Tigercat®

855E/L855E FELLER BUNCHER

SERVICE MANUAL

SERIAL NUMBER 85513001–85514000
SERIAL NUMBER 85523001–85524000

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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.

MACHINESTABILITYANDTRACTION

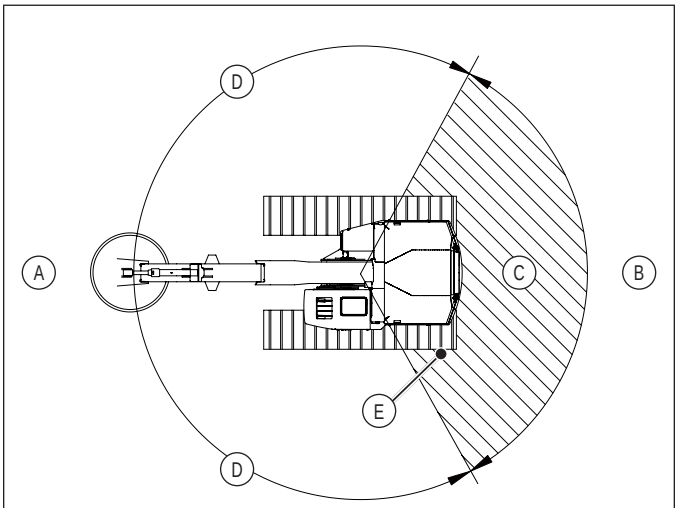
This machine is designed to operate in rugged terrain. However, ground conditions vary greatly according to soil type, slope, moisture level, temperature, season, geology, and vegetation. These factors affect the machine's stability and tractive capabilities. The machine may not be suitable for some ground conditions. Use caution when assessing the terrain in the work area

MACHINES WITHOUT LEVELER

Observe the following approaches to minimize the risk of tipping:

- When working on slopes, travel straight up or straight down the slope to prevent tipping.
- Do not travel across a steep slope or hillside.
- As the attachment is loaded, the handling and stability of the machine may change suddenly.
- To reduce the risk of tipping, keep the attachment as low as possible to maintain a low centre of gravity.
- Be prepared to the drop the load in case of emergency.
- Do not overload the attachment.

MACHINES WITH LEVELER



860C-030

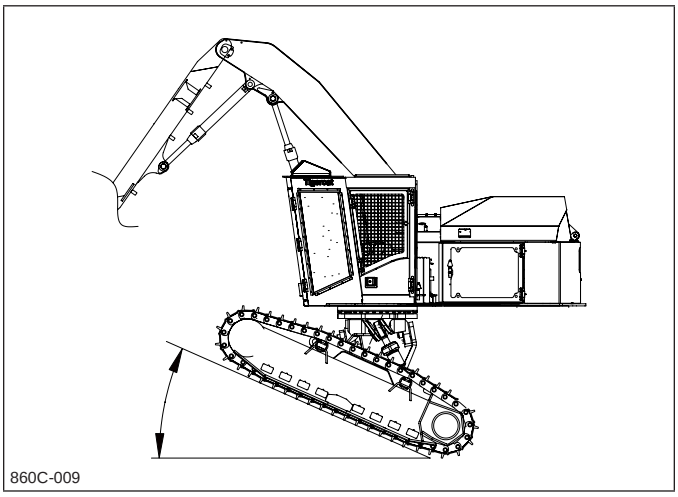
Boom System Normal Working Range	
A	Higher Ground
B	Lower Ground
C	Reduced Stability Boom System Working Range
D	Normal Boom System Working Range
E	Track Drive Gearbox at Rear of Undercarriage

Where possible, keep the boom within the normal working range. When working with the boom in the reduced stability working range, the risk of tipping increases.

When working on a slope, the machine is most stable when the boom is oriented uphill.

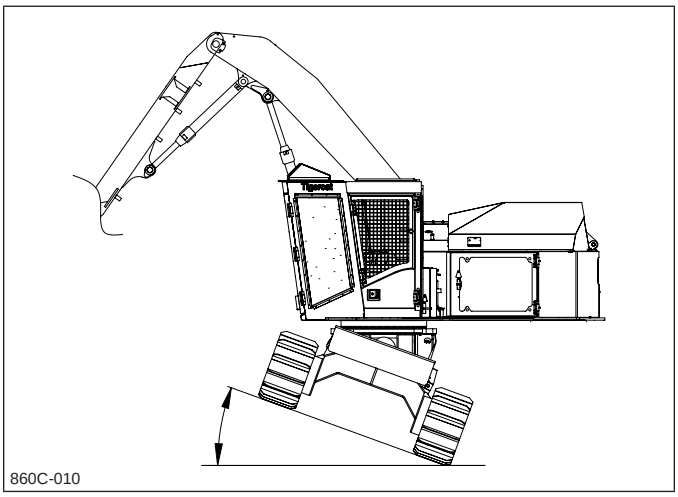
Beware of tipping risk irrespective of boom position.

This machine has been designed to minimize the risk of tipping. It is not possible, however, to achieve a zero-risk design. Operators must exercise caution when working on slopes or uneven terrain.



860C-009

20° Leveling Angle (Tracks Parallel with Slope)



860C-010

16° Leveling Angle (Tracks Perpendicular to Slope)

Observe the following approaches to minimize the risk of tipping:

- Do not operate this machine on slopes without first receiving proper training.
- Learn the stability limits or 'feel' of the machine by first working on gentle slopes and by positioning the boom to reduce the risk of tipping. Gain experience over time by gradually increasing the angle of the work slopes.
- Keep the attachment as close to the ground as possible to increase machine stability, and to allow the boom to be quickly lowered to the ground should the machine begin to tip.

⚠ WARNING

Diesel fuel or hydraulic oil under pressure can penetrate the skin and cause serious personal injury, blindness, or death. If any fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with treating this type of injury.

Never use your bare hand to check for fluid leaks.

Fluid leaks under pressure may not be visible. When searching for leaks, wear work gloves and use a wrench or piece of wood to move hydraulic hoses. Do not grab hold of hydraulic hoses. Wear safety goggles for eye protection.

Pressure can be maintained in a hydraulic system long after the power source and pump have been shut down. Lower the attachment to the ground, stop the engine and relieve trapped pressure before performing work on components, or disconnecting any hoses. Accumulators will self drain within two minutes of stopping the engine. Refer to PARKING THE MACHINE in THIS SECTION.

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off 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.

Do not change any pressure or relief setting unless Tigercat authorized instruction has been obtained.

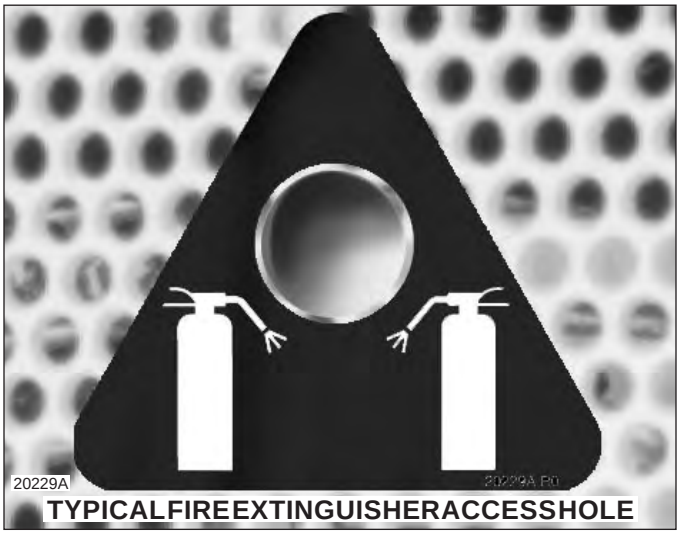
Use the proper tool for the job. Repair or replace worn or damaged tools including lifting equipment immediately.

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. Never place body parts within the range of motion of the working parts of the machine.

Never stand under an object supported with hydraulics. Use safety stands or a locking device.

- Use the PASS method. This is the most effective use of a fire extinguisher.
    - **P**ull the pin at the top of the extinguisher that keeps the handle from being pressed. Break the plastic seal as the pin is pulled.
    - **A**im the nozzle at the base of the fire. Do not aim the nozzle at the flames. In order to put out the fire, you must extinguish the fuel, not the flames. Hose nozzles are often clipped to the extinguisher body. Release the hose before taking aim.
    - **S**queeze the handle to release the pressurized extinguishing agent. The handle can be released at any time to stop the discharge.
    - **S**weep from side to side at the base of the fire until the fire is completely out or the fire extinguisher is empty



TYPICAL FIRE EXTINGUISHER ACCESS HOLE

- Place the nozzle of the fire extinguisher into the appropriate fire extinguisher access hole and discharge the extinguisher.
- Only if you can safely do so, open the access panels to the machine in the area of the fire.
- Failing all attempts to access the machine compartment, discharge the extinguisher through the mesh or any available openings on the machine.
- Ensure the machine and all components have cooled down sufficiently after a fire so that re-ignition does not occur.
- 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. Ensure that all extinguishers used in fighting the fire are replaced or recharged.

- 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.

KEEP BACK 150 M (500 FT)

This label warns personnel to keep back
150 m (500 ft) due to flying projectiles and falling trees. Danger exists predominantly around the attachment.

When approaching an operating machine on foot, keep back at least 150 m (500 ft) away until the operator recognizes your presence. Make sure that all equipment has been shut down before advancing to the machine.

STORED ENERGY

The saw blade stores energy from the hydraulic motor between tree cuts so it can supply up to 1000 hp during a one second tree cut. However, this rotational energy, if misapplied, can result in wood materials or other objects being thrown strongly enough to cause damage and injure people.

BE AWARE OF THE HAZARDS

Users of machines with disc saw felling heads must be aware of all safety precautions. In this section, some previously unknown, unexpected safety hazards are illustrated and explained. These should be studied before use of the machine and then reviewed again after use has begun.

SAFE PRACTICES

It is understood and expected that logging organizations and operators must develop and practice additional rules to suit particular conditions of terrain, trees, soil and job requirements. The information provided in this section is intended to assist towards a quicker understanding of how and why things can happen when a high speed disc saw is in use and to assist in the development of safe operating practices.

It should not be assumed that all possible dangers have been discovered and described in this section.

OTHER INSTRUCTIONS

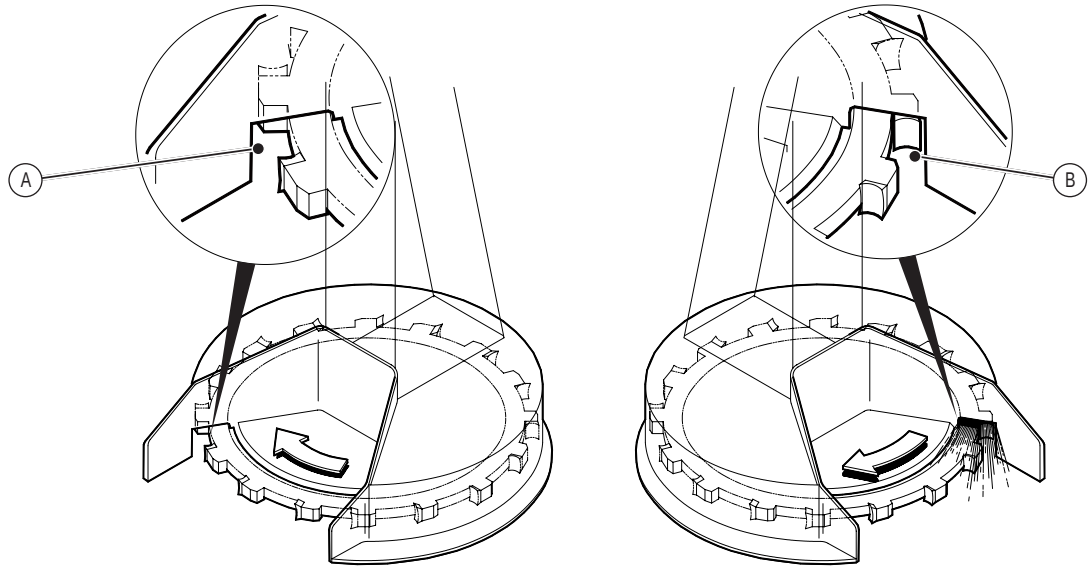
All instructions contained in the operator and service manuals for use and maintenance of Tigercat disc saw heads and other disc saw heads installed on Tigercat machines must be read, understood and followed.

DANGERS

Here are the most common means by which a rotating disc saw can cause harm by throwing:

- The normal throwing of chips from the cut.
- Soil particles are thrown from the ground.
- Loose chunks of wood encountered or produced are tossed by the exposed blade.
- Sticks and debris falling onto the blade or sliding across the blade are struck by the teeth and thrown.
- Metal pieces from the blade or from encountered objects are thrown.
- Wood pieces enter the saw housing and are expelled by the blade.
- In very peculiar cases the saw can throw long lengths of wood as spears.

SAW HOUSING ENTRANCE AND EXIT SPACE



SAW22
SAW22A
SAW22B

Saw Bade Entrance and Exit Space	
A Ingoing Opening of the Saw Blade Housing	B Outgoing Opening of the Saw Blade Housing

To avoid the ingestion of materials into the housing space above the disc (and later ejection) the ingoing entrance for the saw rim of teeth is kept as small as practical. It is important that this high wear area be maintained at its original size and shape.

The outgoing opening is large enough to allow the housing to clean itself and allows most things inside to be thrown out. Its throw direction and angle must be respected. A long snout on the ingoing side reduces this danger.


Day Night Mode Button


DEF Consumption Information


DEF Consumption Trip Information


DEF Consumption Trip Information Reset


Defrost, Front Window


Diesel Exhaust Fluid (DEF, AUS32, AdBlue)


Disc Saw


Engine Menu


Engine Anti-stall


Engine Anti-stall ON


Engine Anti-stall OFF


Engine Boost Pressure


Engine Charge Air Pressure Filter


Engine Charge Air Temperature


Engine Coolant Temperature


Engine Diagnostics


Engine Door/Roof CLOSE Switch


Engine Door/Roof OPEN Switch


Engine Roof Open


Engine Oil Pressure


Engine–Percentage of Load


Engine Oil Temperature


Engine Speed–rpm


Engine WAIT TO START


ER Boom Function ON


ER Boom IN


ER Boom OUT


Event Counter


Event Counter Reset

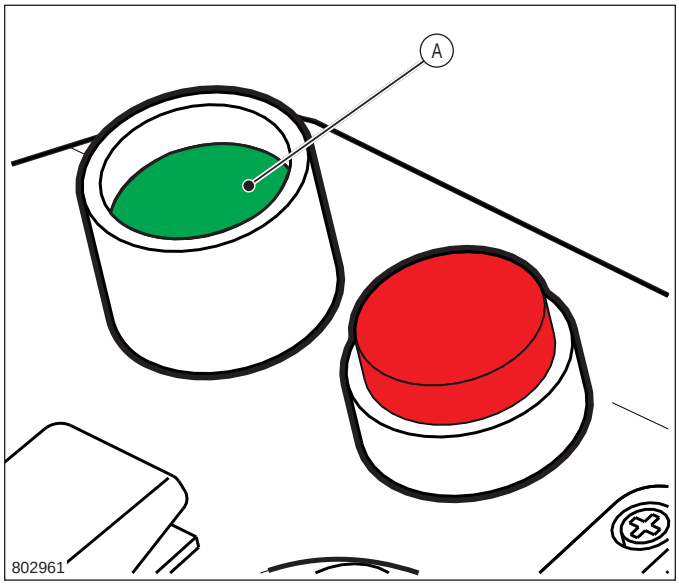

Fan AUTO Icon (green)

AUTO Fan AUTOMATIC (later design)


Fan Auto Reversing/Cleaning


Fan Full ON

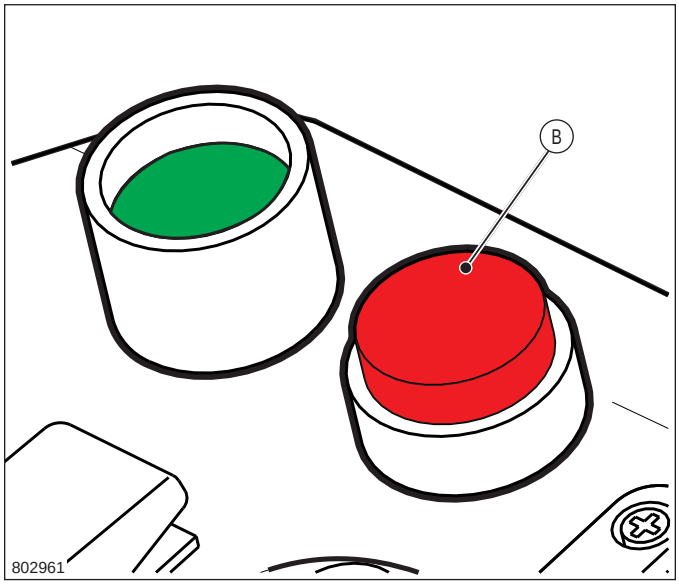
PILOT SYSTEM RESET SWITCH



A Pilot System Reset Switch

This is a green push-on, spring-return switch. Push this switch to activate the pilot system when the engine is running. The 'pilot on' icon displays in green on the computer display. The front door must be closed to activate the pilot system

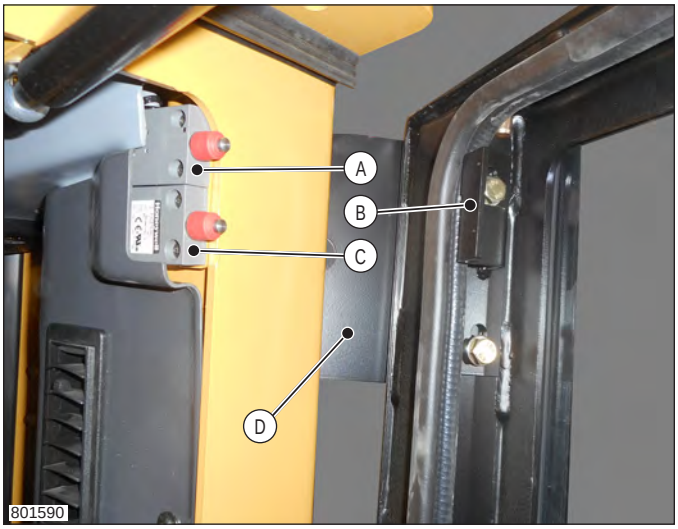
PILOT SYSTEM OFF SWITCH



A Pilot System Off Switch

This is a red push-off, spring-return switch. Push this switch to deactivate the pilot system. The 'pilot off' icon displays in yellow on the computer display.

SAFETY INTERLOCK SWITCH (FRONT DOOR)



Front Door Switches	
A	Safety Interlock Switch
B	Switch Actuator
C	Cab Dome Light Switch
D	Upper Door Hinge

This switch turns OFF the pilot system when the front door is opened; all operating functions are deactivated, and the swing drive brake and track drive brakes apply automatically. The pilot off icon displays in yellow on the computer display.

IMPORTANT!
If the interlock switch does not stop machine functions, turn OFF the engine.

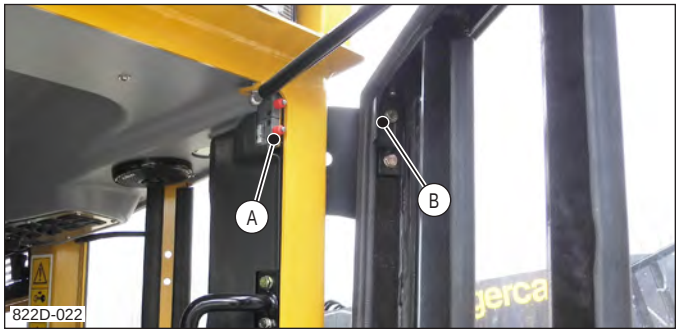
Close the front door and press the pilot system reset switch to reactivate the pilot system.

WARNING

Do not defeat the front door pilot off switch. It is an important safety feature. Failure to comply could result in death or injury.

CAB DOME LIGHT SWITCH

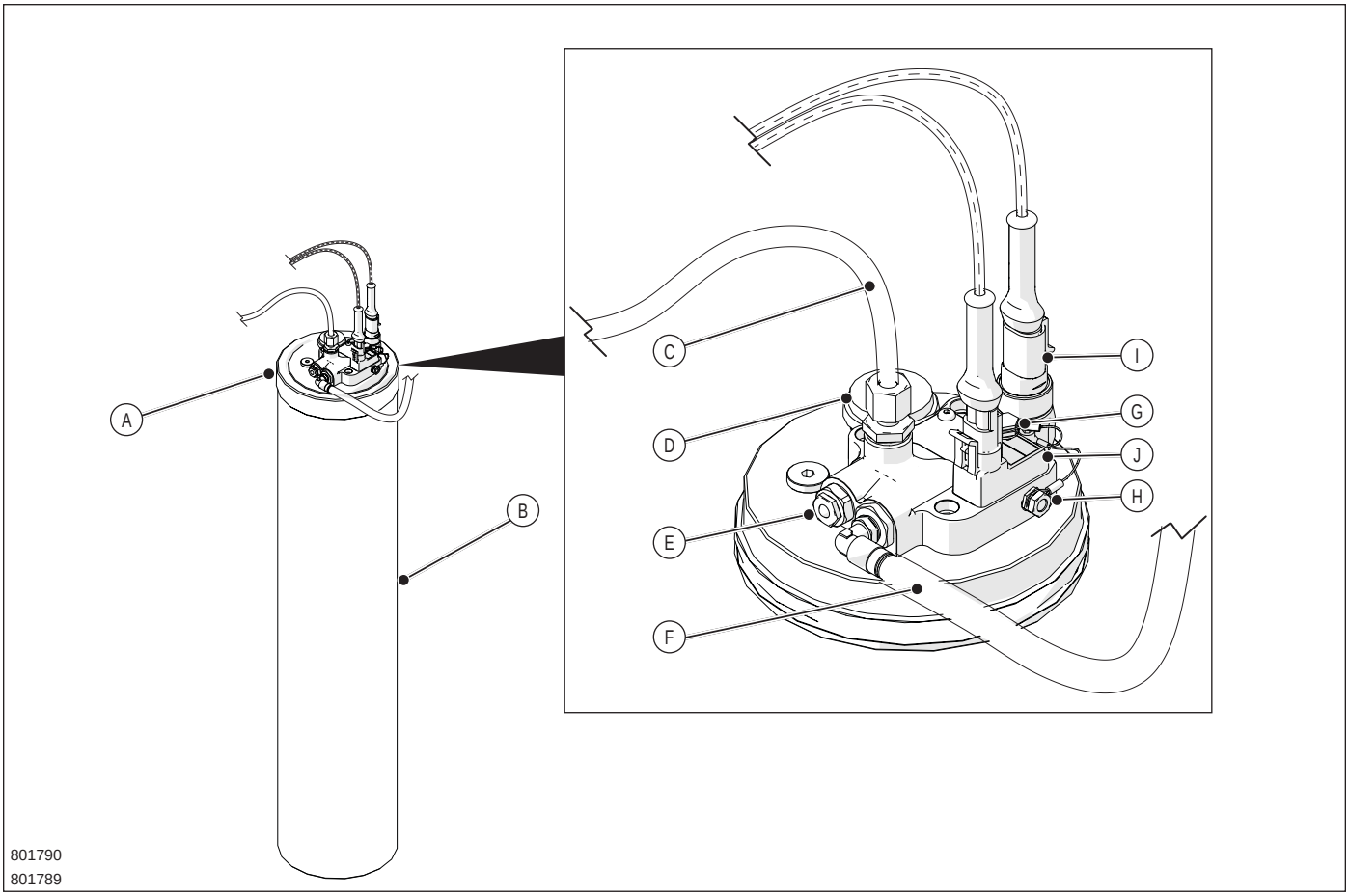
This is a two-position switch to turn the interior cab dome lights ON/OFF. Place the switch in the ☼ position to turn ON the interior cab done lights. Place the switch in the alternate position to turn OFF the interior cab dome lights.



A	Cab Dome Light Switch
B	Actuator (On Door)

The front door of the cab is also equipped with a plunger switch. When the door is opened, the switch is released and the interior cab dome lights turn ON.

PISTON ACCUMULATOR



Piston Accumulator			
A	Cylinder Cover	F	Detection Tube
B	Cylinder	G	Safety Screw (red)
C	Distribution Hose	H	Cover Screw (green)
D	Pressure Gauge	I	Pressure Switch
E	Pressure Relief Valve	J	Signal Module

The piston accumulator consists of a piston that deploys suppressant throughout the upper enclosure area via distribution hoses/tubes. Labels on the piston accumulator contain safety instructions and date of last service.

GAUGE (PISTON ACCUMULATOR)

The gauge displays the pressure inside the piston accumulator.

NOTE: Make sure the pressure in the piston accumulator is within the green zone on the pressure gauge.

PRESSURE RELIEF VALVE

When the pressure inside he piston accumulator reaches 138 bar (2000 psi), the valve opens and stays open until the pressure drops to 128 bar (1856 psi).

SAFETY SCREW (RED)

The safety screw locks the piston accumulator by blocking the valve from opening when installed in the side of the valve.

COVER SCREW (GREEN)

The cover screw protects dust from entering the valve when the piston accumulator is armed.

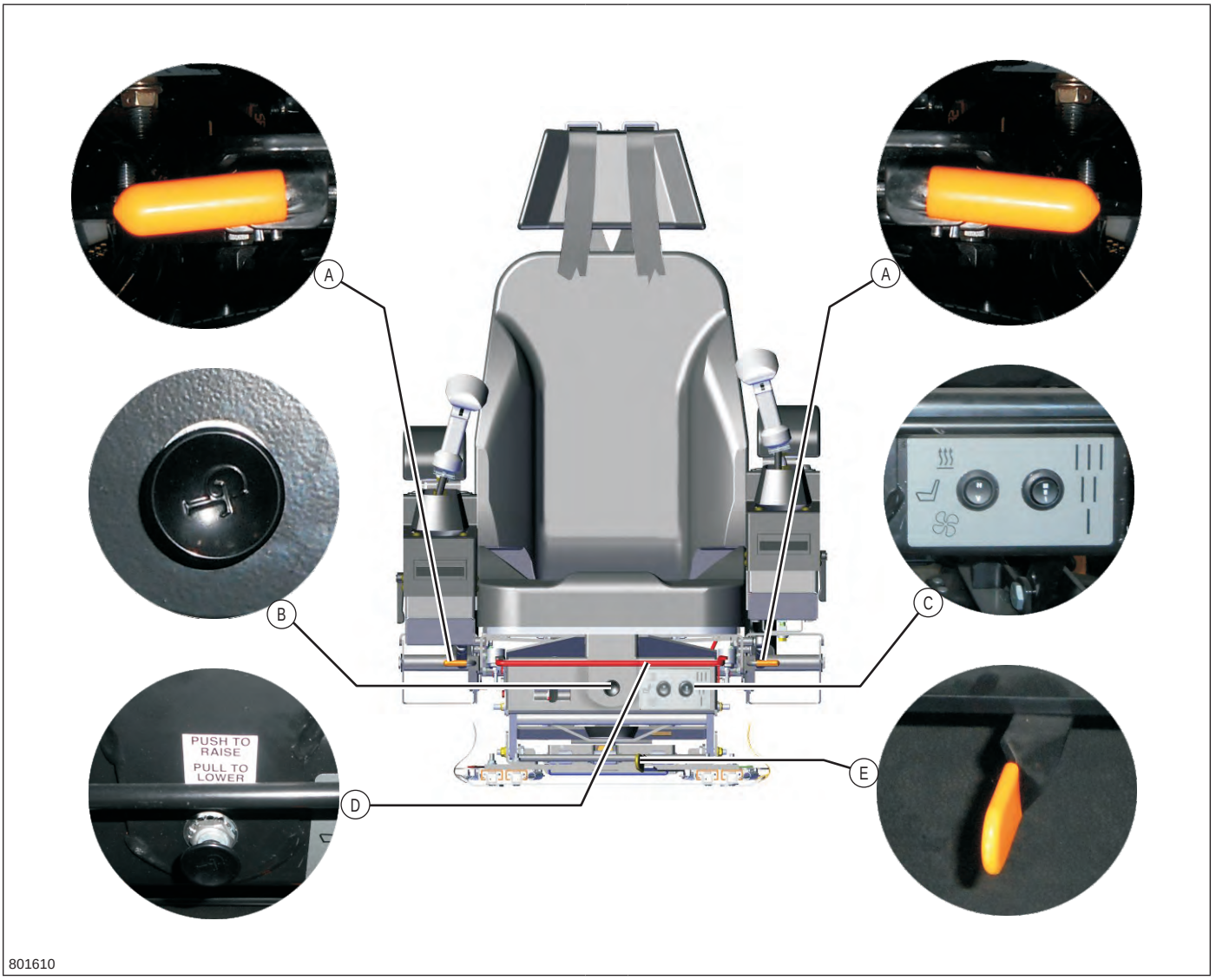
PRESSURE SWITCH

The pressure switch sends a signal to the control panel when the pressure drops below 80 bar (1160 psi).

SIGNAL MODULE

The signal module warns the operator when the piston accumulator is mounted with the safety screw in the locked position.

OPERATOR'S SEAT (855*3169 TO 855*4000)



801610

Operator's Seat Adjustments	
A Fold Up Armrest Lever	D Height Adjustment Control Bar
B Air Adjustment Knob	E Forward/Backward Adjustment Lever
C Seat Climate Control Switches	

WARNING

Use the seat and shoulder restraint belts at all times when operating this machine. Failure to do so can result in death or serious injury.

BACKLIGHT

Home Screen–Backlight Button

Tap the backlight button to toggle between day or night backlight displays.

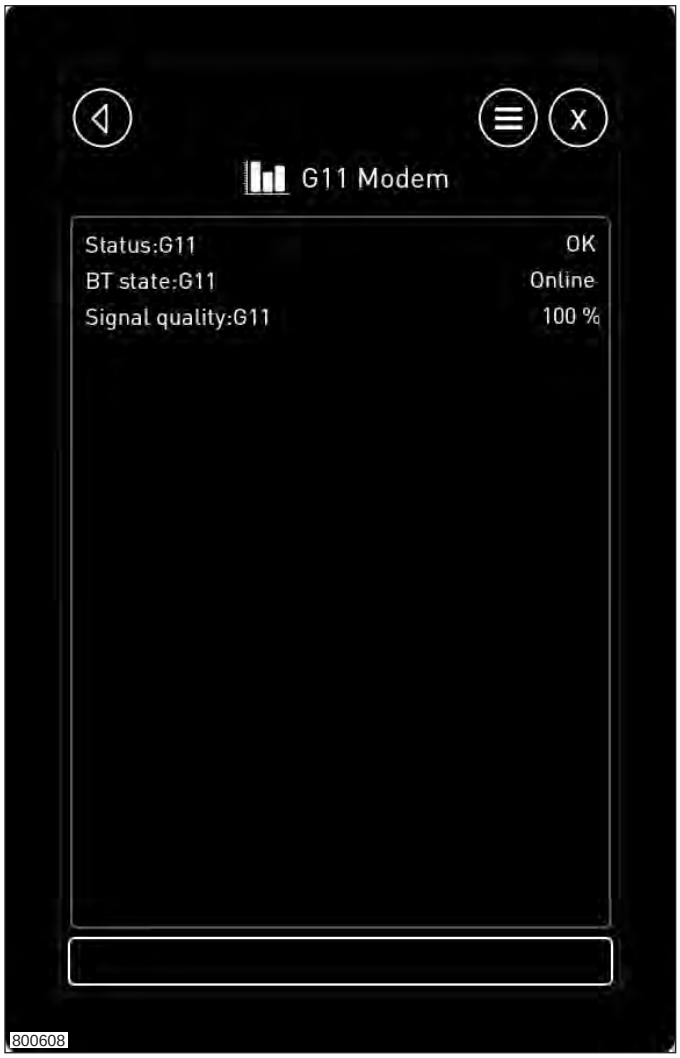
MAIN MENU SCREEN

Home Screen–Main Menu

The main menu displays the following selections:

- System
- Measure
- Adjust
- Preferences

G11 MODEM



Home Screen–Main Menu–Measure Menu–G11 Modem Menu

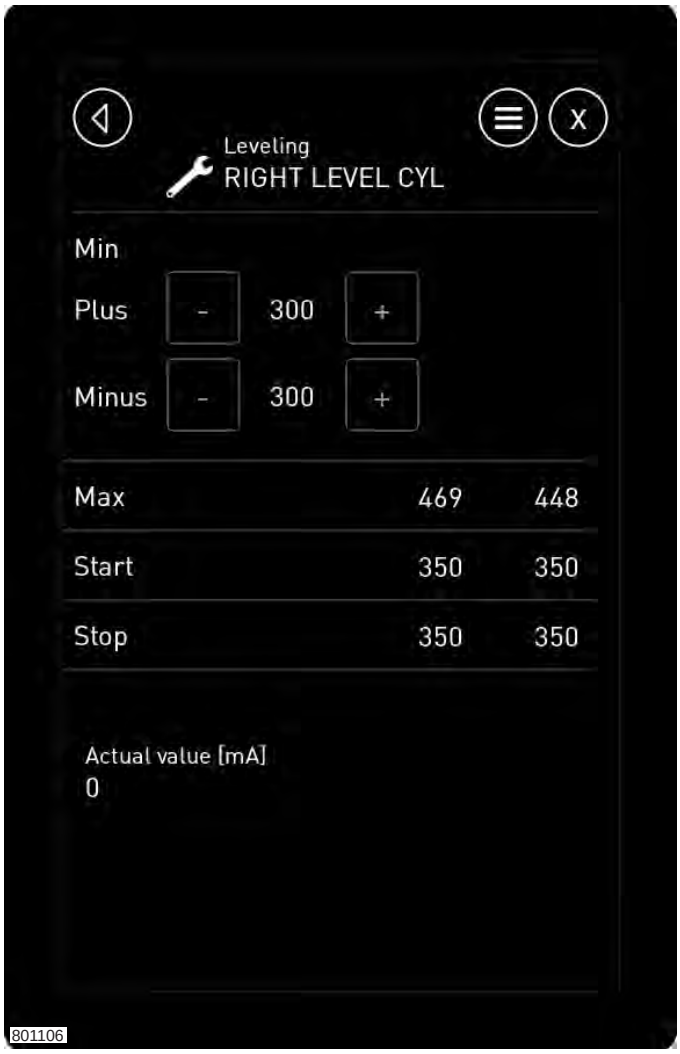
The G11 modem menu displays G11 modem information.

INCLINOMETER

Home Screen–Main Menu–Measure Menu–Inclinometer Menu

The inclinometer menu displays machine inclinometer measurements.

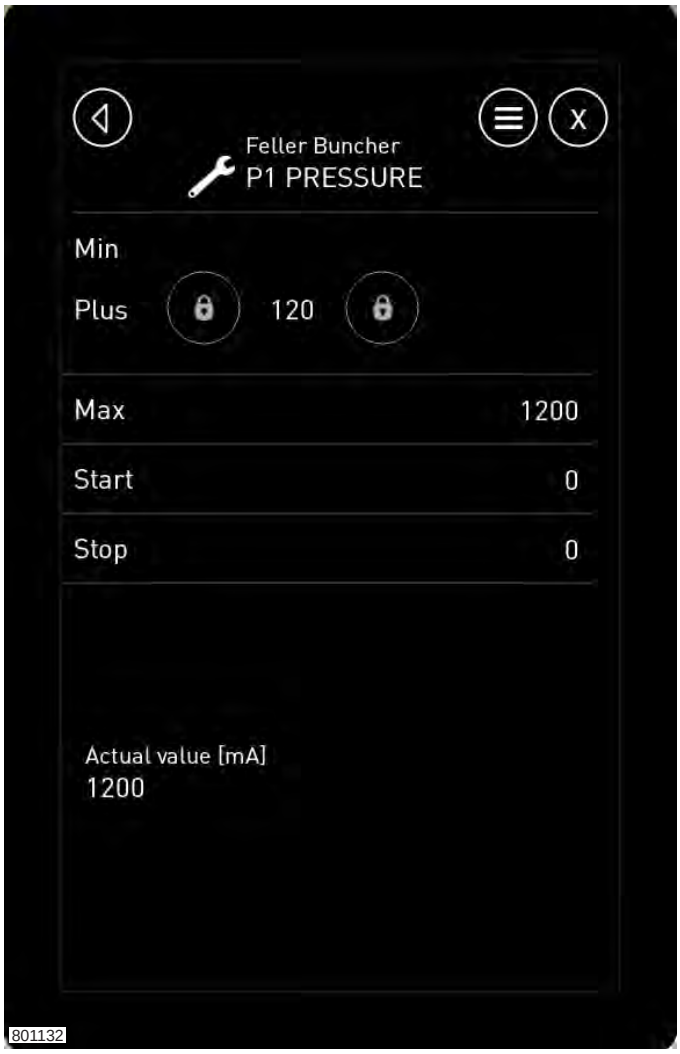
RIGHT LEVEL CYL



Home Screen–Main Menu–Adjust Menu–Leveling–Right Level Cyl Menu

Adjust speeds and ramping of the selected function for individual preference and performance. For general Channel adjustment procedure, refer to CURRENT OUTPUT CHANNELS–CHANNEL ADJUSTMENTS in this section.

P1 PRESSURE



Home Screen–Main Menu–Adjust Menu–Feller Buncher Menu–P1 Pressure Menu

Adjust ramping of the selected function for individual preference and performance. For general channel adjustment procedure, refer to CURRENT OUTPUT CHANNELS–CHANNEL ADJUSTMENTS in this section.

CLAMP

Home Screen–Main Menu–Adjust Menu–Feller Buncher Menu–Clamp Menu

Adjust CLAMP settings, refer to CURRENT OUTPUT CHANNELS–CHANNEL ADJUSTMENTS in THIS SECTION.

OPERATION MODES

WARMUP MODE

As the hydraulic oil temperature increases the system will automatically allow the engine speed to increase and the Computer displays an Information dialogue box that shows the progress of the Warmup Mode in percentage outstanding. This dialogue box closes when hydraulic oil has reached operating temperature.

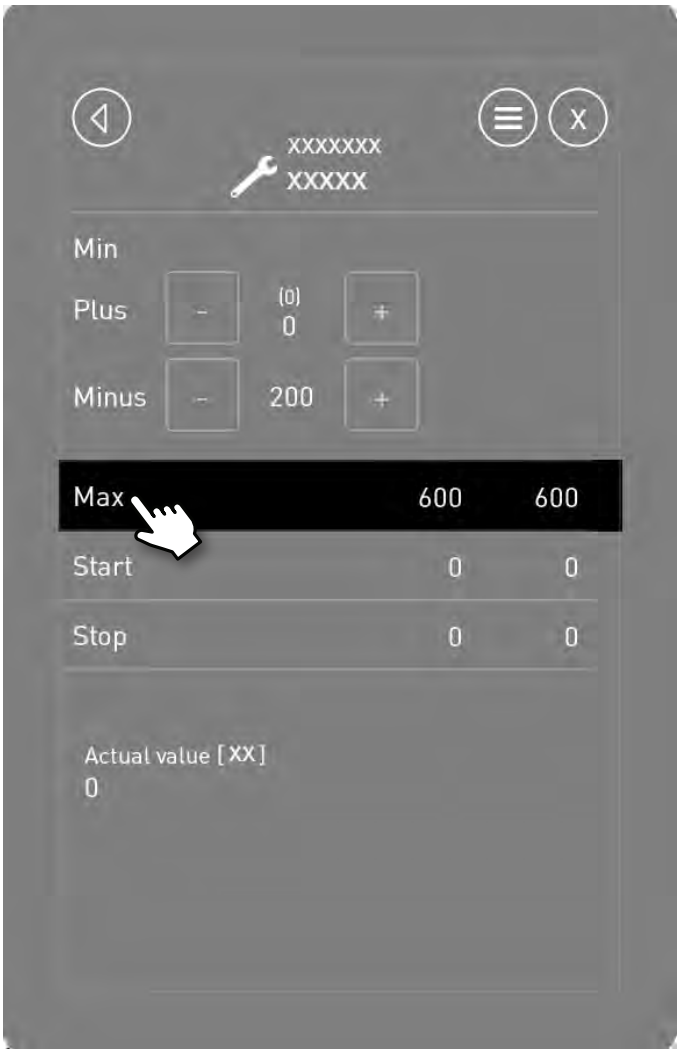
The warmup mode operates automatically on cold starts within a hydraulic oil temperature range. The temperature range will vary based on the Computer hydraulic oil settings.

For proper operation, the Computer hydraulic oil settings should match the type of hydraulic oil in use.

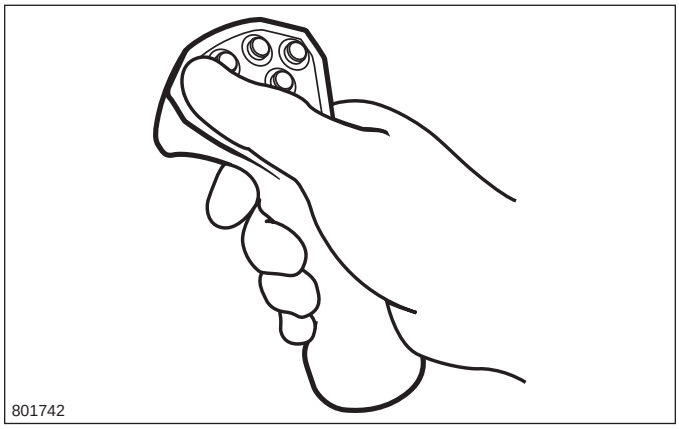
NOTE: Holding the speed switch will not increase the engine speed of a cold engine until the hydraulic oil temperature has reached a designated level based on the grade of oil in your machine. Engine speed will increase incrementally as the oil temperature reached specific levels.

NOTICE

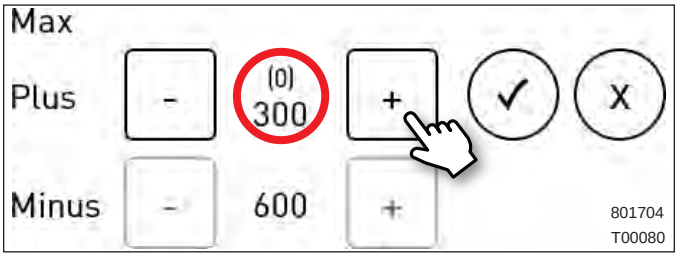
Allow a cold engine to warmup at low speed for at least five minutes before applying any load. Check all measured values on the Computer Display often during the warmup period. If the hydraulic oil is too cold or too hot, the hydraulic pumps will fail at full engine speed.



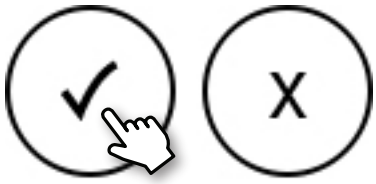
18. Tap the Max line adjust group.



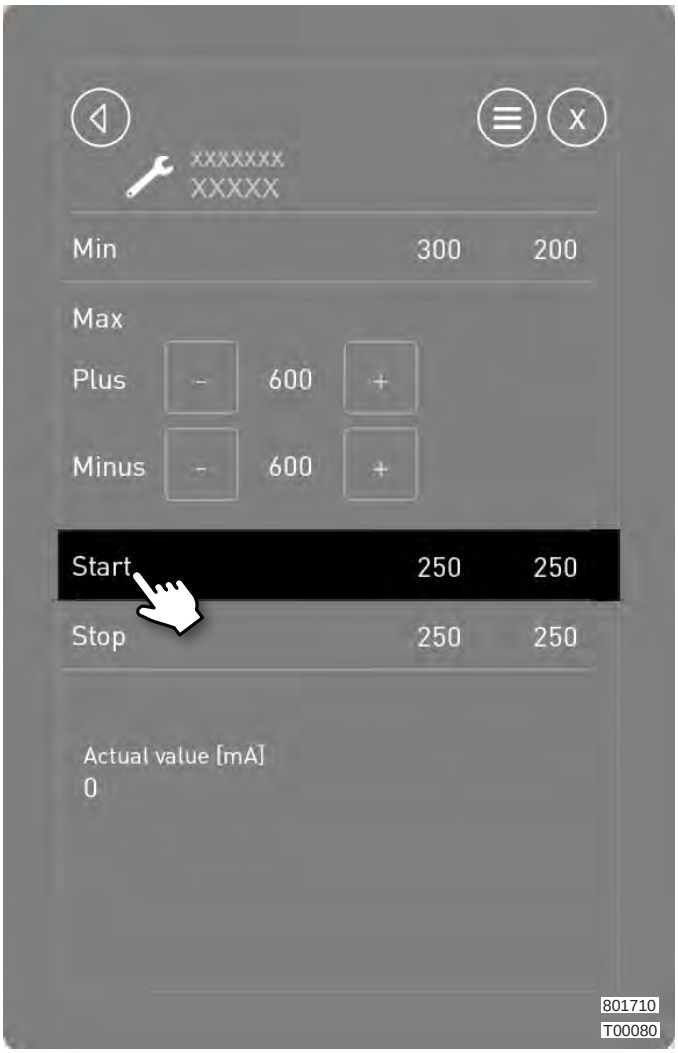
19. Operate and hold the desired current output channel function.



20. Tap the Plus positive button to adjust the function until speed, pressure or displacement meets specifications.



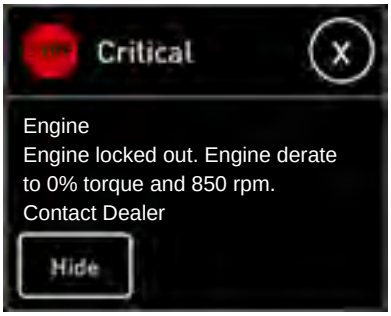
21. Tap the check mark button to accept the change.



22. Tap the Start line adjust group.

ENGINE LOCKED OUT

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



This message will be displayed, alarm light will flash and alarm will sound when an engine is locked out by the computer system to prevent further damage to the engine and aftertreatment system.

Note that an engine is locked out after several other critical aftertreatment system messages regarding the cause of the problem and additional messages regarding the number of restarts until engine lockout.

Once locked out the engine will only operate at idle. Action to correct the original cause(s) of the lockout must be taken before the engine can be reset. Contact dealer to reset engine lockout for normal operation.

Refer to ENGINE OPERATION AND MAINTENANCE MANUAL for code information.

Refer to COMPUTER DISPLAY MESSAGES – CRITICAL MESSAGES – ENGINE RESTARTS REMAINING UNTIL ENGINE LOCKOUT in THIS SECTION.

ENGINE RESTARTS REMAINING UNTIL ENGINE LOCKOUT

This message will be displayed, alarm light will flash and alarm will sound to inform the operator of the number of restarts available before the engine is locked out.

Note that an engine is locked out after several other critical aftertreatment system messages regarding the cause of the problem and this message regarding the number of restarts until engine lockout.

Refer also to COMPUTER DISPLAY MESSAGES – CRITICAL MESSAGES – ENGINE LOCKED OUT in THIS SECTION.

ENGINE OIL PRESSURE LOW

This message will be displayed, alarm light will flash and alarm will sound when engine oil pressure falls below 69 kPa (10 psi).

Stop the engine when this alarm is activated. Check engine oil levels.

Refer to STARTING THE ENGINE in THIS SECTION for more information.

HARDWARE FAULT – MC43[1]

This message will be displayed when an alert level active hardware fault related to the MC43[1] has been hidden.

To recall the original active fault(s) the operator must turn the key off and on.

High temperature, low supply voltage and high supply voltage module alert messages are examples of the type of hardware fault which will be the original active faults which trigger this message.

HARDWARE FAULT – MC43[2]

This message will be displayed when an alert level active hardware fault related to the MC43[2] Module has been hidden.

To recall the original active fault(s) the operator must turn the key off and on.

High temperature, low supply voltage and high supply voltage module alert messages are examples of the type of hardware fault which will be the original active faults which trigger this message.

HARDWARE FAULT – MC43[3]

This message will be displayed when an alert level active hardware fault related to the MC43[3] module has been hidden.

To recall the original active fault(s) the operator must turn the key off and on.

High temperature, low supply voltage and high supply voltage module alert messages are examples of the type of hardware fault which will be the original active faults which trigger this message.

INFORMATION MESSAGES

Information messages are used to give the operator useful information, but requires no action to prevent immediate or future damage to the machine

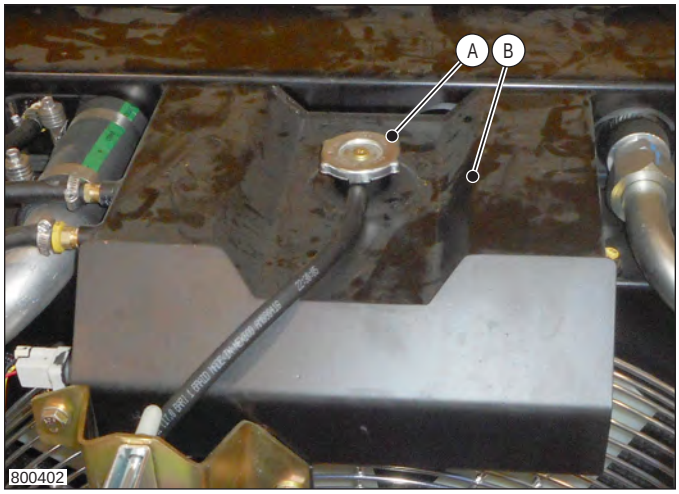
When an information message is displayed on the screen the message will stay on the screen until the operator acknowledges the message.

Information messages can be acknowledged by tapping the Close button. Acknowledged information messages are removed from the screen.

Information messages do not have an indicator after they have been acknowledged.

A list of the INFORMATION MESSAGES is as follows:

- FAN CLEAN ACTIVE
- Fault Memory Reset
- Help Air Filter Restriction Pressure Symbol Message
- Help Air Filter Status Lamp Message
- Help Anti-Stall Lamp Message
- Help Auto Accumulator Symbol Message
- Help Battery Symbol
- Help Boost Pressure Symbol
- Help DEF Info Symbol Message
- Help DEF Trip Info Symbol Message
- Help ECU Version Symbol
- Help Engine Coolant Temp Symbol
- Help Engine Hours Symbol
- Help Engine Load Symbol
- Help Engine Oil Pressure Symbol
- Help Engine Oil Temp Symbol
- Help Engine Speed Symbol
- Help Event Counter Symbol Message
- Help Fan Speed Symbol
- Help Fan State Lamp Message
- Help Fuel Consumption Rate Symbol
- Help Fuel Info Symbol Message
- Help Fuel Temp Symbol
- Help Fuel Trip Info Symbol Message
- Help Harvester Pressure Symbol Message
- Help Hyd Filter Bypass Status Lamp Message
- Help Hyd Oil Level Lamp Message
- Help Hyd Oil Temp Symbol Message
- Help Hyd System Pressure Symbol Message
- Help Intake Temp Symbol
- Help Machine Hours Symbol Message
- Help New Text Msg Lamp Message
- Help Oil Grade Symbol Message
- Help Pilot Lamp Message
- Help Pilot Pressure Symbol Message
- Help Roof Open Lamp Message
- Help Saw Pressure Symbol Message
- Help Serial Number Symbol Message
- Help Side Door Open Lamp Message
- Help Track Low Lamp Message
- Help Tree Counter Symbol Message
- Help WIF Indicator Lamp Message
- Inducement Reset Complete
- INHIBIT PURGE
- WARMUP MODE

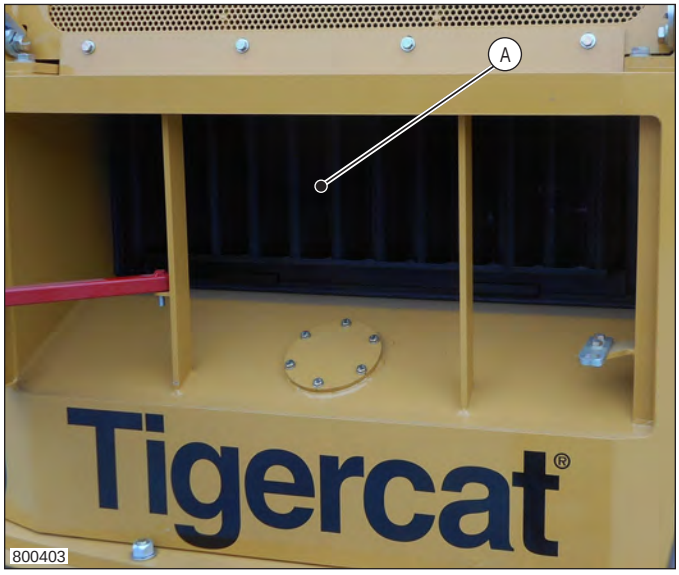


A Engine Coolant Fill Cap
B Engine Coolant Surge Tank

12. Check the engine coolant level. Fill as required.

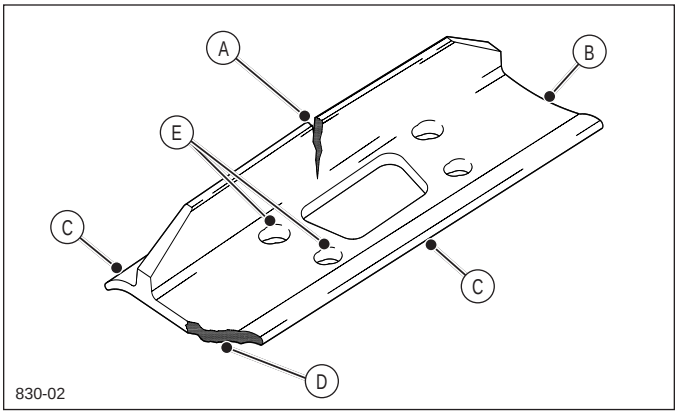
WARNING

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



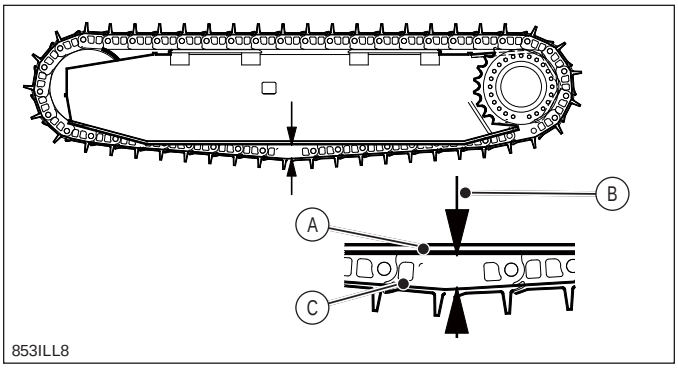
A Debris Screen

13. Clean the cooler package, if required. Refer to CLEANING COOLER PACKAGE in SECTION 3.



A Cracking
B Bent
C Edge Wear
D Broken Edge
E Worn Holes

14. Check the condition of the track shoes.



A Underside of Track Guard
B Sag Dimension
C Upper Surface of Track Shoe

15. Check the track chain tension by measuring the track sag. Refer to TRACK CHAIN SAG in SECTION 3.
16. Check all exits.
17. Be sure that all doors and access panels are securely fastened.
18. Inspect all windows daily and immediately after any impacts. Refer to WINDOWS–INSPECTION AND MAINTENANCE in SECTION 3.
19. Unlock all cab doors.

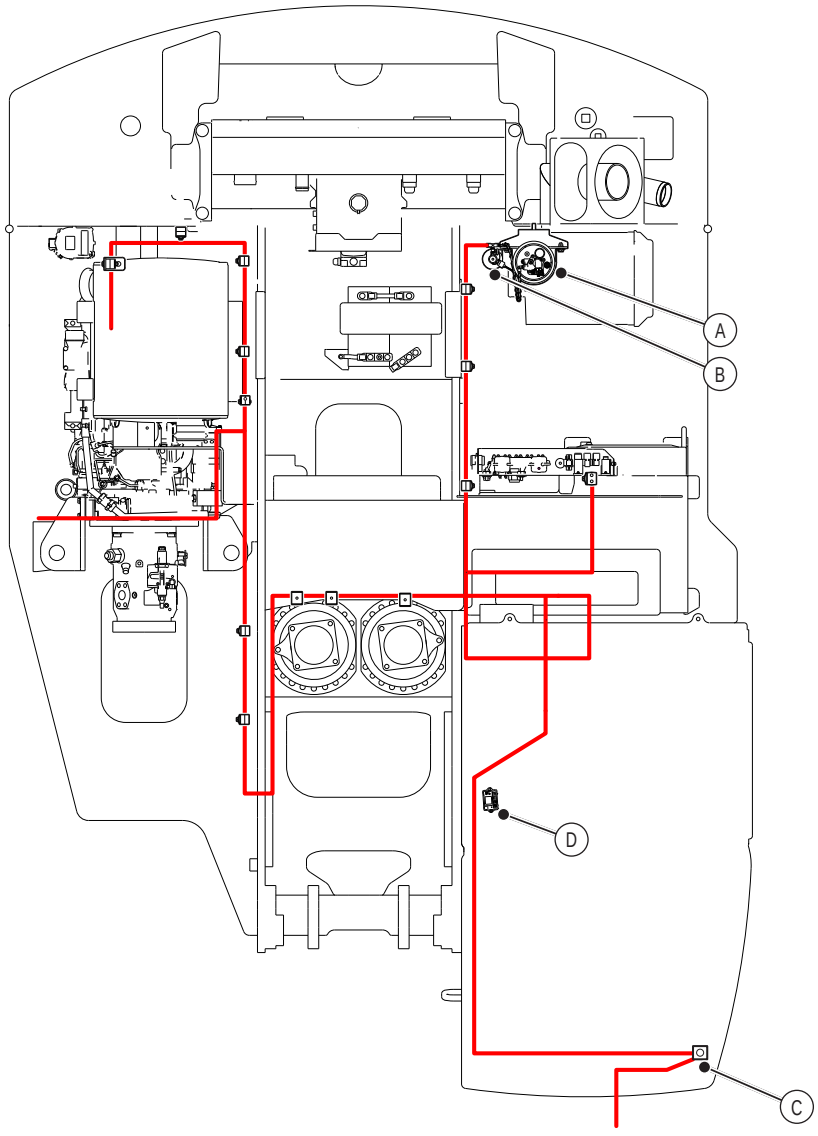
FIRE SUPPRESSION SYSTEM COMPONENT LOCATION TYPE B

Make sure all fire suppression system components are maintained in good working condition. Visually inspect the components to ensure safe operation.

Frequently inspect for:

- All couplings/valves/connections are free of leakage or corrosion.
- The safety pin on the manual actuator can be removed easily.
- The pressure in the piston accumulator is within the green zone on the pressure gauge.
- The pressure in the detection cylinder is within the green zone on the pressure gauge.
- The status of the fire detection and/or fire suppression system on the control panel is 'ok'. Refer to CONTROL PANEL in SECTION 2.
- Test the control panel fire suppression system alarm before starting work. Refer to FIRE SUPPRESSION SYSTEM TEST in SECTION 2.

All defects must be reported. Those affecting safe operation must be repaired immediately by an authorized person.



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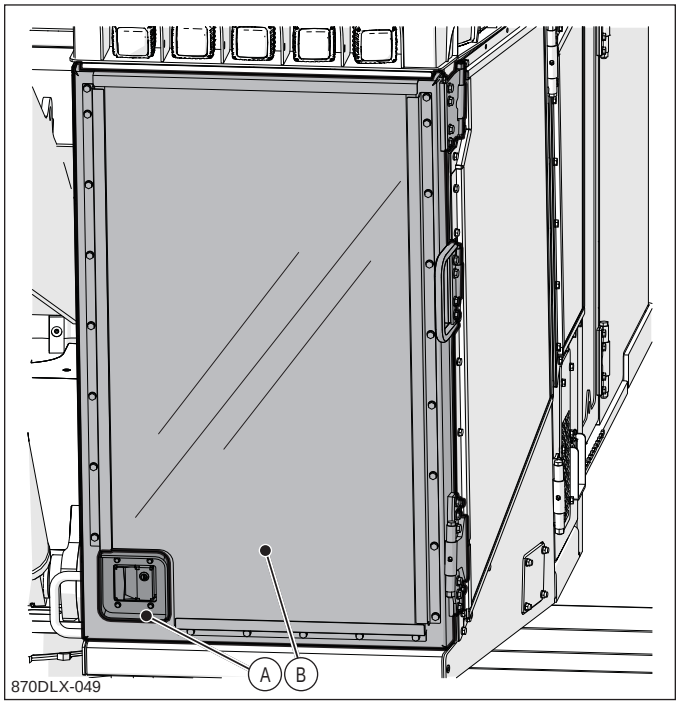
Component Location Diagram

A Piston Accumulator	D Control Panel
B Detection Cylinder	— Detection Tube
C Manual Actuator	

FRONT DOOR CAB

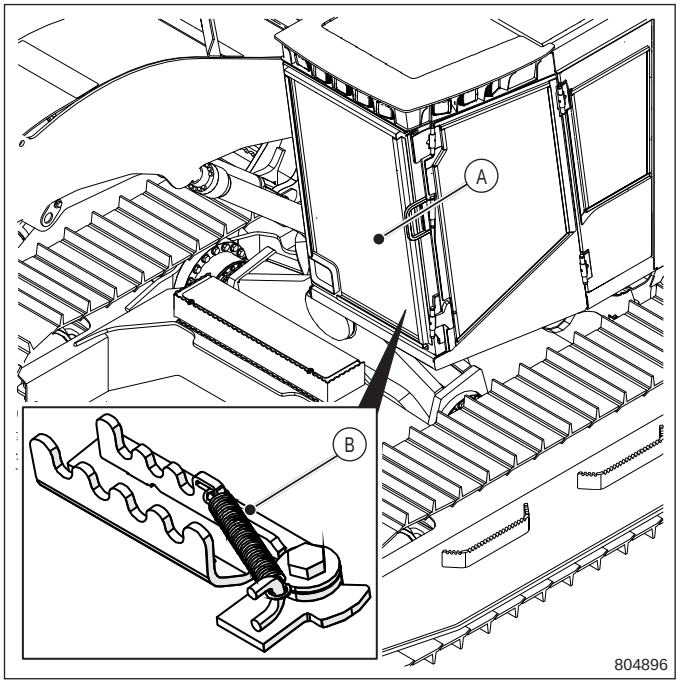


A	Front Door Latch
B	Front Door

A swing open door hinged at the sides, provides access to the cab. After pulling the latch paddle handle outward, gas springs will completely open the front door automatically.

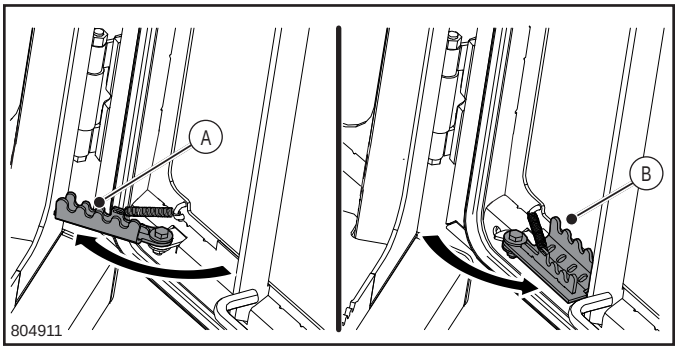
To unlock the front door from the outside with the key, insert the key and turn it toward the right side of the machine. To lock the front door from the outside with the key, insert the key and turn it toward the left side of the vehicle. The front door can be opened from the inside if the door is locked.

FRONT DOOR PROP ROD



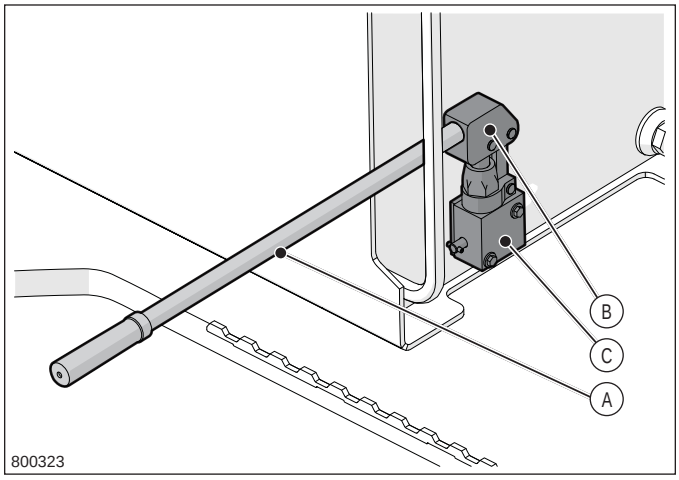
Front Door Prop Rod Location	
A	Front Door
B	Prop Rod

A prop rod is used to keep the front door from unintentionally closing.



Front Door Prop Rod Position	
A	Open Position
B	Stored Position

The prop rod is engaged while in the open position, and disengaged while in the stored position.



A Pump Handle
B Lever
C Manual Pump

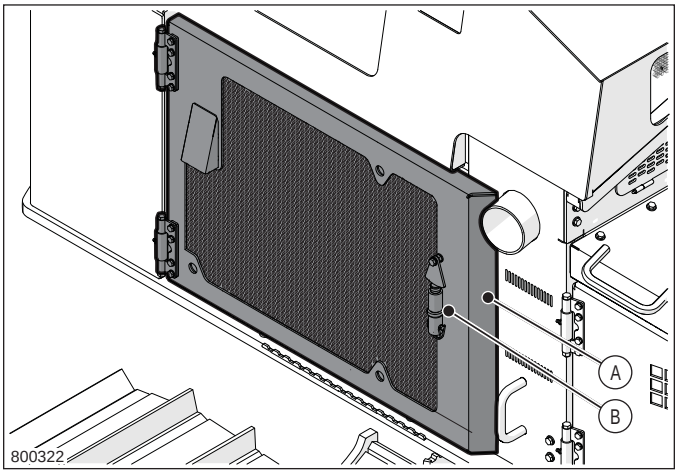
4. Place the pump handle into the lever.

⚠ WARNING

The motion alarm will NOT sound when the power roof is transitioning between the open and closed position. When the machine is turned on, an icon on the computer display will display the current position of the power roof.

5. Operate the hand pump.
6. When the power roof is fully closed, place the lever in the down position.
7. Return the pump handle to its storage location.
8. Push (C) metal pin down and turn ¼ turn CW to the default operating position.
9. Install the breather cabinet door.

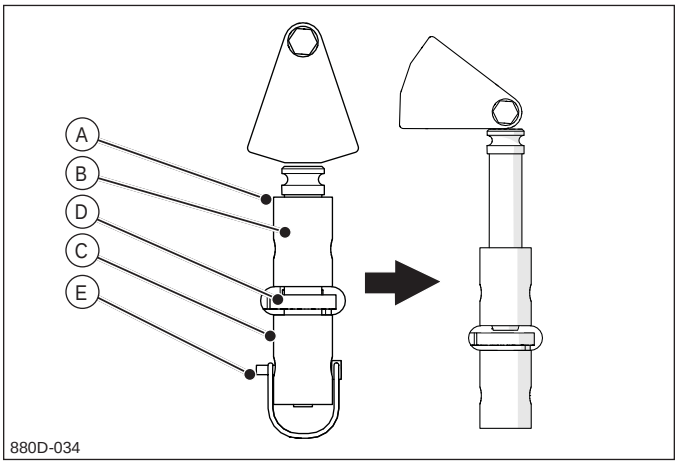
RIGHT SIDE DOOR



A Right Side Door
B Right Side Door Latch

A swing open door hinged at the sides, provides access to the engine compartment.

To open the right side door, do the following:



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

1. Remove the hitch pin.
2. Move the door swing lock to allow the door pin to clear the door latch lug.
3. Open the right side door.
4. Pull up on the right side door prop rod to release it from the prop rod catch.
5. Place the right side door prop rod in the hole located on the upper structure.

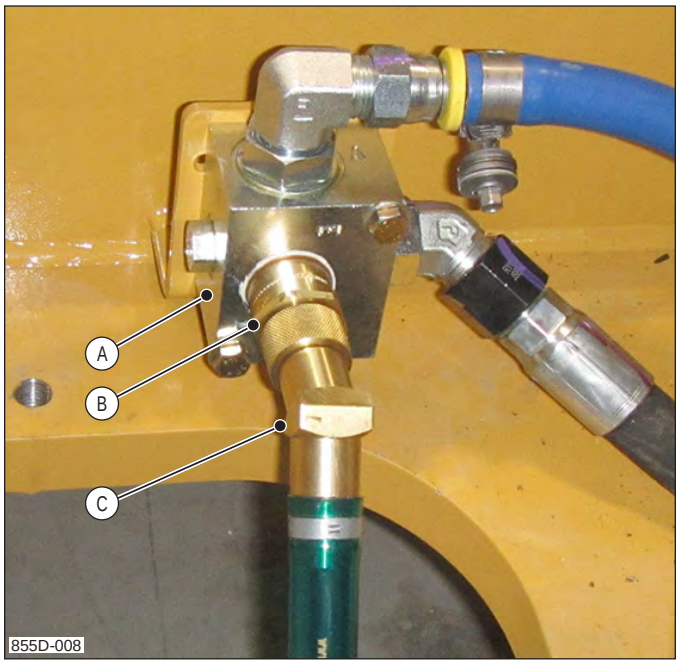
If equipped with a work platform perform the following.

CHANGE SWING DRIVE GEARBOX UPPER GEARING OIL

NOTE: Change swing drive gearbox oil after 250 hours maximum operation and every 250 hours from then on.

1. Park the machine on level ground with the attachment resting firmly on the ground. Refer to PARKING THE MACHINE in SECTION 1.
2. Open the:
   - Power roof
   - Left side door.
   - Main control valve cover.
   - Main control valve bottom cover

   Refer to SERVICE AND MAINTENANCE ACCESS DOORS AND COVERS in THIS SECTION.



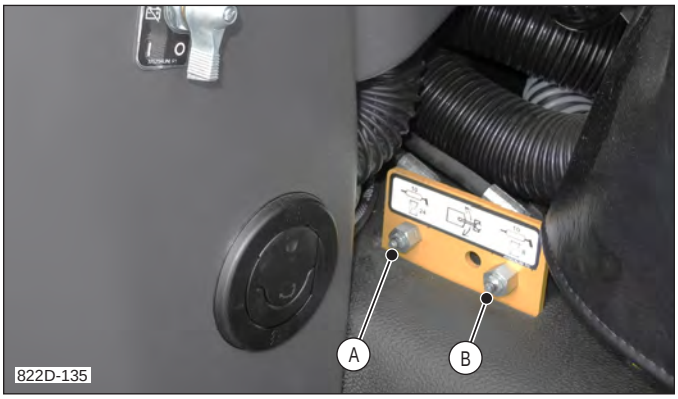
A	Drain Manifold
B	Environmental Drain Plug
C	Drain Hose

3. Remove the dust cap from the drain manifold environmental drain plug.
4. Install the drain hose on the drain manifold environmental drain plug.

   NOTE: The environmental drain plug contains a check valve that will allow free flow of oil when the drain hose is installed.
5. Drain the swing gearbox upper gearing oil.

   NOTE: Dispose of the waste oil according to local regulations.
6. When the oil has been completely drained, remove and store the drain hose.
7. Install the environmental drain plug dust cap.
8. Add gear oil to the gear oil bottle. Refer to APPROVED HYDRAULIC OILS in THIS SECTION.
9. Close all access doors and covers.

LUBRICATION OF SWING BEARING AND SWING PINION



A	Swing Bearing Grease Fitting
B	Swing Pinion Grease Fitting

To lubricate the swing bearing, apply 10 shots of grease, while swinging, every 24 hours to the right grease fitting which is located on the seat pedestal in the operator's cab.

To lubricate the swing pinion (or teeth), apply 10 shots of grease, while swinging, every eight hours to the left grease fitting located on the seat pedestal.

For the lubrication intervals, refer to SCHEDULED MAINTENANCE or SERVICE AND LUBRICATION SCHEDULE in THIS SECTION.

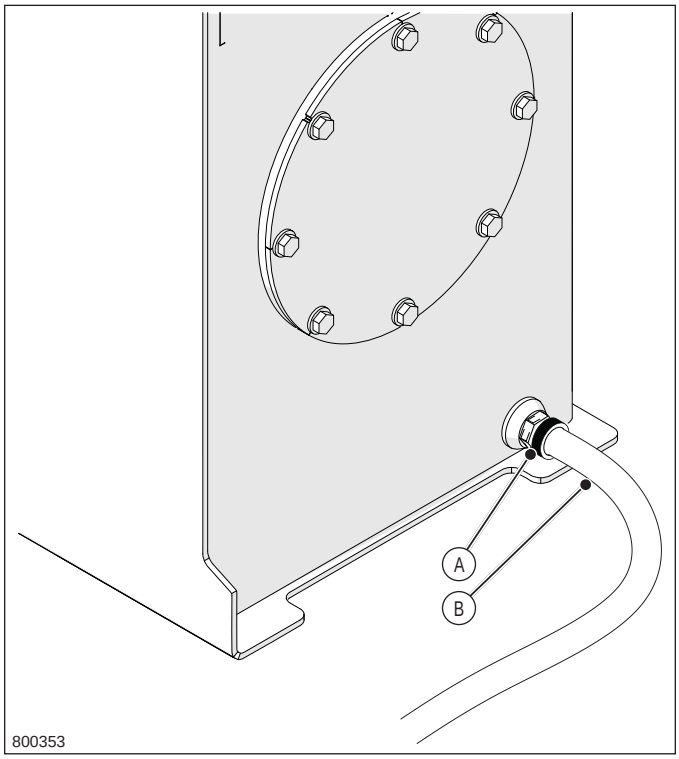
For additional information refer to SECTION 15 in the SERVICE MANUAL.

DRAINING THE HYDRAULIC OIL TANK

To drain the hydraulic oil tank, do the following:

1. Park the machine on level ground with the attachment resting firmly on the ground. Refer to PARKING THE MACHINE in SECTION 1.
2. Apply the swing brake.
3. Turn OFF the engine.
4. Remove the ignition key.
5. Open the left side door. Refer to SERVICE AND MAINTENANCE ACCESS DOORS AND COVERS in THIS SECTION.
6. Turn OFF the battery disconnect switch.
7. Depressurize the hydraulic oil tank.

   Refer to HYDRAULIC OIL TANK PRESSURIZATION INSTRUCTIONS in THIS SECTION.



A Environmental Drain Plug
B Drain Hose

8. Remove the dust cap from the environmental drain plug.
9. Thread the drain hose onto the environmental drain plug.

   NOTE: Once the drain hose seats itself, the valve will open and hydraulic oil will begin to drain through the hose.

⚠ CAUTION

Allow oil to cool below 100°F (38°C) to reduce the risk of burns.

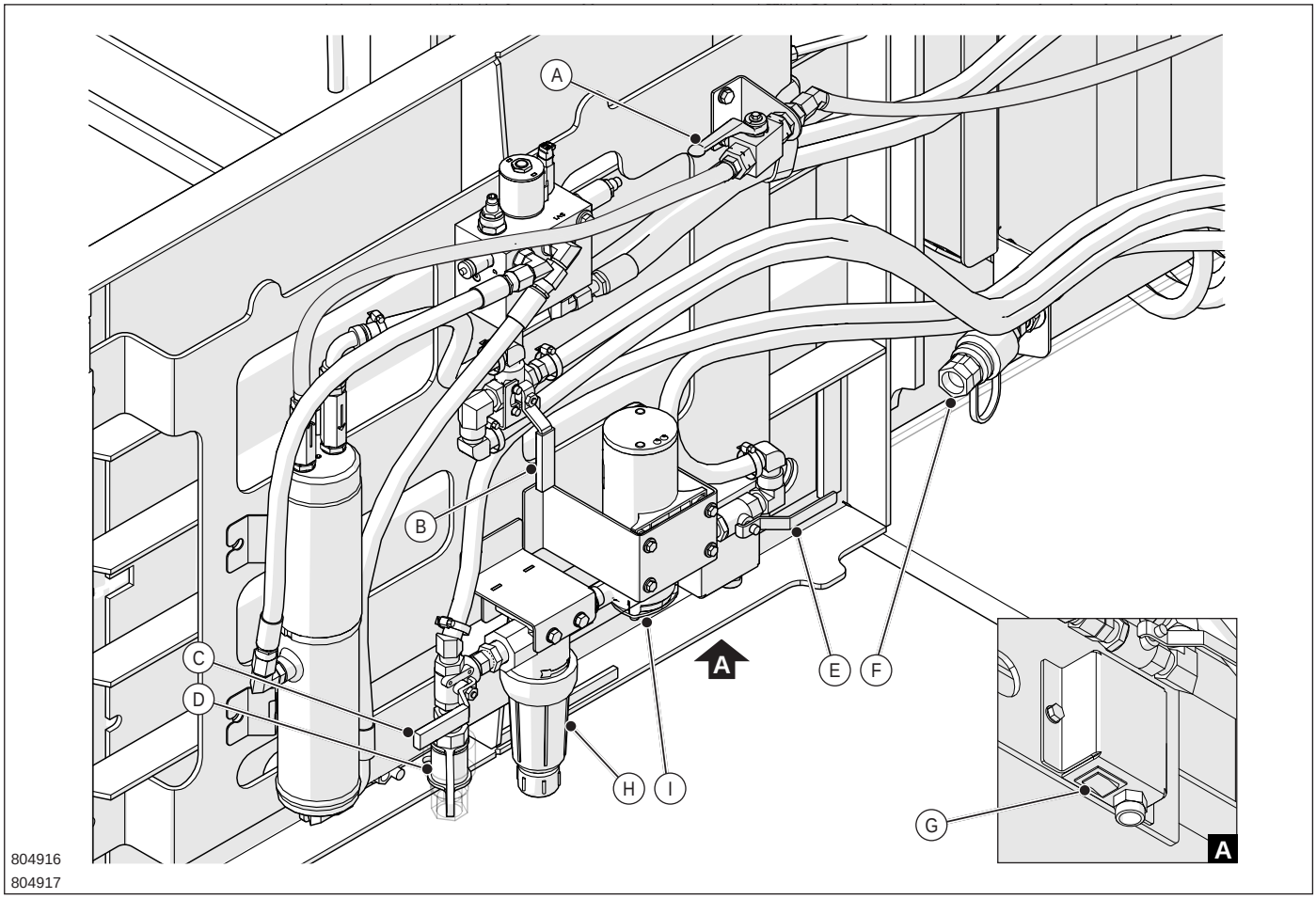
10. Drain the hydraulic oil into a suitable container.

    NOTE: Dispose of the waste hydraulic oil according to local regulations.

11. Remove and store the drain hose.
12. Install the environmental drain plug dust cap.

HERBICIDE STUMP SPRAY (OPTIONAL)

OPERATION



Herbicide Stump Spray Fill and Recirculate Operation	
A Valve 'D'	F Overflow Quick-connect Port
B Valve 'C'	G Electric Fill Pump Switch
C Valve 'A'	H Strainer
D Fill Quick-connect Port	I Electric Fill Pump
E Valve 'B'	

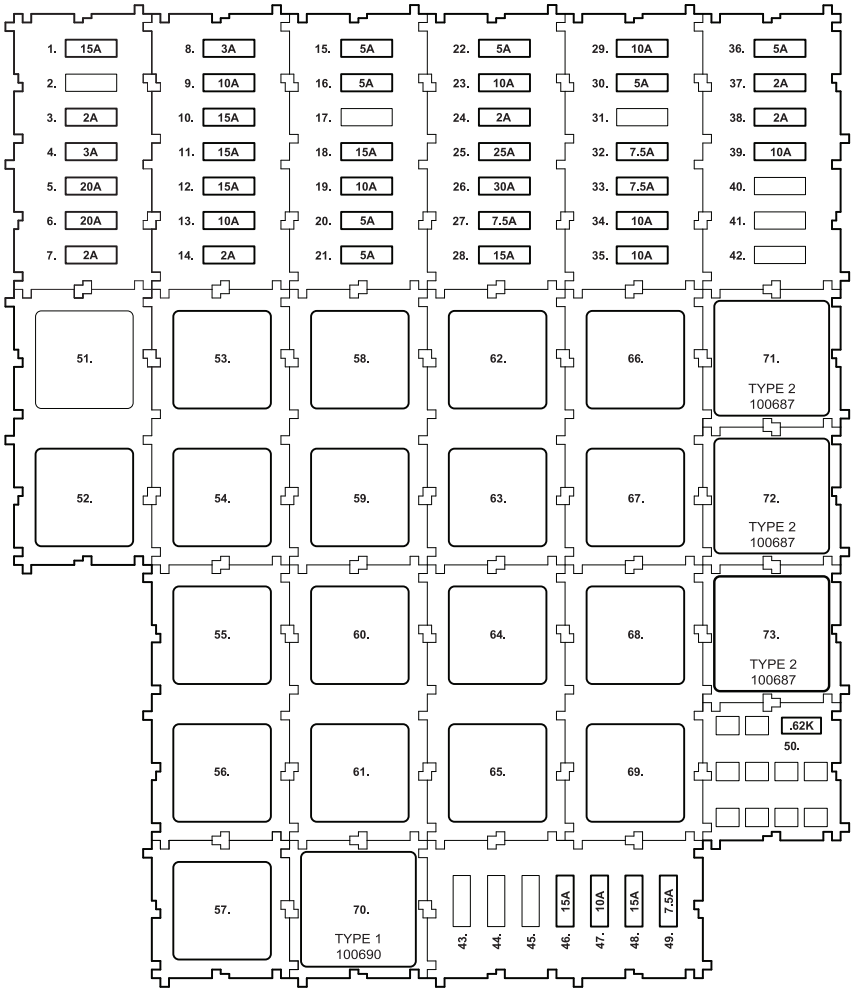
The electric fill pump is used to add herbicide fluid to the herbicide tank. The electric fill pump is also used to recirculate herbicide fluid. Herbicide mixture may split after sitting for a period of time. Recirculate the herbicide fluid daily to ensure proper herbicide mix.

Open the right side door to access the herbicide stump spray system.

7. Press the selection button to enter the LVD threshold page.

8. Turn the rotary knob to adjust the LVD threshold to 22 V.
9. Press the selection button three times to return to the main page and confirm the change.

REPLACE FUSES WITH SAME VALUES AS INDICATED



FOR 12 VOLT TWO WAY RADIOS

CONNECT POWER LEAD TO TERMINAL 497 FOR CONSTANT POWER
- OR -
CONNECT TO TERMINAL 500 FOR ON/OFF WITH IGNITION KEY. (FUSE #47)
FOR ADDITIONAL INFORMATION SEE OPERATORS MANUAL

*DO NOT MIX DIODE MODULE TYPES
TYPE 1 PART # AM301
TYPE 2 PART # AM302

FUSES

1. XA2 A2 (IF EQUIPPED)
2. SPARE
3. G11 BLUETOOTH (IF EQUIPPED)
4. CAMERA SYSTEM POWER
5. MC43-1 (CAB)
6. MC43-1 (CAB)
7. CAB INCLINOMETER (IF EQUIPPED)
8. IQAN MD4
9. A/C HEAT COMBO UNIT RELAY, PANEL SWITCHES
10. XA2 A0 (IF EQUIPPED)
11. XA2 A1 (IF EQUIPPED)
12. HARVESTER KEY SWITCHED POWER (15 AMP, HARVESTER ONLY, WIRE 492)
13. 24 VOLT AUXILIARY POWER (MAX. 10 AMP FUSE, WIRE 505)
14. TELEMATICS SWITCHED POWER (2 AMP OPTIONAL)
15. UNDERCARRIAGE ELECTRICAL CIRCUIT (IF EQUIPPED) RUN RELAY #4, UPPER FRAME ELECTRICAL BOX (IF EQUIPPED)
16. FUEL SHUT OFF VALVE
17. SPARE
18. VOLTAGE CONVERTER KEY SIGNAL, SEAT POWER, HORN, THROTTLE SWITCH, TRACK LOW SWITCH, HORN SWITCH
19. HYDRAULIC TANK PRESSURIZATION SYSTEM (IF EQUIPPED)
20. PILOT CIRCUIT
21. SENSORS, 24 VOLT POWER SUPPLY (WIRE 481)
22. ENGINE DIAGNOSTIC TOOL POWER
23. POWER ROOF SWITCH POWER
24. TELEMATICS BATTERY DISCONNECT SIGNAL
25. VOLTAGE CONVERTER
26. A/C HEAT COMBO UNIT
27. CAB INTERIOR LIGHTS
28. HARVESTER CONSTANT POWER (15 AMP, HARVESTER ONLY, WIRE 536)
29. IGNITION KEY SWITCH AND VACUUM SYSTEM (IF EQUIPPED)
30. ENGINE ECU RUN SIGNAL
31. SPARE
32. CAB WORK LIGHTS FUSE #1
33. CAB WORK LIGHTS FUSE #2
34. CAB WORK LIGHTS FUSE #3
35. CAB WORK LIGHTS FUSE #4
36. ENGINE PRE-HEAT (5 AMP OPTIONAL)
37. HARVESTER BATTERY POWER
38. IQAN MD4 RTC
39. TELEMATICS CONSTANT POWER (OPTIONAL)
40. SPARE
41. SPARE
42. SPARE
43. SPARE
44. SPARE
45. SPARE
46. RADIO CIRCUIT
47. 12 VOLT SWITCHED POWER (WIRE 500)
48. 12 VOLT UNSWITCHED POWER (WIRE 497)
49. 12 VOLT POWER OUTLETS (WIRE 496)
50. IQAN MD4 RTC RESISTORS (620 OHMS)

RELAYS

51. SPARE
52. RUN # 3
53. A/C OFF
54. RUN #1
55. LEVEL LEFT (OPTIONAL)
56. LEVEL FORWARD (OPTIONAL)
57. HORN (JOYSTICK CONTROL)
58. A/C HEAT COMBO
59. RUN #2
60. LEVEL RIGHT (OPTIONAL)
61. LEVEL REAR (OPTIONAL)
62. CAB LIGHT #1
63. KEY SIGNAL DISCONNECT
64. TELESCOPIC BOOM IN (OPTIONAL)
65. TELESCOPIC BOOM OUT (OPTIONAL)
66. CAB LIGHT #2
67. PUMP 1 (OPTIONAL)
68. PUMP 2 (OPTIONAL)
69. PUMP 3 (OPTIONAL)

DIODES

70. PILOT SIGNAL KEY DISCONNECT (TYPE 1)
71. WORK LIGHT SIGNAL (TYPE 2)
72. IQAN SHUTDOWN (TYPE 2)
73. DEFROST (TYPE 2)

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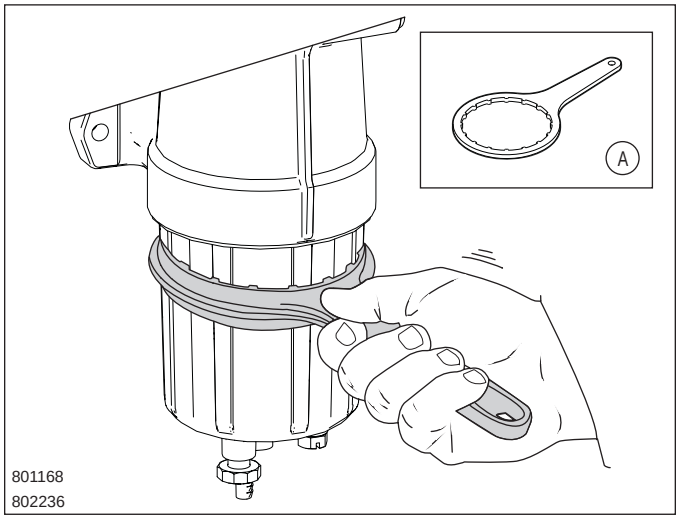
To change the fuel filter element:

1. Park the machine on level ground with the attachment resting firmly on the ground. Refer to PARKING THE MACHINE in SECTION 1.
2. Apply the swing brake.
3. Turn OFF the engine.
4. Remove the ignition key.
5. Open the right side door.
6. Open the power roof.
7. Open the pump cover side door.

   The engine must be off and cool to the touch for installation.

   Do not smoke or allow open flames near installation.
8. Wipe clean the area around the fuel filter and filter head.
9. Disconnect the fuel heater and 'water in fuel' sensor from the respective wiring harnesses.
10. Place a drain pan under the separator bowl.
11. Loosen the vent plug on the filter head.
12. Turn the drain valve open on the separator bowl to allow the fuel to drain completely from the separator bowl into a suitable container.

    NOTE: A drain hose can be attached to the drain valve if required.
13. Close the drain valve.



A Bowl Wrench

14. Remove the water separator bowl from the filter head.

    NOTE: A bowl wrench is supplied with the machine (Tigercat Part Number BH859).
15. Remove and discard the O-ring from the top of the separator bowl.
16. Clean the separator bowl.
17. Remove the fuel filter from the filter head (pressure fit) and discard properly.
18. Place the new fuel filter into position on the filter head.
19. Lubricate the new O-ring with clean engine oil and install at the top of the separator bowl.
20. Install (screw) separator bowl onto the filter head, hand tight, then turn an additional $^{3}/_{4}$ turn only.
21. Reconnect the fuel heater and 'water in fuel' sensor to their respective wiring harness.
22. Turn the ignition key to the ON position to energize the fuel supply shut-off solenoid valve.
23. Prime the filter by operating the hand primer pump until fuel spills out the vent plug.
24. Close the vent plug.
25. Start the engine and check for leaks.
26. Clean up any spilled fuel before returning machine to operation.

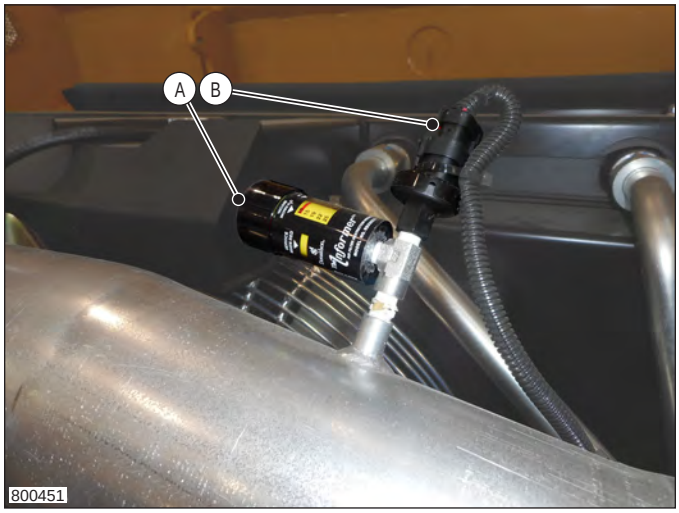
⚠ WARNING

To lower the risk of causing accidental fires, do not leave fuel or oil soaked rags laying around.

⚠ WARNING

Drain fuel filter into a container and dispose of all fluids properly.

FILTER RESTRICTION INDICATOR



A	Air Filter Restriction Indicator
B	Air Filter Restriction Sensor

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

A	Engine Air Intake Filter Restriction Icon

The machine is also equipped with an engine air filter restriction sensor which sends a signal to the Computer in the event of filter restriction. The engine air intake pressure icon turns YELLOW when service to the filter is required and turns RED, along with an ALERT message, when service to the air filter has reached a critical state.

Refer to AIR INTAKE SYSTEM – OVER SERVICING and IMPROPER SERVICING in THIS SECTION.

Refer to COMPUTER DISPLAY MESSAGES in SECTION 2.

DIESEL EXHAUST FLUID (DEF)

The SCR aftertreatment system uses DEF to lower the concentration of nitrogen oxides from the diesel engine exhaust of this vehicle. DEF is an aqueous urea solution with 32.5% high purity urea and 67.5% deionized water. Note that DEF may also be referred to as AUS32 or AdBlue. All DEF must be American Petroleum Institute (API) Certified DEF or meet ISO 22241 specifications.

It is important to avoid contamination of DEF when filling the tank as this may cause costly damage to SCR system components and affect the proper operation of the SCR system and the engine. Refer to DIESEL EXHAUST FLUID (DEF) HANDLING AND STORAGE in THIS SECTION.

When the engine is turned OFF, the ECU remains active and pumps all DEF pumped back to tank This process takes approximately 90 seconds.

NOTE: The ECU draws a negligible amount of current when the engine is turned OFF and the battery disconnect switch is turned OFF. Disconnect the batteries or remove the master fuse when a machine is prepared for long-term storage.

⚠ WARNING

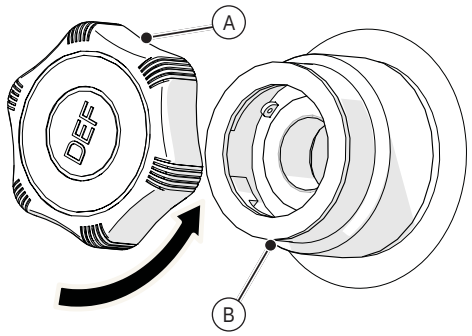
Use only diesel exhaust fluid (DEF) which meets ISO 22241 specifications. NEVER fill the DEF tank with any other fluid.

DEF is injected into the exhaust gas stream during normal operation of the of the Selective Catalytic Reduction (SCR) aftertreatment system.

Use of other fluids may cause component damage, or a fire risk which could result in death or serious injury.

FILLING THE DEF TANK

1. Park the machine on level ground with the attachment resting firmly on the ground. Refer to PARKING THE MACHINE in SECTION 1.
2. Apply the swing brake.
3. Turn OFF the engine.
4. Open the power roof and left side door.
5. Remove the ignition key.



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A Fill Cap
B Fill Neck

6. Clean the area around the top of the fill cap to prevent DEF contamination.
7. Remove the fill cap.
8. Clean inside the fill neck to prevent DEF contamination.

NOTICE

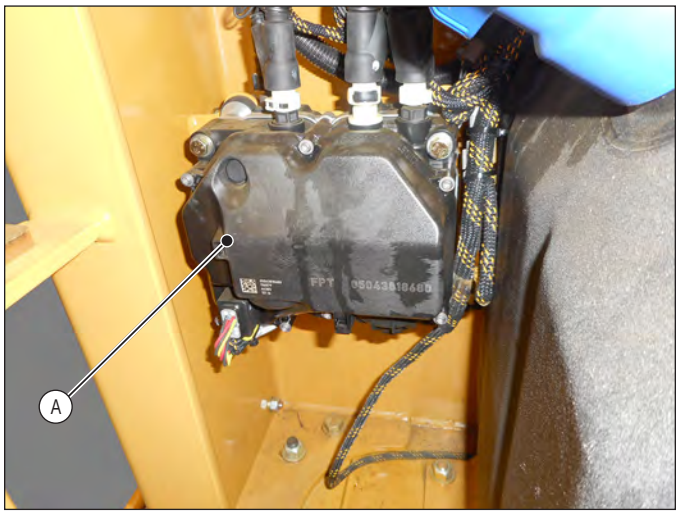
Do NOT remove the DEF fill strainer when filling the tank. DEF contamination can occur.

9. Fill the tank.

   NOTE: A portion of the DEF tank remains empty when the DEF level reaches the strainer to allow for DEF expansion in case of freezing.

10. Install the fill cap.

DEF SUPPLY MODULE



A DEF Supply Module

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.

The supply module is equipped with a filter. Refer to SERVICE AND LUBRICATION SCHEDULE in THIS SECTION for details.

DEF DOSING MODULE FILTER

NOTE: DEF and its related components are applicable to Tier 4f machines only.

The DEF dosing module filter should be replaced as part of scheduled maintenance every 250 hours.

If DEF and/or aftertreatment fault codes have occurred then Tigercat recommends performing a DEF flushing test and Urea Dosing System Test (UDST) at every DEF dosing module filter change to ensure proper operation of the DEF supply module.

If no DEF and/or aftertreatment fault codes have occurred then only the DEF dosing module filter replacement is required.

CHANGING DEF DOSING MODULE FILTER, DEF FLUSHING TEST AND UDST (UREA DOSING SYSTEM TEST)

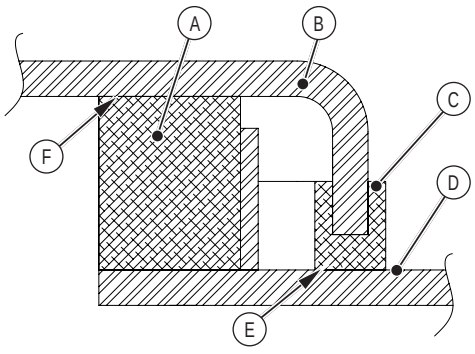
TOOLS REQUIRED

- 27 mm (1 1⁄16 in) wrench
- Container to catch DEF and flushing water
- Clean distilled/demineralized water
- 1 litre (0.25 US gal) plastic water bottle with hose attached*
- Laptop computer with Tigercat by FPT E.A.SY. engine diagnostic software to run UDST test*
- PT-Box*

IMPORTANT!
Do not contaminate the DEF when performing maintenance on the system as this may cause costly damage to SCR system components and affect the proper operation of the aftertreatment system and the engine.

*Items required if performing a DEF flushing test and UDST.

3. Replace the nylon inserts in each stud, leaving approximately 3.5 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.



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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.

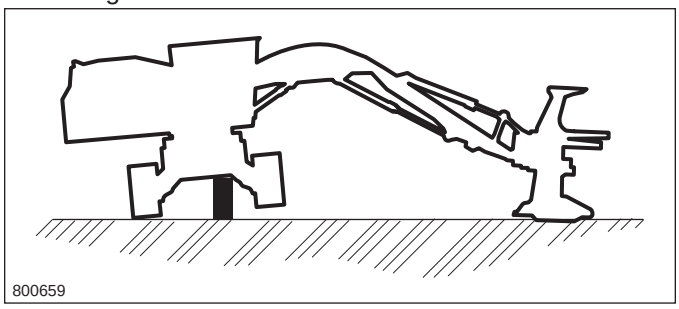
TRACK CHAIN

TRACK CHAIN SAG

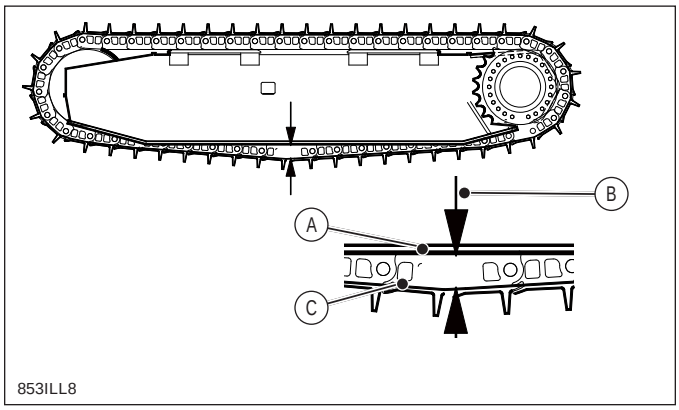
Track chains that are too tight significantly shorten the bushing OD wear life.

MEASURING TRACK SAG

1. Position attachment in the vertical position and swing boom to side of machine.



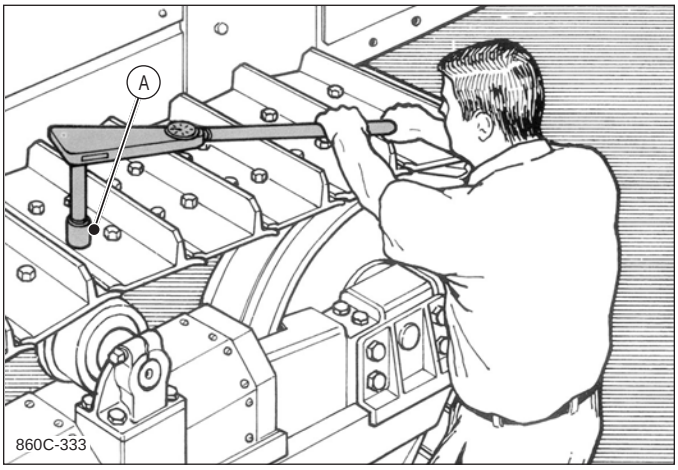
2. Place attachment on the ground and force down with boom controls, lift track clear of the ground.
3. Rotate track in forward and reverse several times. Stop the track while in reverse. Do not clean the track.



A	Underside of Track Guard
B	Sag Dimension
C	Upper Surface of Track Shoe

4. Turn OFF the engine.
5. Measure distance between upper surface of track shoe at centre of lower surface of track guard.
6. This dimension should be between 102–152 mm (4–6 in) for normal operations.

TORQUE PROCEDURE, TRACK SHOE



A	Torque Procedure

- Incorrect bolt torque is the leading cause of shoe loosening.
- Torque + turn is the shoe bolts assembly method.
  - Provides a controlled stretch of the bolt of about 0.3 mm (0.012 in). It is the stretch that prevents the bolt from coming loose.
  - Provides up to 25% more clamp load than straight torque.
  - It is not influenced by friction/condition of mating components.
- The method is also used on other critical joints, such as sprockets, master sections, final drives. Refer to TORQUE SPECIFICATIONS in SECTION 11 in the SERVICE MANUAL.

Parker

Assembly Torque

JIC 37 Degree Flare

SAE Dash Size	Thread Size	Tube Connection FFWR	Swivel or Hose Connection FFWR
-2	5/16-24	NA	NA
-3	3/8-24	NA	NA
-4	7/16-20	2	2
-5	1/2-20	2	2
-6	9/16-18	1 1/2	1 1/4
-8	3/4-16	1 1/2	1
-10	7/8-14	1 1/2	1
-12	1 1/16-12	1 1/4	1
-14	1 3/16-12	1	1
-16	1 5/16-12	1	1
-20	1 5/8-12	1	1
-24	1 7/8-12	1	1
-32	2 1/2-12	1	1
-40	3-12	1	1

F.F.W.R : Flats From Wrench Resistance
All values are for Steel, Stainless Steel and Brass

NPTF

SAE Dash Size	Thread Size	Tube Connection TFFT	Swivel or Hose Connection TFFT
-2	1/8-27	2-3	2-3
-3	NA	NA	NA
-4	1/4-18	2-3	2-3
-5	NA	NA	NA
-6	3/8-18	2-3	2-3
-8	1/2-14	2-3	2-3
-10	7/8-14	NA	NA
-12	3/4-14	2-3	2-3
-14	NA	NA	NA
-16	1-11 1/2	1.5-2.5	1.5-2.5
-20	1 1/4-11 1/2	1.5-2.5	1.5-2.5
-24	1 1/2-11 1/2	1.5-2.5	1.5-2.5
-32	2-11 1/2	1.5-2.5	1.5-2.5
-40	NA	NA	NA

T.F.F.T. : Turns from finger tight
All pipe values are for Steel, Stainless Steel and Brass

O'ring Face Seal / Seal-Lok

SAE Dash Size	Thread Size	Tube Connection FFWR	Swivel or Hose Connection FFWR
-2	NA	NA	NA
-3	NA	NA	NA
-4	9/16-18	1/4 TO 1/2	1/2 TO 3/4
-5	NA	NA	NA
-6	11/16-16	1/4 TO 1/2	1/2 TO 3/4
-8	13/16-16	1/4 TO 1/2	1/2 TO 3/4
-10	1-14	1/4 TO 1/2	1/2 TO 3/4
-12	1 3/16-12	1/4 TO 1/2	1/3 TO 1/2
-14	NA	NA	NA
-16	1 7/16-12	1/4 TO 1/2	1/3 TO 1/2
-20	1 11/16-12	1/4 TO 1/2	1/3 TO 1/2
-24	2-12	1/4 TO 1/2	1/3 TO 1/2
-32	NA	NA	NA
-40	NA	NA	NA

F.F.W.R : Flats From Wrench Resistance
All values are for Steel, Stainless Steel and Brass

BSPT

SAE Dash Size	Thread Size	Tube Connection TFFT	Swivel or Hose Connection TFFT
-2	1/8-28	2-3	2-3
-3	NA	NA	NA
-4	1/4-19	2-3	2-3
-5	NA	NA	NA
-6	3/8-19	2-3	2-3
-8	1/2-14	2-3	2-3
-10	NA	NA	NA
-12	3/4-14	2-3	2-3
-14	NA	NA	NA
-16	1-11	1.5-2.5	1.5-2.5
-20	1 1/4-11	1.5-2.5	1.5-2.5
-24	1 1/2-11	1.5-2.5	1.5-2.5
-32	2-11	1.5-2.5	1.5-2.5
-40	NA	NA	NA

T.F.F.T. : Turns from finger tight
All pipe values are for Steel, Stainless Steel and Brass

SAE J1926 Straight Thread Port Assembly Torques

SAE DASH SIZE	THREAD SIZE	ASSEMBLY TORQUE = 10 % -0											
		NON-ADJUSTABLE				ADJUSTABLE				PLUGS			
		SEAL-LOK		TRIPLE-LOK FERULOK PIPE FITTINGS		SEAL-LOK		TRIPLE-LOK FERULOK PIPE FITTINGS		HOLLOW HEX HP5ON-S		HEX HEAD P5ON-S	
		lbf-ft (lbf-in)	Nm	lbf-ft (lbf-in)	Nm	lbf-ft (lbf-in)	Nm	lbf-ft (lbf-in)	Nm	lbf-ft (lbf-in)	Nm	lbf-ft (lbf-in)	Nm
2	5/16-24	(310)	20	(85)	10	(310)	20	(60)	7	(30)	3.5	(85)	10
3	3/8-24	(310)	20	(155)	18	(310)	20	(100)	11	(55)	6	(155)	18
4	7/16-20	(310)	20	(260)	29	(310)	20	(180)	20	(120)	13.5	(260)	29
5	1/2-20	(360)	40	(280)	32	(360)	40	(250)	28	(170)	19	(280)	32
6	9/16-18	(420)	46	(350)	40	(420)	46	(350)	40	(410)	46	(350)	40
8	3/4-16	60	80	(620)	70	60	80	(620)	70	60	80	(620)	70
10	7/8-14	100	135	85	115	100	135	85	115	100	135	85	115
12	1 1/16-12	135	185	135	183	135	185	135	183	135	185	135	183
14	1 3/16-12	175	235	175	237	175	235	175	237	175	235	175	237
16	1 5/16-12	200	270	200	271	200	270	200	271	200	270	200	271
20	1 5/8-12	250	340	250	339	250	340	250	339	250	340	250	339
24	1 7/8-12	305	415	305	414	305	415	305	414	305	415	305	414
32	2 1/2-12	375	510	375	509	375	510	375	509	375	510	375	509

Tigercat 855E/L855E Feller Buncher

SECTION 4–HYDRAULIC SYSTEM

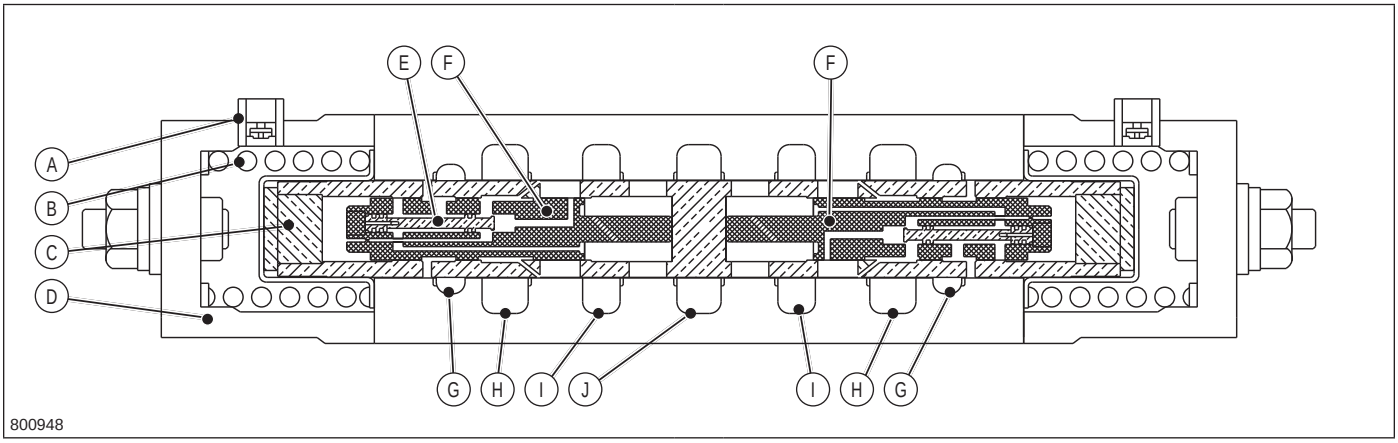
Read and understand the entire contents of this manual, and all manuals for any attachments or accessories associated with this machine, prior to operating or servicing this equipment.

CONTENTS–SECTION 4

ISSUE 1.1, MARCH 2020

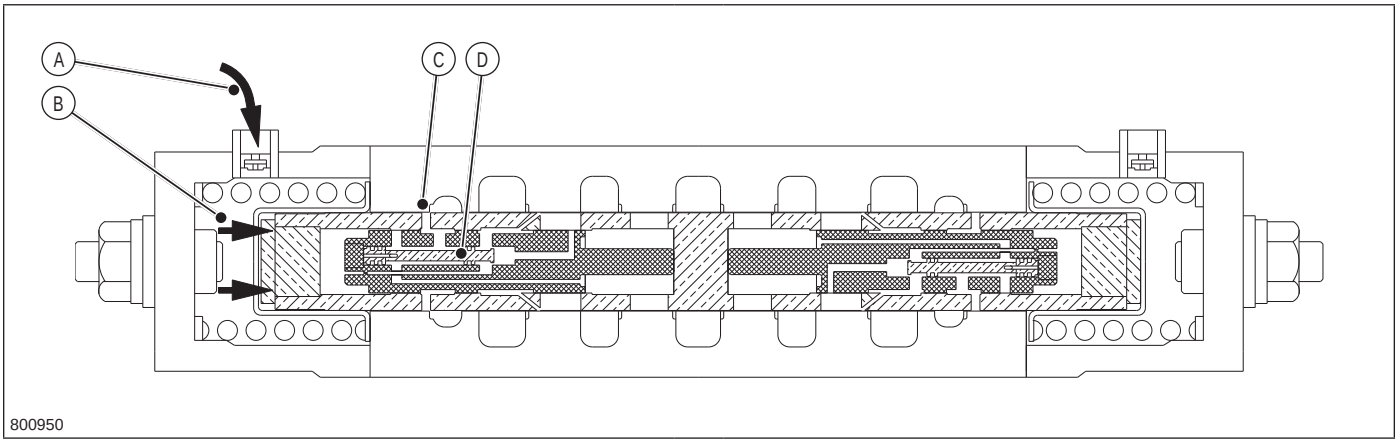
CONTROL VALVE SPOOL OPERATION: SINGLE FUNCTION

The main control valve sections have load sensing compensators that balance and allocate oil flow from the main pump when several functions are concurrently active. Each valve spool contains two compensators. The compensators incorporate shuttles, either the piston type or the ball type, depending upon the function in question. In this instance, the compensators have piston-type shuttles. (The control valve sections are closed centre typed. Refer to HYDRAULIC FUNDAMENTALS in THIS SECTION



Control Valve Section: Neutral Position			
A	Pilot Check Valve	F	Compensator
B	Centering Spring	G	Load Sense Passages
C	Valve Spool	H	Return Passages
D	Pilot End Cap	I	Work Ports
E	Shuttle	J	Pressure Inlet Passage

The valve spool blocks the pressure inlet passage when the centering springs hold the spool in neutral. The neutral valve spool also blocks the work ports, return passages, and load sense passages. Oil in the work ports is trapped. When all control valve spools are in neutral, main pump flow approaches its minimum; output pressure drops to the standby level, in the 14–41 bar (200–600 psi) range.



Control Valve Section: Pilot Input Signal Received			
A	Pilot Input Signal	C	Load Sense Port
B	Pilot Pressure Area	D	Shuttle

When a single function is operated, pilot oil flows on the corresponding control valve pilot end cap. Pilot pressure inside the cap pushes the valve spool against the centering spring at the opposite end of the valve. In this instance, the valve spool moves to the right.

The load sense port is the first to open. When flow enters the load sense port, the shuttle cavity reaches load sense pressure. However, because no other functions are yet active, there is no load sense pressure in the main control valve base manifold. Consequently, the shuttle remains stationary.

The optional vacuum/breather is used to create a vacuum inside the hydraulic tank. The vacuum prevents the tank from spilling oil when hydraulic hoses, pumps, or other components are opened for servicing. A switch situated in the cab activates the vacuum pump.

It is not possible to activate the vacuum pump while the machine is running. Conversely, it is not possible to start the machine if the vacuum switch is engaged.

It is not necessary to introduce a vacuum inside the hydraulic tank when changing the return filters. Use the air vent valve to release the tank pressure before changing the filters.

The vacuum system may be used when changing the case drain strainer(s).

Refer to HYDRAULIC OIL TANK PRESSURIZATION INSTRUCTIONS in SECTION 3.

NOTICE

Bleed the pump and motor cases before starting the engine if the vacuum system is used during case drain servicing. Running the engine without bleeding the cases risks component failure.

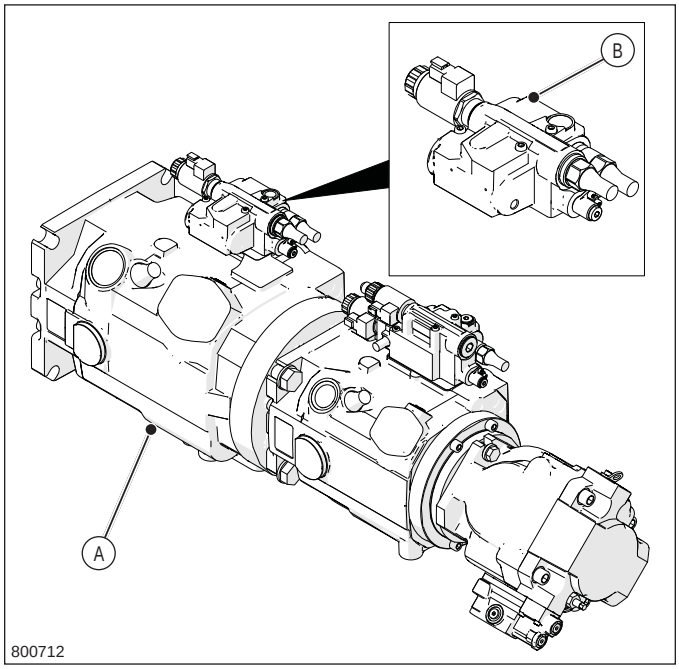
MARGIN PRESSURE

Margin pressure is the difference between the load sense pressure and the pump output pressure while a function (boom or swing) is being operated. For the load sensing system to operate correctly, the differential pressure between 'LS' and 'P' should be approximately 16.5 bar (240 psi), with 'P' being higher than 'LS'.

The margin pressure is set at the factory to 17.5 bar (250 psi). The margin pressure can be adjusted from 16.5-20.6 bar (240-300 psi), however the flow stops on the valves must be reset to maintain the same speed of the functions.

NOTE: If the margin pressure is not set correctly, the machine controls may not respond as they should. For example:

- If boom operation abruptly starts and stops, the margin pressure is probably set too high.
- If boom operation is slow moving or slow to respond, the margin pressure is probably set too low.



A Main Pump
B Main Pump Controller

The margin pressure adjustment is made at the main pump controller on the main pump.

MARGIN PRESSURE SETTING

For specific operating temperatures, pressure and speed values, refer to PRESSURE AND SPEED SETTING and HYDRAULIC OIL TEMPERATURE OPERATING RANGE chart in SECTION 3.

1. Make sure the hydraulic oil is at operating temperature.
2. Park machine on level ground with the attachment resting firmly on the ground. Refer to PARKING THE MACHINE in SECTION 1.

⚠ CAUTION

Use caution when in the cab as a slight touch of the controls can cause sudden rotation of the upper structure and boom assembly

⚠ CAUTION

Be aware of other personnel in the area. Operator is responsible for the safe operation of the machine.

⚠ WARNING

Ensure that no one is standing near the attachment during this procedure.

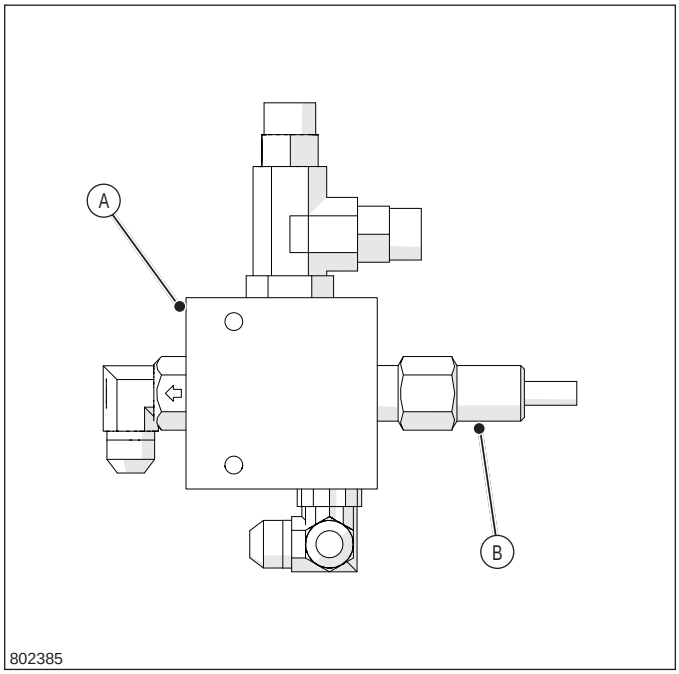
⚠ WARNING

The swing brake must be applied at all times during this procedure.

3. Check that all personnel are clear of the machine before starting the engine.
4. Sound horn to warn personnel of machine start-up
5. Start the engine and set engine speed to HIGH. Refer to ENGINE IDLE SPEED SWITCH in SECTION 2.
6. Apply the swing brake.
7. Place the fan in service mode. Refer to FAN SERVICE MODE in SECTION 2.
8. Activate the pilot system. Refer to PILOT SYSTEM RESET SWITCH in SECTION 2.
9. Turn OFF the anti-stall switch. Refer to MD4 COMPUTER AND DISPLAY–ENGINE MENU in SECTION 2.
10. Open the power roof and access doors. Refer to SERVICE ACCESS DOORS in SECTION 2.

PILOT SYSTEM COMPONENTS

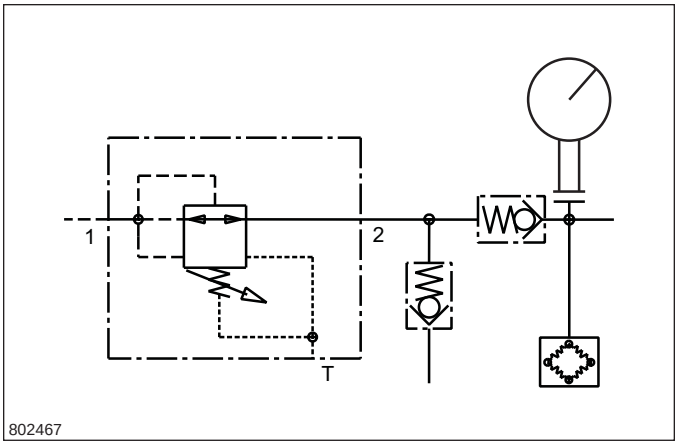
PILOT SUPPLY VALVE



Pilot Supply Valve	
A	Pilot Supply Valve
B	Pressure Reducing/Relieving Valve

The pilot supply valve is located inside the hydraulic pump compartment. To access the pilot supply valve, open the pump compartment cover.

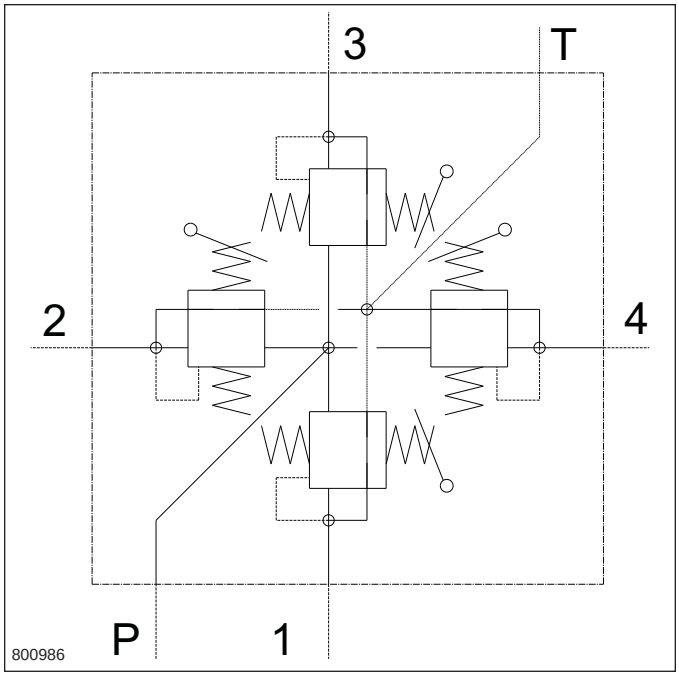
This pilot supply valve is a pressure reducing/relieving valve. The valve maintains constant pressure in the pilot system regardless of fluctuations at the main hydraulic system, irrespective of pressure fluctuations in the main hydraulic system.



Pilot Supply Valve Hydraulic Schematic

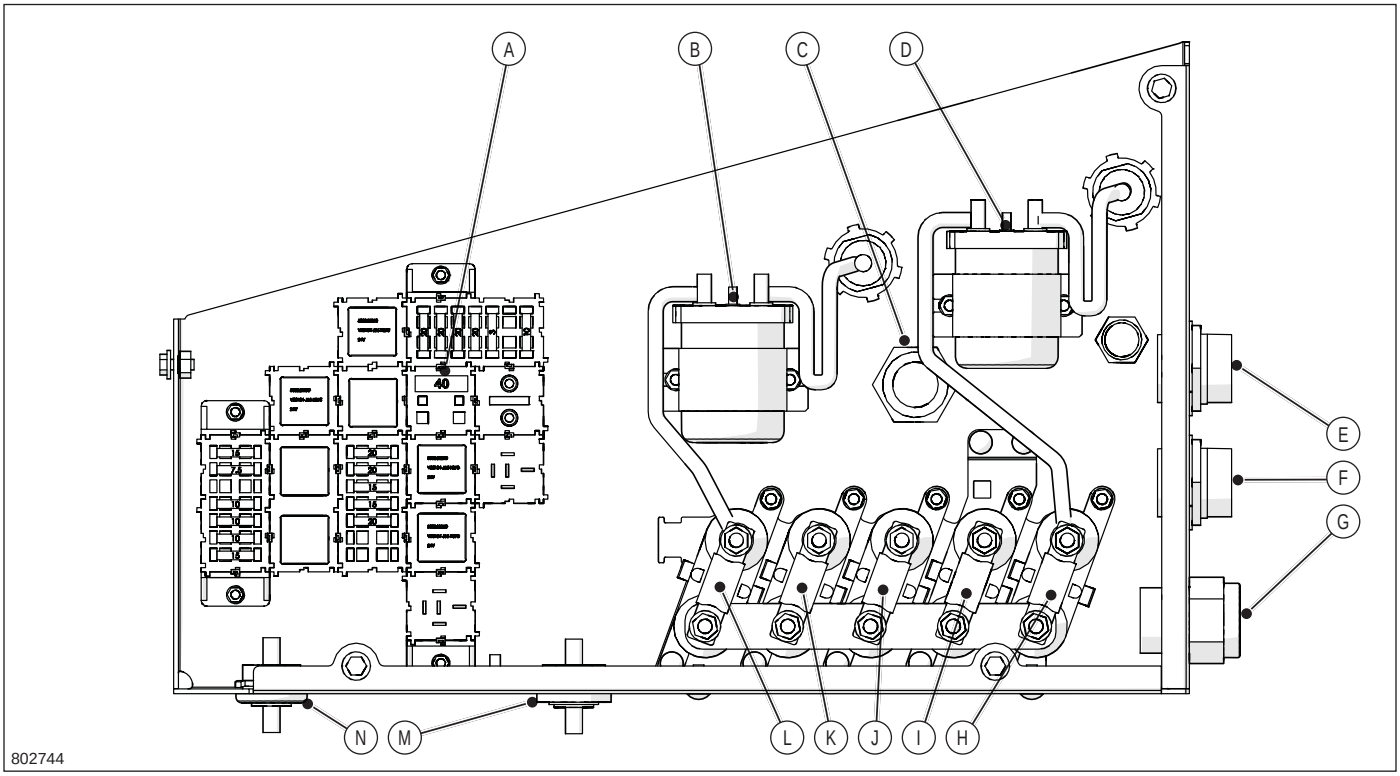
The valve is normally open, allowing inlet oil (port '2') to pass through to the pilot outlet (port '1'). If the outlet pressure exceeds the maximum pilot pressure setting, a pressure imbalance across the valve shifts the main spool against the bias spring, throttling the inlet flow and preventing further pressure increase at the pilot outlet.

If an external force causes the pilot pressure to rise more than 5-10% above the maximum setting, the main spool moves further against the bias spring, opening port '1' to the tank return port 'T'–in effect acting as a pressure relief valve.



Joystick Control Hydraulic Schematic	
1	Port 1
2	Port 2
3	Port 3
4	Port 4
P	Pressure Port
T	Tank Port

MAIN ELECTRICAL (FUSE AND RELAY BOX)



Main Electrical (Fuse and Relay) Box, T4F Engines

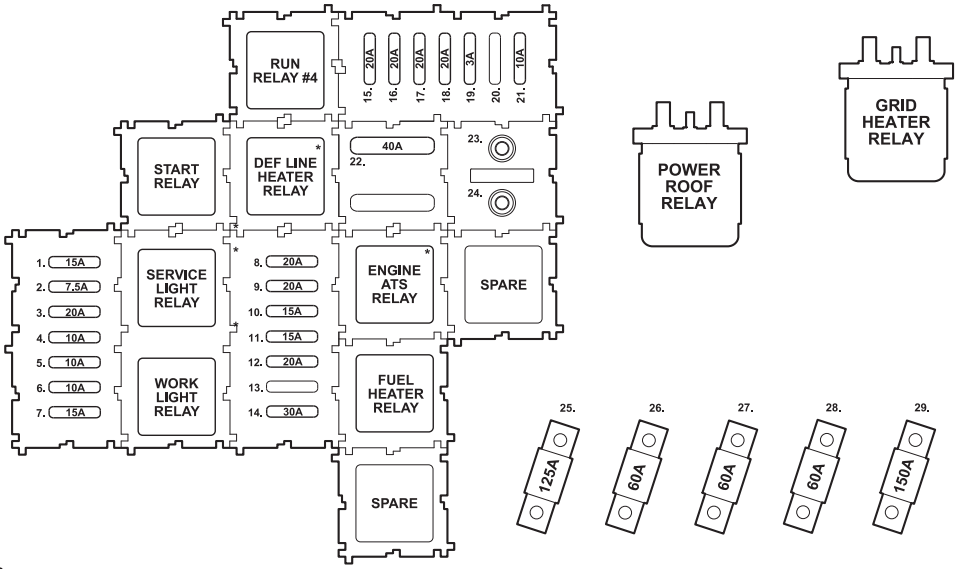
A	Start Relay Fuse 40A	H	Grid Heater Relay Fuse 150A , Red
B	Power Roof Relay	I	Cab Work Lights Relay Fuse 60A , Red 104
C	Strain Relief for Cab Power and Ground Cables	J	Cab Power Fuse 60A Red 98
D	Grid Heater Relay	K	Key Switch Run/Acc Relay Fuse 60A Red 96
E	23 Pin Connector to Main Upper Frame Harness	L	Power Roof Relay Fuse 125A Red 468
F	31 Pin Connector to Main Upper Frame Harness	M	Bulkhead Stud, Ground
G	Strain Relief for Positive Battery Cable (Switched Power)	N	Bulkhead Stud, to Battery (Red 418) (Unswitched Power)

FUSES

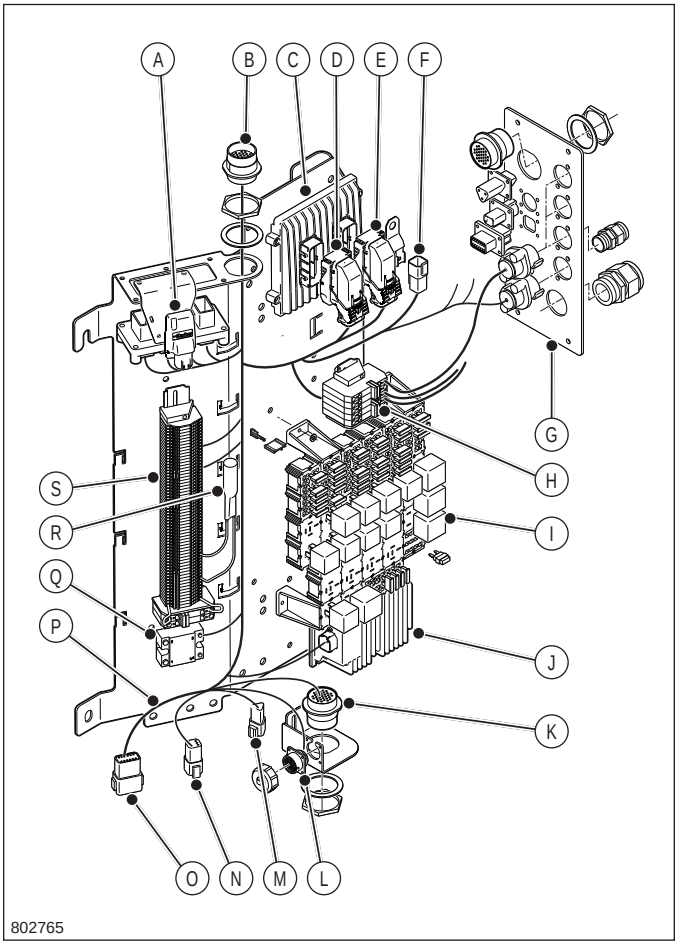
REPLACE FUSES WITH SAME VALUES AS INDICATED

1. ENCLOSURE SERVICE LIGHTS
2. PUMP AREA SERVICE LIGHT
3. ENGINE PRE-HEAT(OPTIONAL)
4. BATTERY DISCONNECT
5. PUMP AREA WORK LIGHTS
6. PUMP AREA WORK LIGHTS
7. ENCLOSURE WORK LIGHTS
- *8. ATS SENSOR POWER
- *9. EXHAUST FLAP POWER
10. PRE FUEL FILTER HEATER
11. PRIMARY FUEL FILTER HEATER
- *12. DEF LINE HEATERS
13. SPARE
14. ENGINE ECU POWER
15. MC43-2 (HYDRAULIC TANK)
16. MC43-2 (HYDRAULIC TANK)
17. MC43-3 (PUMP AREA)
18. MC43-3 (PUMP AREA)
19. UNDERCARRIAGE POWER
20. SPARE
21. TELEMATICS (OPTIONAL)
22. START RELAY POWER
23. ENGINE ECU POWER
24. ATS SENSOR POWER
25. POWER ROOF RELAY
26. KEY SWITCH RUN RELAY POWER
27. CAB SWITCHED BATTERY POWER
28. CAB WORK LIGHT POWER
29. GRID HEATER RELAY

* TIER 2 DO NOT REQUIRE THIS ITEM.



CAB ELECTRICAL PANEL

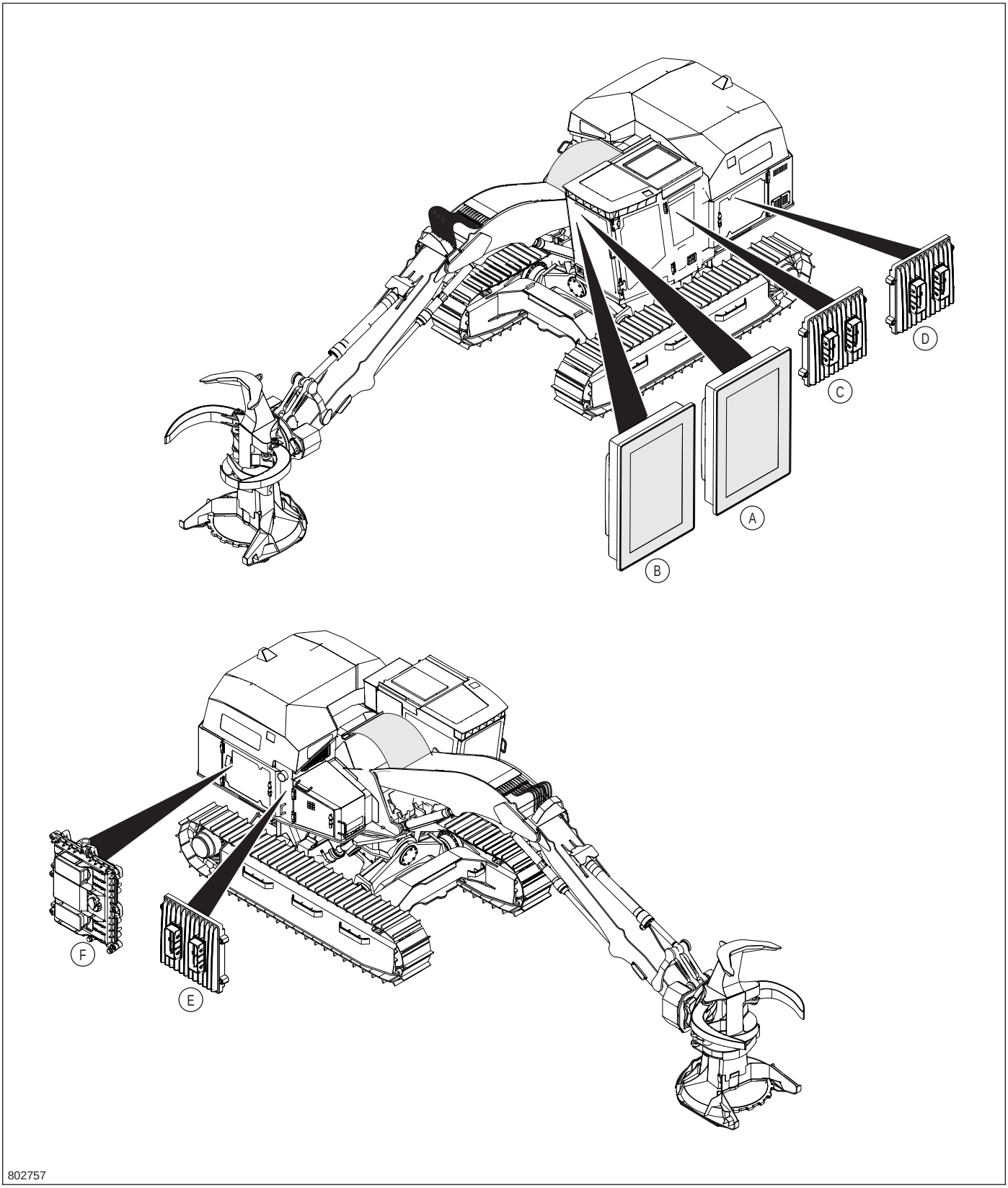


Cab Electrical Panel	
A	Bluetooth Dongle
B	31-Pin Connector to Cab Roof Harness
C	MC43-1 Cab Module
D	73-Pin Connector
E	66-Pin Connector
F	Telematics 6-Pin Connector
G	Cab Bulkhead Plate
H	Terminal Blocks
I	Fuse and Relay Box
J	Voltage Converter, 24 VDC to 12 VDC
K	31-Pin Connector to Cab Lower Harness
L	Engine Diagnostic Connector
M	Harvester J1939 3-Pin Connector
N	Harvester 6-Pin Connector
O	HVAC Unit Grey 12-Pin Connector
P	Rear Electrical Panel Harness
Q	Defrost Relay
R	Capacitor Harness
S	Terminal Rail

Fuses situated at the cab electrical panel protects circuits relating to various control functions and cab electrical components, including for example:

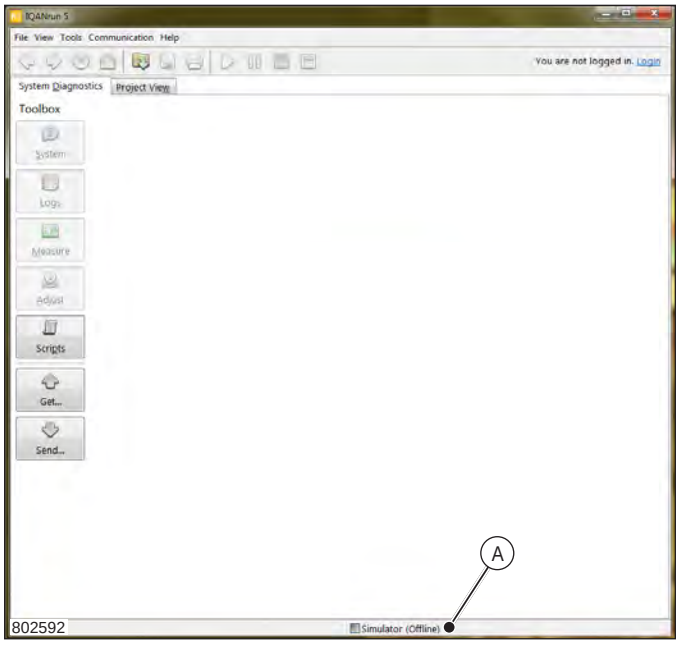
- computer and expansion modules
- A/C heater unit
- engine and track speed switches
- pilot circuit
- voltage converter, radio, 12 V auxiliary power
- ignition switch
- cab interior lights and external work lights
- horn, alarms, door sensors
- engine diagnostic tool power

COMPUTER CONTROL SYSTEM



Computer Control System	
A MD4−0 Computer Display and Master Module	D MC43−2 Control Module (Hydraulic Tank)
B MD4−1 RearVIEW/SkyVIEW Camera Display	E MC43−3 Control Module (Pump Compartment)
C MC43−1 Control Module (Cab)	F Engine ECU

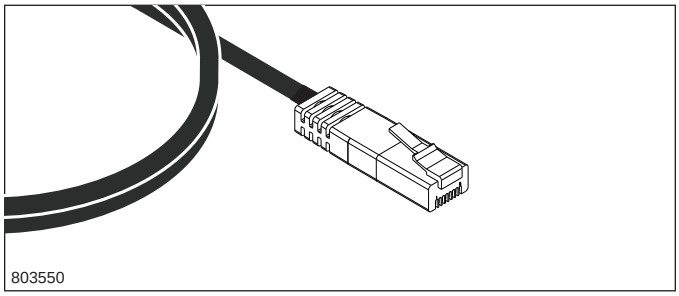
CONNECT TO THE COMPUTER



IQANrun Home Screen: Offline

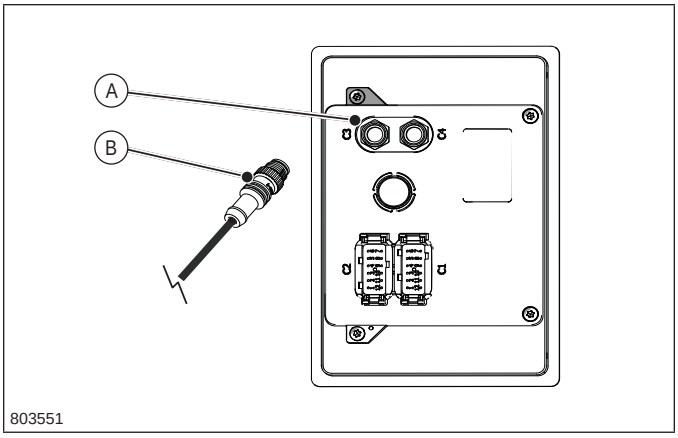
A Grey Box–Offline

1. Turn on the PC/laptop computer; launch IQANrun 5.
2. Turn the ignition switch to the run position, to supply power to the machine computer. (Do not turn ON the engine.)



Ethernet Cable: RJ45 Connector

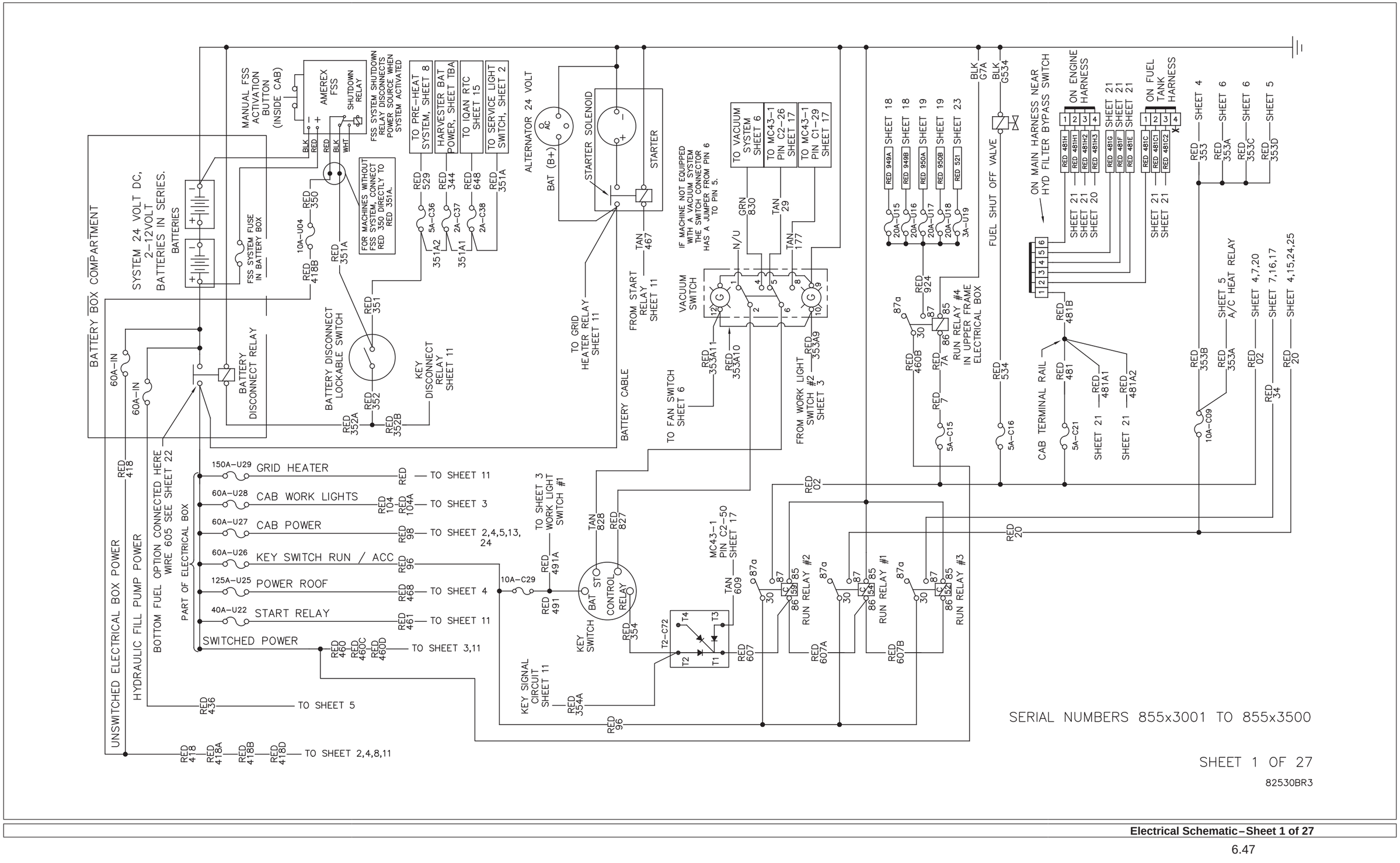
3. Connect the RJ45 end of the Ethernet cable to the appropriate port at the PC/laptop.

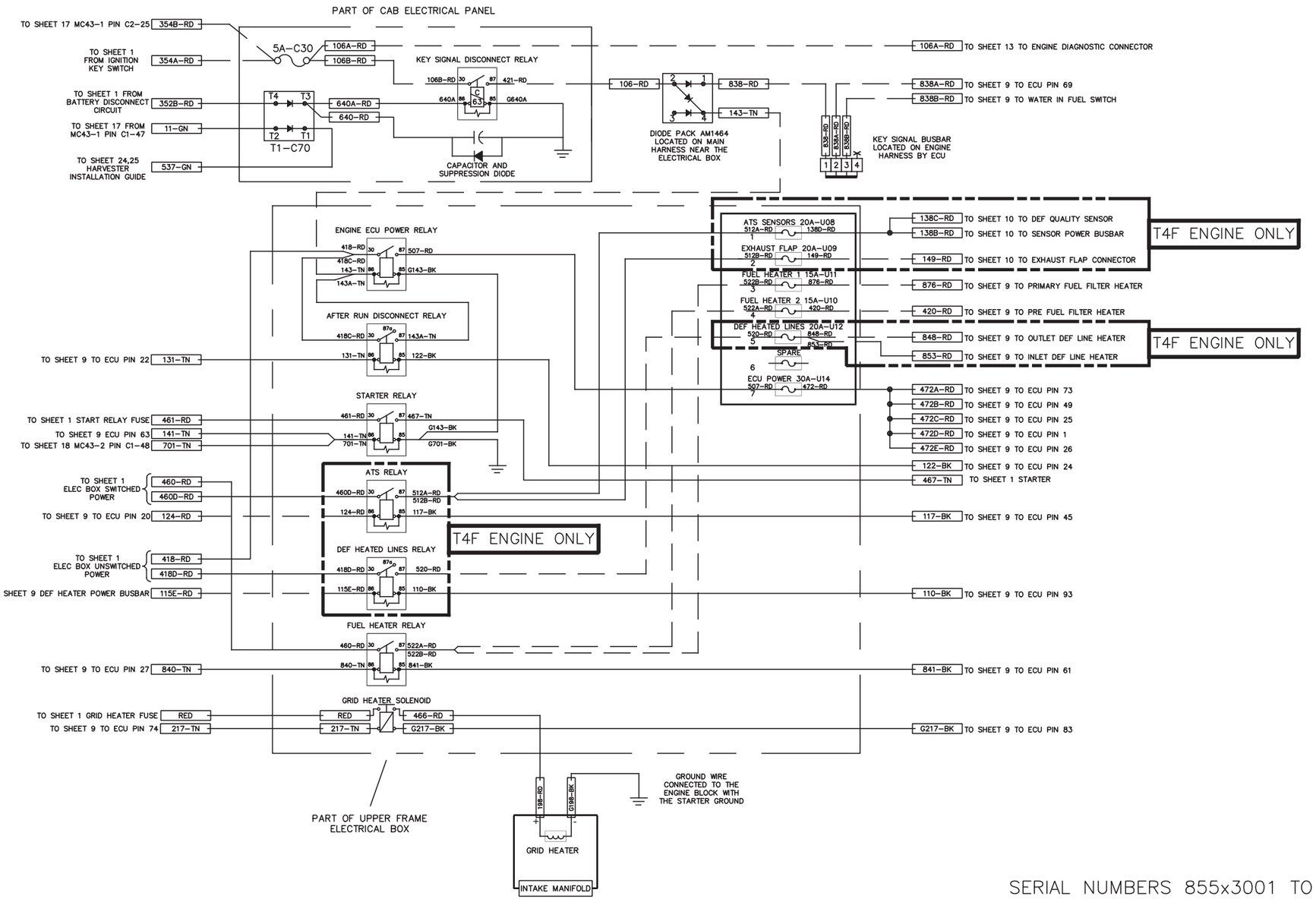


A Computer Display Ports
B M12 Ethernet Connector

4. Connect the M12 end of the Ethernet cable to port ‘C3’ or ‘C4’ at the rear of the computer display.
5. Click the ‘Connect (Ethernet)’ button in IQANrun 5.
6. Select the machine serial number. Click the ‘Connect’ button.
7. IQANrun now indicates that it is online. Proceed with service operations and login if required. Refer to LOGIN in THIS SECTION.

NOTE: If the (machine) computer does not contain a program (in the event that a replacement computer has been installed), update the program before logging in. Refer to UPDATE PROGRAM, and also to LOGIN in THIS SECTION.

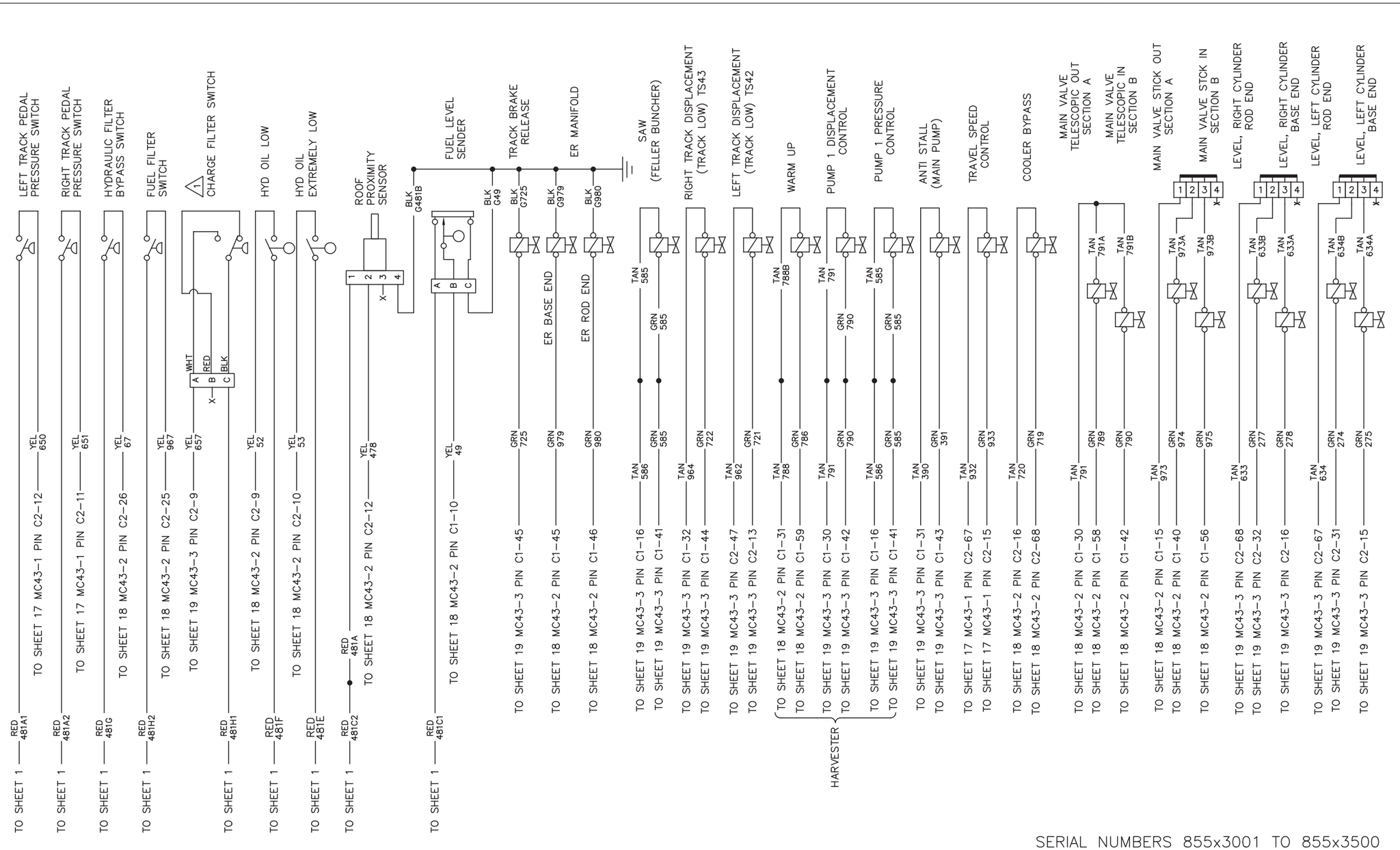

BATTERY BOX COMPARTMENT
SYSTEM 24 VOLT DC, 2-12VOLT BATTERIES IN SERIES.
BATTERIES
FSS SYSTEM FUSE IN BATTERY BOX
MANUAL FSS ACTIVATION BUTTON (INSIDE CAB)
AMEREX FSS SHUTDOWN RELAY
FSS SYSTEM SHUTDOWN RELAY DISCONNECTS POWER SOURCE WHEN SYSTEM ACTIVATED
FOR MACHINES WITHOUT FSS SYSTEM, CONNECT RED 350 DIRECTLY TO RED 351A.
TO PRE-HEAT SYSTEM, SHEET 8
HARVESTER BAT POWER, SHEET TBA
TO IQAN RTC SHEET 15
TO SERVICE LIGHT SWITCH, SHEET 2
ALTERNATOR 24 VOLT
BAT (B+)
STARTER SOLENOID
STARTER
60A-IN
BATTERY DISCONNECT RELAY
BATTERY DISCONNECT LOCKABLE SWITCH
KEY DISCONNECT RELAY SHEET 11
TO GRID HEATER RELAY SHEET 11
FROM START RELAY SHEET 11
BATTERY CABLE
IF MACHINE NOT EQUIPPED WITH A VACUUM SYSTEM THE SWITCH CONNECTOR HAS A JUMPER FROM PIN 6 TO PIN 5.
VACUUM SWITCH
TO VACUUM SYSTEM SHEET 6
TO MC43-1 PIN C2-26 SHEET 17
TO MC43-1 PIN C1-29 SHEET 17
TO FAN SWITCH SHEET 6
FROM WORK LIGHT SWITCH #2 SHEET 3
FUEL SHUT OFF VALVE
ON MAIN HARNESS NEAR HYD FILTER BYPASS SWITCH
ON ENGINE HARNESS
ON FUEL TANK HARNESS
CAB TERMINAL RAIL
RUN RELAY #4 IN UPPER FRAME ELECTRICAL BOX
UNSWITCHED ELECTRICAL BOX POWER
HYDRAULIC FILL PUMP POWER
BOTTOM FUEL OPTION CONNECTED HERE WIRE 605 SEE SHEET 22
PART OF ELECTRICAL BOX
GRID HEATER
CAB WORK LIGHTS
CAB POWER
KEY SWITCH RUN / ACC
POWER ROOF
START RELAY
SWITCHED POWER
TO SHEET 11
TO SHEET 3
TO SHEET 2,4,5,13, 24
TO SHEET 4
TO SHEET 3,11
TO SHEET 5
TO SHEET 2,4,8,11
TO SHEET 3 WORK LIGHT SWITCH #1
KEY SWITCH
KEY SIGNAL CIRCUIT SHEET 11
MC43-1 PIN C2-50 SHEET 17
RUN RELAY #1
RUN RELAY #2
RUN RELAY #3
SERIAL NUMBERS 855x3001 TO 855x3500
SHEET 1 OF 27
82530BR3



SERIAL NUMBERS 855x3001 TO 855x3500

SHEET 11 OF 27

82530BR3


LEFT TRACK PEDAL PRESSURE SWITCH
RIGHT TRACK PEDAL PRESSURE SWITCH
HYDRAULIC FILTER BYPASS SWITCH
FUEL FILTER SWITCH
CHARGE FILTER SWITCH
HYD OIL LOW
HYD OIL EXTREMELY LOW
ROOF PROXIMITY SENSOR
FUEL LEVEL SENDER
TRACK BRAKE RELEASE
ER MANIFOLD
SAW (FELLER BUNCHER)
RIGHT TRACK DISPLACEMENT (TRACK LOW) TS43
LEFT TRACK DISPLACEMENT (TRACK LOW) TS42
WARM UP
PUMP 1 DISPLACEMENT CONTROL
PUMP 1 PRESSURE CONTROL
ANTI STALL (MAIN PUMP)
TRAVEL SPEED CONTROL
COOLER BYPASS
MAIN VALVE TELESCOPIC OUT SECTION A
MAIN VALVE TELESCOPIC IN SECTION B
MAIN VALVE STICK OUT SECTION A
MAIN VALVE STICK IN SECTION B
LEVEL, RIGHT CYLINDER ROD END
LEVEL, RIGHT CYLINDER BASE END
LEVEL, LEFT CYLINDER ROD END
LEVEL, LEFT CYLINDER BASE END
ER BASE END
ER ROD END
HARVESTER
SERIAL NUMBERS 855x3001 TO 855x3500
SHEET 21 OF 27
82530BR3

COLD WEATHER STARTING

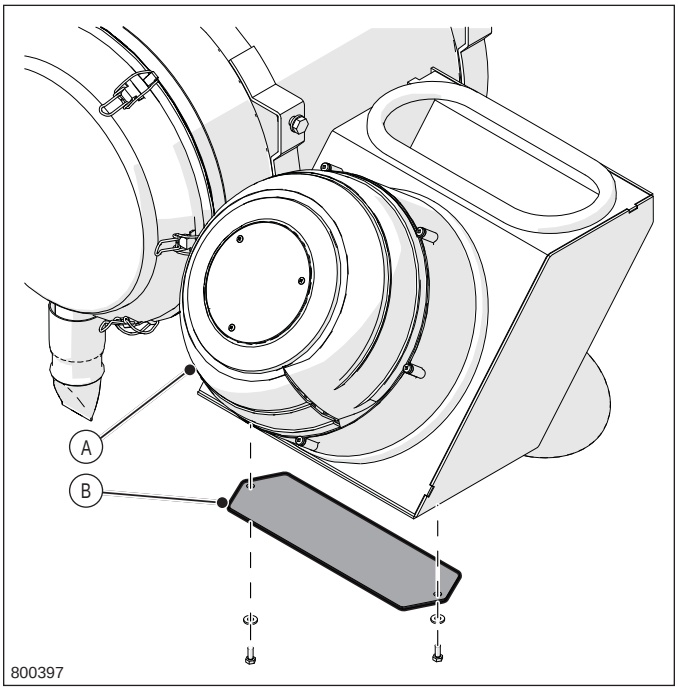
⚠ WARNING

Never use ether! The engine is equipped with an electrical starting aid. Ether may cause an explosion and/or severe injury.

NOTICE

Cold starting may result in hydraulic pump damage or failure. The oil grade in use must be appropriate for the ambient temperatures. Refer to APPROVED HYDRAULIC OILS in SECTION 3.

Machines that work in cold temperatures are equipped with an optional engine coolant and hydraulic oil pre-heating system. Use this system to pre-heat the engine block and the hydraulic oil before starting the engine in cold temperatures. Refer to COOLANT PRE-HEATING SYSTEM (OPTIONAL) in SECTION 10 and the pre-heating system manufacturer's operation manual.

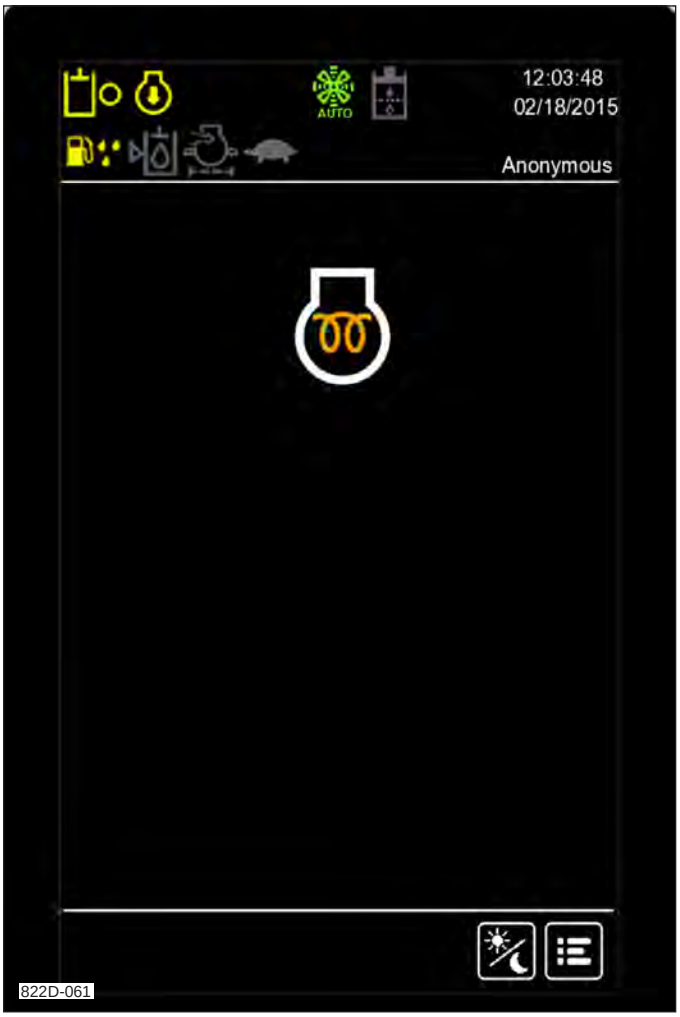


Air Intake Bypass	
A	Air Intake Precleaner
B	Air Intake Bypass Plate

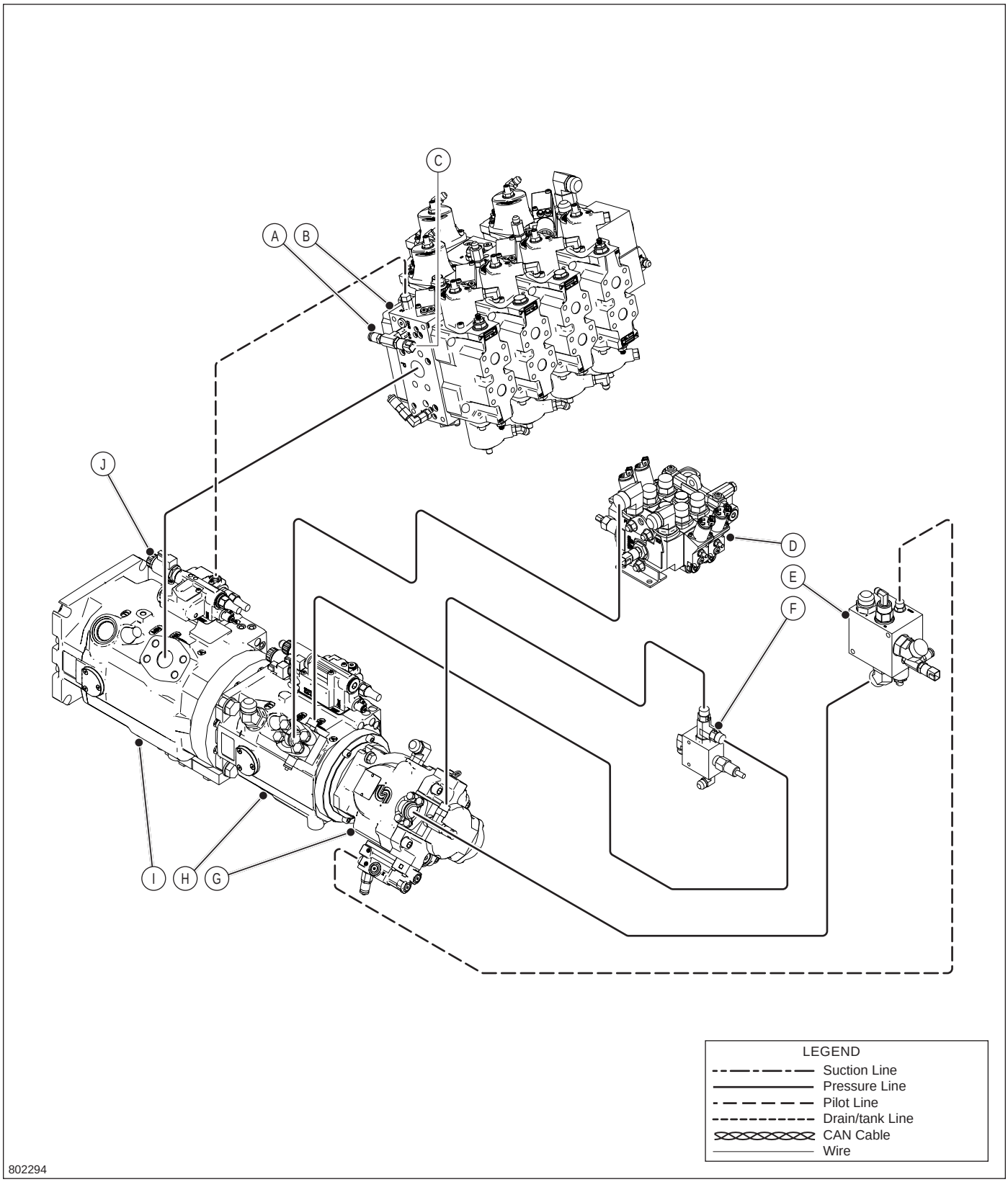
During cold weather operation, remove the air intake bypass plate to allow warm air from the engine compartment to pass through the engine air intake. The plate is situated at the left rear corner of the upper enclosure, below the air intake precleaner. Replace the bypass plate when warm weather returns, using the bolts and washers provided.

1. Perform all PRE-START CHECKS. Refer to OPERATING MACHINE–PRE-START CHECKS in SECTION 2.
2. Clear all personnel from the machine area before starting the engine. Refer to OPERATING MACHINE–PRE-START CHECKS in SECTION 2.
3. Turn ON the battery disconnect switch.
4. Sound the horn to warm personnel of machine start-up.
5. Turn the ignition key switch to the run position.

NOTE: The wait to start icon (below) will appear on the computer display during the engine pre-heat phase. The heating elements on a grid-type heater, situated in the engine air intake manifold, are activated to pre-heat the intake air when starting the engine Do not start the engine until the wait to start icon disappears from the display.



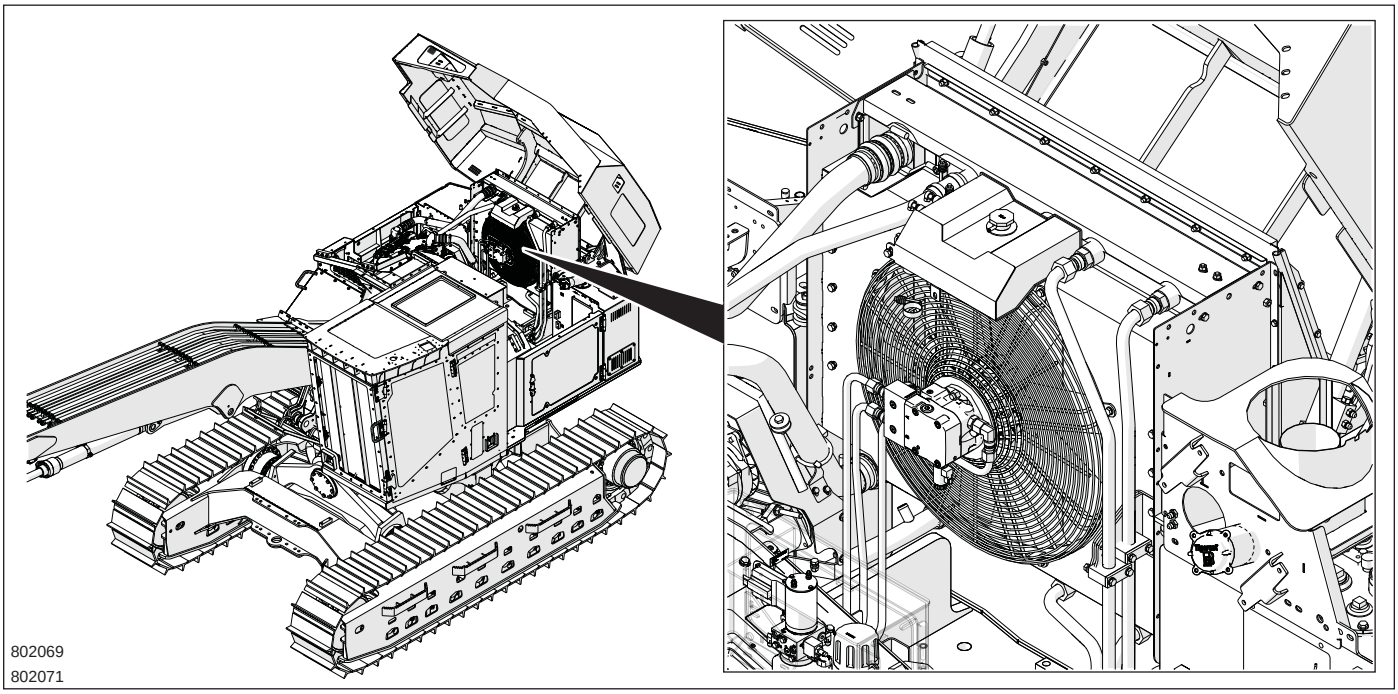
6. After the Wait to Start icon disappears, turn the ignition key switch to the start position to crank the engine. When the engine starts, release the ignition key switch to the run position.
7. Set the engine speed to low.



Load Sense Circuit

A	Load Sense Pressure Sensor	F	Pilot Supply Valve
B	Main Control Valve	G	Saw Pump
C	To MC43-2 Hydraulic Tank Module	H	Attachment Pump
D	Attachment Control Valve	I	Main Pump
E	Saw Control Valve	J	Load Sense Port

COOLING SYSTEM



Cooling System Location

The principal cooling system components—including the fan, hydraulic oil cooler, radiator, charge air cooler, and A/C condenser—are situated together at the rear of the upper enclosure. A screen protects these components from airborne debris.

The fan draws fresh air through the debris screen, and across the cooler package. When the fan drive motor reverses, the fan pulls air in the opposite direction (from inside to outside), purging any accumulated foliage or other debris from the outer surface of the screen.

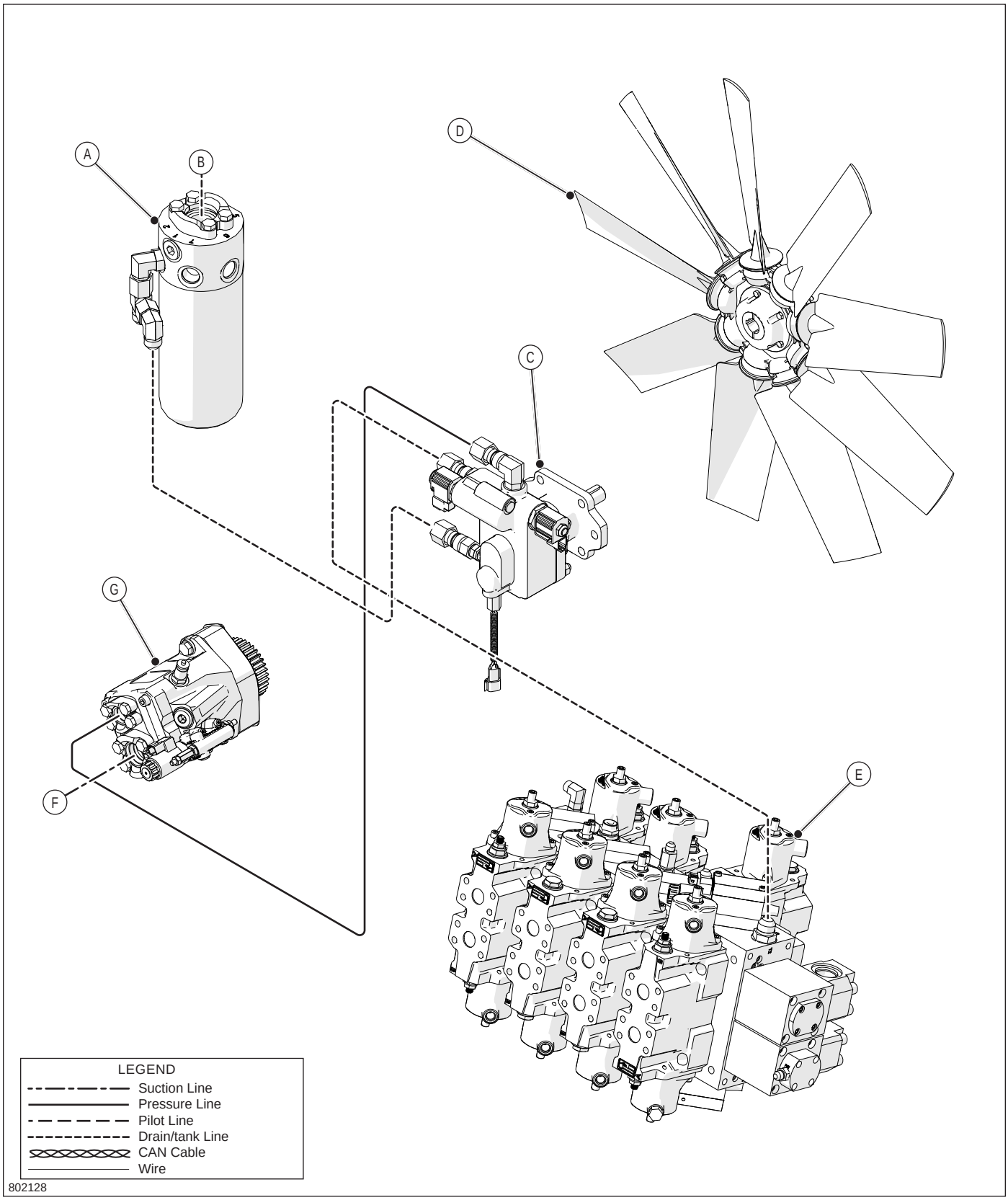
The fan drive system is set to reverse automatically at periodic intervals. The operator may also do so manually if it is likely the screen is blocked with debris.

The computer system varies the fan speed to maintain the appropriate operating temperatures for the hydraulic oil, engine coolant, and charge air.

The cooling system components and all engine enclosure doors should be inspected every 8 hours (once every shift) for debris and dust.

⚠ CAUTION

Use appropriate personal protective equipment when cleaning with pressurized air or water.

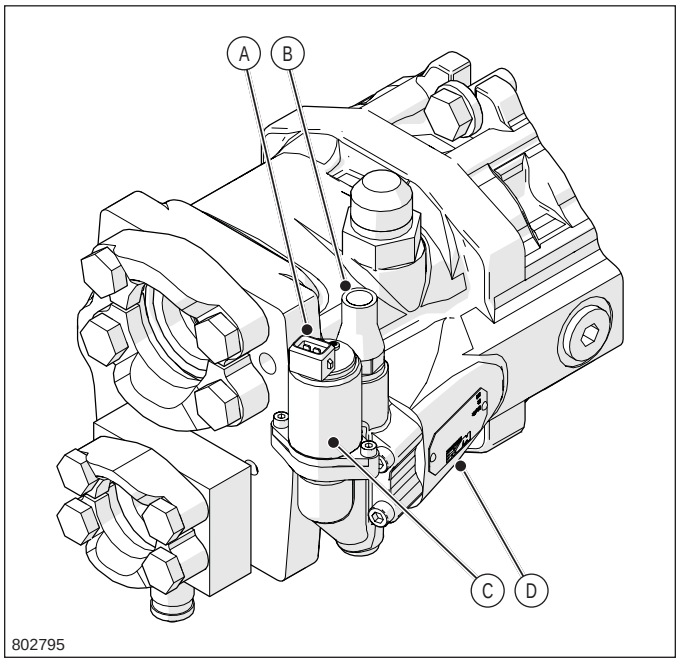


Fan Drive Circuit (Feller Buncher), 855*3100-855*4000

A Case Drain Strainer	E Main Control Valve
B Case Drain (to Hydraulic Tank)	F Suction Line (to Hydraulic Tank)
C Fan Drive Motor	G Fan Pump
D Fan	

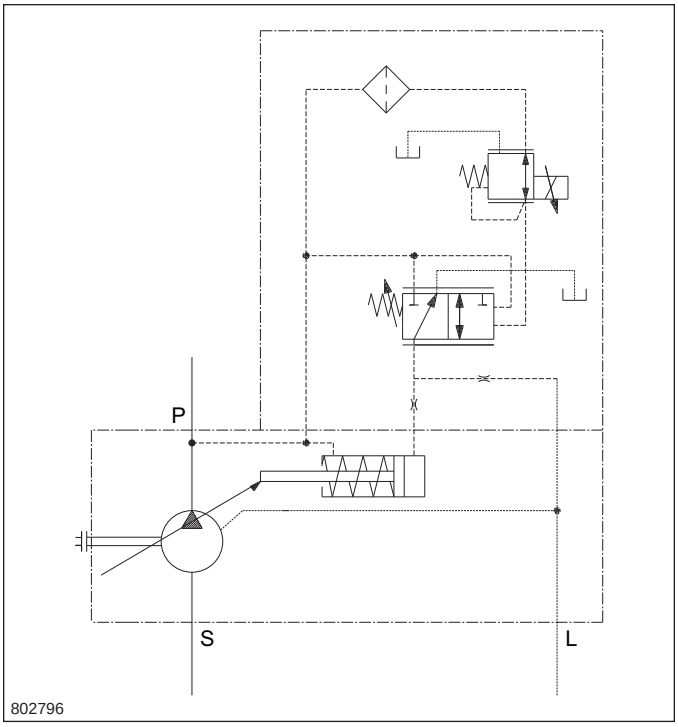
FAN PUMP (SHEAR), 855*3001-855*3308

Machines with the shear head may be equipped with either of two types of fan pump. Each type is situated in the pump compartment, mounted directly to the attachment pump.



Fan Pump	
A	AMP Jr Connector
B	Pressure Compensator Adjustment Screw
C	Proportional Solenoid
D	Controller Assembly

The fan pump is an open-loop, variable displacement, axial-piston-type pump equipped with an electro-hydraulic controller.



Fan Pump Schematic

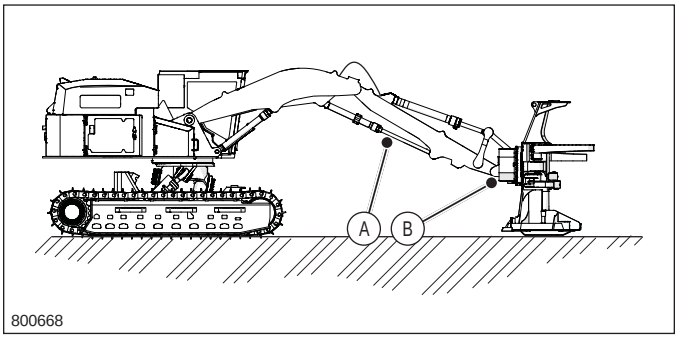
The fan pump is at a default state when the proportional solenoid on the fan controller is unplugged or fully de-energized. When the proportional solenoid is unplugged or fully de-energized, the controller adjusts pump displacement to maintain pump outlet pressure. The controller will reduce displacement if pressure is higher than the mechanical pump setting and will increase displacement if pressure is lower than the mechanical pump setting.

Energizing the solenoid on the pump controller reduces the pump pressure setting from the mechanical setting to a lower value. Increasing the current output does not directly control pump displacement; displacement changes are a result of the pump pressure setting or the load on the pump changing.

FAN SYSTEM TESTING

The following tests may be performed to ensure that fan system functions are operating correctly.

- A/C and defrost function
- A/C and defrost function with clean mode
- Fan full on speed
- Fan speed default



Parking the Machine	
A	Stick cylinder fully extended
B	Stick boom end fully supported

When testing the fan system, the machine must be parked on level ground with the attachment resting firmly on the ground. Refer to PARKING THE MACHINE in SECTION 1.

⚠ WARNING

Use caution in the cab. A slight touch of the controls can cause sudden rotation of the upper structure and boom assembly. The swing brake must be applied at all times during these procedures.

Be aware of other personnel in the area. Ensure that no one is standing near the attachment during these procedures. The operator is responsible for safely operating the machine.

A/C AND DEFROST FUNCTION

When either the A/C or defrost position is selected on the A/C defrost switch, the fan speed should automatically increase. To effect this increase, the computer must decrease the output current applied to the proportional solenoid valve on the fan pump.

The automatic fan speed increase function may be tested only when the hydraulic oil, engine coolant, and charge air are below normal operating temperatures.

Refer to PRESSURE AND SPEED SETTINGS in SECTION 3 for specific pressure and speed values.

Hydraulic oil temperature must be less than the value provided for each oil viscosity grade specified in the table below.

Engine coolant temperature must be 195°F or less.

Charge air temperature must be 100°F or less.

VISCOSITY GRADE	HYDRAULICOILTEMPERATURE
ISO 22	43°C (110°F) or below
ISO 32	49°C (120°F) or below
Univis Ultra Multi	65.5°C (150°F) or below
ISO 46	60°C (140°F) or below
ISO 68	65.5°C (150°F) or below

To test for proper fan operation when the A/C or defrost switch positions are selected, perform the following steps:

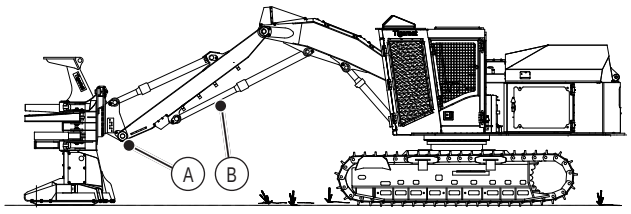
1. Park the machine on level ground with the attachment resting firmly on the ground.
2. Apply the swing brake.
3. Turn ON the battery disconnect switch.
4. Make sure that all personnel are clear of the machine before starting the engine.
5. Insert the ignition key and turn to the run position.
6. Sound the horn to warn personnel of machine start-up.
7. Start the engine and set the engine speed to high.
8. Close and latch the front door.
9. Press the pilot system reset switch to activate the pilot system.

PRESSURE SETTINGS

There are two pressure setting points on the fan pump.

- Standby pressure setting
- POR pressure setting

Refer to PRESSURE AND SPEED SETTINGS and APPROVED HYDRAULIC OILS in SECTION 3.



860C-001

Parking the Machine	
A	Stick boom end fully supported
B	Stick cylinders fully extended

When setting pressures, the machine must be parked on level ground with the attachment resting firmly on the ground.

⚠ WARNING

Use caution in the cab. A slight touch of the controls can cause sudden rotation of the upper structure and boom assembly. The swing brake must be applied at all times during these procedures.

Be aware of other personnel in the area. Ensure that no one is standing near the attachment during these procedures. The operator is responsible for safely operating the machine.

STANDBY PRESSURE (FELLER BUNCHER)

Refer to PRESSURE AND SPEED SETTINGS and APPROVED HYDRAULIC OILS in SECTION 3 for specific pressure and speed values.

The hydraulic oil, engine coolant, and charge air temperatures must be below normal operating temperatures.

Hydraulic oil temperature must be less than the value provided for each oil viscosity grade specified in the table below.

Engine coolant temperature must be 195°F or less.

Charge air temperature must be 100°F or less.

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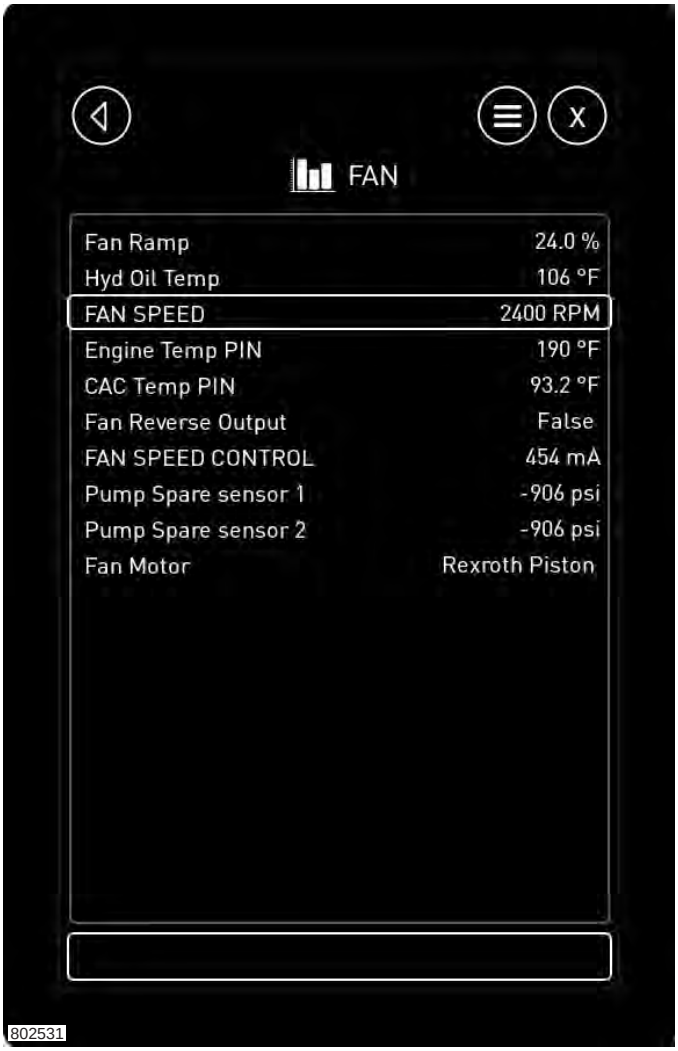
ISO 68	65.5°C (150°F) or below

Fan Switch	
A	Full On Position
B	Auto Position
C	Clean Position (Reverse)

16. Select the auto position on the fan switch.
17. Slowly increase engine speed to HIGH.



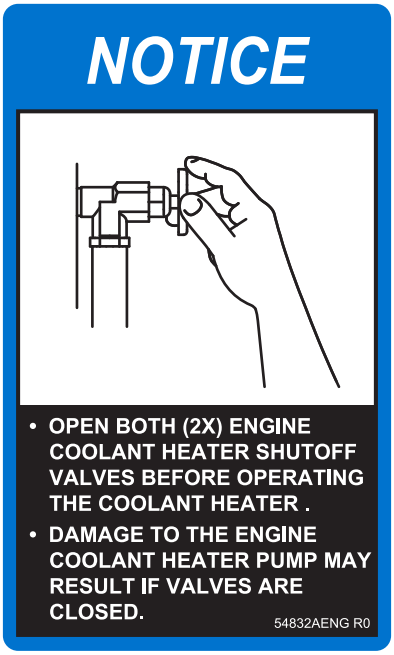
18. Use the computer to monitor FAN RPM input. Refer to MAIN MENU SCREEN—MEASURE MENU in SECTION 2.

    NOTE: Ensure fan speed does not exceed 2700 rpm.

19. Ask an assistant to observe the pressure reading on the gauge at the test port. The pressure value should meet fan pump POR pressure specifications.
20. Use the computer to monitor FAN RPM input. Refer to MAIN MENU SCREEN—MEASURE MENU in SECTION 2. Ensure fan speed is within specification.

HEATER SYSTEM OPERATION

The heater system is mounted on the upper area inside the A/C unit. It uses the engine cooling system, supplying coolant through the coolant outlet manifold and in to the heater coil. The heating system comprises a water valve and a heater coil.



COOLANT SHUT-OFF VALVE

The coolant shut-off valves are situated at the bottom middle of the upper enclosure, to the left of the engine. The two coolant shut-off valves, one for inlet and one for outlet, are used to control flow of engine coolant to the heater system.

Close the engine coolant heater shut-off valves before performing service and open the valves before operating the heater system.

WATER VALVE

The water valve is situated inside the A/C heater unit, at the top of the unit between the blower fans. When the water valve is opened, hot coolant from the engine flows from the coolant outlet manifold through the heater coil.

The heat/cool temperature knob inside the cab is used to control the flow of engine coolant through the heater coil.

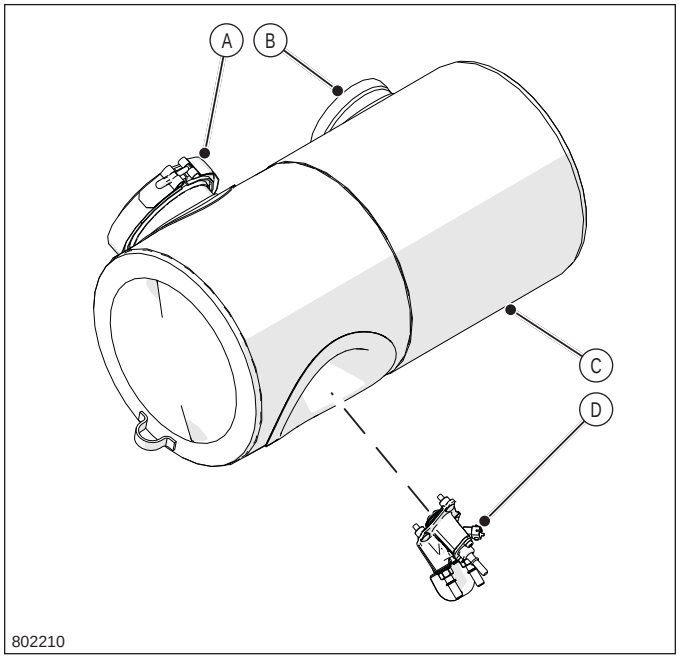
HEATER COIL

The heater coil is situated in the middle inside the A/C heater unit. The blower fans in the A/C heater unit draw air from the bottom intake of the A/C heater unit across the heater coil and out towards one of the two blower fans.

Hot coolant from the engine flows through the heater coil. The blower fans draw air from the bottom intake of the A/C heater unit through the heater coil which is then heated by the heater coil before directing out to the cab.

The coolant in the heater coil flows back to the lower coolant tube where the heating cycle begins again.

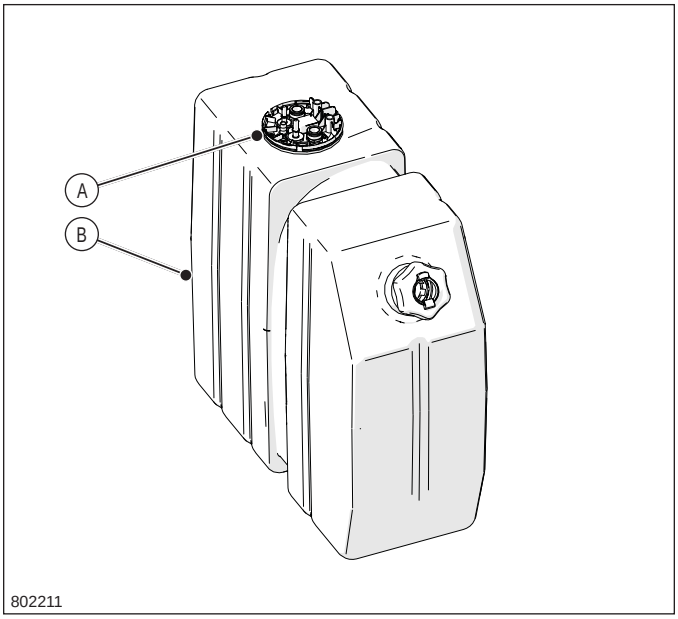
DOSING MODULE



Dosing Module and Diesel Oxidation Catalyst	
A	Exhaust Inlet
B	Exhaust Outlet
C	Diesel Oxidation Catalyst
D	Dosing Module

The dosing module is mounted directly to the diesel oxidation catalyst, which operates at high temperatures. The dosing module's temperature is moderated by a constant flow of coolant, regardless of the coolant control valve position (open or closed).

DEF TANK AND SENDING UNIT

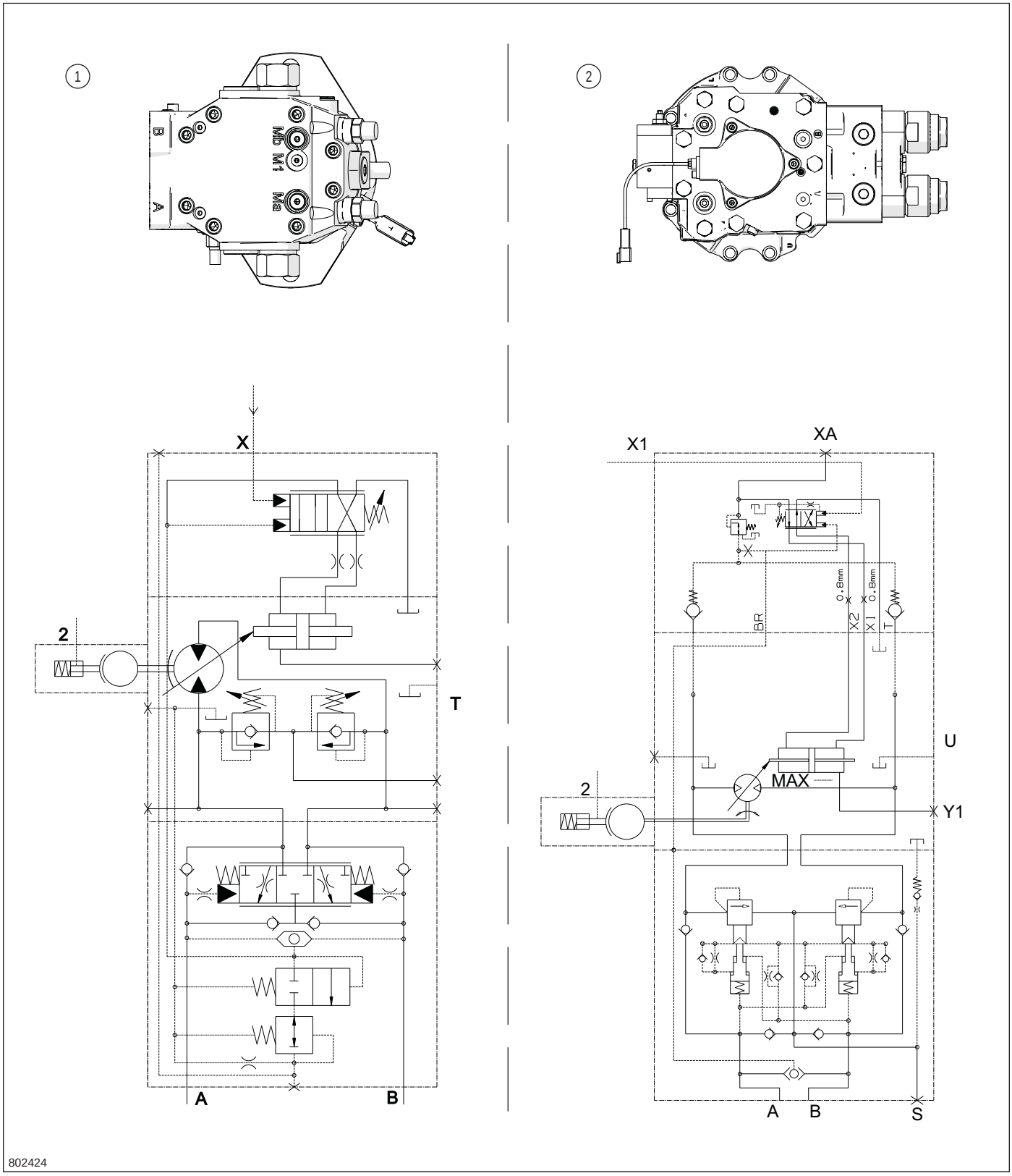


DEF Tank and Sending Unit	
A	Sending Unit
B	DEF Tank

The DEF tank (80L capacity) is equipped with a heating element and sending unit. When the temperature of the diesel exhaust fluid or ambient air falls below a specified threshold, the sensor relays a signal to the engine ECU. The ECU in turn energizes the solenoid on the coolant control valve, switching the valve to the open position. Coolant is diverted through the heating element inside the DEF tank, warming the diesel exhaust fluid.

TRACK DRIVE MOTOR TYPES

Machines are equipped with either of two types of track drive motor, depending upon application: type B or C.



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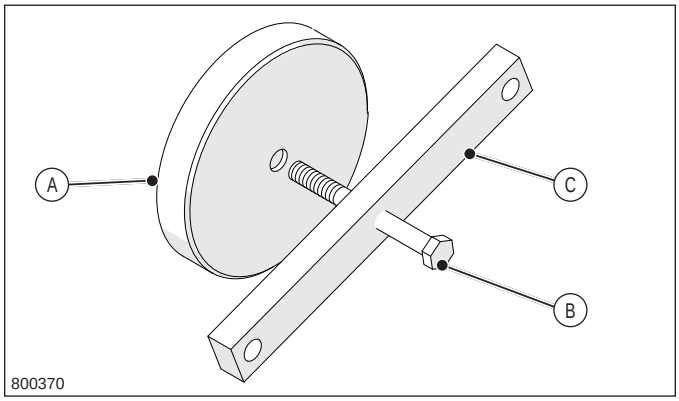
Type B and Type C Track Drive Motors	
1 Type B Motor and Schematic	2 Type C Motor and Schematic

PARKING BRAKE DISC REPLACEMENT (TYPE A)

Refer to SCHEDULED MAINTENANCE or SERVICE AND LUBRICATION SCHEDULE in SECTION 3 for maintenance and service schedule.

IMPORTANT!
Replace general wear components such as seals and O-rings when replacing the parking discs. Parking brake seal and O-ring parts kits are available through the Tigercat Parts Department.

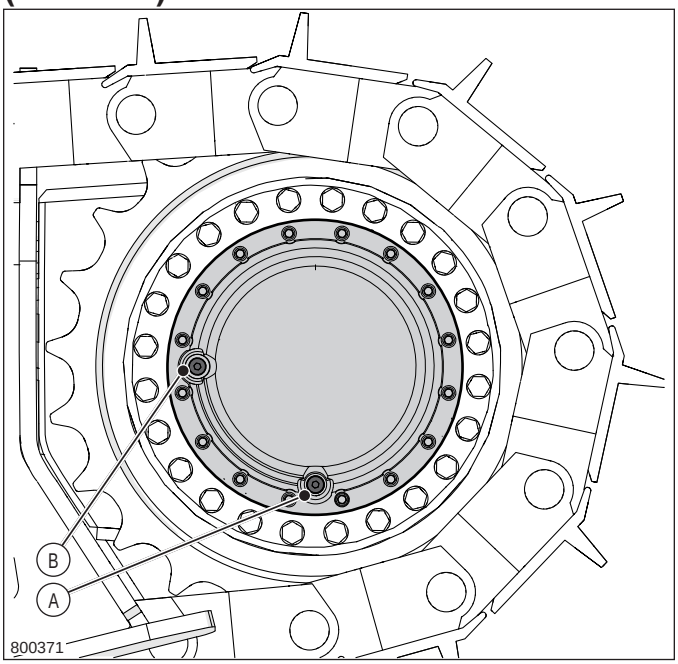


Brake Removal Tool	
A	Compression Disc Tool
B	Brake Compression Bolt
C	Brake Removal Bar

A brake removal tool is required to remove the brake friction discs. The brake removal tool is available through the Tigercat Parts Department.

NOTE: Brake removal tools are not included with the parking brake seal and O-ring kits.

PARKING BRAKE DISC REMOVAL (TYPE A)



A	Track Drive Gearbox Plug A
B	Track Drive Gearbox Plug B

1. Park the machine on level ground with track drive gearbox drain plug 'A' at the six o'clock position and the fill plug 'B' at the 9 o'clock position.
2. Rest the attachment firmly on the ground. Refer to PARKING THE MACHINE in SECTION 1.
3. Apply the swing brake.
4. Turn OFF the engine.
5. Remove the ignition key.
6. Drain oil from the track drive gearbox. Refer to TRACK DRIVE GEARBOX–OIL DRAINING AND REPLACEMENT in SECTION 3.
7. Remove the left and right track drive motor inspection covers.
8. Disconnect the hoses from the left track drive motor.
9. Disconnect the brake line at the left track drive gearbox.
10. Plug all hydraulic ports at the gearbox, track drive motor, and hose fittings to prevent contamination.

16. Torque motor flange bolts.
17. Install the track drive motor.
18. Fill the gearbox with oil. Refer to TRACK DRIVE GEARBOX–FILLING THE GEARBOX in SECTION 3.
19. Install the hydraulic hoses to the motor.

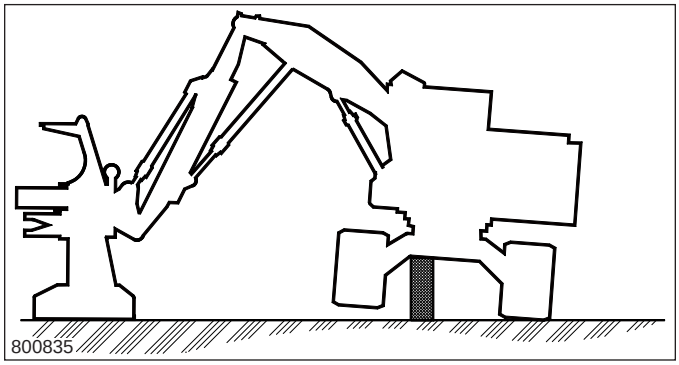
    NOTE: Do not connect the track drive gearbox brake line to the gearbox
20. Check that all personnel are clear of the machine before starting the engine.
21. Sound horn to warn personnel of machine start-up.
22. Start the engine and set to low engine speed. Refer to ENGINE SPEED SWITCH in SECTION 2. Make sure the hydraulic oil is at operating temperature.
23. Apply the swing brake.
24. Attempt to rotate the left track forward and backward by fully pressing on the left foot pedal.

    IMPORTANT!
    The track must not rotate when performing this function.
25. Release the left foot pedal.
26. Turn the engine OFF.
27. Reconnect the track drive gearbox brake line to the gearbox.
28. Install the left side track motor cover.
29. Check that all personnel are clear of the machine before starting the engine.
30. Sound horn to warn personnel of machine start-up.
31. Start the engine and set engine speed to LOW engine speed. Refer to ENGINE SPEED SWITCH in SECTION 2. Make sure the hydraulic oil is at operating temperature.
32. Apply the swing brake.
33. Attempt to rotate the left track forward and backward by fully pressing on the left foot pedal.

    NOTE: The left track should rotate forward and backward.
34. Release the left foot pedal.
35. Turn the engine OFF.
36. If the left track does not rotate in either direction, repeat TRACK DRIVE GEARBOX–PARKING BRAKE DISC REPLACEMENT in THIS SECTION.
37. Install the left side track motor cover.
38. Repeat PARKING BRAKE DISC REPLACEMENT procedure for the right side track drive gearbox.

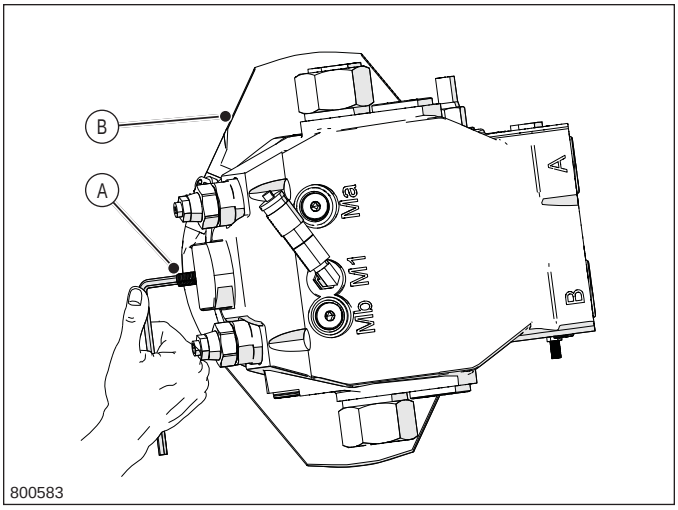
To set track drive motor speeds:

1. Park the machine on level ground with the attachment resting firmly on the ground. Refer to PARKING THE MACHINE in SECTION 1.
2. Clear all personnel from the machine area.
3. Sound the horn.
4. Turn ON the engine.



Blocking the Undercarriage

5. Swing the boom to the side of the machine; apply the swing brake.
6. Place the attachment on the ground. Push down with the boom controls to lift the track clear off the ground.
7. Use suitable blocks to support the undercarriage frame in the raised position.
8. Open the power roof and left side door.
9. Remove the left and right track drive motor inspection covers.
10. Set engine speed to high.
11. Activate the pilot system.
12. Turn OFF anti-stall mode.



Track Drive Motor Minimum Displacement Adjustment	
A	Left Track Drive Motor Minimum Displacement Adjusting Screw
B	Left Track Drive Motor

13. Turn the minimum displacement adjusting screw in (clockwise) 2 turns to slow down the final drives to keep the motors from over speeding and damaging the track drive motor.
14. Place the track speed range switch in the low position.
15. Increase travel speed control to the maximum limit. Refer to TRAVEL SPEED CONTROL in SECTION 2.
16. Ask an assistant to hold the left track drive pedal in the forward position.
17. Observe and record the track drive sprocket speed.

    Example: For a track containing 47 links, a reading of 14 rpm is desired, which equals 1 complete revolution of the track every 17.5 seconds.

BOTTOM ROLLER RETAINING BOLTS

The bottom rollers must be fastened to the undercarriage by apply the exact torque values shown below.

When installing new rollers, apply anti-seize compound to the bolt threads.

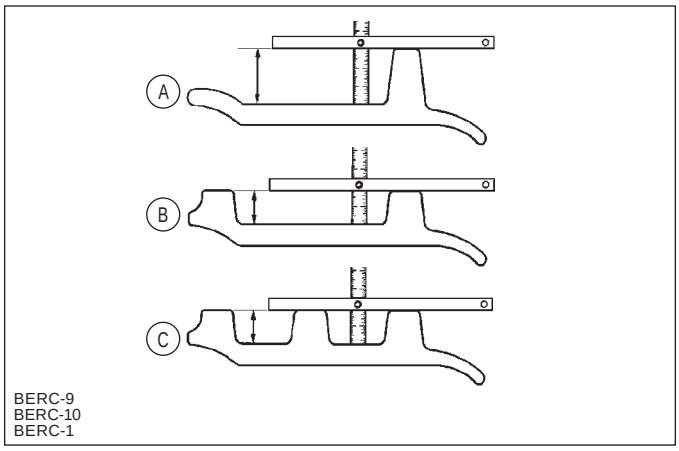
When checking the torque values at the first 100 hours and every 125 hours after that use the torque value(s) shown below.

BOTTOM ROLLER BOLTS 1 IN. (FH400 – FH7150)	
Torque	1017 nm (750 lbf-ft)

Refer to PREVENTATIVE MAINTENANCE SCHEDULE in SECTION 3 for a complete maintenance check.

WEAR LIMITS

TRACK SHOE GROUSER HEIGHT WEAR



BERC-9
BERC-10
BERC-1

Grouser Wear – Height

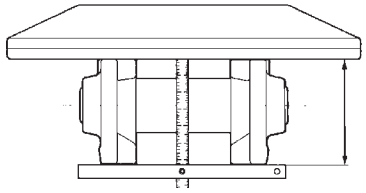
A Single Grouse
B Double Grouse
C Triple Grouse

WEAR LIMITS FOR FH400 TRACK TYPE

SHOE GROUSER	NEW	75% WEAR	100% WEAR
Single	74.4 mm (2.81 in)	39.1 mm (1.5 in)	25 mm (1 in)
Double	49 mm (1.9 in)	23 mm (0.9 in)	12 mm (0.5 in)
Triple	30 mm (1.2 in)	19 mm (0.7 in)	15 mm (0.6 in)

NOTE: Allowable wear for soft ground conditions is 100%. Allowable wear for rocky ground conditions is 75%.

TRACK LINK WEAR



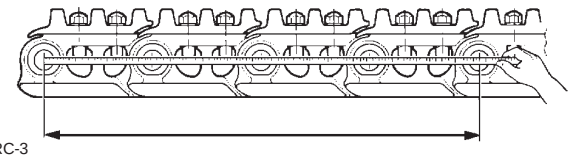
BERC-2

Track Link Wear – Height

WEAR LIMITS FOR FH400 TRACK TYPE

WEAR	HEIGHT
0% wear (new)	129.0 mm (5.08 in)
50% wear	124.9 mm (4.92 in)
75% wear	122.1 mm (4.81in)
100% wear	119.0 mm (4.68 in)

PIN AND BUSHING WEAR



BERC-3

To determine the track internal wear, i.e., the wear between the pin and the internal diameter of the bushing, measure the track pitch over four sections of track (5 pins).

To take this measurement:

1. Remove slack by placing a steel pin between sprocket and chain, then slowly move machine in reverse to tighten chain.
2. Measure pitch across two four link sections, except section on each side of the master pin, to find average chain wear.

Tigercat 855E/L855E Feller Buncher

SECTION 12 – BOOM FUNCTIONS

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.

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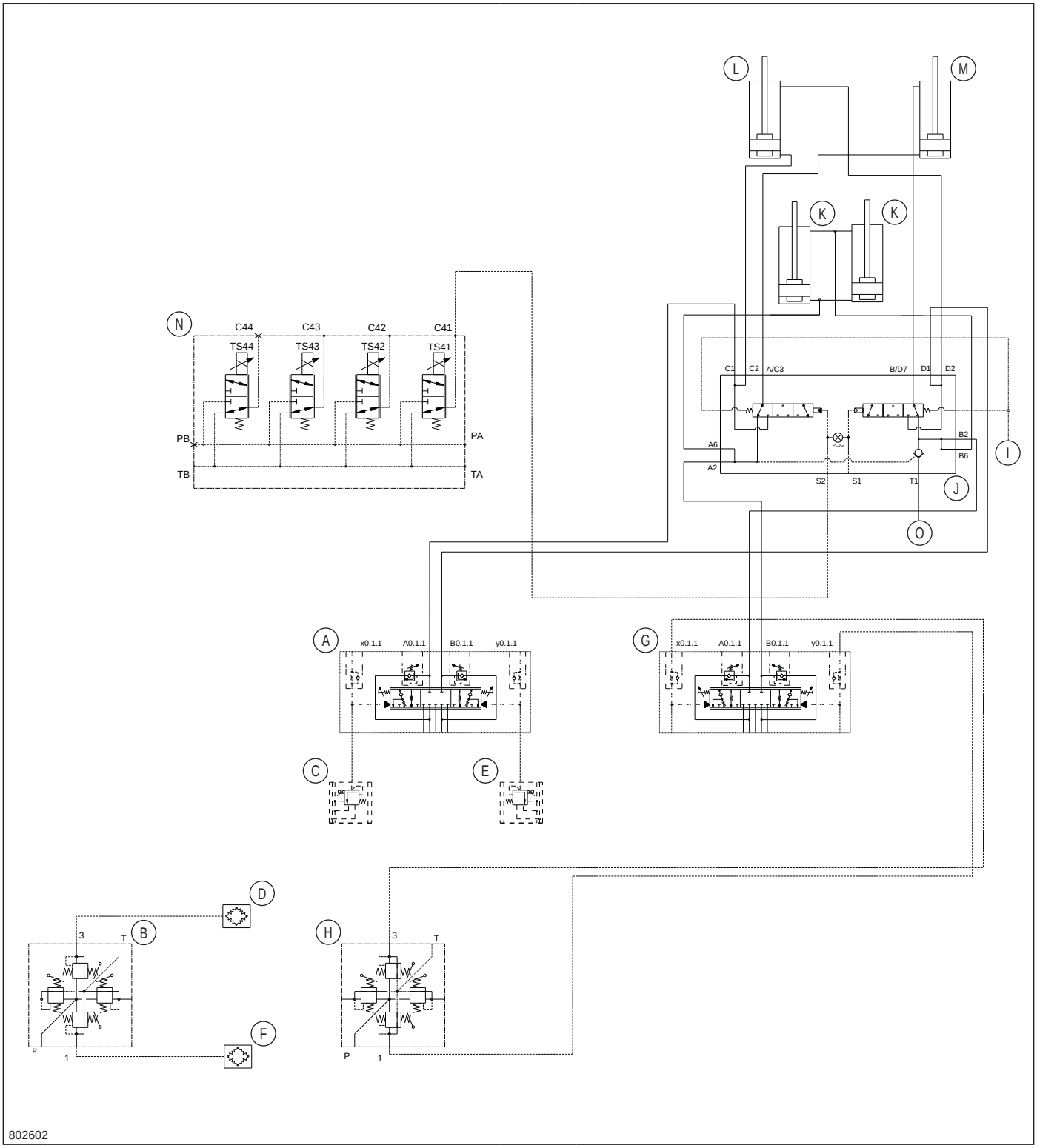


Semi-ER Boom Hydraulic Schematic

A Stick Cylinder Control Valve Section	I To Return Manifold
B Left Joystick	J ER Boom Valve
C Proportional solenoid Valve–Stick Boom Out	K Hoist Cylinder
D Pressure Transducer–Stick Boom Out	L Left Stick Cylinder
E Proportional solenoid Valve–Stick Boom In	M ER (Right Stick) Cylinder
F Pressure Transducer–Stick Boom In	N ER/Cooler Bypass Valve
G Hoist Cylinder Control Valve Section	O To Main Control Valve
H Right Joystick	

HOIST BOOM PORT RELIEF VALVES

Adjust the hoist boom port relief valve pressures at the main control valve (hoist boom valve section).

Refer to PRESSURE AND SPEED SETTING and HYDRAULIC OIL OPERATING RANGE chart in SECTION 3 for specific values.

The hydraulic oil must be at normal operating temperature before making these settings.

NOTICE

Repeated loosening and tightening of the locknuts on the port relief valve adjusting screws will, eventually, cause the seal in the locknut to break down and leak. Keep the adjusting procedure as brief as possible.

⚠ WARNING

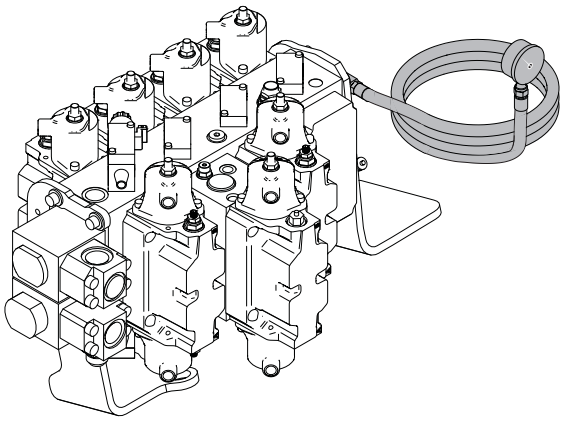
Exercise caution in the cab. A slight touch of the controls can cause sudden rotation of the upper structure and boom assembly.

The swing brake must be applied at all times during this test.

Be aware of other personnel in the area. Verify that no one is standing near the attachment during these procedures. The operator is responsible for safely operating the machine.

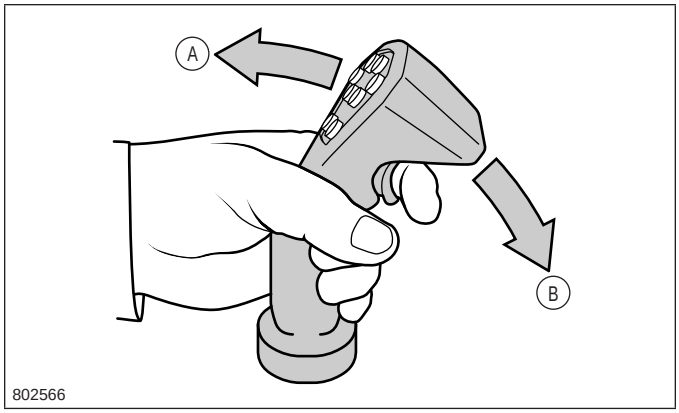
To set the hoist and ER cylinder port relief pressures:

1. Open the power roof and left side door.



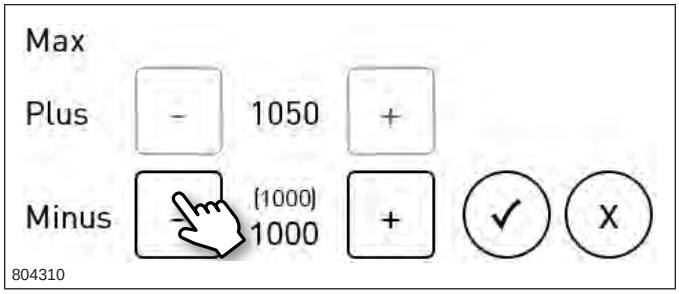
Main Control Valve

2. At the main control valve, connect a 0–700 bar (0–10,000 psi) gauge at gauge port 'xP'.
3. Clear all personnel from the machine area.
4. Sound the horn.
5. Turn ON the engine.
6. Set the engine speed to low.
7. Apply the swing brake.
8. Turn ON fan service mode.
9. Activate the pilot system.
10. Turn OFF anti-stall mode.



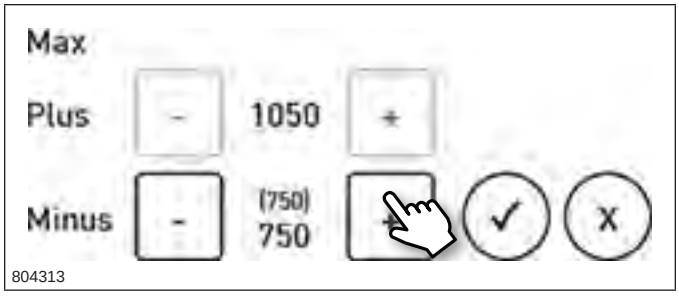
A Stick Boom In
B Stick Boom Out

5. Move the stick boom out and extend the cylinders.
6. While graphing Stick Cyl measure group, operate stick in at full speed. Refer to MACHINE PROGRAM UPDATES–COMPUTER SERVICING–MEASURE (GRAPH) in SECTION 6.
7. Stop Stick Cyl measure, record maximum 'MAIN PUMP DISPLACEMENT' value.



8. Tap the Minus negative button and lower value by 50 mA.
9. Repeat steps 6 to 8 until the maximum 'MAIN PUMP DISPLACEMENT' value decreases.

   NOTE: Stick boom speeds will be slower when the value decreases.

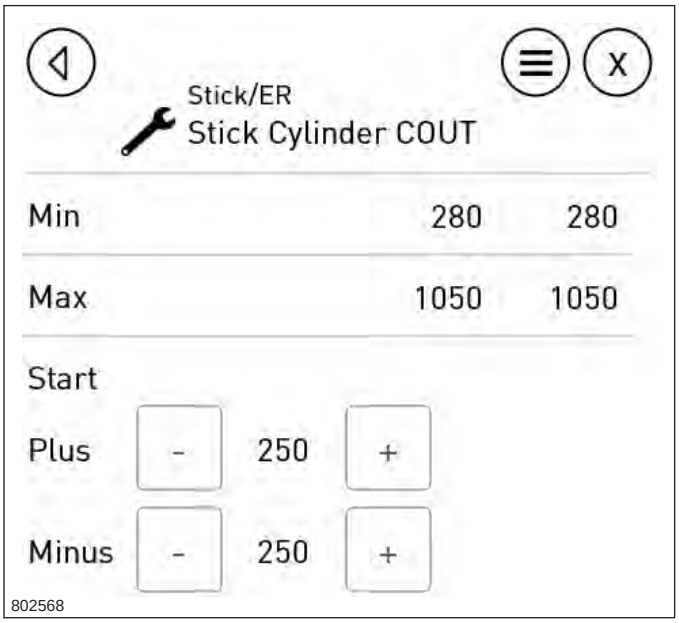


10. Tap the Minus positive button and raise value by 50 mA to go back to the previous setting (ensures the valve spool is against the flow stop).

SET START/STOP RAMPS

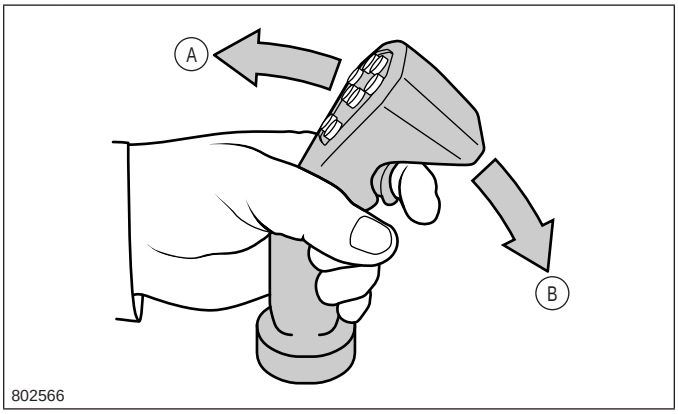
1. Turn ER mode to Non-ER.
2. Open the stick cylinder COUT channel.

   Home Screen–Main Menu–Adjust Menu–Stick/ER–Stick Cylinder COUT Menu.



Stick Cylinder COUT

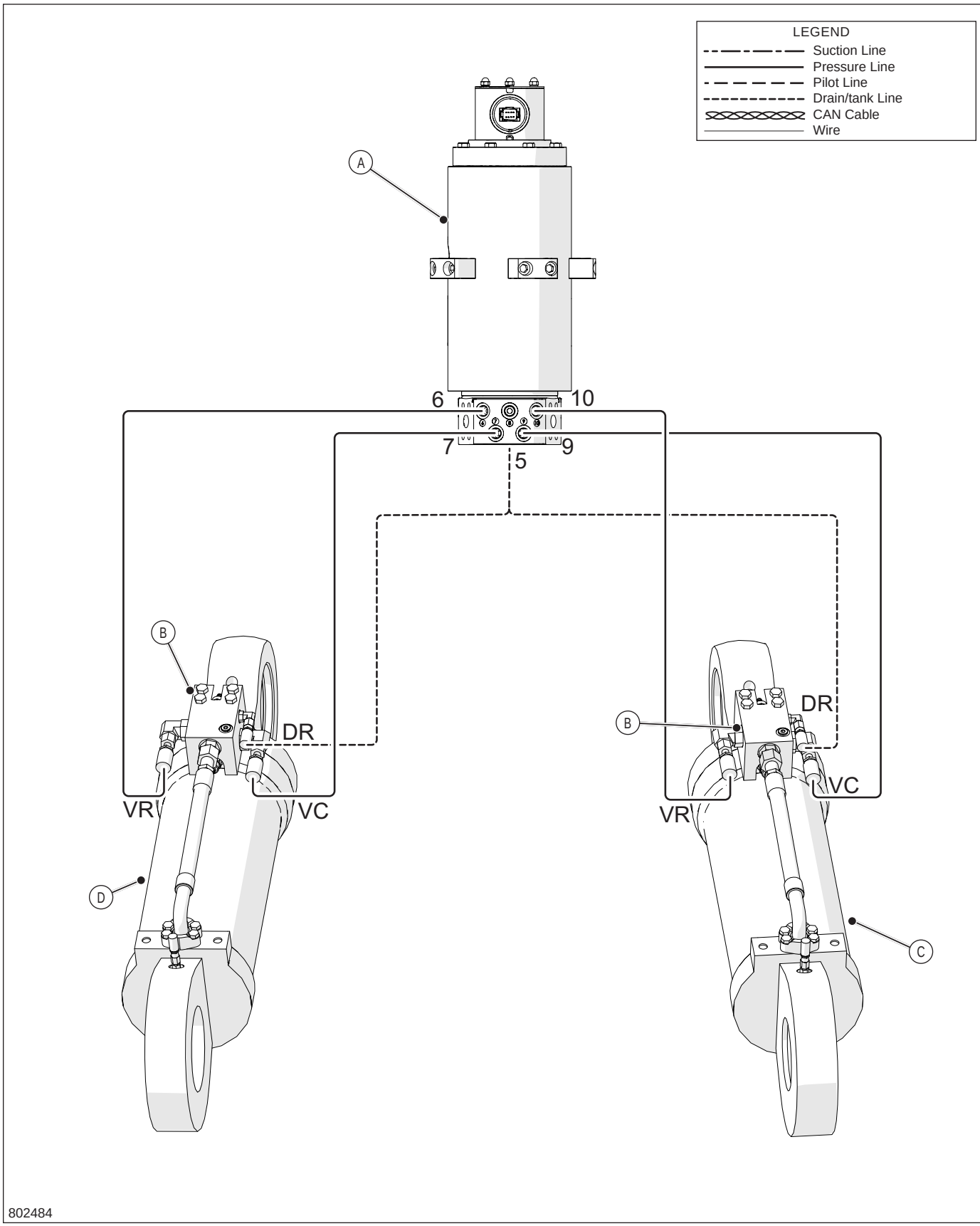
3. Tap the Start line adjust group.



A Stick Boom In
B Stick Boom Out

4. Move the stick boom out and extend the cylinders.

   NOTE: Observe the rate of acceleration when the stick boom is engaged. To increase rate of acceleration, reduce start ramp value. To decrease rate of acceleration, increase start ramp value.

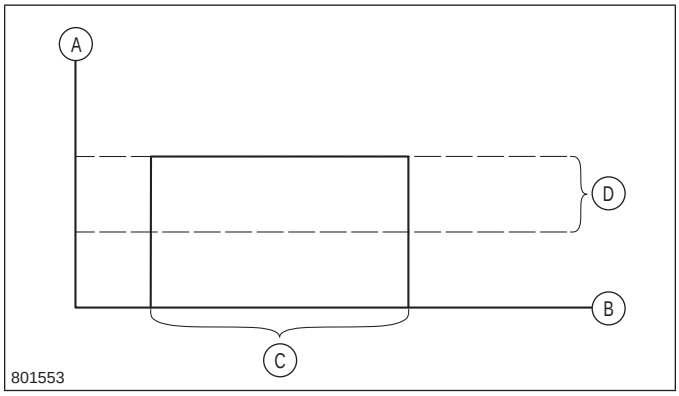


Leveling System Hydraulic Circuit Diagram (Undercarriage Components)

A Rotary Manifold	C Right Leveling Cylinder
B Counterbalance Valves	D Left Leveling Cylinder

ELECTRONIC ADJUSTMENT ILLUSTRATION

Suppose that one of the leveling cylinders is adjusted as follows:

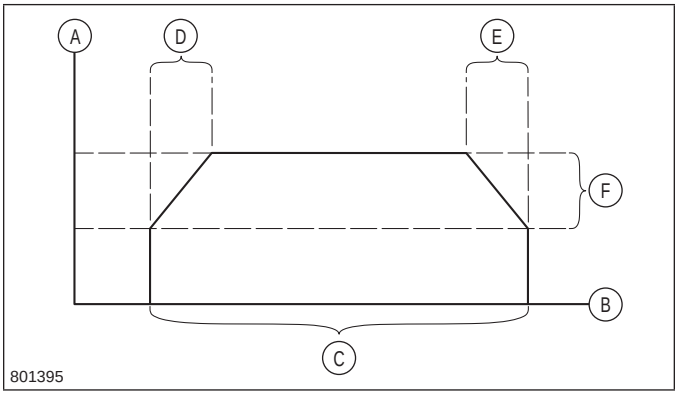


Current Level And Function Speed	
A	Current Scale (mA)
B	Time Scale (ms)
C	Function Travel Time (x)
D	Min to Max Current (300–475 mA)

- Min current = 300 mA
- Max current = 475 mA
- Start ramp = 0 ms
- Stop ramp = 0 ms

There is no start ramp; the cylinder, in effect, begins to travel at top speed directly when the joystick is actuated.

Now suppose the following adjustments are made to the cylinder:

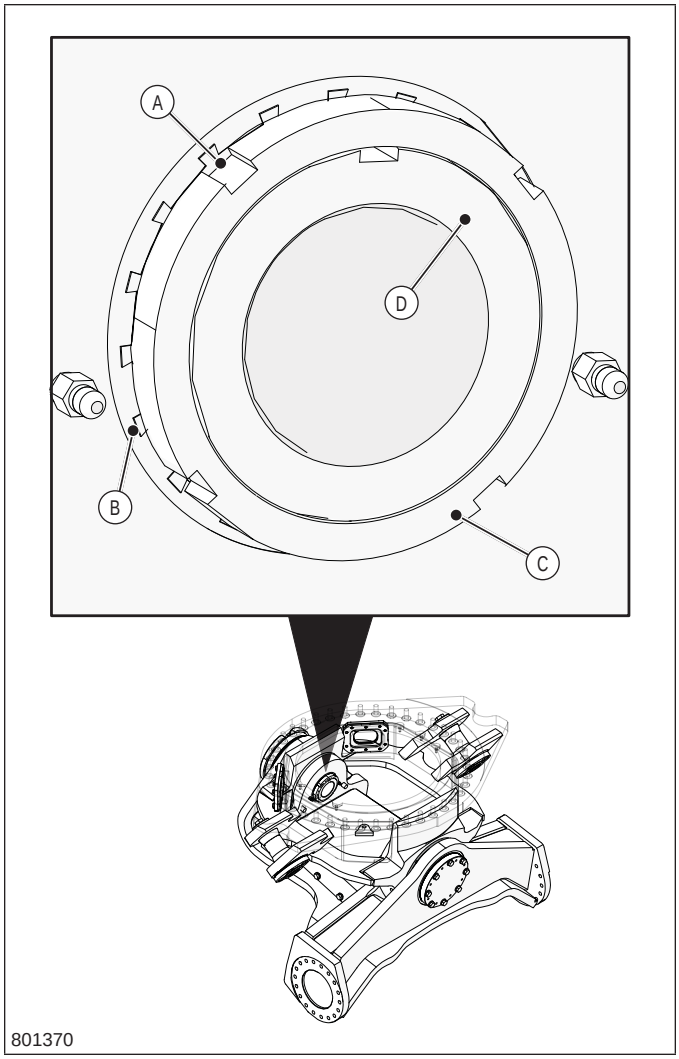


Current Level And Function Speed	
A	Current Scale (mA)
B	Time Scale (ms)
C	Function Travel Time (x + 350 ms + 350 ms)
D	Start Ramp (350 ms)
E	Stop Ramp (350 ms)
F	Min to Max Current (300–475 mA)

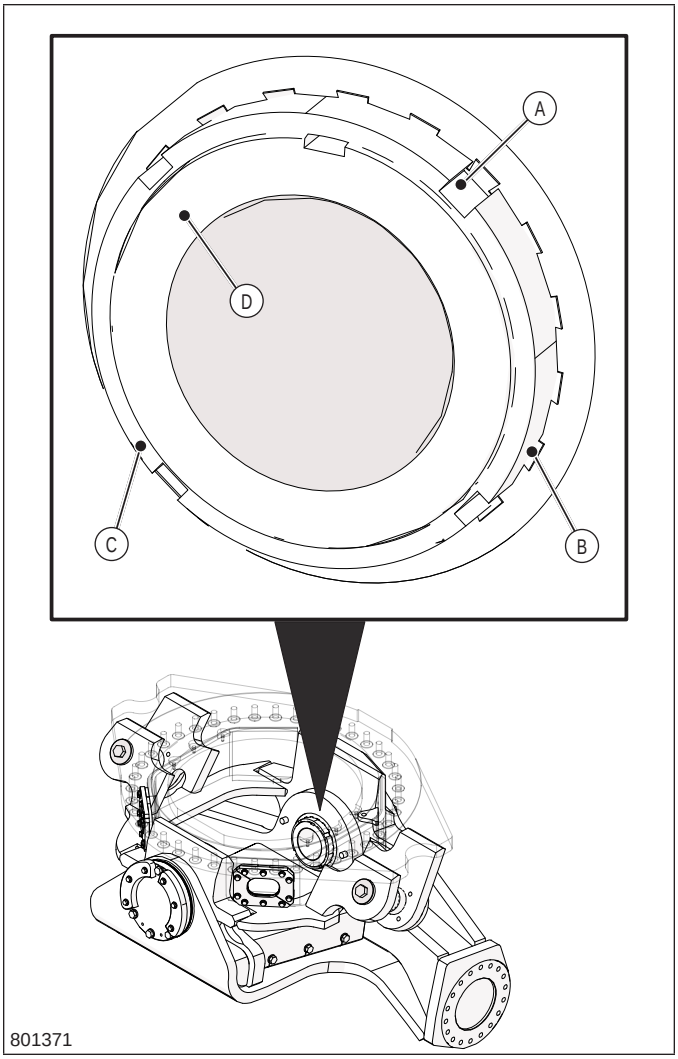
- Min current = 300 mA
- Max current = 475 mA
- Start ramp - 350 ms
- Stop ramp = 350 ms

The start and stop ramps are adjusted to 350 ms each. This adjustment affects the cylinder's operation in three ways.

- The overall travel time is longer.
- The initial movement of the cylinder rod from min to max current is slower.
- The final movement of the cylinder rod from max to min current is slower.



Rear Pivot Axis Bearing Area	
A	Pivot Axis Bearing Locknut Lock Slot
B	Pivot Axis Bearing Lock Washer (behind Locknut)
C	Pivot Axis Bearing Locknut
D	Rear Leveling Pin



Front Pivot Axis Bearing Area	
A	Pivot Axis Bearing Locknut Lock Slot
B	Pivot Axis Bearing Lock Washer (behind Locknut)
C	Pivot Axis Bearing Locknut
D	Front Leveling Pin

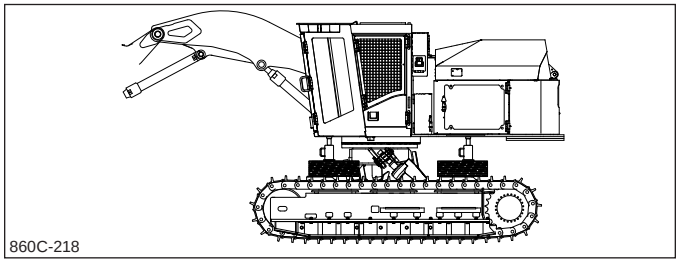
9. Unlock the rear and front bearing locknuts by bending flat the lock tab, disengaging it from one of the four slots cut into the circumference of the locknut.
10. Examine the rear and front bearing lock washer tabs. Replace the lock washers if the tabs are broken, cracked, or otherwise damaged.

    NOTE: Remove the locknut(s) only if it is necessary to replace the lock washer(s).
11. Turn the rear and front bearing locknuts counterclockwise, three turns each.

SUPPORTING THE UPPER STRUCTURE

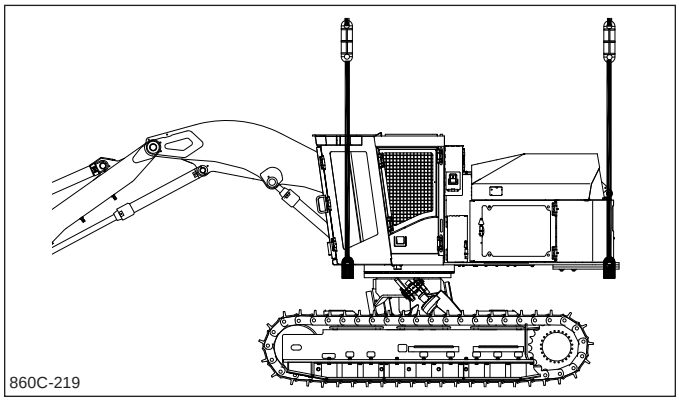
There are three methods of supporting the upper structure during leveling cylinder service.

HYDRAULIC JACKS AND WOOD BLOCKS


860C-218

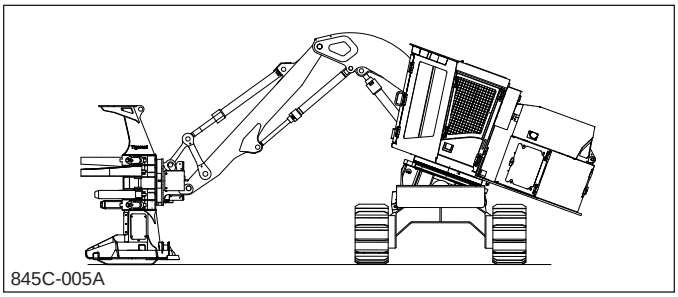
Install hydraulic jacks and new solid hardwood blocks at four places to fully support the upper structure. Install the supporting jacks and blocks such that they prevent movement of the upper structure when the tapered lock pins are removed from the leveling cylinders.

OVERHEAD CRANE


860C-219

Use an overhead crane with suitable lifting straps/chains and support beams. Position the lifting straps/chains to prevent contact with the cab.

BOOMS AND HEAD SUPPORTING UPPER STRUCTURE


845C-005A

Swing the upper structure over the side of the tracks and tilt the leveling mechanism such that the left cylinder is fully extended and the right cylinder is fully retracted. Lower the attachment to the ground so it is resting squarely on a solid footing with the attachment and boom fully supported on the ground.

NOTE: Adjust the jacks, overhead crane, or boom system respectively to remove the load from the cylinder pin that is to be removed. The load is removed when the cylinder rod can be swivelled easily using a small pry bar against the cylinder rod eye.

Use a portable lifting device with a suitable lifting strap to support the weight of the leveling cylinder that is being serviced during tapered lock pin removal and installation.

Tigercat 855E/L855E Feller Buncher

SECTION 15 – SWING

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.

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CROSSLINE RELIEF VALVE SETTING

IMPORTANT!

Set the left and right swing speeds (at the main control valve) before setting swing motor crossline relief pressures. Refer to SWING PRESSURE AND SPEED SETTINGS–SWING SPEED SETTINGS in THIS SECTION.

The hydraulic oil must be at normal operating temperature before making these settings.

⚠ WARNING

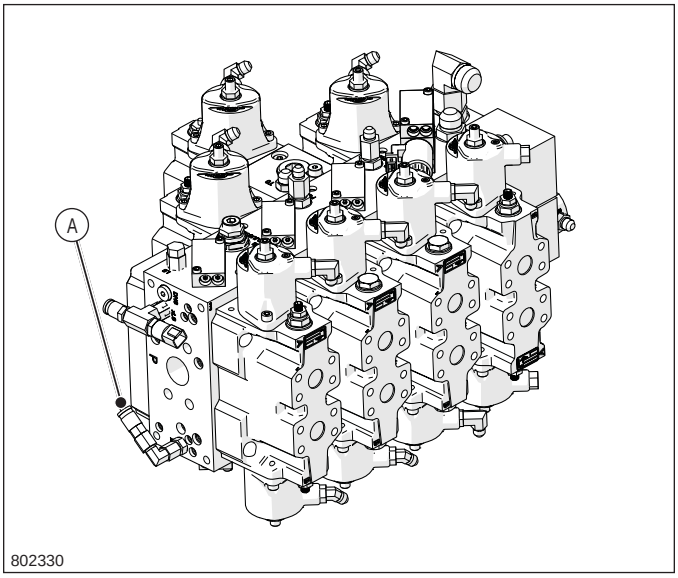
Exercise caution in the cab. A slight touch of the controls can cause sudden rotation of the upper structure and boom assembly.

The swing brake must be applied at all times during this test.

Be aware of other personnel in the area. Verify that no one is standing near the attachment during these procedures. The operator is responsible for safely operating the machine.

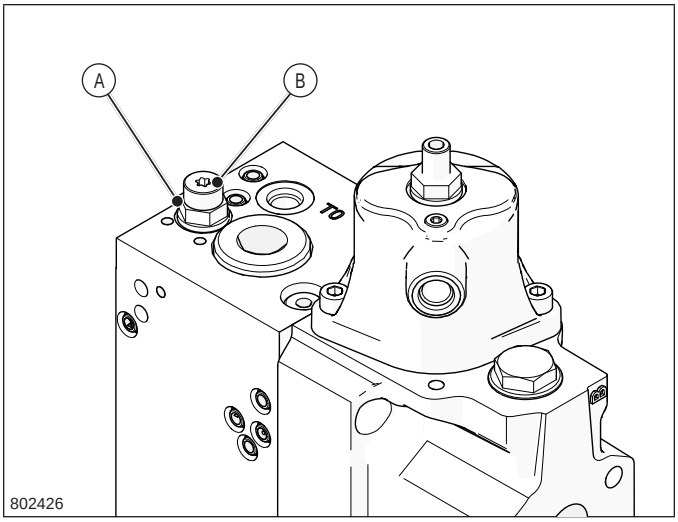
To set the crossline relief valve pressure(s):

1. Park the machine on level ground with the attachment resting firmly on the ground. Refer to PARKING THE MACHINE in SECTION 1.
2. Apply the swing brake.
3. Turn OFF the engine.
4. Remove the ignition key.
5. Turn OFF the battery disconnect switch.



Main Control Valve
A Gauge Port 'xP'

6. Install a 0–350 bar (0–5000 psi) pressure gauge at the 'xP' gauge port at the main control valve.



Swing Drive Control Valve Section
A POR Adjusting Screw Locknut
B POR Adjusting Screw

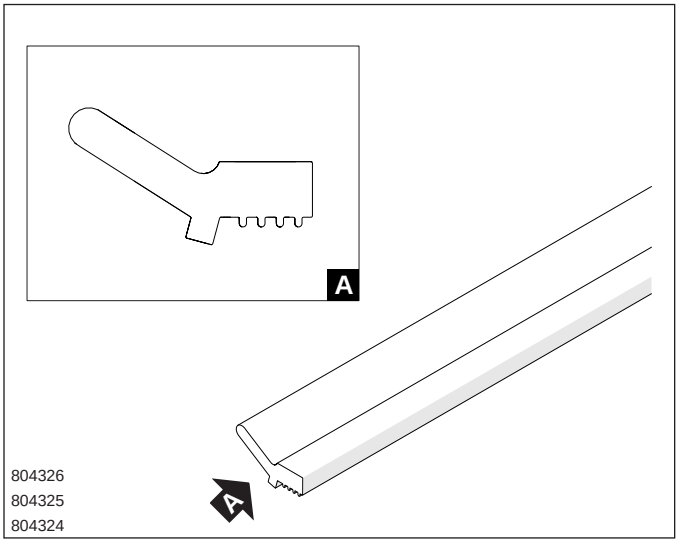
7. Loosen the POR adjusting screw locknut at the priority swing plate.
8. Turn the adjusting screw inward (clockwise) to its limit (seat lightly).

⚠ WARNING

Do not overtighten the swing plate POR adjusting screw. This can severely damage the hydraulic components.

9. Tighten the POR adjusting screw locknut at the priority swing plate.
10. Turn ON the battery disconnect switch.
11. Clear all personnel from the machine area.
12. Insert the ignition key and turn to the run position.
13. Sound the horn.
14. Turn ON the engine.
15. Set the engine speed to high.
16. Close and latch the front door.
17. Activate the pilot system.
18. Turn OFF anti-stall mode.
19. Turn ON fan service mode.
20. Verify that the swing brake is applied. Operate the left joystick in both directions to confirm that the upper structure does not rotate.
21. Ask an assistant to hold the left joystick level in the right (clockwise) position.
22. Check the pressure gauge reading at the 'xP' gauge port. The reading should meet crossline relief settings.

SWING BEARING SEAL REPLACEMENT–GALPERTI



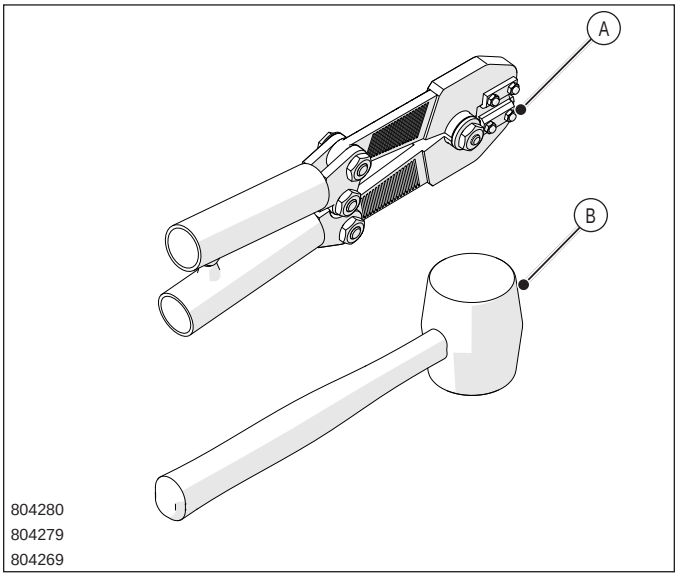
Swing Bearing Lower Seal Cross Section

Install the swing bearing seal properly to ensure effective sealing.

APPROVED ADHESIVES

Use Loxeal 43 or similar ethyl cyanoacrylate based instant glue.

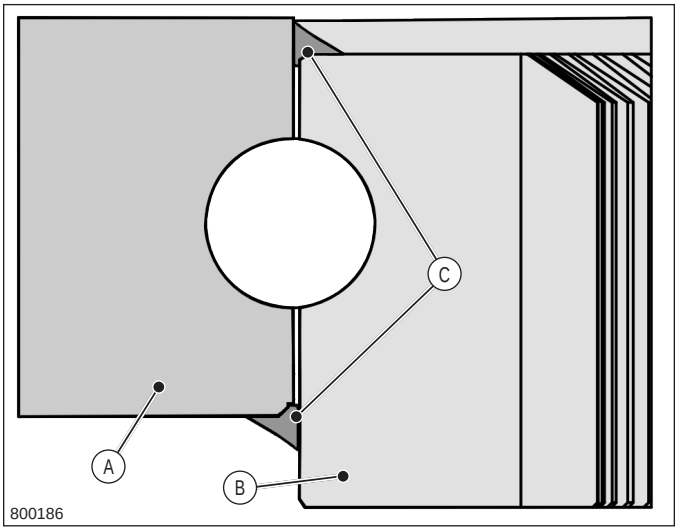
RECOMMENDED INSTALLATION TOOLS



Installation Tools	
A	Anvil Shears
B	Rubber Mallet

A rubber hammer and anvil shears are necessary to complete swing bearing seal replacement.

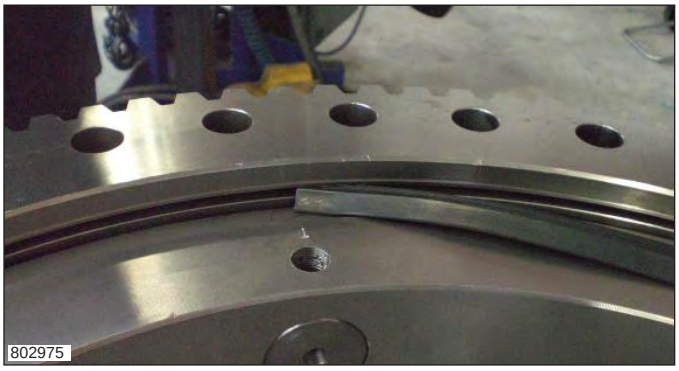
To replace the swing bearing seal:



Situating the Seal	
A	Outer Ring
B	Inner Ring
C	Seal

1. Remove the old gasket from the seal gland.
2. Remove all sharp edges in the seal gland and the space between inner and outer rings.
3. Thoroughly clean the seal, the seal gland, and the space between the inner and outer rings with solvent to remove all dirt, oil, and grease.

   NOTE: Allow all surfaces to dry before proceeding.



Inserting the Seal

Tigercat 855E/L855E Feller Buncher

SECTION 17 – SAW DRIVE

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.

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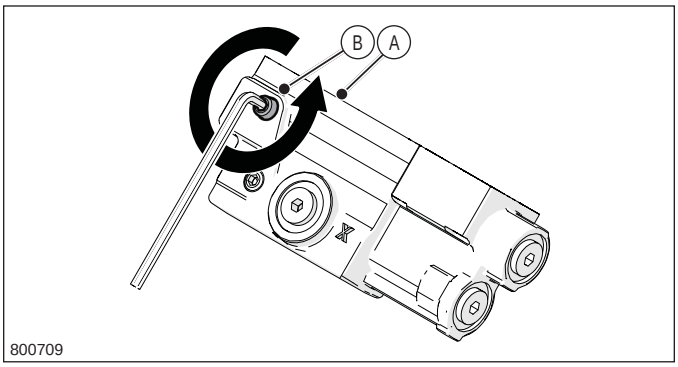
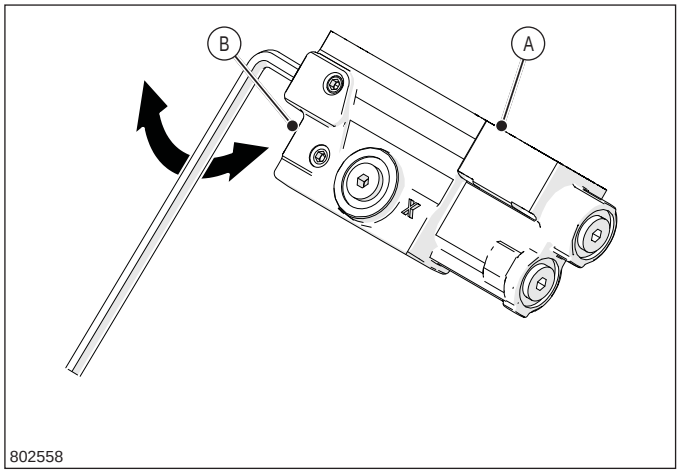
9. Place the fan in service mode. Refer to FAN SERVICE MODE in SECTION 2.
10. Open the power roof and power side door. Refer to POWER ROOF and POWER SIDE DOOR in SECTION 2.
11. Turn ON the saw switch.

12. Supply maximum current to the saw valve proportional solenoid. Refer to MD4 COMPUTER AND DISPLAY–MAIN MENU SCREEN–ADJUST MENU in SECTION 2.



A	Saw Pump Control Valve
B	Saw Pump Control Valve POR Set Screw

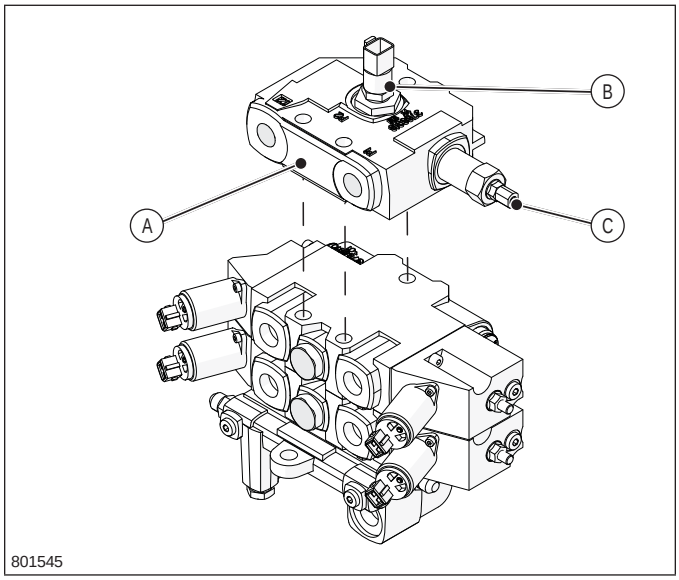
13. Loosen the POR adjusting screw locknut.



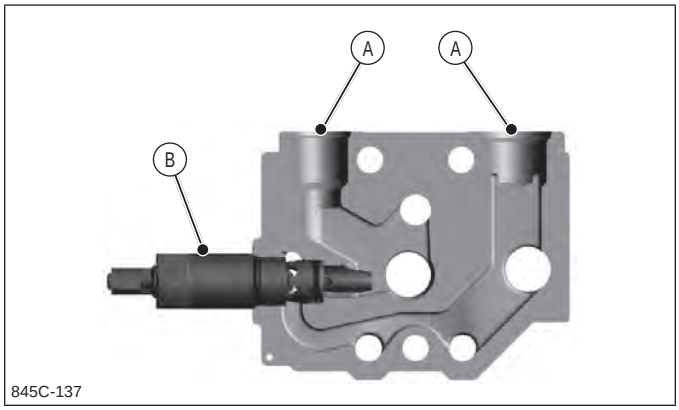
A	Saw Pump Control Valve
B	Saw Pump Control Valve POR Adjusting Screw

14. Turn the POR adjusting screw until the pressure gauge reading at 'P' port meets POR specifications.
15. Tighten the POR adjusting screw locknut, take care not to turn the adjusting screw at the same time.
16. Reduce the current supplied to the saw valve proportional solenoid until the pressure at 'P' port begins to drop immediately below POR specifications.
17. Increase the current supplied to the saw valve proportional solenoid until the pressure at 'P' port meets POR specifications.
18. Turn OFF the saw switch.
19. Remove the pressure gauge from the 'P' port on the saw valve.

INLET SECTION



Inlet Section	
A	Inlet Section
B	Pressure Transducer
C	Relief Valve



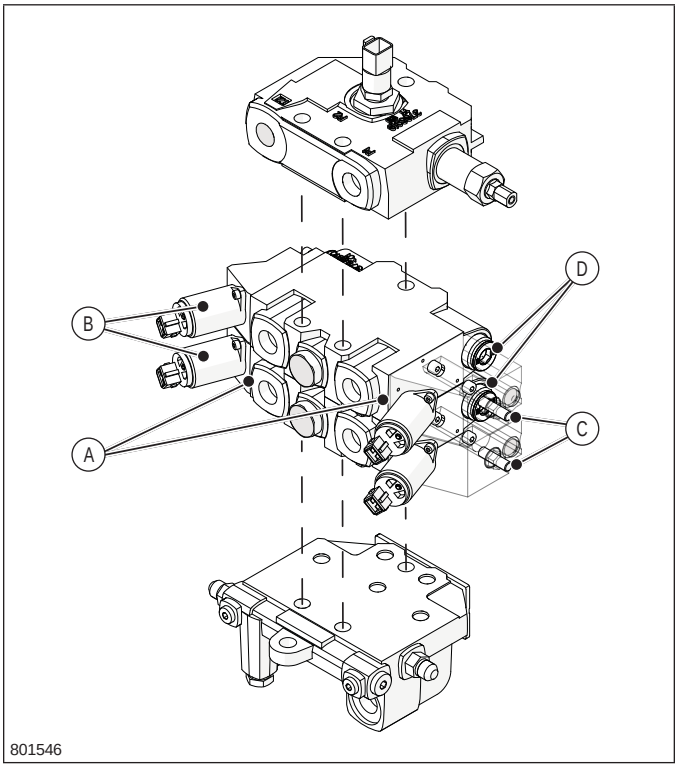
Inlet Section Cross Section	
A	Work Ports
B	Relief Valve

Oil enters the attachment valve through port 'P1' at the inlet section. The relief valve regulates the pressure at this port. Oil that passes over relief returns to tank via port 'T2'. Return oil from the other attachment valve sections also passes through 'T2'.

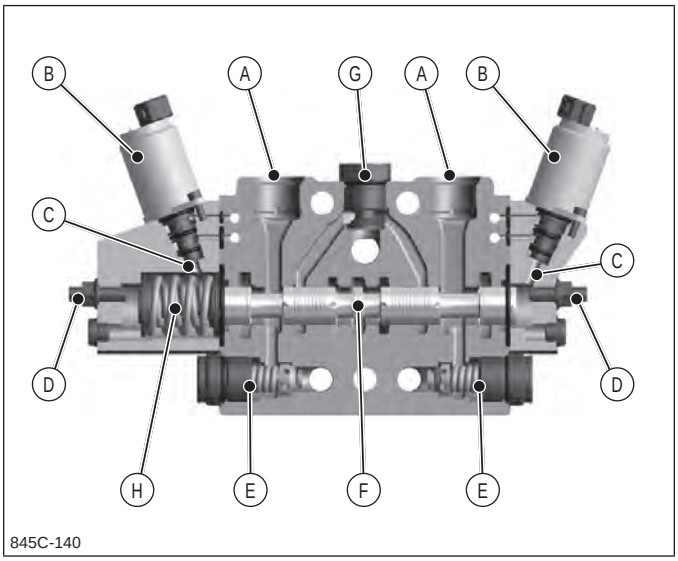
The pressure transducer at port 'P2' transmits load sense signals to the attachment pump. When more than one function is active at the attachment valve, the highest load sense pressure regulates output flow from the pump.

The relief valve at the inlet section is not adjustable.

FUNCTION CONTROL VALVE SECTIONS



Function Control Valve Sections	
A	Accumulator and Clamp Control Valve Sections
B	Proportional Solenoids
C	Flow Adjustment Screws
D	Port Relief Valves



Control Valve Section Cross Section	
A	Work Ports
B	Proportional Solenoids
C	Damping Restrictors
D	Flow Adjusting Screws
E	Port Relief Valves
F	Valve Spool
G	Check Valve
H	Spring

24. Turn OFF the engine.
25. Remove the ignition key.
26. Turn OFF the battery disconnect switch.
27. Remove the gauge.

ADJUST FLOW CYCLE TIMES

CYLINDER CYCLE TIMES

Do not set the flow adjusting screws such as to provide faster than specified cycle times. This will increase stress on boom components and the hydraulic system.

To set cylinder cycle times, loosen the spool travel-stop locknut at the adjusting screw. Turn the adjusting screw in (clockwise) to reduce speed and out (counterclockwise) increase speed. Tighten the adjusting screw locknut and verify cycle times.

IMPORTANT!
Backing the adjusting screw out to exceed recommended speeds prompts the valve spool to travel beyond the optimum position for maximum oil flow. This causes cylinder cycle times to increase and boom function to slow down. If excessive adjustment has occurred, allow the valve to return to the neutral position and turn the screw in until it just touches the valve spool. Repeat the flow cycle time adjustment procedure. Do not turn the adjusting screw more than 12 turns out from where it just touches the valve spool when in the neutral position.

P1 PRESSURE START SLOPE

This setting controls the time required to go from P1 Pressure Min current to P1 Pressure Max Current.

Set to 0ms.

P1 PRESSURE STOP SLOPE

This setting controls the time required to go from P1 Pressure Max Current to P1 Min Current.

Set to 0 ms

Tigercat 855E/L855E Feller Buncher

SECTION 19 – SHEAR

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.

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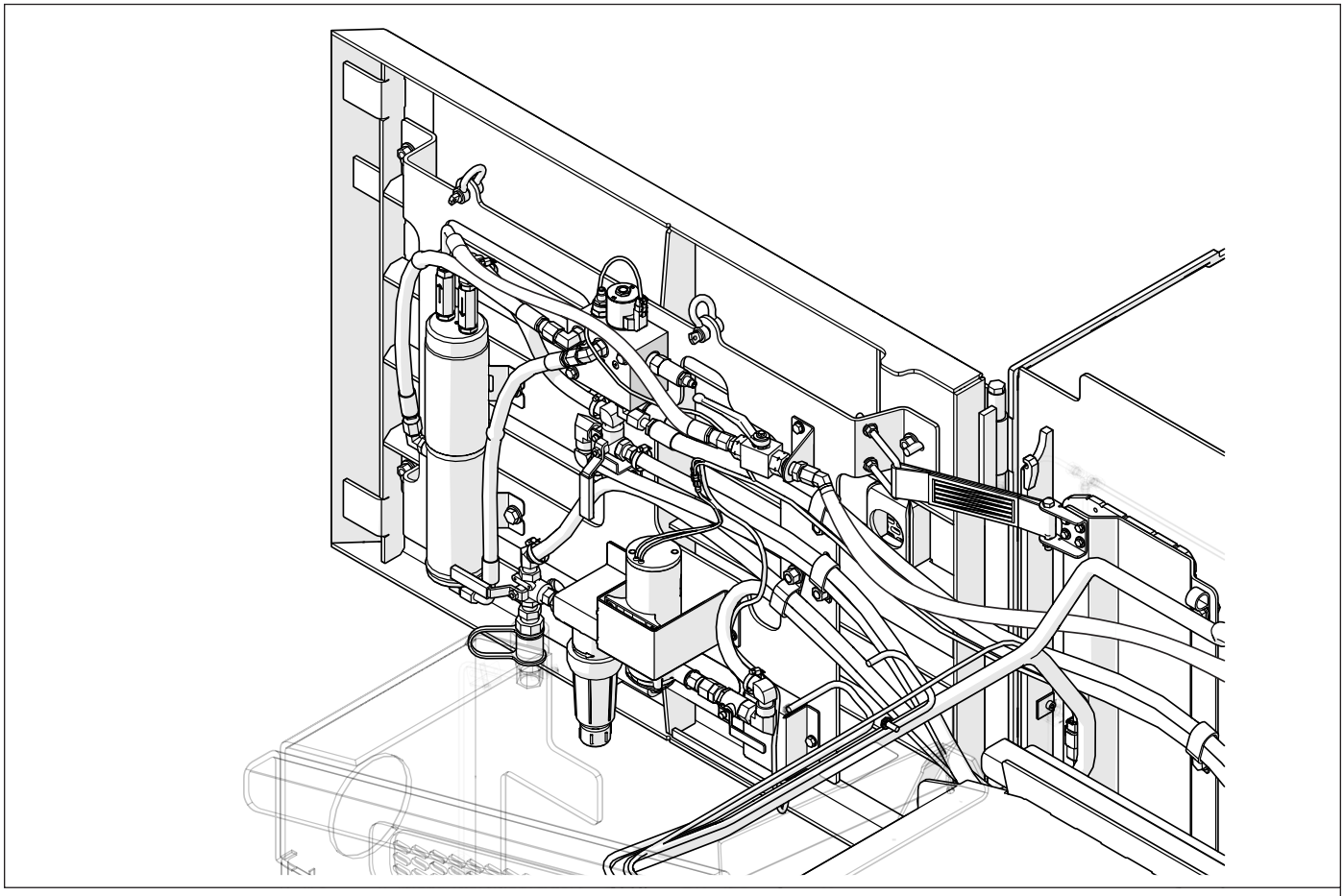
HERBICIDE STUMP SPRAY SYSTEM (OPTIONAL)

HERBICIDE STUMP SPRAY SYSTEM DESCRIPTION



Herbicide Stump Spray System

Machines equipped with a Shear Head attachment may also be fitted with an optional Herbicide Stump Spray Kit.

The Herbicide Stump Spray System is situated on the right side door.

Oil flow to the stump spray pump is supplied by the attachment pump. Oil flow from the attachment pump to the stump spray pump is controlled by the stump spray control manifold.

When the solenoid on the stump spray control manifold is de-energized, oil flows through the stump spray control manifold to the rod end of the stump spray pump. The spray section of the stump spray pump fill with either herbicide or fresh water as the pump cylinder retracts.

The spray function can be programmed to deploy automatically as the shear close or manually with a programmable joystick button, refer to JOYSTICK BUTTONS/TRIGGERS in SECTION 2. Pressing the appropriate button at the joystick lever or activating the shear close function energizes the solenoid on the stump spray control manifold. Oil then flows through the stump spray control manifold to the base end of the stump spray pump, causing the pump to deploy herbicide or fresh water spray.

Three tanks, two for herbicide and another for fresh water, are located at the rear of the machine behind the fuel tank. The two herbicide tanks are connected to keep the machine balanced regardless of the fluid level.

For further information on the herbicide and fresh water tanks, refer to HERBICIDE TANK and FRESH WATER TANK in SECTION 3.

For further information on the attachment pump, refer to ATTACHMENT PUMP in SECTION 18.