message. Keep safety labels in good condition. Repair or replace damaged labels.



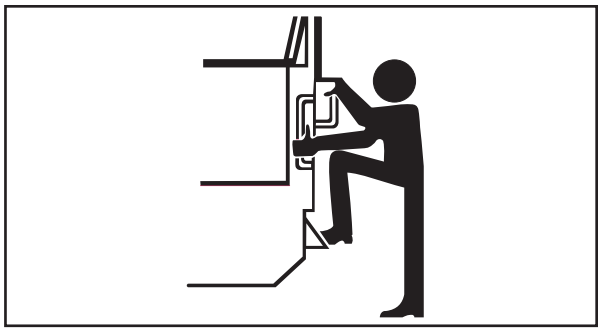
Wear a suitable hearing protective device such as earmuffs or earplugs to protect against noise. Prolonged exposure to loud noise can cause impairment or loss of hearing. This machine exceeds 70dB(A) in the cab and exceeds 85dB(A) when servicing machine engine.

Always use the handrails and steps provided when mounting and dismounting from the machine.

Do not jump off the machine at any time.

Do not try to climb onto or off of a moving machine.

Do not use the seat armrest or joystick as handle when entering or leaving the cab.



Do not use the machine foot controls as steps.

When mounting or dismounting the machine always use the 3 point technique; use 1 hand with 2 feet or 2 hands with 1 foot.

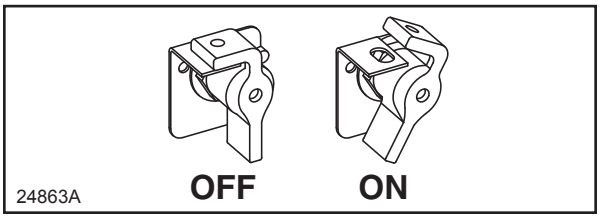
⚠ WARNING

Avoid mounting or dismounting the machine in areas with slippery surfaces. Dry, deice, clean up or cover slippery surfaces with an anti-slip material before mounting or dismounting the machine.

OPERATING SAFETY PRECAUTIONS continued

When parking the machine;

- Park on level ground *only* and engage the swing brake.
- Do not park on a hillside or incline.
- Lower grapple attachment onto level ground.
- Stop the engine.



- Turn the master disconnect switch off if the vehicle is to be parked for an extended period of time (Example - overnight).

NOTE:
Wait 30 seconds after engine shut down before turning off battery disconnect switch. If battery disconnect is turned off before this the engine ECM (Engine Control Module) will register a fault.

When transporting the machine watch that enough clearance is available on both sides and above the machine or any of its attachments to avoid contact with power or telephone lines, bridge structures, etc.

Before transporting the machine check to ensure that all doors, panels and access covers are installed properly and secured. Improperly secured doors or panels pose a serious danger to pedestrians and other vehicles.

LIGHTNING SAFETY AWARENESS continued

Unfortunately loggers do not often work close to buildings and therefore other alternatives need to be considered.

Sheds, weather shelters, hunting blinds, tents and other partially open or small structures are not safe against lightning strikes as they lack the electrically grounded components of larger buildings. They are intended for sun or rain protection only. Do not seek shelter from lightning strikes inside these structures.

The second safest location during lightning activity is inside a fully enclosed car, van, truck or bus with a metal roof and metal sides. The electrical energy of a lightning strike to these vehicles is carried to ground by the conducting outer metal surfaces. This is called the skin effect.

Do not seek safety from lightning strikes in vehicles with fiberglass or plastic body shells or in convertible top vehicles. None of these are safe, as they do not offer skin effect lightning protection.

Heavy forestry equipment such as a skidder, loader, feller buncher, forwarder, etc. with a fully enclosed rollover protective structure (ROPS) cab take advantage of the skin effect and are therefore safe in electrical storms.

However machines with a rollover canopy only are not safe against lightning strikes as they are open to electrically conductive rainwater and do not benefit from the skin effect. Operators of this equipment must abandon their machines and get to a safer location before lightning strikes.

Note that the rubber tires on motor vehicles and heavy equipment do not increase safety from lightning strikes. Lightning has already travelled a great distance through the air to strike the vehicle. In comparison a few inches of rubber in a tire offers absolutely no additional insulation.

WHAT TO DO IF YOU ARE OUTSIDE AND SEE LIGHTNING OR HEAR THUNDER.

If you can, get inside.

1. Run to the nearest building, motor vehicle or fully enclosed ROPS equipment cab immediately. Being anywhere outside is not safe.
2. If inside a building:
   - Don’t watch the lightning storm from open windows or doorways. Stay in inner rooms.
   - Stay well away from corded telephones, electrical appliances, lighting fixtures, radio microphones, electrical sockets and plumbing pipes and fixtures.
3. If inside a motor vehicle or fully enclosed ROPS equipment cab:
   - Under no circumstances whatsoever step outside of the vehicle or off the equipment to move to another shelter. Very dangerous electrical pathways to ground may go through you.
   - Shut down all operation, turn off the engine, close all doors and raise all windows.
   - Sit squarely in the seat with your hands in your lap and your feet flat on the floor mat.
   - Do not touch any metallic objects referenced to the outside of the vehicle. Do not touch any door and window handles, control levers, foot pedals, steering wheels, cab interior walls and any other inside to outside metal objects.
   - Do not touch any radio or telephone connected to an outside antenna.

Tigercat S855C/LS855C Shovel Logger
SECTION 2 - CONTROLS & OPERATION

FEBRUARY, 2012

Read and understand this entire manual including the SAFETY SECTION prior to operating this equipment. Read and understand all manuals for any attachments or accessories associated with this machine.

CONTENTS - SECTION 2

860C-131 **TRAVEL SPEED CONTROL LEVER**

4. TRAVEL SPEED CONTROL LEVER - OPTIONAL

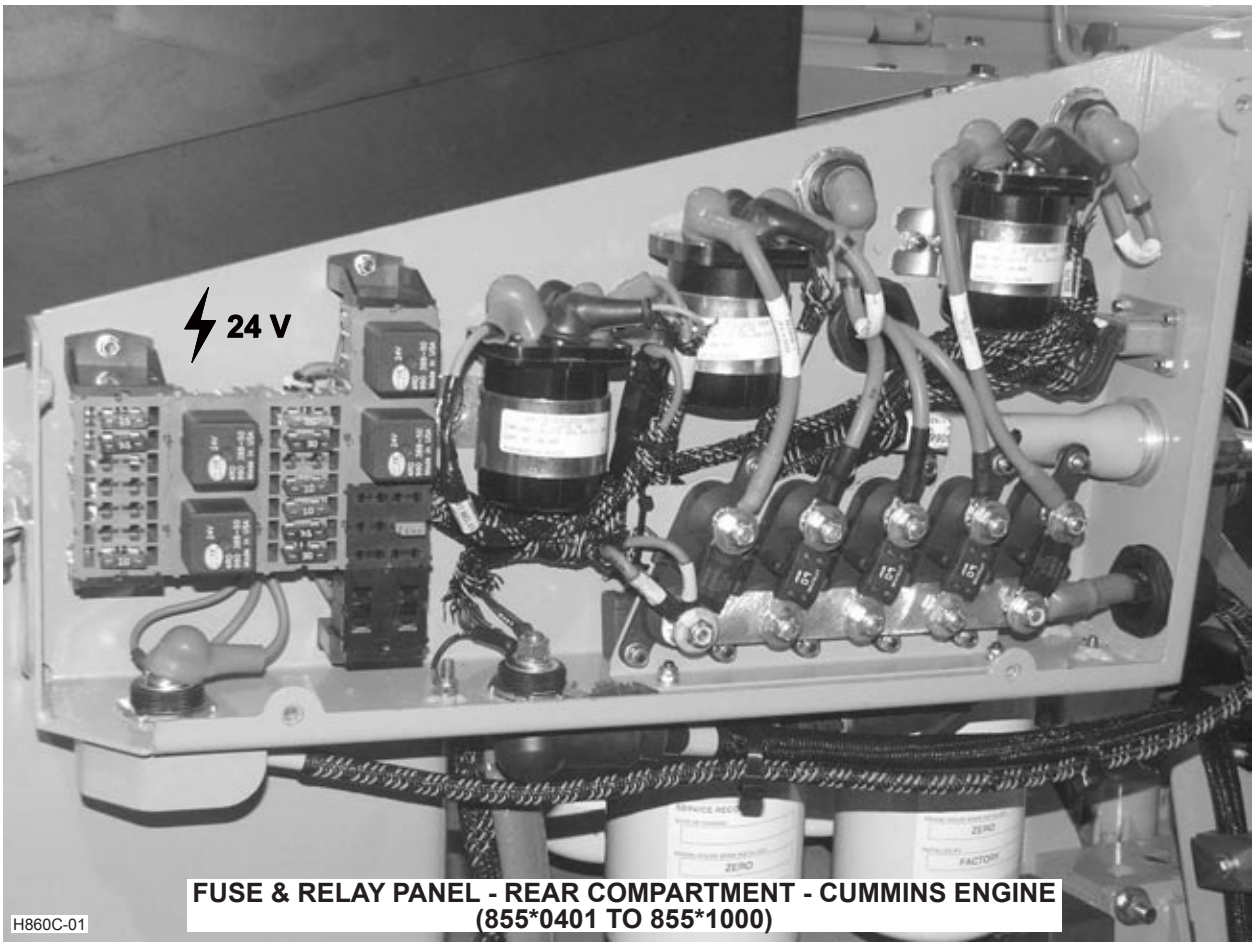
The speed control lever allows the operator to set the maximum speed of the machine to maintain a given speed without having to feather the drive pedals.

Push the lever forward to increase the maximum speed.

Pull the lever back to decrease the maximum speed of the machine.

This lever can be used while the machine is in motion in either HI or LOW travel speed selections.

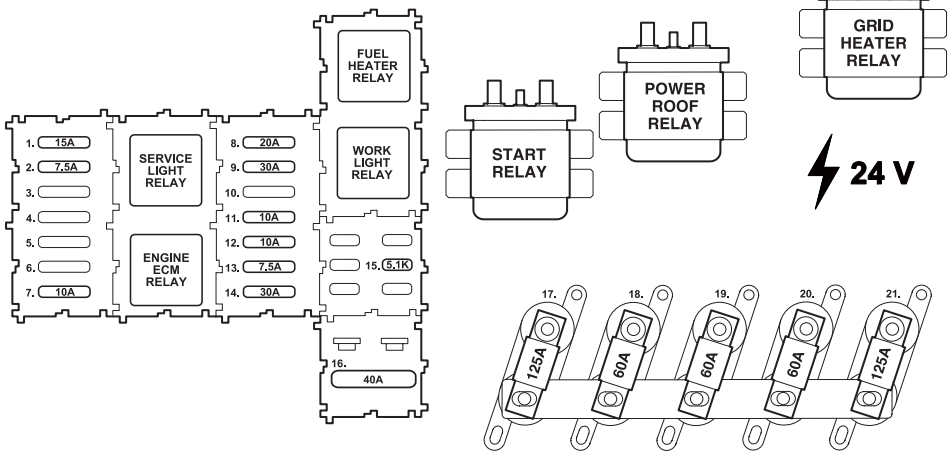
- **Electrical Controls, Fuse and Relay Rear Panel** located in the rear compartment behind the cab.



FUSE & RELAY PANEL - REAR COMPARTMENT - CUMMINS ENGINE (855*0401 TO 855*1000)

FUSES
REPLACE FUSES WITH SAME VALUES AS INDICATED

1. ROOF SERVICE LIGHTS
2. PUMP AREA SERVICE LIGHTS
3. SPARE
4. SPARE
5. SPARE
6. SPARE
7. BATTERY DISCONNECT
8. FUEL HEATER
9. WORK LIGHT RELAY
10. SPARE
11. PUMP AREA COVER HID LIGHT
12. PUMP AREA COVER HID LIGHT
13. ROOF HALOGEN WORK LIGHTS
14. ENGINE ECM
15. IQAN HYD. TEMP SENSOR RESISTOR
16. STARTER RELAY
17. POWER ROOF RELAY
18. KEY SWITCH RUN/ACC POWER
19. CAB SWITCHED BATTERY POWER
20. CAB WORK LIGHT POWER
21. GRID HEATER RELAY



14. PILOT "OFF" LIGHT (AMBER)

This light comes ON when the *pilot system* has been de-activated*.

15. PILOT "ON" LIGHT (GREEN)

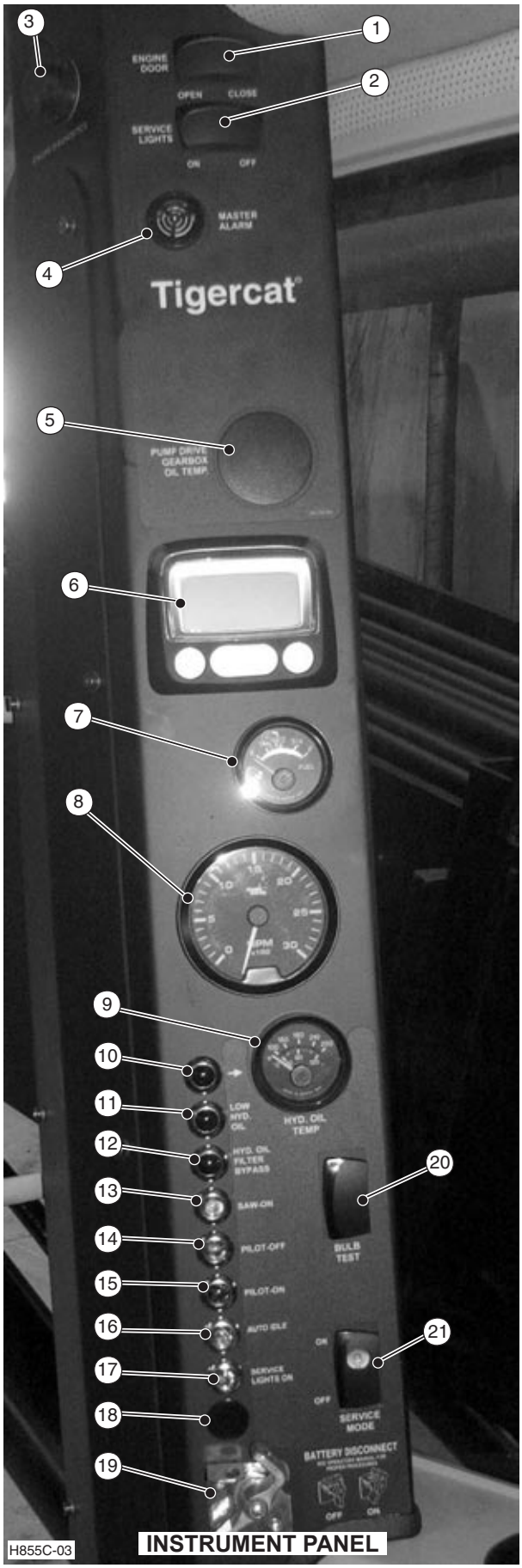
This light comes ON when the *pilot system* is activated by the pilot reset switch*.

*When the *ignition key switch* is in the RUN position, either the PILOT OFF or the PILOT ON will be lit. If neither are lit then the state of the SAFETY INTERLOCK SYSTEM is unknown and should be checked out immediately.

⚠ WARNING

Do not, under any circumstances allow the pilot system to be re-activated without an operator in the cab.

For more information on the pilot shut off system see PILOT SYSTEM OFF SWITCH in THIS SECTION.



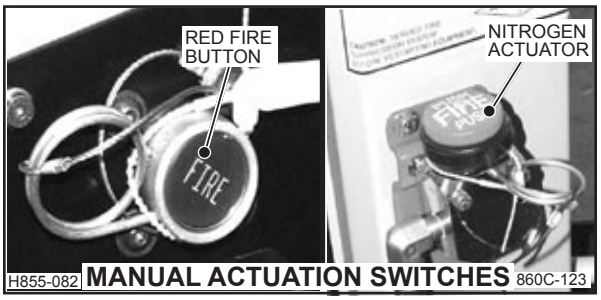
INSTRUMENT PANEL

DISCHARGE OF THE SYSTEM

When an electrical signal (automatic or manual) is received by the control panel it sends a discharge signal to the electrical actuator located on top of the pressurized cylinder. When activated the electrical/pneumatic actuator extends a control shaft which mechanically opens the agent cylinder valve. This releases the dry chemical in the discharge area protected by the system. The control panel will also automatically shut down the engine and all electrical power.

NOTE: *The engine does not shut down automatically when the fire suppression system is activated using the nitrogen actuator. When using the nitrogen actuator to activate the fire suppression system the operator must shut the engine off manually.*

The automatic engine shutdown feature will either shutdown the engine **immediately** the fire suppression system is discharged (non levelling machines) OR will delay the shutdown for a period of between **10 to 15 seconds** for levelling machines. The time delay period is a factory setting. This delay feature allows the operator to lower the load or move the machine to a safer location before the engine shuts down. The operator can extend the delay by pressing the SHUTDOWN RESET button on the control panel to repeat the preset delay period. This button can be pressed repeatedly until the operator has brought the machine to a safe stop. The SHUTDOWN RESET button does not delay the discharge of the fire suppression system.



IN CASE OF FIRE:

If a fire starts in any space protected by the system, DO NOT wait for the system to operate automatically. Instead, operate the system manually:

1. Safely lower the boom to the ground.
2. Pull locking pin.
3. Press red FIRE button.

NOTE: In the event of a power failure the system can be activated by the Nitrogen Actuator located on the front left post of the cab.

1. Remove Locking Pin.
2. Strike down hard on actuator knob.

The system will activate the *discharge system* and the *automatic engine shutdown system*. There will be a cloud of dry chemical dispersed in the discharge area. The engine will automatically shutdown either **immediately** or will be delayed for **10 to 15 seconds** if the machine is a leveller.

IMPORTANT: Stop the engine before discharging the system. This will keep the dry chemical in the engine area.

Get away from the machine. Take the portable fire extinguisher in the cab or outside along if possible or obtain one from another location.

Stand by with a portable fire extinguisher and watch for any flashbacks after the system has discharged.

Do not restart the machine until it has been serviced and cleaned. Do not return the machine to service until the source of the fire has been located and neutralized. The fire suppression system must be recharged by Amerex Factory Certified Personnel before returning the machine to service.

⚠ CAUTION

Wear protective clothing and masks when cleaning up after a discharge

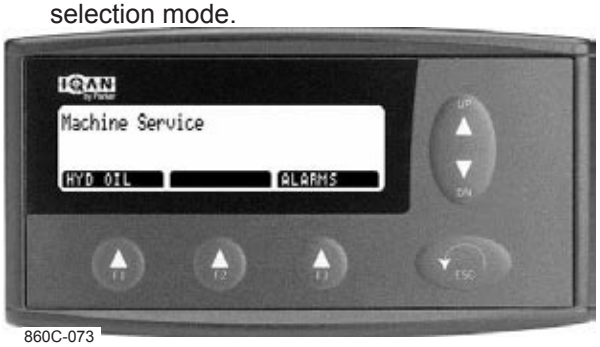
Before cleaning up after a discharge, read the AMEREX manual. If water mixes with the dry chemical it becomes corrosive and can seriously damage wiring connections.

Dry chemical must be vacuumed or blown off with compressed air.

SERVICE

3. Machine Service - Hydraulic Oil

   This electronic menu display provides access to the machine service hydraulic oil type selection mode.



   SERVICE (F3) has been chosen, now ‘F1’ Machine Service Hyd Oil or ‘F3’ Alarms can be selected. Pressing ALARMS (F3) resets all active/bypassed alarms.

   Press HYD OIL (F1) to access Select Hydraulic Oil Grade - Current Hyd Oil.

   Press ISO 22 (F1), ISO 32 (F2), or NEXT (F3)

   Press ISO 44 (F1), ISO 46 (F2), or NEXT (F3)

   Press ISO 68 (F1) or NEXT (F3)

   When the type of oil has been selected the display will return to Machine Service display. Select ESC.

   The display will return to ATTACH - SERVICE,

FUEL

4. Trip Fuel Consumption

   On machines 855*0400 to 855*1000, select F2 FUEL. This menu display provides access to the Trip Fuel Consumption function.

   The Trip Fuel function provides the operator with Average Fuel Rate L/h (Gal/h).

   Pressing RESET (F3) will reset the Fuel Rate to zero.

   Press the bottom of the MENUS switch to display the IQAN-MDM diagnostic and function adjustment menus.

Note: Whenever an alarm is activated, the current display menus are replaced with the alarm warning message. When the alarm function is cleared, diagnostic and function adjustment menus appear. Press the top of the MENUS switch to display the ALTERNATE MENUS.

PWM OUT (PWMOUT)

PWM (Pulse Width Modulation) Out is a way of producing an analog signal level with a digital output that turns on and off many times a second. By varying the ratio between on and off time (modulation ratio or duty cycle) an output proportional to the system voltage can be obtained. PWMOUT maintains a constant output voltage, and the output current is governed by the resistance in the circuit.

These settings (defined below) fine tune the operating speeds and start/stop ramps for the adjustable pwm out operated functions.

MINIMUM MR (MODULATION RATIO)

Minimum MR settings control function start speed. Coils on hydraulic valves require a certain MR before they begin to operate the valve. The Min MR value is the modulation ratio that will be sent to the hydraulic valve coil when the function switch is activated.

The min MR is adjusted to a value that causes the function to just begin to move.

MAXIMUM MR (MODULATION RATIO)

Maximum MR setting controls the maximum speed the function will operate.

START/STOP SLOPE

Start and stop slope is the time it will take for the MR to rise from minimum to maximum and maximum to minimum respectively.

FINE CONTROL

Fine Control changes the PWM output curve from being a straight line to being close to a type of curved line. Lower numbers create more output. Higher numbers create less output.

EXAMPLE:

Press OUTPUTS (F2) to select ouputs for adjustment.

Use UP/DOWN scroll buttons to select type of output you wish to adjust.

Press SELECT (F1) to select.

Use UP/DOWN scroll buttons to select the output you wish to adjust.

Press SELECT(+) (F1) or SELECT(-) (F2) to select a function and direction for adjustment.

Use UP/DOWN scroll buttons to select the setting to be adjusted.

Press SELECT (F1) to select.

Use UP/DOWN scroll buttons adjust setting.

Select OK (F1) to confirm new setting.

ADJUSTING CYLINDER TRACKING

Refer also to COMPUTER ~ (PROPERTIES) MENU OPERATION in THIS SECTION for information about adjustable settings and factory default values (max current, min current, start slope, stop slope and fine control).

MAX CURRENT SETTING

This procedure is used to set the maximum speed to retract (-) or extend (+) of the left or right levelling cylinder.

EXAMPLE:

If the right cylinder extends faster than the left cylinder it bottoms out first. Reducing the MAX CURRENT (+) Right Level Cylinder reduces the speed at which the right cylinder extends to match the left cylinder speed. Adjust as follows:

1. Press Escape button then scroll UP/DOWN to display PROPERTIES.

   Press OUTPUTS (F2) and use the UP/DOWN scroll buttons to scroll though the menus to CURRENT OUT.

2. Press SELECT(F1) to go to SELECT. FUNCTION menu.

3. Scroll using UP/DOWN buttons to Right Level Cylinder menu and press SELECT (+) (F1).

4. Scroll using UP/DOWN buttons to select MAX CURRENT menu. Press SELECT (F1).
5. Shown above MAX CURRENT (+) Right Level Cylinder function has been selected.
6. Adjust the MAX CURRENT value (600mA) using the UP/DOWN buttons to increase (speed up Right Level Cylinder speed) or decrease (slow down Right Level Cylinder speed) value.

   NOTE: In this example the right cylinder is extending faster than the left. The value should be reduced to slow down the extend speed.

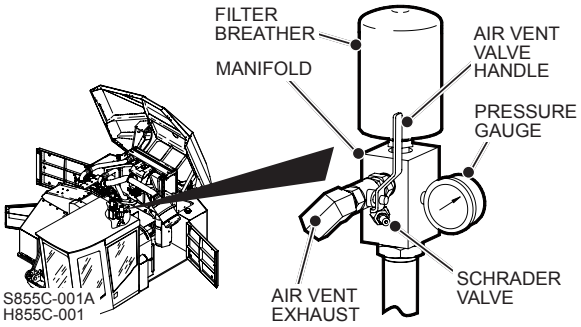
7. Use the SCROLL DOWN button to decrease the value. Start by reducing the value by 10mA.
8. Press OK (F1) to save the selection.
9. Check cylinder cycle times as outlined previously. Refer to CHECKING LEVELLING SPEED (CYLINDER CYCLE TIMES) in THIS SECTION.

IMPORTANT

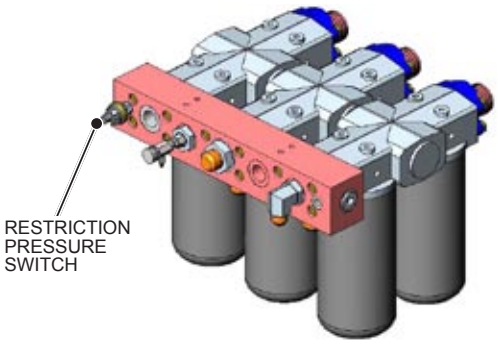
PRESSURIZED HYDRAULIC TANK.

34.5 kPa (5 psi) MAXIMUM.

Before servicing hydraulic system, wearing eye protection, release air pressure from tank using air vent valve.



After service is completed, close air vent valve and add air pressure from a clean air source to the hydraulic tank via the schrader valve. **Do not exceed 34.5 kPa (5 psi)**. Refer to HYDRAULIC TANK PRESSURIZATION INSTRUCTIONS in section 3 of this manual for details.



HYDRAULIC OIL FILTERS

RETURN FILTERS ~ HYDRAULIC OIL

The return oil entering the hydraulic tank passes through six replaceable filters mounted on filter heads beside the tank and three mesh type reusable strainers one on the end of each return tube in the reservoir.

There is a bypass valve built into each filter head preset at **25 psi.** which will open in the event the elements become restricted. A **15 psi.** filter restriction pressure switch is installed in each filter head that will turn on the FILTER BYPASS warning light in the cab before this happens.

⚠ CAUTION

The warning light and buzzer are in place to alert the operator to a potential problem with the hydraulic system.
DO NOT use these warnings as a substitute for checking the oil level at regular intervals as per the SCHEDULED MAINTENANCE program in SECTION 3 of THIS MANUAL.

FILTER RESTRICTION PRESSURE SWITCH

A warning light is mounted on the instrument panel in the cab. When an oil flow in excess of **15 psi.** is encountered at the return filters in the hydraulic tank, this pressure switch closes and turn the filter bypass warning light ON in the cab.

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

FILTER/STRAINER SERVICE NOTE:

The filters should be checked/changed when the filter by-pass warning light in the cab comes ON. If the warning light is still ON after the filters have been changed, the return strainers attached to the base of the return tubes in the hydraulic tank should be examined for possible obstruction.

IMPORTANT

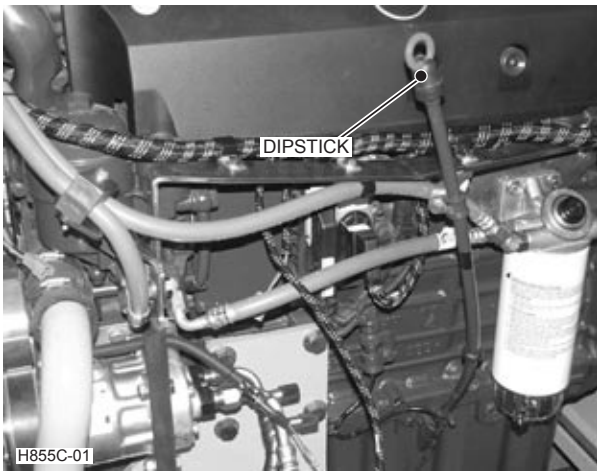
NEVER PRE-FILL

HYDRAULIC FILTERS

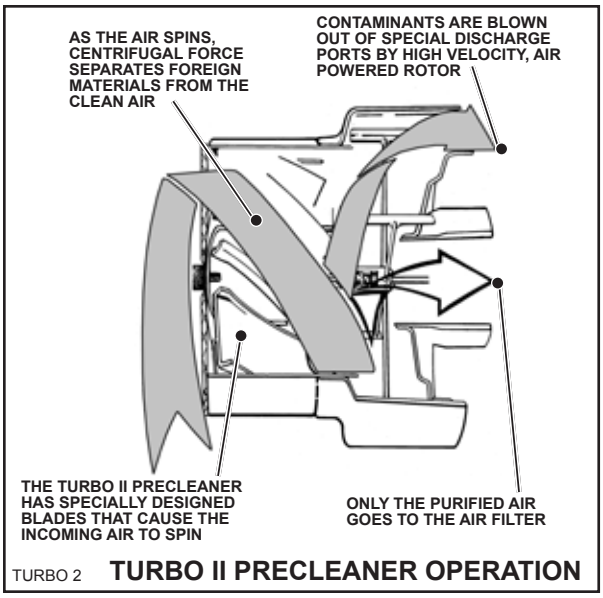
Tigercat generally does not recommend the pre-filling of spin-on filters due to the risk of damage to the hydraulic system caused by unfiltered oil. Unfiltered oil used to pre-fill filters enters directly into the hydraulic circuit. Contaminants in unfiltered oil can cause significant and costly damage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

IMPORTANT

Contaminated hydraulic fluid can lead to premature failure of hydraulic components and costly repairs.
Filters must be replaced at the recommended time intervals, See SECTION 3 in THIS MANUAL.
Use of filters other than genuine Tigercat replacement filters is not recommended.

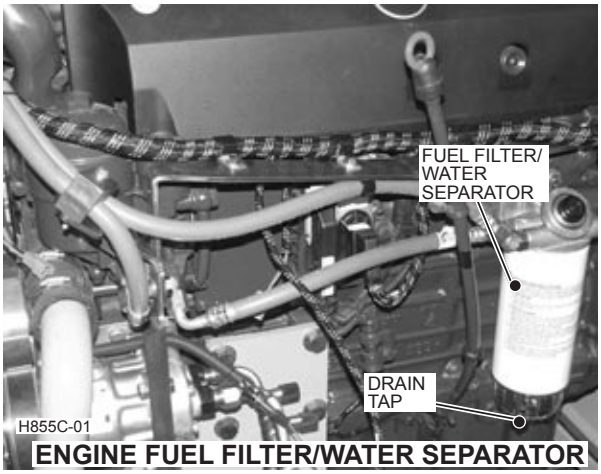


5. Check the engine oil level. The level of the oil must be between the ADD and the FULL marks on the dipstick.



6. Check air intake pre-cleaner intake and discharge areas. Remove any blockages or obstructions.

7. Check air cleaner unloader valve.



8. Check fuel line water separator and drain any accumulated water into a bowl and clean up any spills.

CLEANING INSTRUCTIONS FOR LEXAN WINDOWS

NOTE: On this machine all of the windows are made of LEXAN.

1. Rinse with lukewarm water.
2. Using a soft cloth or sponge, gently wash the sheet with a mild solution of soap or detergent and lukewarm water. **DO NOT** scrub or use brushes or squeegees.
3. Rinse with clean lukewarm water.
4. Dry thoroughly with a chamois or moist cellulose sponge to prevent water spotting.

To remove wet paint, glazing compound or grease, rub lightly (not in direct sunlight) with a good grade of VM&P naphtha, isopropyl alcohol or butyl cellosolve (2-Butoxy Ethanol), then wash and rinse thoroughly. **DO NOT USE GASOLINE.** Gasoline or oil will cause uncoated LEXAN to become opaque. MARGARD coated lexan will start to become opaque around the edges and creep in.

REMOVING HAIRLINE SCRATCHES

Scratches and minor abrasions can be removed or minimized by using a mild automobile polish. Three such products that tend to polish and fill scratches are Johnson Paste Wax, Novus Plastic Polish #1 & #2, and Mirror Glaze Plastic Polish. It is suggested that a test be made on a sample of LEXAN sheet with the product selected and that the polish manufactures instructions be followed.

SOME IMPORTANT DON'TS

DO NOT use abrasive or highly alkaline cleaners on LEXAN sheet products.

Never scrape LEXAN sheet products with squeegees, razor blades or other sharp instruments.

Benzene, gasoline, oil, acetone or carbon tetrachloride should never be used on LEXAN sheet products. DO NOT clean LEXAN sheet products in hot sun or at elevated temperatures.

Compatible Cleaning Agents

Aqueous Solutions of Soaps and Detergents

Formula 409	Top Job
Freon T.F.	VM&P grade Naphtha
Joy	Windex with Ammonia D
Palmolive Liquid	

GRAFFITI REMOVAL

(A) Butyl Cellosolve (For removal of paints, marking pen inks, etc.) The use of masking tape, adhesive tape or lint removal tools works well for lifting off old weathered paints.

(B) 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. GASOLINE SHOULD NOT BE USED.

REMOVAL OF ANTI-CORROSION SPRAY (IF APPLICABLE)

Some machines, particularly machines shipped outside North America, are shipped with an optional anti-corrosion spray to protect the machine from corrosion during shipment.

This anti-corrosion spray should be removed when the machine reaches it's destination as is may cause debris to stick to the treated surfaces of the machine.

The anti-corrosion can be removed with a pressure washer, a sponge and soap.

SCHEDULED MAINTENANCE

EVERY 500 HOURS:~

- **Perform frequently maintenance**
- **Perform 8 hour maintenance**
- **Perform 24 hour maintenance**
- **Perform 125 hour maintenance**
- **Perform 250 hour maintenance**

And in addition:~

- Replace engine fuel filter(s) §.
- Replace filter in fuel filter/water separator §.
- Replace swing charge pressure filter §. †
- Replace hydraulic oil return filters §. †

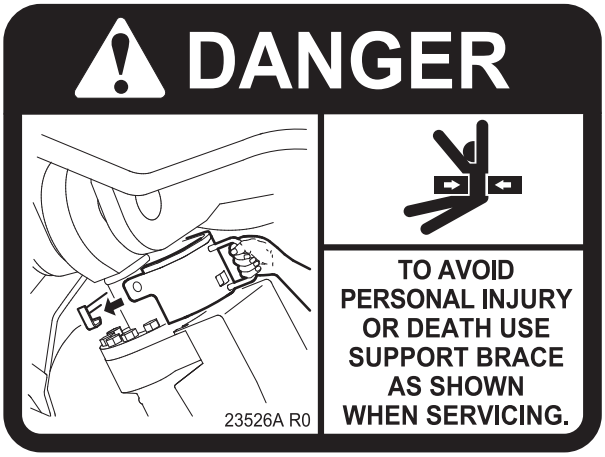
§ Refer to FILTERS - REMOVE AND REPLACE in THIS SECTION.

Lubricate:~

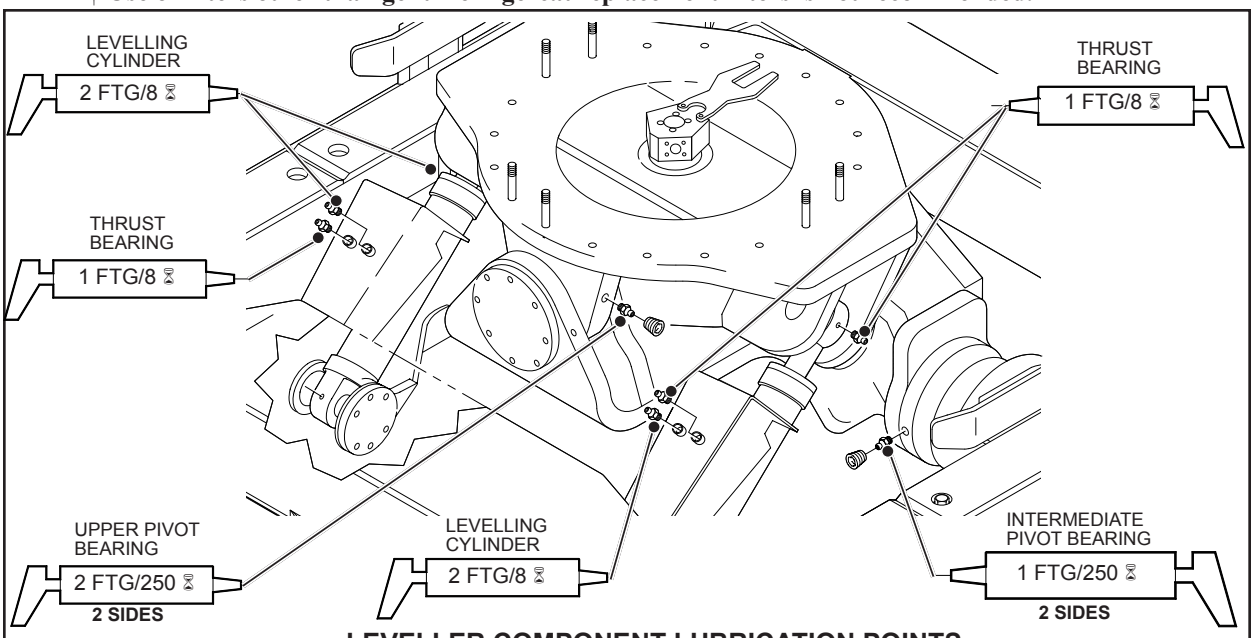
- Door and cover hinges; 12 fittings - 1 shot
- Roof and door cylinder pins apply oil liberally.
- Other door hinges; apply oil liberally

Check:~

- Torque on swing bearing and swing gearbox retaining bolts.
- Torque on track drive gearboxes and motor mounting bolts.
- Check track rollers for leakage. Rollers are filled with oil and are considered to be maintenance free. If a lubricant leakage is detected the rollers must be removed, repaired and replaced.
- Check track idler assembly for leakage, the bearing is filled with oil and is considered to be maintenance free. If a lubricant leakage is detected the idler must be removed, repaired and replaced.
- **Refer to diesel engine service manual and attachment manual for additional required maintenance at this scheduled time period.**



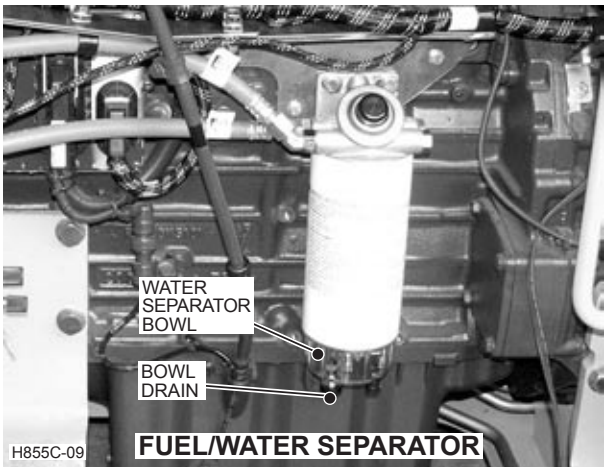
† Use of filters other than genuine Tigercat replacement filters is not recommended.



LEVELLER COMPONENT LUBRICATION POINTS

FUEL FILTER/WATER SEPARATOR

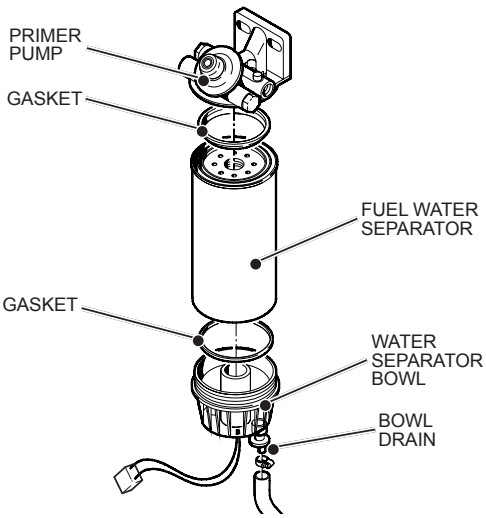
The fuel filter/water separator is a combination unit, with a replaceable fuel filter and a removable water sediment bowl on the bottom of the unit. The water sediment bowl is only replaced if it becomes damaged or non-functional. For service and replacement intervals see SERVICE AND LUBRICATION CHART in THIS SECTION.



FUEL/WATER SEPARATOR

Changing the filter:

1. Park machine on level ground with attachment resting on the ground.
2. Stop engine. Turn battery disconnect switch to the OFF position.
3. Open right hand access door fully and install safety strut.
4. Wipe clean the area around the filter and head.
5. Attach a hose to the spout on the bowl drain and place a suitable drain pan under separator bowl drain hose.
6. Loosen vent plug on filter head, open drain on separator bowl and drain fuel into pan.
7. Disconnect the fuel heater from the wiring harness.
8. Remove the water separator filter and bowl from the filter head.
9. Remove and discard the gasket from the filter head.
10. Remove the water sediment bowl from the bottom of the old filter. Discard this gasket also. Dispose of old filter and any fuel properly.
11. Clean the water sediment bowl, seating area for the gaskets on the filter head and the sediment bowl and close bowl drain.



FUEL/WATER SEPARATOR

12. Lubricate gasket for bottom of filter and water sediment bowl with clean **engine oil** and carefully **hand tighten** the water sediment bowl onto the new filter. Close the water drain valve.
13. Lubricate the gasket on top of the new filter with clean **engine oil**.
14. Screw the new filter on to the filter head until the gasket makes contact with the seat and then hand tighten an **additional 3/4 turn only**.
15. Reconnect the fuel heater to the wiring harness.
16. Turn the ignition key switch to the RUN position to release the automatic fuel shut off. Use primer pump to refill filter until fuel free of air flows from vent on top of filter head, then tighten vent plug.
17. Start the engine and check for leaks.
18. Clean up any spilled fuel before returning machine to operation.

AIR CLEANER UNLOADER VALVE

This rubber valve on the tube of the air cleaner housing should be checked before every shift (**8 hrs**). If this valve is missing, damaged or has turned hard, it will cause the air cleaner to become ineffective. The valve should be replaced every **1000 Hours**.

Remove the unloader valve from the tube of the air cleaner housing. A good valve is soft and flexible. Check and clean the valve. If it was plugged, then check the filter elements as they may need to be replaced as well. Reattach the valve to the tube. The valve should suck closed at about 1/3 of full throttle. When operating in high dust conditions this valve should be checked and squeezed frequently to release dust buildup.

FILTER RESTRICTION INDICATOR

A filter restriction indicator is connected to the outlet side of the air filter. Replace the primary air filter when the indicator shows RED. This indicator provides a continuous reading whether the engine is running or is shut down. After replacing the filter, reset the indicator by pressing the reset button.

NOTE: Replace the safety element every third primary filter change.

INTAKE TUBING AND JOINTS

Check all air intake system components, rubber elbows, connector hoses, tubes and clamps for damage, hardening, wear, cracks, leaks, loose clamps or loose hanger bracket hardware and repair or replace immediately.

Replace all air intake rubber components such as elbows and connectors every 2000 hours - High temperatures in this area can cause the rubber to harden.