SERVICE MANUAL
TIGERCAT 845 FELLER BUNCHER

Issue 4.1, MARCH 2003

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845-SM00

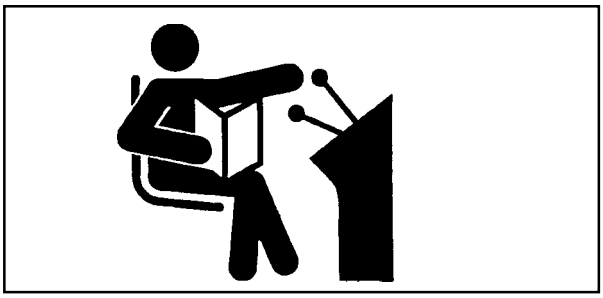
845 Available Literature

Operator's manual ~ English ..... Part No. 4252A
Operator's manual ~ French ..... Part No. 6058A
Service Manual ..... Part No. 4955A
Parts Catalog ..... Part No. 4253A
Hydraulic Adapters Book ..... Part No. 1472A
Hydraulic Hose assemblies Book ..... Part No. 3707A

OPERATING SAFETY PRECAUTIONS

Shut off engine when refuelling - DO NOT refuel the engine while smoking or when near open flame or sparks.

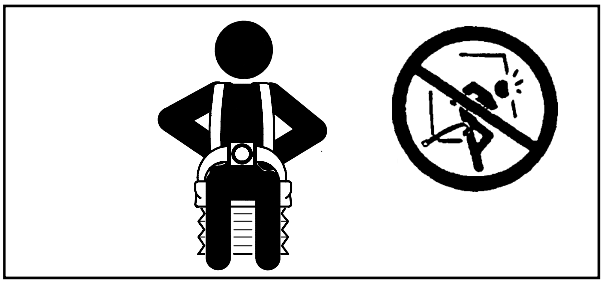
Before starting the engine, check to ensure that all doors, panels, and access covers are installed properly and secured.



Make sure that all of the controls are positioned as specified in the *starting instructions* in the operator's manual.

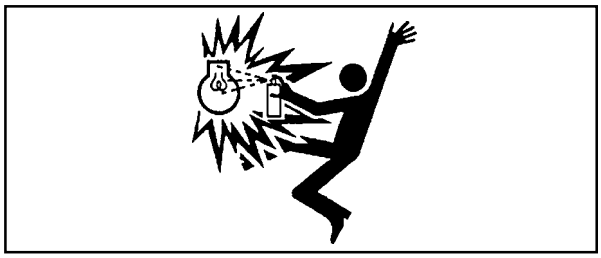
Check that no other personnel have moved into a hazardous area before starting the machine.

Sound the machine horn before starting the machine.



The operator’s seat is equipped with lap and shoulder harness belts. Use this restraint system at all times when operating the machine.

Felling operations should only be performed from the operator's seat. Secure loose items in the cab.



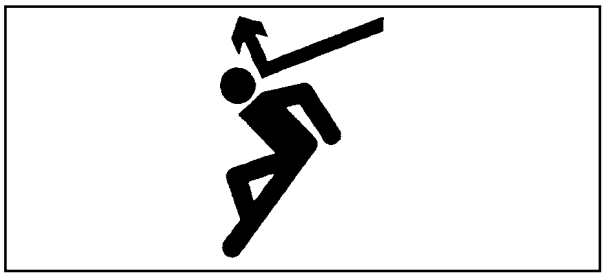
Start the engine according to the instructions in this manual.

Never use a liquid starting aid to start an engine with a pre-heat device.

Prior to commencing work, check all equipment controls to ensure that the machine responds correctly.

Make sure that all safety screens including the skylight are installed and properly secured.

Do not open/remove an escape hatch, skylight or the cab door to increase ventilation when operating the machine.



Keep the cab door closed when operating the machine to prevent accidental entry of branches and debris into the cab.

Keep the cab doors closed and use seat belt when travelling in rough terrain to prevent being thrown from the operator's cab.

Always rest the felling attachment on the ground when operation is stopped, regardless if the engine is running or shut off.

Safe practices

It is understood and expected that logging organizations and operators will develop and practice additional rules that suit (for example) particular conditions of terrain, trees, soil and job requirements. The information given here 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 hence to assist in development of safe operating practices.

It should not be assumed that all possible dangers have been discovered and described here.

Other instructions

It is also understood and expected that all instructions contained in service and operator's manuals for use and maintenance of Tigercat disc saw heads and other disc saw heads installed on Tigercat machines will be followed.

THE DANGERS

There are at least these 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 objects encountered 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.

Comments and Instructions cont.

Saw blade throw gap

Saw blades have gaps between adjacent teeth and holders to permit installation and removal of the teeth and to provide spaces to accumulate chips in the cut, see figure 12. Fallen sticks and debris or sticks and debris sliding across the the saw blade can enter these gaps when the blade is rotating and be struck by the teeth and be tossed or thrown. Larger gaps and lower rotation speeds increase these dangers.

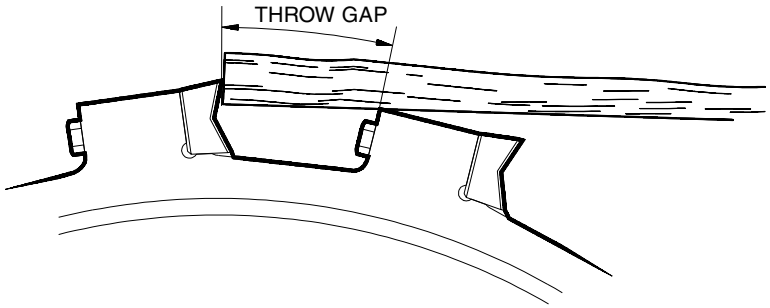


FIGURE 12: SAW BLADE THROW GAP

FILTER AND LUBRICATION SCHEDULE

FIRST 25 HOURS	FIRST 100 HOURS	EVERY SHIFT 8 HOURS	EVERY 125 HOURS	EVERY 250 HOURS	EVERY 500 HOURS	REF. NUMBER	DESCRIPTION	CAPACITY LITRE	CAPACITY USG	CAPACITY No.	REMARKS/LUBRICANT
		CHK	CHANGE COOLANT EVERY 2 YEARS			1	COOLING SYSTEM 50% ANTIFREEZE 50% WATER	38	10		19L (5 USG) ANTIFREEZE ** 19L (5 USG) DISTLD. WATER
	REP	CHK		REP		2	ENGINE OIL/FILTER CUMMINS 'B' CUMMINS 'C'	16.4 18.9	4.3 5		SEE ENGINE MANUFACTURER'S SERVICE MANUAL
	REP			REP		3	FUEL FILTER (ENGINE)			1	
		DRN		REP		4	FUEL/WATER SEPARATOR			1	
		CHK				5	AIR INTAKE PRECLEANER			1	CLEAN BOWL AS REQ'D
				REP		6	AIR INTAKE PRIMARY ELEMENT			1	CHECK FILTER RESTRICTION INDICATOR WITH ENGINE RUNNING
					REP	7	AIR INTAKE SAFETY ELEMENT			1	
CHK		CHK				8	HYDRAULIC RESERVOIR	170	45	1	DRAIN AND REFILL AS REQ'D BY SEASONAL OIL CHANGE SEE APPROVED HYD. OILS
	REP				REP	9	RETURN FILTER, CASE DRAIN			1	CHECK RESTRICTION INDICATOR
	REP		CHK		REP	10	RETURN FILTERS, (IN TANK)			2	CHECK FILTER RESTRICTION INDICATOR ON FILTER WITH ENGINE RUNNING AT FULL AND WITH OIL FLOW
	REP		CHK		REP	11	PRESSURE FILTER, PILOT*			1	*CHECK RESTRICTION INDICATOR ON LATER MACHINES
CHK	D/R		CHK	D/R		12	TRACK DRIVE GEARBOX; CHECK OIL LEVEL WITH BOTH LEVEL PLUGS IN LINE WITH THE HORIZONTAL PLAN AND ABOVE CENTER.	6	1.5	2	FILL WITH S 75W-90 SYNTHETIC GEAR OIL
					CHK	13	TRACK ROLLERS AND IDLERS CHECK FOR OIL LEAKAGE	7.6	2	1	IF LEAKING REMOVE AND REPAIR FILL WITH SAE 30 OR 40
		*** LUB 24 HRS				14	SWING BEARING ***	10 SHOTS		1	GREASE WHILE SWINGING ***EVERY 24 HOURS LITHIUM BASE EP2 GREASE ◆
		LUB				15	SWING PINION	10 SHOTS		1	GREASE WHILE SWINGING LITHIUM BASE EP2 GREASE ◆
				LUB*		16	SWING GEARBOX LOWER BEARING *REFER TO 250 HOURS SCHEDULED MAINTENANCE FOR DETAILS	10 SHOTS		1	LITHIUM BASE EP2 GREASE ◆
		LUB				17	BOOM AND STICK JOINTS	PURGE		7	LITHIUM BASE EP2 GREASE ◆
		LUB				18	BOOM, STICK AND TILT CYLINDERS	PURGE		8	LITHIUM BASE EP2 GREASE ◆
					LUB	19	DOOR(S) AND ROOF HINGES	1 SHOT		12	LITHIUM BASE EP2 GREASE ◆
						20	FELLING ATTACHMENT	SEE MANUFACTURERS MAINTENANCE SCHEDULE			

◆ LITHIUM BASED EP2 GREASE CONTAINING MOLYBDENUM DISULFIDE
**ANTIFREEZE MUST MEET GM 6038M SPECIFICATIONS • SEE ENGINE MANUFACTURERS MAINTENANCE MANUAL

LEGEND: CHK - CHECK REP - REPLACE DRN - DRAIN D/R - DRAIN AND REFILL LUB - LUBRICATE

FIELD SET UP PROCEDURE FOR HYDRAULIC TANK REGULATOR BEFORE SETTING TANK PRESSURE

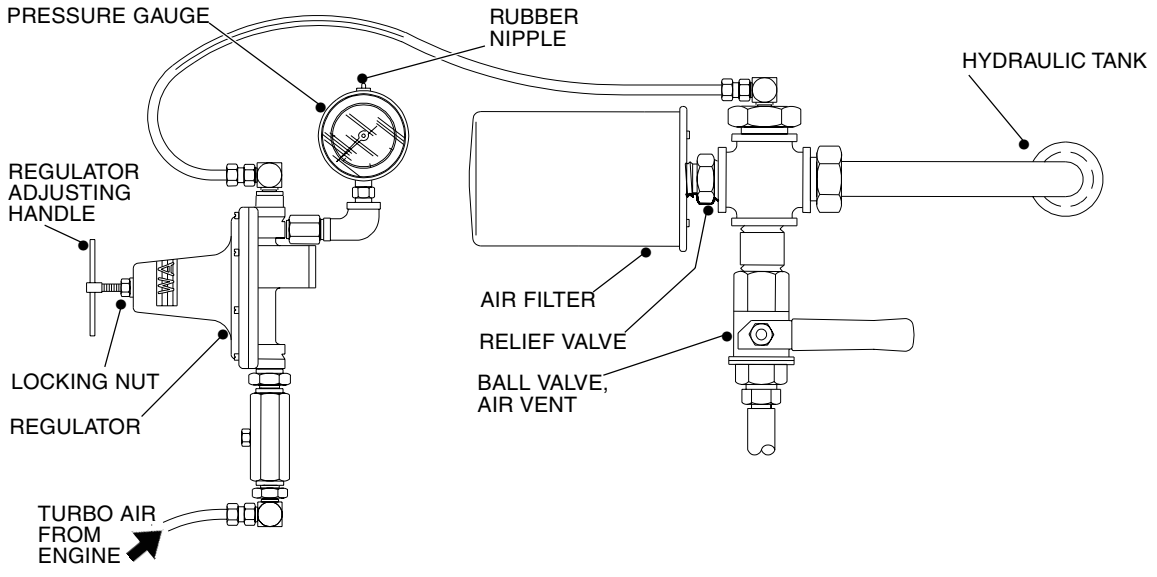
1. If a new pressure gauge has been installed excess air that may be trapped in the gauge must be relieved. With the gauge in an upright position momentarily remove the rubber nipple on top of the gauge and insert back into place. Do not cut the rubber nipple off as is indicated.
2. Ensure hydraulic fluid level is within specified limits. Overfilling the tank can cause hydraulic fluid to flow into the regulator disabling the unit.
3. To ensure that tank pressure is not influenced by any remaining air still circulating through the hydraulic lines allow air to precipitate out of the hydraulic system. This can take up to 1 or 2 days.

SET UP PROCEDURE

1. Set the engine to FULL throttle. This should provide a no load boost pressure of approximately 10 psi from the turbo manifold.
2. Close the ball valve located behind the hydraulic tank regulator. Turn the regulator adjusting handle in completely. If tank pressure exceeds 12 psi replace the relief valve.
3. Relieve all pressure from the tank by opening the ball valve.
4. Turn the regulator adjusting handle out until it starts to turn freely.
5. Close the ball valve.
6. Slowly turn the regulator adjusting handle IN, allowing the gauge reading to settle between turns until reading a of 3 to 3.5 psi is obtained. Lock the regulator adjusting handle in place by tightening the locking nut.
7. If tank pressure exceeds 3.5 psi open the ball valve and repeat steps 4 to 7.
8. Turn the engine off.
9. Watch the tank pressure gauge for several minutes for any indications of a loss in system pressure.
10. If tank pressure falls check all fittings and connections for leaks. NPT connectors must be fastened using pipe sealant to prevent leakage. A properly installed system should be capable of maintaining constant pressure over night.

    NOTE:
    The tank pressure can decrease without substantial leaks due to the contraction of air within the hydraulic tank. This may occur when the air and oil temperature within the tank decreases.

    If gauge motion seems erratic and is difficult to adjust there may be air remaining in the hydraulic lines. Sufficient time must be allowed for the excess air to precipitate out of the system before the regulator can be accurately set.



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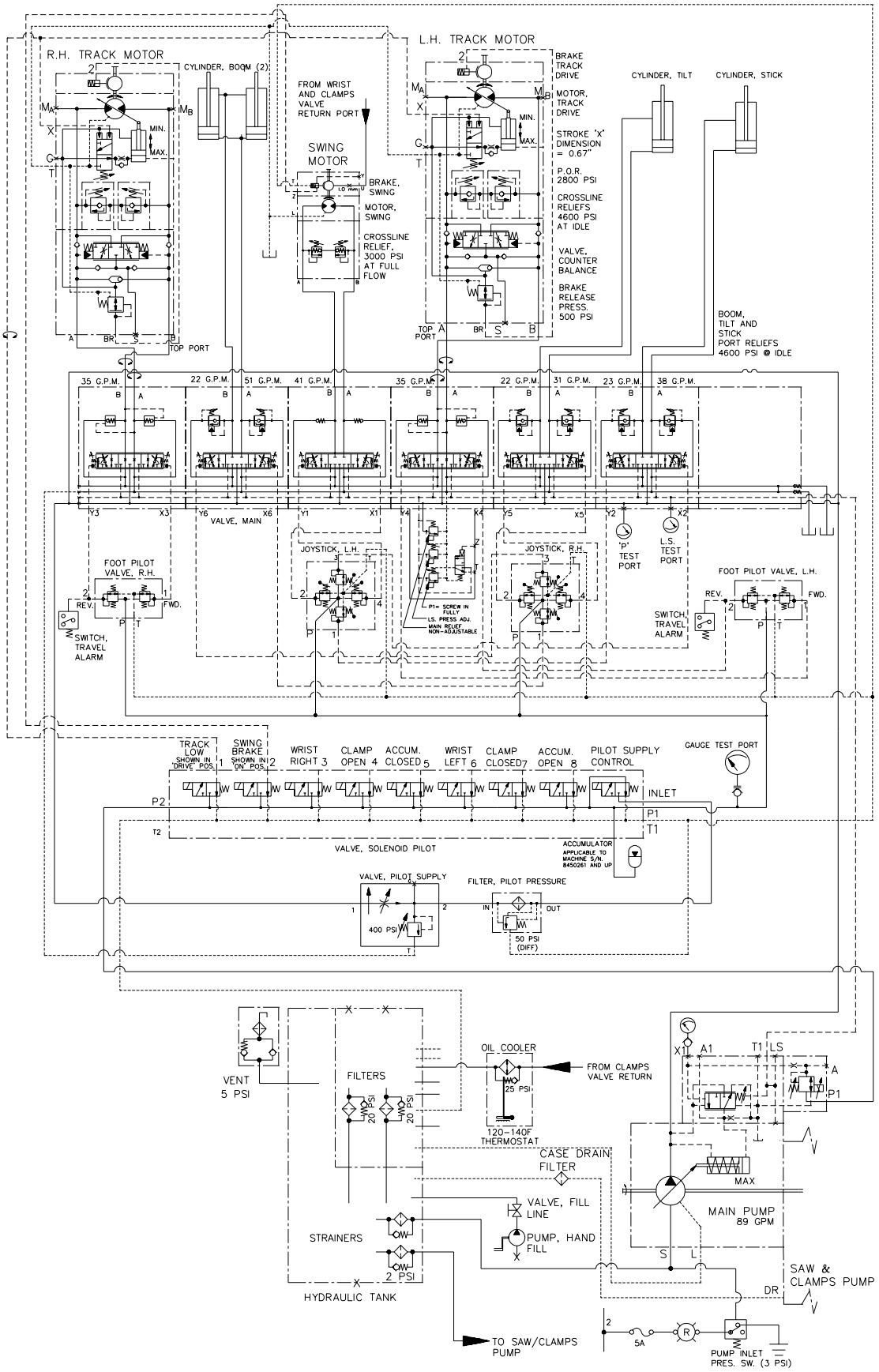
REGULATOR SET-UP PROCEDURE



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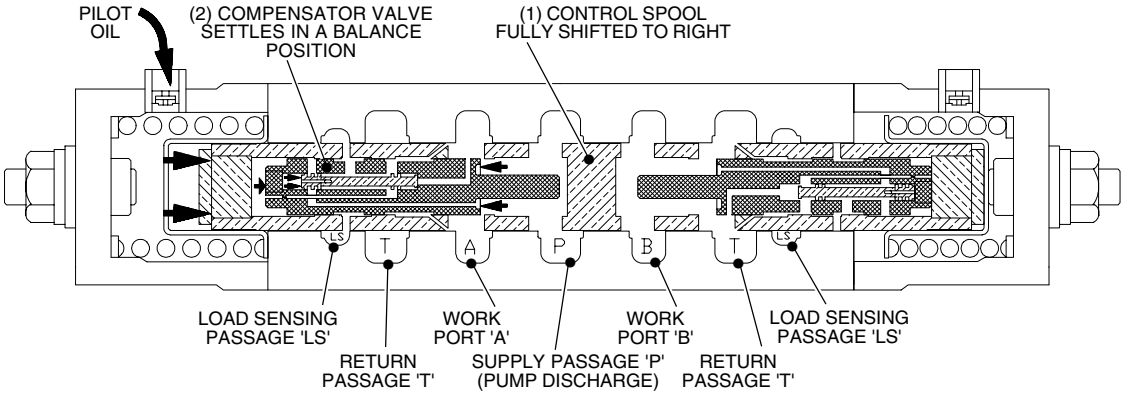
MAIN HYDRAULIC CIRCUIT ~ Serial Number 8450101 & 8450102

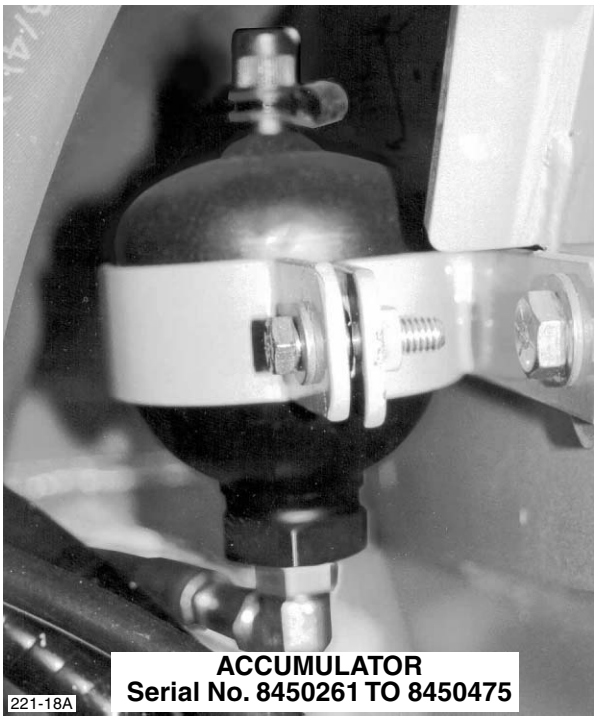


(I) CONTROL VALVE SECTION ~ • CONTROL SPOOL FULLY SHIFTED TO RIGHT
• LOWER WORKING PRESSURE

(I) As the control spool continues to move (1), the compensator spool continues to move in response to the pressure variations and it settles in a position of balance (2) as shown in the figure with the spool fully shifted. As the loads vary in the work ports, the valve components continue to modulate and compensate for the load variations and maintain movement of the selected functions.

This valve system performs the functions automatically that are performed by an operator using a conventional system as explained in the third paragraph above.

If the second valve being operated had a higher work port pressure than the one already selected, the operation would be the same up to the point where the work port was opened. At this point the LS would change to the new higher work port pressure and the new valve would act in the same way as the first valve selected and described above. The first valve selected would then have the internal spool components take the same positions as the lower work port pressure valve described above.



ACCUMULATOR
Serial No. 8450261 TO 8450475

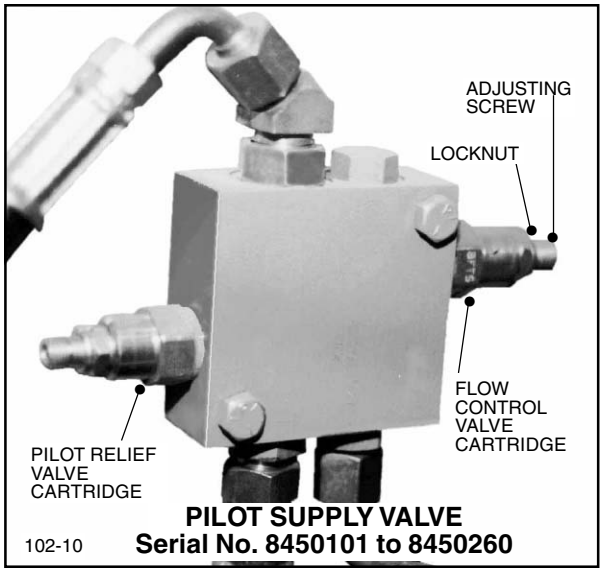
The accumulator will ensure that the controls remain responsive by maintaining optimum pilot pressure. This prevents the pilot pressure from dipping when several functions are activated at the same time.

The electrical circuit; (Refer to Schematic diagram), The pilot supply control valve solenoid is not energized until the armrest is down and the pilot reset button is pushed. When this button is pushed, the coil on the function lock-out relay is energized closing the circuit between wires 6 and 33. Wire 33 connects to the armrest switch. When this switch is closed (armrest down) the coil on the pilot supply valve is energized shifting the valve spool to supply oil to the pilot circuit. At the same time the wire from the armrest switch is connected back to the function lock-out relay coil through a diode and thus latches the function lock out relay in the energized position.

The diode in the circuit prevents the flow of current to the pilot supply control valve solenoid when the armrest switch is open (armrest up). Whenever the arm is raised and the switch opens, the voltage is interrupted to the function lock-out relay coil and the relay contacts open resulting in the pilot supply control valve returning to the normally closed position. This prevents pilot oil pressure from reaching the controls.

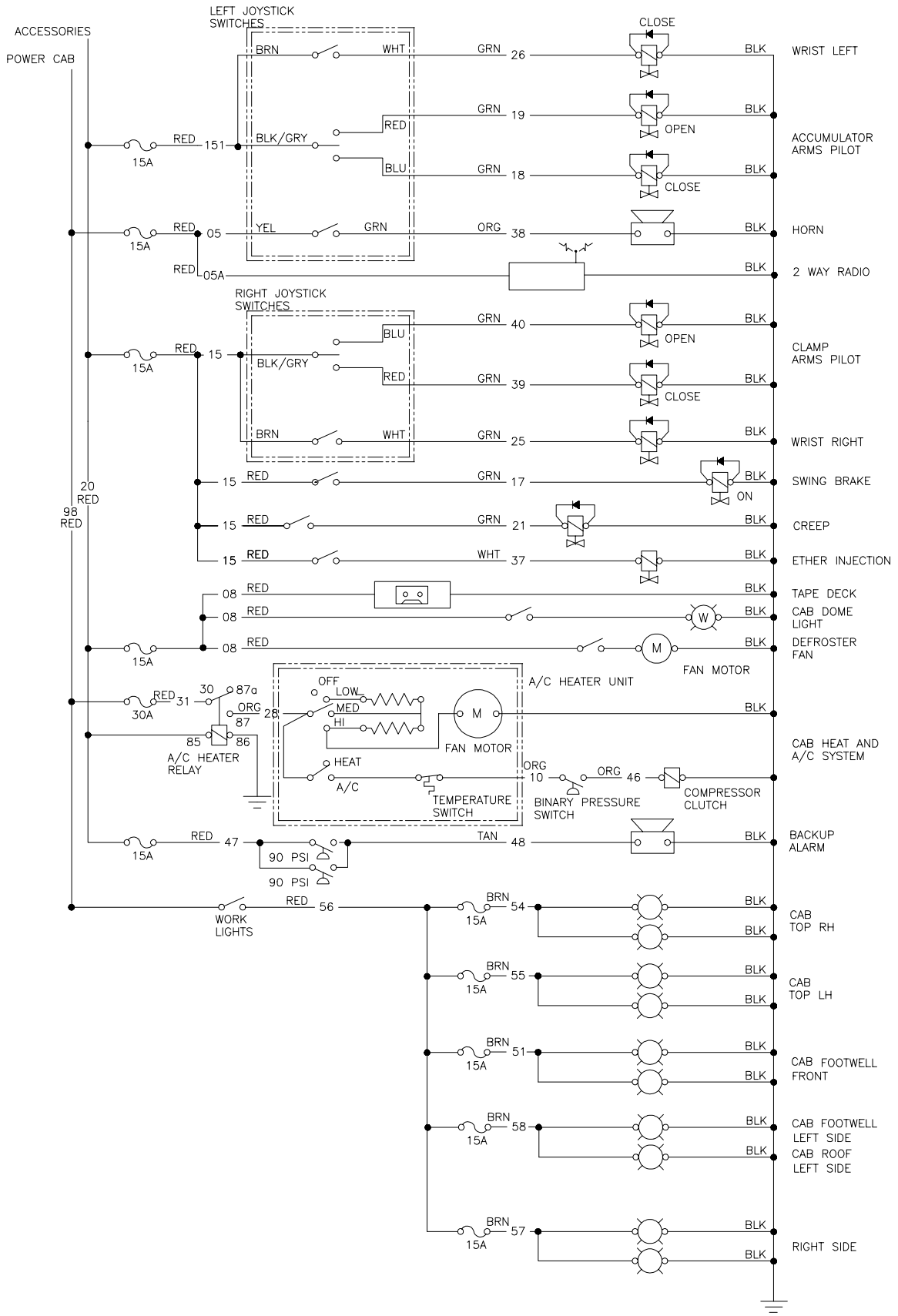
SET PILOT FLOW CONTROL (SERIAL NO. 8450101 TO 8450260)

1. The engine need not be running to adjust the flow control valve.



PILOT SUPPLY VALVE
Serial No. 8450101 to 8450260

2. Loosen locknut on flow control valve and turn adjusting screw all the way IN (clockwise) until resistance is encountered. Do not over-tighten or damage to the valve seat will result.
3. Turn adjusting screw OUT 5 FULL TURNS (counterclockwise). Tighten locknut.



MACHINE SCHEMATIC DIAGRAM (Machine Serial No. 8450101 to 8450270)
SHEET 2 OF 2

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Tigercat 845 Feller Buncher

SECTION 7 - ENGINE START AND STOP

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CONTENTS - SECTION 7

C. PILOT PRESSURE.

1. Ensure pilot pressure is correct.

   To verify PILOT PRESSURE refer to PILOT SYSTEM in SECTION 5 of THIS MANUAL.

D. MARGIN PRESSURE

1. Ensure margin pressure is correct.

   To verify MARGIN PRESSURE refer to HYDRAULIC SYSTEM in SECTION 4 of THIS MANUAL.

E. ELECTRICAL POWER TO ANTI-STALL CONTROL MODULE.

1. Remove connector from anti-stall control module.
2. Start engine.
3. Measure DC voltage across pins 1 and 13 on connector.
   • The electrical power should be 13 ±2VDC

F. SOLENOID VALVE WIRES.

1. Remove connector from anti-stall control module.
2. Measure resistance between pins 11 and 16 on connector.
   • The resistance should be 6.6 ±2 ohms
3. Check for shorts to chassis.

G. SOLENOID VALVE COIL

1. Remove DIN connector from anti-stall (VD3) solenoid valve.
2. Measure resistance of solenoid coil.
   • The resistance should be 6.6 ±2 ohms.

H. SPEED SENSOR OUTPUT

1. Remove connector from anti-stall control module.
2. Start engine and place throttle in maximum position.
3. Measure the AC voltage across pins 12 and 14 or pins 13 and 14 on connector.
   • The speed sensor output should be >5VAC.

   The speed sensor is non adjustable on the John Deere 6076 and 6081 engines (853 and 860). The speed sensor on the Cummins C engine (845) should be a fixed distance from the flywheel. Do not use the voltage to adjust this distance. Refer to INSTALL OR ADJUST SPEED SENSOR in THIS SECTION.

I. SPEED SENSOR WIRES

1. Remove connector from anti-stall control module.
2. Measure resistance between pins 12 and 14 or pins 13 and 14 on connector
   • The resistance should be:

3000 ±300 ohms ... Tigercat model 853; 860; John Deere 6076, 6081.

960 ±150 ohms ..... Tigercat model 845; Cummins 'C' engine.

3. Check for shorts from pin 14 to chassis. (Pin 12 or 13 is connected to ground)

J. SPEED SENSOR COIL

1. Remove connector from anti-stall control module.
2. Measure resistance of speed sensor coil.
   • The resistance should be:

3000 ±300 ohms ... Tigercat model 853; 860; John Deere 6076, 6081.

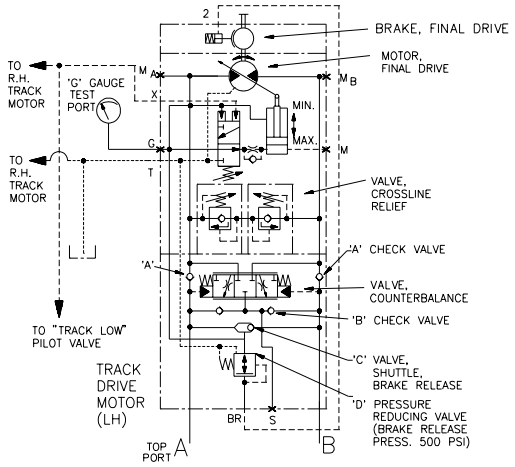
960 ±150 ohms ..... Tigercat model 845; Cummins 'C' engine.

BRAKE DESCRIPTION

SERIAL NO. 8450101 & 8450102

Refer to circuit diagram;

Oil pressure from line 'A' or 'B' enters the motor and passes through shuttle valve 'C' and enters brake release pressure reducing valve 'D'. Output pressure from the reducing valve is limited to 500 psi whenever 'A' or 'B' line pressure is above 500 psi., or 'A' or 'B' line pressure below 500 psi.



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TRACK DRIVE MOTOR (S/N 8540101 & 8450102)

The brake is fully released by 250 psi and the maximum pressure the brake can stand without failure is 725 psi.

The time required for the brake to release is approximately 1 second and 3 seconds to apply.

RIGHT TRACK ADJUSTMENT

POSITION MACHINE

15. Repeat steps 2 to 4 for 'RIGHT' TRACK

LOW FORWARD (valve flow setting)

16. Repeat steps 5 to 8 for 'RIGHT' TRACK

HIGH FORWARD (motor minimum displacement)

17. Repeat steps 9 to 12 for 'RIGHT' TRACK

HIGH REVERSE (valve flow setting)

18. Repeat steps 13 to 14 for 'RIGHT' TRACK

REPLACE INSPECTION COVERS

19. Replace final drive inspection covers for both right and left track drives

SUMMERY OF PROCEDURE

- REMOVE INSPECTION COVERS

LEFT TRACK ADJUSTMENT

- POSITION MACHINE
- LOW FORWARD (valve flow setting)
- HIGH FORWARD (motor minimum displacement)
- HIGH REVERSE (valve flow setting)

RIGHT TRACK ADJUSTMENT

- POSITION MACHINE
- LOW FORWARD (valve flow setting)
- HIGH FORWARD (motor minimum displacement)
- HIGH REVERSE (valve flow setting)
- REPLACE INSPECTION COVERS

SET STRAIGHT TRAVEL

Following completion of TRACK SPEED SET-UP PROCEDURE, try driving machine in both forward and reverse directions with the 'DRIVE/LOW' switch in both 'DRIVE' and 'LOW' positions.

If machine does not travel straight, the right and left track speeds are not set the same, therefore the above set-up procedures need to be rechecked.

NOTE:
There are 4 speeds; Forward, reverse, drive and low. However, there are only 3 adjustments; Forward flow stop adjusting screw; Reverse flow stop adjusting screw and Motor minimum displacement adjustment stop.

Continued from page 4

MAIN BOOM PORT RELIEFS:

NOTE: When making these relief adjustments, the upper should be positioned with the boom in the straight ahead position between the tracks.

WARNING

When adjusting the port relief valves, the boom will fall if the relief adjusting screw is unscrewed (counterclockwise) out too far.

6. With an assistant holding R.H. joystick in MAIN BOOM UP position (fully extended), loosen locknut on the main boom UP port relief valve cartridge and slowly unscrew adjusting screw (counterclockwise) until oil can be heard (hissing noise) flowing through the relief valve or engine begins to lug slightly.
7. Slowly raise setting (clockwise) until hissing noise stops or until engine stops lugging.

   NOTE: Observe the pressure gauge at 'P' port when making these adjustments, it will fall and rise as the adjusting screw is being turned and should show 4700 PSI as the hissing sound begins to subside or until engine stops lugging.
8. Tighten locknut on adjusting screw taking care NOT to turn the adjusting screw at the same time.
9. Check the setting again by ensuring that the hissing noise is still absent after tightening the locknut.
10. With an assistant holding R.H. joystick in MAIN BOOM DOWN position (fully retracted), loosen locknut on the main boom DOWN port relief valve cartridge and slowly unscrew adjusting screw (counterclockwise) until oil can be heard (hissing noise) flowing through the relief valve or engine begins to lug slightly.
11. Slowly raise setting (clockwise) until hissing noise stops or until engine stops lugging.

    NOTE: Observe the pressure gauge at 'P' port when making these adjustments, it will fall and rise as the adjusting screw is being turned and should show 4700 PSI as the hissing sound begins to subside or until engine stops lugging.
12. Tighten locknut on adjusting screw taking care NOT to turn the adjusting screw at the same time.
13. Check the setting again by ensuring that the hissing noise is still absent after tightening the locknut.

STICK AND TILT PORT RELIEFS

14. Repeat steps 5 thru' 12 to set the port relief valves for the STICK 'IN' and 'OUT' and the TILT 'FORWARD' and 'BACK' functions.
15. Readjust L.S. pressure relief valve on Linde main valve manifold to read 4300 PSI on pressure gauge at 'P' port (4050 psi at 'LS' port). Refer to SET LOAD SENSE RELIEF VALVE in SECTION 4 of THIS MANUAL.
16. Stop engine, remove all gauges and reinstall plugs and caps.

ADJUST OIL FLOW TO CYLINDERS (CYLINDER CYCLE TIMES)

NOTE: Constant loosening and tightening of the locknut (sealnut) on the adjusting screws will eventually cause the seal in the nut to break down and leak. Because of this it is best to keep the adjusting procedure brief.

1. Hydraulic oil must be at operating temperature.
2. Start engine and place engine throttle control in FULL position.

MAIN BOOM CYLINDER;

3. Fully retract cylinder.
4. Place MAIN BOOM joystick lever in 'FULL UP' position and fully ** extend cylinder. Record cycle time from stop to stop.
5. Place MAIN BOOM joystick lever in 'FULL DOWN' position and fully ** retract cylinder. Record cycle time from stop to stop.

STICK BOOM CYLINDER;

6. Repeat steps (4) and (5) using STICK BOOM joystick lever.

TILT CYLINDER;

7. Before the TILT cylinder cycle times can be recorded, the rod end flow control adjusting screw must first be set correctly.

   See TILT CYLINDER (ROD END)FLOW ADJUSTMENT in THIS SECTION.

   Repeat steps (4)** and (5)** using TILT joystick lever.

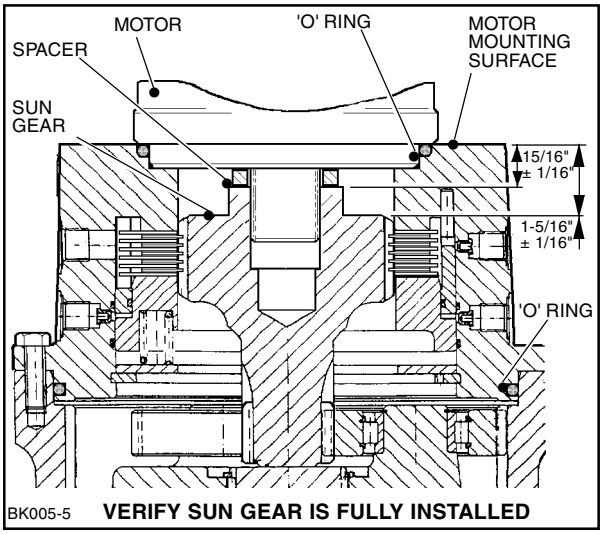
   ** When extending or retracting the cylinders to record the time, it is better to stop the cylinder just before it gets to the end of it's stroke rather than let it bottom out and impose unnecessary loads on the cylinder parts and boom structures.

gearbox and inspect the gear teeth at the bottom of the sun gear for abnormal damage or wear.

If there is no visible damage to the gear teeth, proceed to step (6). If there is visible damage to the sun gear, it must be replaced, proceed to step (4).

4. If the sun gear in step (3) has visible signs of damage, then the first stage planetary gears must also be inspected. Remove the brake assembly and inspect the first stage planetary gears for visible damage. If there is no visible damage, proceed to step (5). If there is visible damage to the first stage planetary gears, then the entire swing drive gearbox should be replaced.

5. Assuming that there is no visible damage to the first stage planetary gears, reassemble the brake assembly back onto the swing drive gearbox and secure it by reusing the six M12x30mm hex head bolts. Torque each hex head bolt to 62 lbf/ft (84 Nm).



BK005-5 **VERIFY SUN GEAR IS FULLY INSTALLED**

6. Reinstall the sun gear into the swing drive gearbox using the alignment marks made in step (2). Verify that the sun gear is properly and fully engaged into the swing drive gearbox, i.e.; That the outer splines on the sun gear have passed through all of the brake discs.

   This can be done by measuring the distance from the swing motor mounting surface to either the top of sun gear (15/16" ± 1/16") or to the next flat surface on the sun gear (1 5/16" ± 1/16").

7. Verify that the O-ring is properly seated and secured on the swing motor. If there is any difficulty in securing it in place, use a small amount of petroleum jelly on the O-ring for assistance.

8. Center the spacer ring on top of the sun gear and install the swing drive motor. Torque the two M16 mounting bolts to 150 lbf/ft (205 Nm).

PRESSURE SETTINGS:

PUMP AND SAW CONTROL VALVE
Serial No. 8450231 to 8450249*

*** NOTE: Some machines in this Serial No. range may have been updated to include a later design pump as shown on page 17.12.**

In this case when setting pressures refer to set up procedure for machine serial number 8450261 TO 8450475, described later in this section.

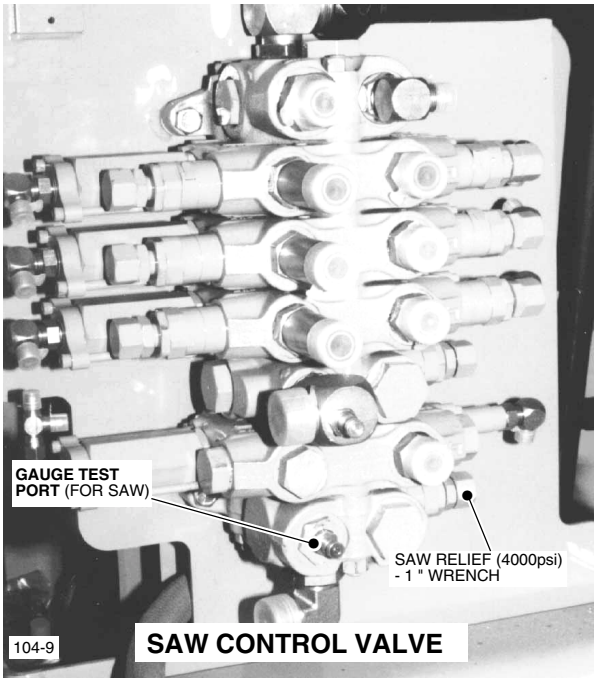
1. Park machine on level ground, stop engine.
2. Block saw blade from rotating as per method outlined in saw head manufacturer's manual.
3. Ensure the hydraulic oil temperature is at operating temperature.
4.. Install a 0-5000 psi pressure gauge on saw valve test port.
5. On *pump COMPENSATOR valve*; Slacken jamnut and screw the adjusting screw all the way in. CAUTION: Do not use excessive force, Stop when resistance increases sharply.
6. On *saw control valve*; slacken jamnut and turn adjusting screw on saw control relief valve out until spring pressure is relieved.
7. Start the engine❋ and put throttle control to the IDLE position.

   ❋**CAUTION:** Before starting engine, ensure relief valve is unscrewed as stated in paragraph 5 otherwise damage could occur to the piston pump.
8. Reset pilot system and turn the saw switch ON.

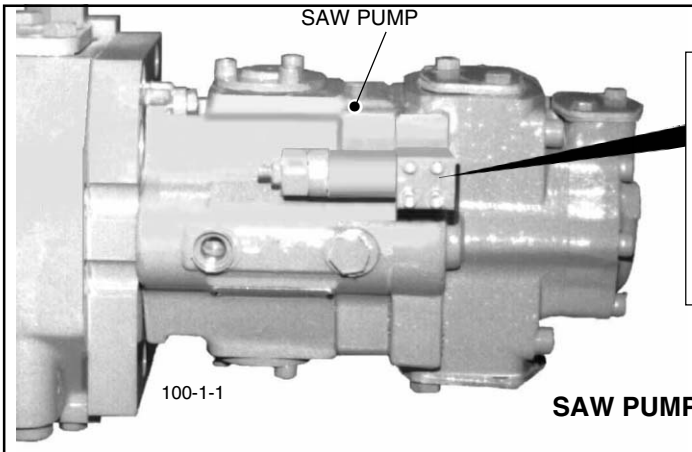
   NOTE:
   Saw will not operate with pilot system OFF. Saw will not function properly with low pilot pressure.
   NOTE: If the engine has been turned off or the *pilot shut off system* tripped (L.H. arm rest raised) with the saw switch left in the ON position, the saw will not start up when the engine is restarted or the arm rest lowered. In this case press the PILOT RESET button and turn the saw switch OFF and then ON.
9. Set the *saw control valve relief** pressure to 4000 psi. by slowly screwing the relief valve adjusting nut in until the required pressure reading is obtained.

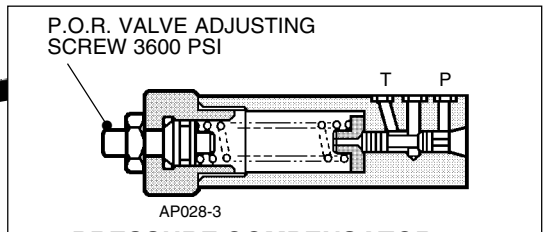
IMPORTANT: Saw relief valve must be set at least 400 PSI above pump P.O.R. to avoid generation of excessive heat.

10. Re-tighten jamnut making sure adjusting nut does not turn.



SAW CONTROL VALVE





PRESSURE COMPENSATOR

SAW PUMP (WITH SMALLER PRESSURE COMPENSATOR VALVE) (Serial No. 8450231 to 8450249)

Tigercat 845 Feller Buncher

SECTION 18 - TREE CLAMPS AND WRIST

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