SERVICE MANUAL
Tigercat 855C/L855C FELLER BUNCHER

TABLE OF CONTENTS

ISSUE 1.0, AUGUST, 2008

855C-SM00

855C Feller Buncher Available Literature

Operator's Manual, English ..... Part No. 33293A
Service Manual English (this manual) ..... Part No. 33294A
Parts Catalog ..... Part No. 33295A

Tigercat®

Tigercat Industries Inc.
P.O. Box 544
Paris, Ontario
Canada N3L 3T6
Tel: (519) 442-1000
Fax: (519) 442-1855

GENERAL SAFETY PRECAUTIONS continued

Safety Hazards - Viton Seals

O-rings and other seals manufactured of Viton material (fluorine rubber) produce a highly corrosive acid (Hydrofluoric) when subjected to temperatures above 600°F (315°C).

This contamination can have extreme consequences on human tissue since it is almost impossible to remove after contact.

The following procedures are recommended when inspecting equipment that has been subjected to high temperatures such as fire:

- Visually inspect any seals or gaskets which have suffered from heat; they will appear black and sticky.
- If these are found, **Do Not Touch!!!**
- Determine the material composition of any seals or gaskets, If fluoro-elastomer seals (Viton, fluorel, or tecmoflon) have been used, the affected area must be decontaminated before undertaking further work. Natural rubber and nitrile materials are not hazardous.
- Disposable heavy duty gloves (neoprene) must be worn and the affected area decontaminated by washing thoroughly with limewater (Calcium Hydroxide solution).
- Any cloths, residue and gloves must be safely discarded after use.

NOTE:
Burning discarded items is not recommended except in an approved incineration process where the dangerous products are treated by alkaline scrubbing.

Safety Hazards - Operating

Maintain a charged fire extinguisher on the vehicle at all times and KNOW HOW TO USE IT.

Do not carry passengers either in the cab or anywhere else on the machine. The vehicle is provided and approved with seating for the operator only.

Do not allow anyone to operate the machine who may not be physically fit or who may be under the influence of alcohol or drugs.

When moving the machine, watch that enough clearance is available on both sides and above the machine or any of its attachments. Extra clearance may be required particularly where the ground is uneven.

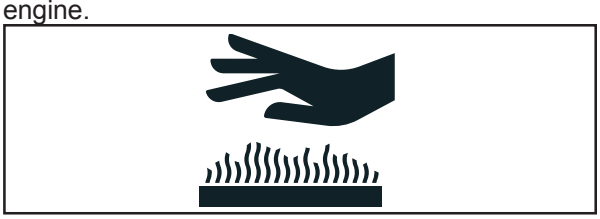
Approach with extreme caution any area where overhanging electrical power lines are present. Serious injury or death by electrocution can result if the machine or any of its attachments are not kept a safe distance from these lines.

Maintain a distance of 10 ft. (3m) between the machine or boom and any power line carrying up to 50,000 volts or less plus 1/2 inch (10mm) for each addition 1,000 volts above the 50,000 volt level.

If State/Provincial, local or job site regulations require even greater safety distances than stated above, adhere strictly to these regulations for your own protection.

If the machine must be transported, make sure that it is adequately secured to the transporting vehicle. Refer to vehicle moving instructions page in SECTION 2 of the OPERATOR'S MANUAL.

Stopping the engine immediately after it has been working under load can result in overheating and premature wear of the engine components. Reduce engine speed to LOW IDLE and let run for approximately 5 minutes to allow gradual dissipation of heat and also to reduce turbo speed. This will also prevent loss of coolant by after boil and possible hot spot damage to the engine.



Be aware when performing service and maintenance tasks that surfaces and grab handles in and around the engine and cooling system may become very hot when the engine has been running. Contact with hot surfaces may cause injury.

Comply with instructions in this manual and also your company's regulations for the operation of this machine.

Read, understand and follow all general safety precautions specified by attachment manufacturer.

WARNING

Engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

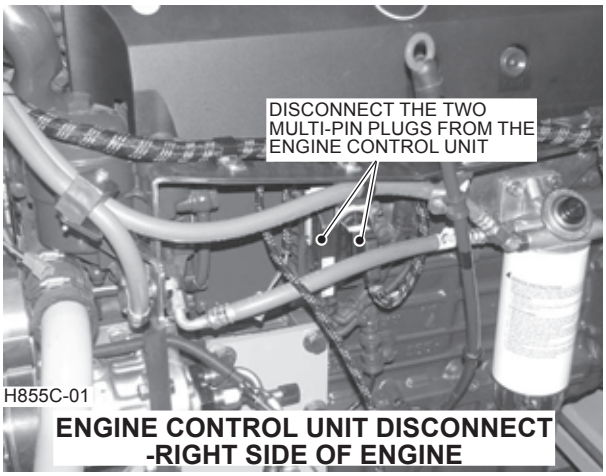
SERVICING SAFETY PRECAUTIONS continued

Prior to welding on any part of the machine, the repair area should be cleaned and a fire extinguisher should be made available at the welding location.

Care must be taken in attaching the welding machine grounding clamp so current does not pass through bearings, especially the swing bearing.

Disconnect the negative (-) battery cable from all the batteries.

This machine is equipped with sensitive electronic control equipment, **prior to welding:-**

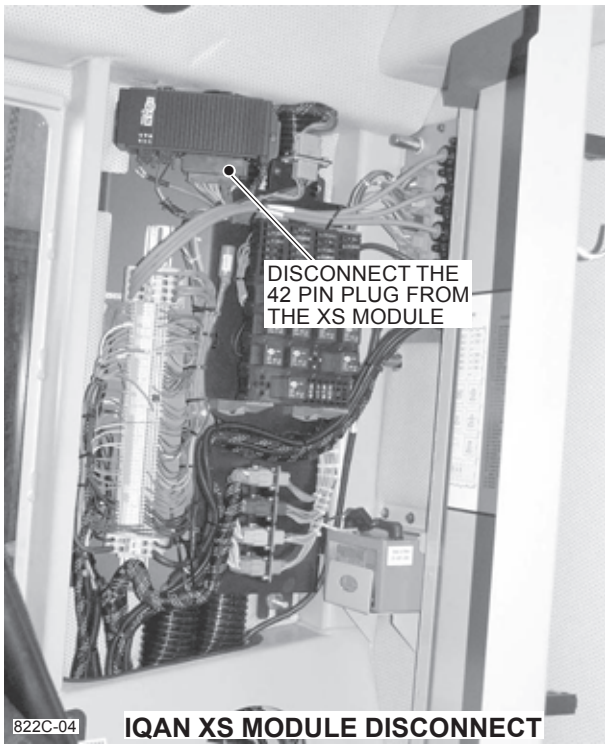


ENGINE CONTROL UNIT DISCONNECT -RIGHT SIDE OF ENGINE

Disconnect the engine control unit by unplugging the the two multipin connectors from the left side of the engine.

IQAN DISPLAY DISCONNECT

Disconnect the IQAN display **6 pin** connector and the control module **42 pin** connector.



IQAN XS MODULE DISCONNECT

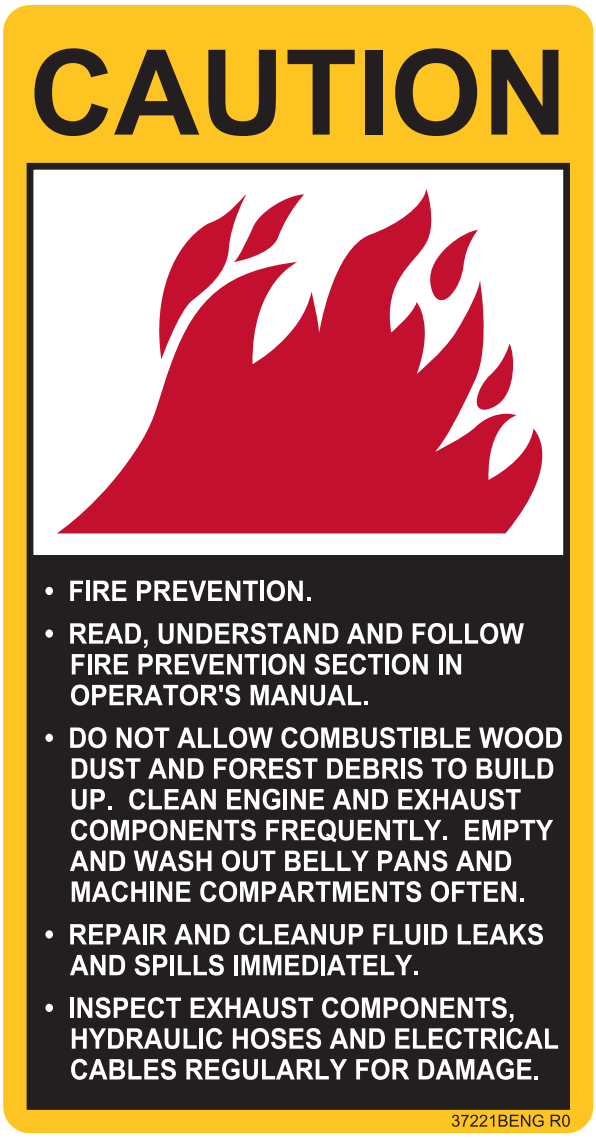
IMPORTANT

24 VOLT

ELECTRICAL SYSTEM

FIRE PREVENTION continued

13. **Turn the battery disconnect switch to OFF** at shut down to de-energize all electrical circuits.
14. **Remain with the machine** for at least 45 minutes at the end of operations while the machine cools.



15. **Remove all keys,** lock equipment and fuel cap at the end of operations to reduce the risk of vandalism.
16. **Be cautious when smoking.** An open flame, a lighted cigarette, etc., should not be permitted around any vehicle, especially during fuelling operations or when the fuel system is open to the atmosphere or when servicing batteries.
17. **AFTER transporting (trucking) a machine** from one job site to the next, open all doors and access panels and blow off any debris that may have repositioned itself onto the engine and exhaust parts due to wind turbulence caused by the journey.
18. **Before starting repair work,** such as welding, the surrounding area should be cleaned and a fire extinguisher should be close by.
19. **Store rags and other combustible materials** in a safe, fireproof location.
20. **Do not use the machine** on top of or to push piles of burning timber. A machine fire will most probably result.

EQUIPMENT FIRES ADVERSELY EFFECT YOUR ABILITY TO LOG, MAY INCREASE YOUR INSURANCE PREMIUMS DRAMATICALLY OR PREVENT YOU FROM OBTAINING INSURANCE COVERAGE AT ALL.

WHAT TO DO TO PREPARE FOR A MACHINE FIRE

- Prevent the fire from happening in the first place by ensuring that all machine systems are frequently inspected and always well maintained.
- Ensure that any hand held fire extinguishers are charged and in working order. Fire extinguishers require routine care. Follow the manufacturer's instructions for inspection and maintenance shown on the label of the fire extinguisher and in the extinguisher manufacturer's manual.
- Ensure that any pressurized water systems on the machine (if applicable) are charged and in working order. Refer to PRESSURIZED WATER SYSTEM MAINTENANCE in SECTION 3 of the OPERATOR'S MANUAL.
- Ensure that you have the proper fire extinguishers on site. Most fires involving mobile forestry equipment will be Class **A** or **B**.

  Dry chemical extinguishers should be rated **ABC** and pressurized water extinguishers should be rated **A**.

  Class **A** fires involve ordinary combustibles such as wood, cloth, paper, rubber and many plastics, Class **B** fires occur with flammable liquids such as diesel fuel, oil and grease and Class **C** fires apply to energized electrical equipment.

COMMENTS AND INSTRUCTIONS

Recognizing the Dangers

While it may appear that these illustrated danger areas can be visually recognized on the job by observing how far chips fly during a cut, that is only true for chips and other light weight materials. Metal parts and wooden spears can be thrown to surprisingly greater distances. Even distant personnel on the ground, in other vehicles, or in buildings are at risk if the throw is in their direction.

Direction of throw

The direction of possible tangential throw for metal parts and stones is dependent on the housing configuration and might be expected to be the same as observed for the chips. However, these throws can occur at any time the saw is running, in whichever direction the angle of throw is pointed by boom geometry, not just when a cut is being made.

Throw distance

The throw distance for metal pieces and stones, can be many times the distance shown by the pattern for chips. More testing and data collection is needed to pin down a “safe distance” but if someone or something is in a place that can be seen by the operator and in the throw direction of a high speed disc saw, then the operation is not safe regardless of the distance.

Safe operating areas

These saw heads must not be used in areas where the logging operation does not have control over the presence and movement of people. In particular, clearing of vegetation in urban and populated areas should not be done with a Tigercat manufactured or supplied high speed disc saw. High speed disc saw heads are intended for high productivity wood harvesting in areas remote from normal habitation. The possible presence of people and property within throw range and the likelihood of encountering scrap metal, wire fencing, steel posts and concrete must be respected.

Assessing the potential dangers on the job site

The extent of danger from high speed disc saws on the logging operation has to be assessed on the job site, depending on how much other work activity is in the area and whether the operator can do his job of cutting and bunching with good control of throw patterns. Danger is greater if the saw is equipped with detachable, or fragile, or brittle teeth, or if the site contains stones or abandoned metal.

Tigercat 855C/L855C Feller Buncher
SECTION 3 - LUBRICATION & MAINTENANCE

CONTENTS - SECTION 3

FEBRUARY, 2009

SCHEDULED MAINTENANCE

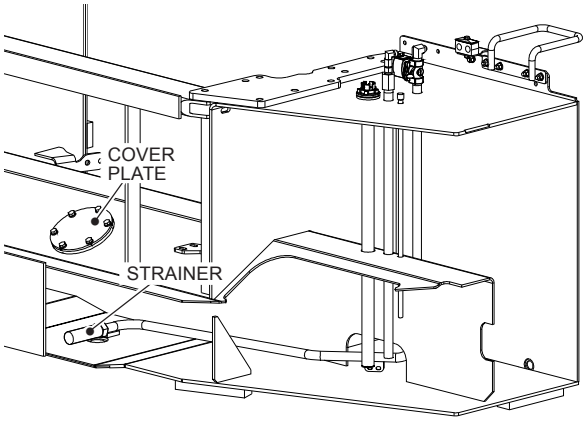
opening a plug or hose fitting located near or on top of the pumps, motors and valves until oil free of air is seen flowing out of the plug or hose fitting.

In some cases, if the fan is not turning it may be necessary to bleed air from fan pump suction. Loosen suction flange connection at the fan pump. Retighten when oil starts to flow from this location.

Failure to vent air from the hydraulic system could cause serious damage to hydraulic components. Tighten plugs or fittings and clean up any spilled oil when completed.

NOTE: Changing strainers, filters and replacing the hydraulic oil tends to aerate the oil. For maximum pump life, the machine should sit for 1 hour after servicing to allow entrained air to escape from the oil prior to applying working pressures to the pumps.

NOTE: Check all hydraulic system components especially cooling fan for proper operation after hydraulic oil has been replaced.



FUEL TANK STRAINER

FUEL TANK STRAINER

A stainless steel 150 micron fuel strainer is screwed onto the end of the fuel supply pipe located inside the fuel tank. The strainer is accessible by removing the R.H. fuel tank cleanout cover.

CHANGING/CLEANING THE STRAINER:

NOTE: This should only be required if excessive quantities of foreign material has built up inside the tank.

1. Park machine on level ground with attachment resting on the ground.
2. Stop engine. Turn battery disconnect switch to the OFF position.
3. Drain the fuel tanks. Drain plugs accessible from underside of upper frame.
4. Remove the rear cleanout cover and “O” ring.
5. Before removing strainer, clean any debris from inside bottom of tank(s) and wipe clean.
6. Remove the fuel strainer using hex on end of strainer. Carefully clean strainer (NOTE: rough handling can cause damage).
7. Check for a buildup of foreign material where the strainer screws onto the pipe.
8. Reinstall the strainer.
9. Reinstall fuel tank cover plate with “O” ring.
10. Refuel and check for leaks.
11. Turn battery disconnect switch ON and start engine, check for leaks again.
12. Clean up any spilled fuel before returning machine to operation.

GENERAL TORQUE SPECIFICATIONS

IMPERIAL

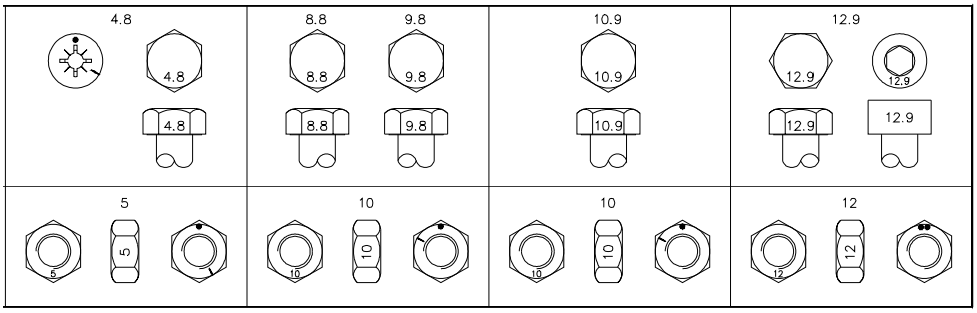
The torque values listed below are for general use only. DO NOT use these values if a different torque value or tightening procedure is shown for a specific application.

GRADE 8 BOLTS **GRADE 5 BOLTS**

IMPERIAL BOLT TORQUE SPECIFICATIONS

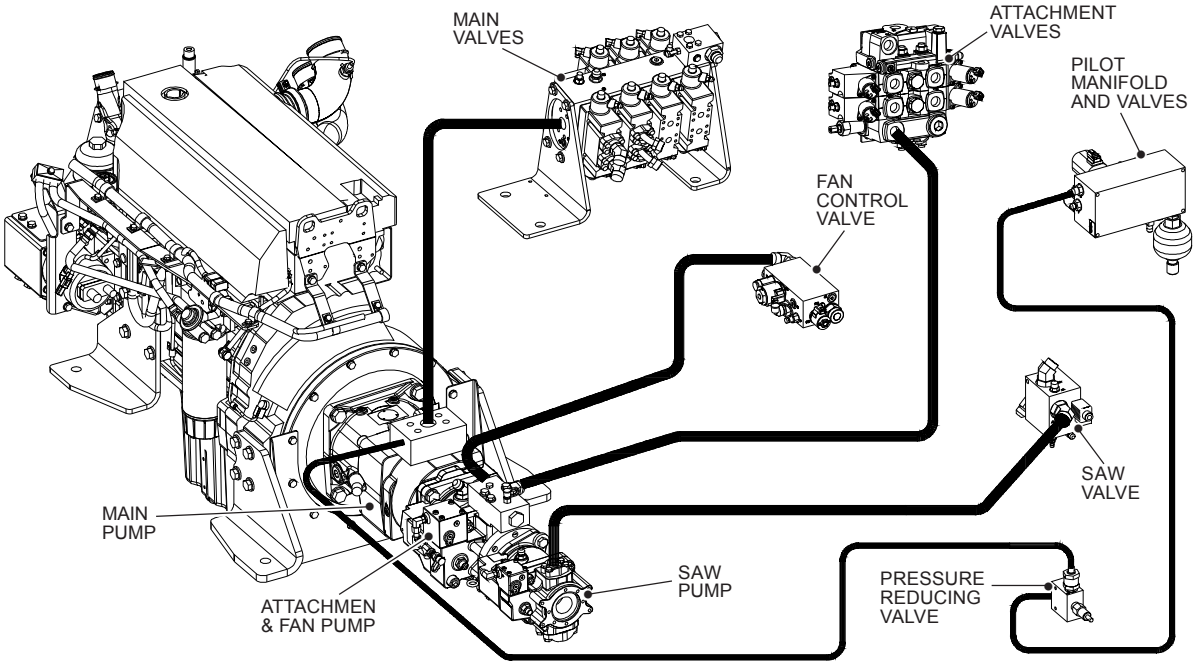
GRADE 8 BOLTS					GRADE 5 BOLTS				
COARSE THREAD	DRY		LUBRICATED		COARSE THREAD	DRY		LUBRICATED	
	lbf-ft	Nm	lbf-ft	Nm		lbf-ft	Nm	lbf-ft	Nm
1/4" - 20	11 - 12	15 - 16	8 - 10	11 - 13	1/4" - 20	7- 8	10 - 11	8 - 10	11 - 13
5/16" - 18	26 - 30	35 - 40	20 - 28	27 - 38	5/16" - 18	14 - 18	19 - 24	10 - 15	13 - 20
3/8" - 16	44 -48	60 - 65	33 - 36	45 - 49	3/8" - 16	31 - 34	42 - 46	23 - 25	31 - 34
7/16" - 14	70 - 77	95 - 104	52 - 57	71 - 77	7/16" - 14	49 - 54	66 - 73	37 - 41	50 - 55
1/2" - 13	106 - 117	144 - 158	80 - 88	109 - 119	1/2" - 13	75 - 83	102 - 112	57 - 63	77 - 85
9/16" - 12	153 - 168	208 - 228	115 - 127	156 - 172	9/16" - 12	109 - 120	148 - 162	82 - 90	111 - 122
5/8" - 11	212 - 233	288 - 316	159 - 175	216 - 237	5/8" - 11	150 - 165	204 - 223	113 - 124	152 - 168
3/4" - 10	376 - 414	510 - 561	282 - 310	393 - 420	3/4" - 10	266 - 293	360 - 397	200 - 220	271 - 298
7/8" - 9	606 - 667	822 - 904	455 - 501	617 - 679	7/8" - 9	394 - 433	535 - 586	296 - 326	402 - 441
1" - 8	909 - 1000	1233 - 1355	682 - 750	925 - 1016	1" - 8	591 - 649	802 - 879	443 - 489	601 - 663
1 1/8" - 7	1288 - 1417	1746 - 1921	966 - 1062	1310 - 1441	1 1/8" - 7	794 - 873	1077 - 1183	596 - 656	808 - 889
1 1/4" - 7	1817 - 1999	2464 - 2710	1360 - 1496	1844 - 2027	1 1/4" - 7	1120 - 1232	1519 - 1670	840 - 924	1139 - 1252
FINE THREAD	DRY		LUBRICATED		FINE THREAD	DRY		LUBRICATED	
	lbf-ft	Nm	lbf-ft	Nm		lbf-ft	Nm	lbf-ft	Nm
1/4" - 28	13 - 14	18 - 19	10 - 13	14 - 17	1/4" - 28	9 - 10	12 - 13	9 - 10	12 - 13
5/16" - 24	23 - 28	31 - 38	18 - 25	25 - 33	5/16" - 24	17 - 22	23 - 29	16 - 20	21 - 27
3/8" - 24	49 - 54	67 - 73	37 - 41	50 - 55	3/8" - 24	35 - 39	48 - 53	26 - 29	35 - 39
7/16" - 20	78 - 86	106 - 116	58 - 64	79 - 86	7/16" - 20	55 - 61	75 - 83	41 - 45	56 - 61
1/2" - 20	120 - 132	163 - 179	90 - 99	122 - 134	1/2" - 20	85 - 94	116 - 127	64 - 70	87 - 95
9/16" - 18	171 - 188	232 - 255	128 - 141	174 - 191	9/16" - 18	121 - 133	164 - 180	91 - 100	124 - 135
5/8" - 18	240 - 264	326 - 358	180 - 198	244 - 268	5/8" - 18	170 - 187	231 - 253	128 - 141	174 - 191
3/4" - 16	420 - 462	570 - 626	315 - 347	427 - 470	3/4" - 16	297 - 327	403 - 443	223 - 245	303 - 332
7/8" - 14	668 - 735	906 - 996	501 - 550	679 - 745	7/8" - 14	434 - 477	589 - 646	326 - 359	442 - 486
1" - 14	995 - 1096	1359 - 1486	746 - 821	1012 - 1113	1" - 12	646 - 711	876 - 965	484 - 534	657 - 724
1 1/8" - 12	1445 - 1590	1960 - 2155	1083 - 1191	1469 - 1613	1 1/8" - 12	891 - 980	1208 - 1328	668 - 735	906 - 996
1 1/4" - 12	2012 - 2213	2728 - 2997	1509 - 1660	2046 - 2250	1 1/4" - 12	1240 - 1364	1682 - 1849	931 - 1024	1262 - 1387

METRIC



METRIC BOLT TORQUE SPECIFICATIONS

SIZE	CLASS 4.8				CLASS 8.8 OR 9.9				CLASS 10.9				CLASS 12.9			
	LUBRICATED		DRY		LUBRICATED		DRY		LUBRICATED		DRY		LUBRICATED		DRY	
	Nm	lbf-ft	Nm	lbf-ft	Nm	lbf-ft	Nm	lbf-ft	Nm	lbf-ft	Nm	lbf-ft	Nm	lbf-ft	Nm	lbf-ft
M6	4.8	3.5	6.0	4.5	9.0	6.5	11.0	8.5	13.0	9.5	17.0	12.0	15.0	11.5	19.0	14.5
M8	12.0	8.5	15.0	11.0	22.0	16.0	28.0	20.0	32.0	24.0	40.0	30.0	37.0	28.0	47.0	35.0
M10	23.0	17.0	29.0	21.0	43.0	32.0	55.0	40.0	63.0	47.0	80.0	60.0	75.0	55.0	95.0	70.0
M12	40.0	29.0	50.0	37.0	75.0	55.0	95.0	70.0	110.0	80.0	140.0	105.0	130.0	95.0	165.0	120.0
M14	63.0	47.0	80.0	60.0	120.0	88.0	150.0	110.0	175.0	130.0	225.0	165.0	205.0	150.0	260.0	190.0
M16	100.0	73.0	125.0	92.0	190.0	140.0	240.0	175.0	275.0	200.0	350.0	225.0	320.0	240.0	400.0	300.0
M18	135.0	100.0	175.0	125.0	260.0	195.0	330.0	250.0	375.0	275.0	475.0	350.0	440.0	325.0	560.0	410.0
M20	190.0	140.0	240.0	180.0	375.0	275.0	475.0	350.0	530.0	400.0	675.0	500.0	625.0	460.0	800.0	580.0
M22	260.0	190.0	330.0	250.0	510.0	375.0	650.0	475.0	725.0	540.0	925.0	675.0	850.0	625.0	1,075.0	800.0
M24	330.0	250.0	425.0	310.0	650.0	475.0	825.0	600.0	925.0	675.0	1,150.0	850.0	1,075.0	800.0	1,350.0	1,000.0
M27	490.0	360.0	625.0	450.0	950.0	700.0	1,200.0	875.0	1,350.0	1,000.0	1,700.0	1,250.0	1,600.0	1,150.0	2,000.0	1,500.0
M30	675.0	490.0	850.0	625.0	1,300.0	950.0	1,650.0	1,200.0	1,850.0	1,350.0	2,300.0	1,700.0	2,150.0	1,600.0	2,700.0	2,000.0
M33	900.0	675.0	1,150.0	850.0	1,750.0	1,300.0	2,200.0	1,650.0	2,500.0	1,850.0	3,150.0	2,350.0	2,900.0	2,150.0	3,700.0	2,750.0
M36	1,150.0	850.0	1,450.0	1,075.0	2,250.0	1,650.0	2,850.0	2,100.0	3,200.0	2,350.0	4,050.0	3,000.0	3,750.0	2,750.0	4,750.0	3,500.0



HYDRAULIC SYSTEM PUMPS AND VALVES

2. SAW DRIVE CIRCUIT

This is a **closed-centre circuit** with a variable-displacement L.S. pressure-compensated piston pump and a solenoid activated attachment control valve. The saw valve also includes an inlet section and an outlet section. The L.S. pump provides only the amount of oil that is required to the saw valve (**saw drive**). The return oil from this closed centre circuit is returned to tank via the spin-on return filters.

For a full description of the SAW DRIVE circuit, refer to SECTION 17 of THIS MANUAL.

3. PILOT CIRCUIT

Pilot oil is provided by the main pump. The oil flow pressure is controlled by a remote pressure reducing/relieving pilot supply valve located between the main pump and the pilot manifold 'P' port. This pressure reducing/ relieving valve controls and provides pilot oil at 34.5 bar (500psi) to the 'P' port of the pilot manifold.

The pilot manifold is a distribution center, directing pilot oil to pilot operated functions on the machine. A pilot shut-off valve installed in the manifold controls the flow of pilot oil into the manifold.

When this pilot shut-off valve is energized, pilot oil is made available to outlet pressure ports and three solenoid valves. When the pilot shut-off valve is de-energized, pilot oil from the pilot supply valve is blocked, preventing pilot oil from entering the manifold, thereby rendering these pilot functions inactive. Refer to PILOT SYSTEM RESET in SECTION 2 of the OPERATOR'S MANUAL.

For a full description of the PILOT MANIFOLD and the PILOT CIRCUIT, refer to in SECTION 5 in THIS MANUAL.

4. COOLING FAN CIRCUIT

The cooling fan system consists of the following components:

- Fan/Attachment Pump
- Fan Motor
- Fan Control Valve
- Electronic Control

The *fan motor* is a fixed displacement gear motor. The fan is coupled directly to the motor output shaft.

The fan direction is controlled by the *fan control valve*.

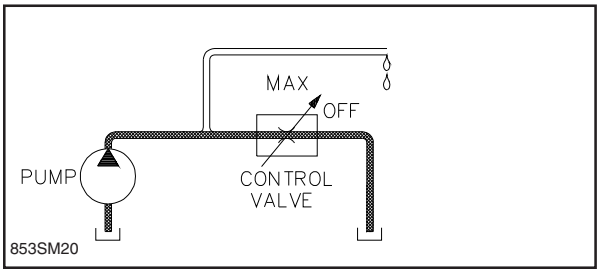
The fan operation is controlled by the cooling fan switch, fan service switch and the computer control unit.

For a full description of the COOLING FAN circuit operation refer to SECTION 2 of THE OPERATOR'S MANUAL, and for adjustment procedures, refer to SECTION 10 of THIS MANUAL.

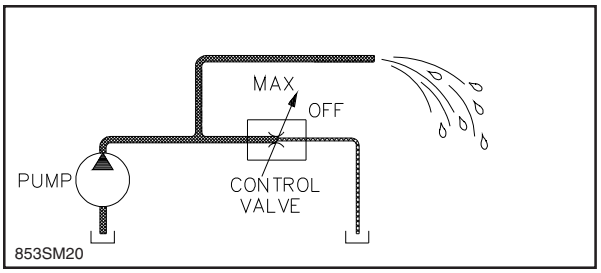
LOAD SENSING BASIC DESCRIPTION

OPEN CENTRE VS. CLOSE CENTRE

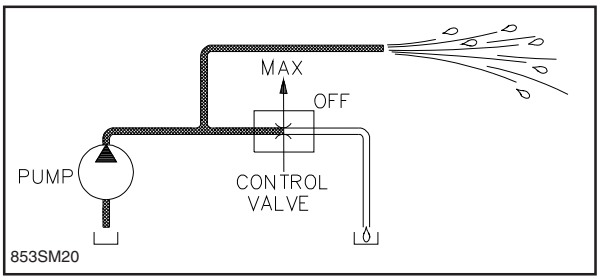
OPEN CENTRE SYSTEM:



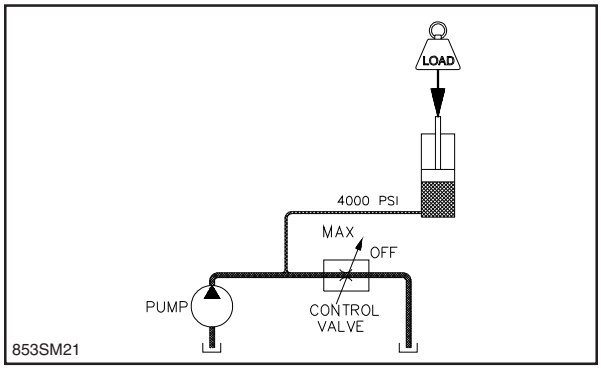
With the control valve in neutral all of the oil from the pump “bypasses” through the open center passage directly to tank. There is no backpressure created by the control valve to force oil into the workport (the workport is actually blocked off when the spool is in neutral, and unblocked when the spool begins to move).



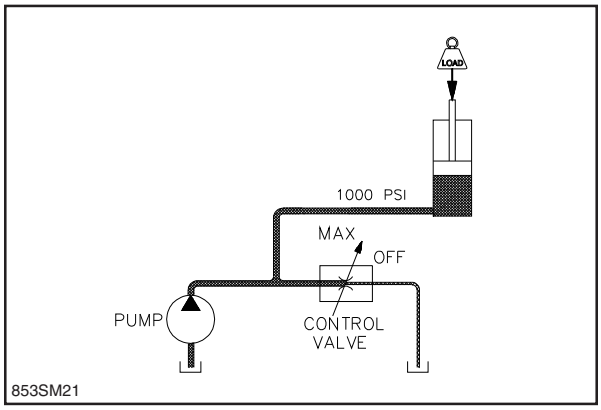
When the control valve lever is moved to actuate a cylinder or motor, the open center passage is blocked off in proportion to the amount the lever is moved. This creates **back pressure** forcing oil into the valve workport to move the load.



When the control valve lever is fully shifted to the maximum flow position the open center passage is completely blocked, and all of the pump flow is forced against the load.

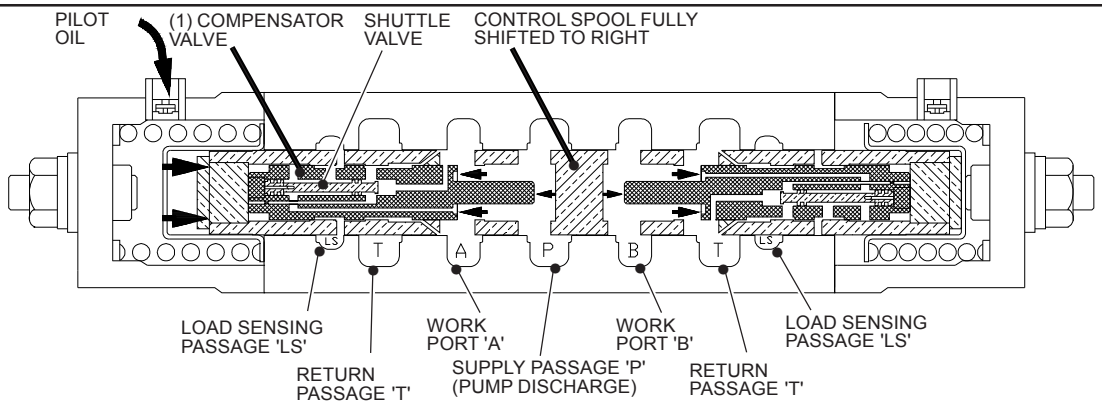


If the oil flowing to the motor or cylinder meets variable loads, this will upset the balance of oil going to the tank and the load. This causes the speed of the function to change with load changes.



This type of system exhibits the following characteristics;

1. If the load against the cylinder or motor changes, the speed of the function will change.
2. If the load increases on a boom cylinder, the boom will slow or stop. Moving the lever further will increase the pressure against the load, and when high enough, the load will begin to move again.
3. The maximum speed of the function is determined by the maximum flow of the pump.



(E) CONTROL VALVE SECTION ~ • CONTROL SPOOL FULLY SHIFTED TO RIGHT
• HIGHEST WORKING PRESSURE

853SM29

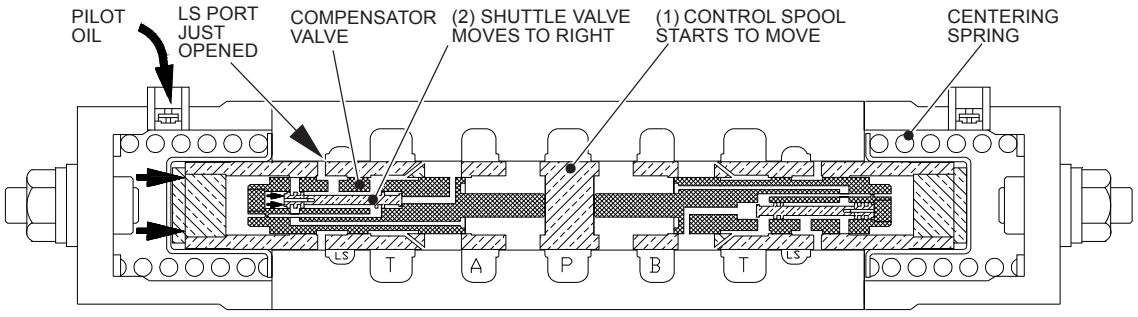
(E) In this figure, pump discharge pressure is slightly higher than work port pressure because the compensator valve (1) is open. When using just one function both the compensator valve and the shuttle valve are moved to the end of their bores.

The load sensing pressure is always the same as the highest work port pressure and as a result is always lower than pump discharge pressure. There are two factors that establish this pressure difference between pump discharge and work port pressure, the load sensing valve and the orifice effect of the passages in the control valve between the pump discharge port and the work port. There are three openings the pump discharge oil must flow through to get to the work port. Each time the oil flows through a passage there is a pressure drop, that is, there is an orifice at each passage. The smaller the opening the smaller the oil flow due to the constant load sensing pressure. There is a passage from the work port to the load sensing passage and this is the pressure sensed at the pump regulator; since the flow is very small there is virtually no pressure drop from the work port to the LS port on the pump.

Load sensing pressure is the same at both ends of all the control spools because the two passages in the control valve manifold are joined together in the manifold.

LOAD SENSING ~ TWO OR MORE FUNCTIONS IN USE

Load compensation comes into effect whenever two or more functions are actuated at the same time. The following is an explanation of the function of the valve components whenever a spool with a lower working pressure is activated when a higher working pressure spool is fully shifted.

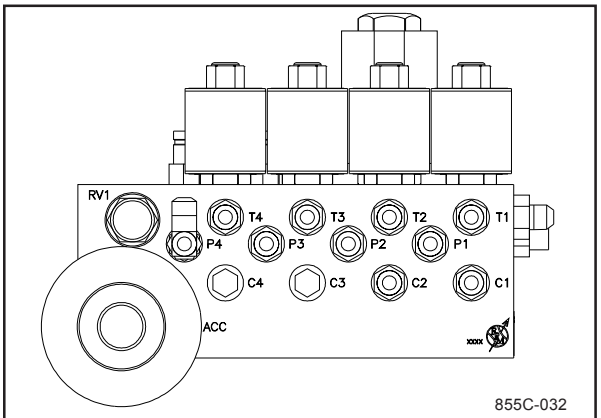


(F) CONTROL VALVE SECTION ~ • CONTROL SPOOL STARTING TO MOVE TO RIGHT
• LS PORT JUST OPENED
• LOWER WORKING PRESSURE

853SM30

(F) Pilot oil will start to move the control spool against the centering spring on the opposite end of the spool. The LS port is the first to open and load sensing pressure is applied to the shuttle valve. The shuttle valve moves to the right to the end of its bore and then LS pressure flows into the cavity at the left end of the compensator valve.

PILOT MANIFOLD



PILOT MANIFOLD - BOTTOM VIEW

The pilot manifold is located in the valve service compartment beside the hydraulic oil tank directly behind the cab. Pilot oil enters the manifold at the inlet port 'P' and is then distributed to the various pilot functions of the machine.

The manifold distributes oil to the following circuits through the ports listed below:

• Brake Manifold Supply	P1
• Right Joystick Pressure (teed)	P2
• Left Joystick Pressure	P3
• Foot Pedal Pressure	P4
• Load Sense Main Pump 1 (teed)	P2

The **pilot shut off valve** controls the flow of oil through the manifold to the outlet pressure ports, the four solenoid operated pilot valves and the pilot accumulator. This valve is activated by pressing the pilot reset switch in cab (with the front door closed and latched).

The **outlet pressure ports** ('P1, P2, P3 & P4') on the bottom of the manifold, feed the joysticks, and drive foot pedals.

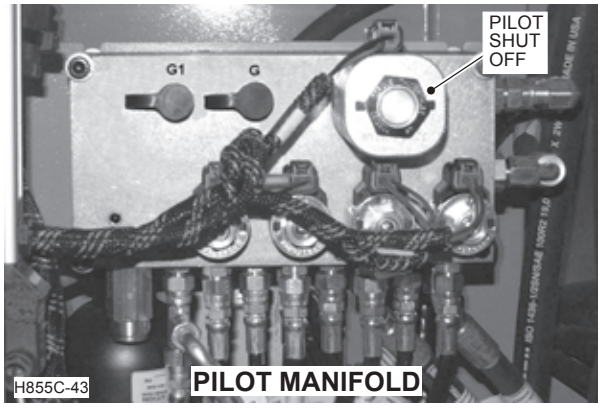
Tank ports ('T') drain oil to the reservoir.

The solenoid operated valves operate the following functions:

• Swing Brake Release	C1
• Track Drive Low Port X1	C2
• Wrist CCW	C3
• Wrist CW	C4

NOTE: The saw circuit is enabled or disabled electrically only by the pilot circuit, the saw hydraulic circuit has its own hydraulic control valve and solenoid control valve.

PILOT SHUT OFF VALVE



The solenoid operated pilot shut off valve is mounted in the pilot manifold directly beside the inlet port. All pilot oil must flow through this valve before reaching any other control valve.

When this solenoid valve is energized (front door closed and latched and pilot reset switch momentarily pressed), pilot oil is supplied to the outlet pressure ports, the solenoid operated pilot valves and the pilot accumulator.

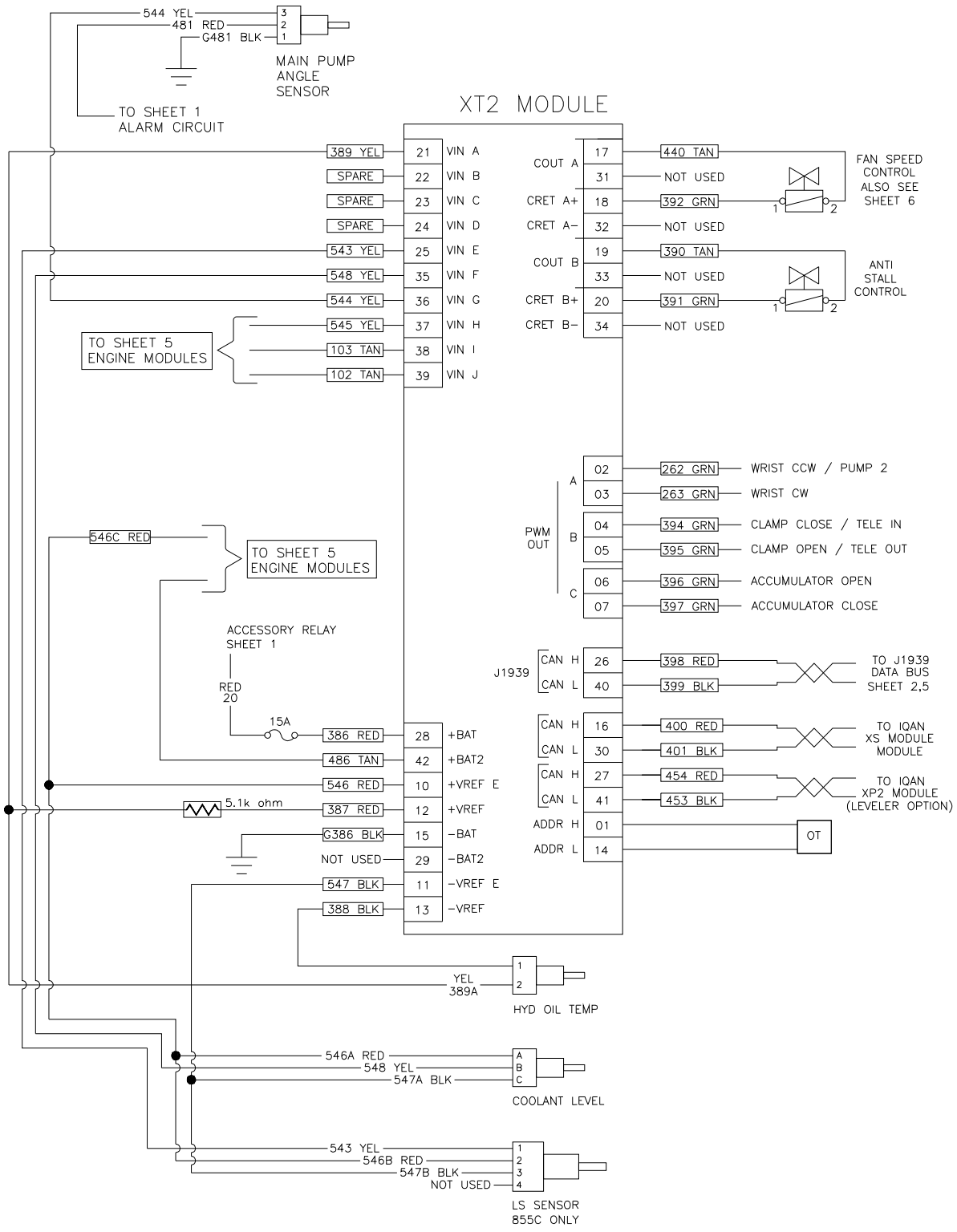
The swing brake will be applied if the swing brake switch in the cab has been left in the ON position. The swing brake will be released when the switch is in the OFF position. The accumulator will also be charged when the pilot shut-off valve is energized.

When the pilot shut-off valve is de-energized by either opening the front door or momentarily pressing the pilot OFF switch, all pilot actuated functions (electrical and hydraulic) are disabled. The swing brake is also applied at this time due to the lack of pilot pressure. The accumulator is drained at this time.

Tigercat 855C/L855C Feller Buncher
SECTION 6 - ELECTRICAL AND COMPUTERS

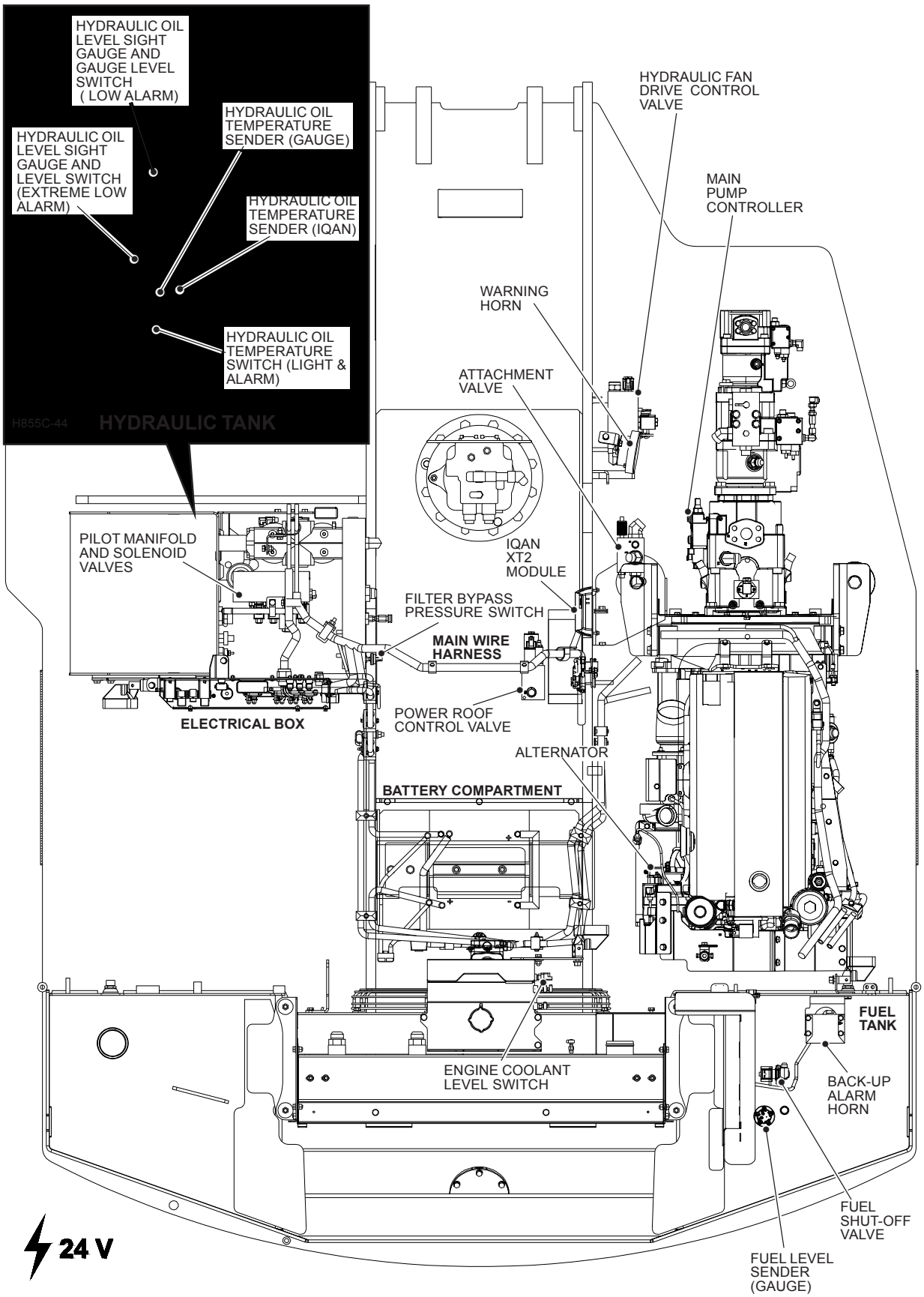
CONTENTS - SECTION 6

AUGUST, 2008

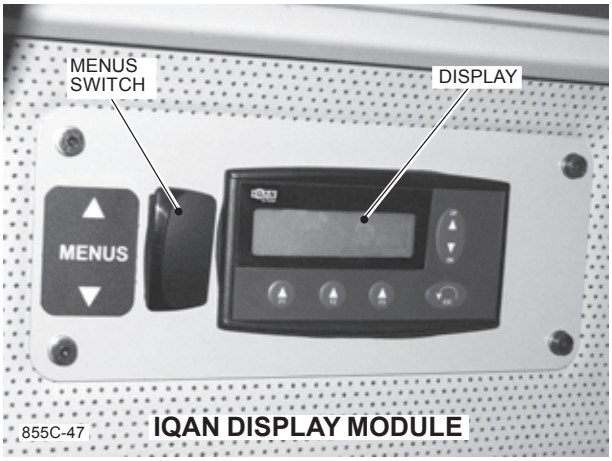


37543BR1S9

ELECTRICAL SCHEMATIC SHEET 9 OF 10



855C-038 **SWITCH, SENSOR AND ELECTRICAL COMPONENT LOCATIONS**



IQAN DISPLAY MODULE

ALTERNATE MENUS

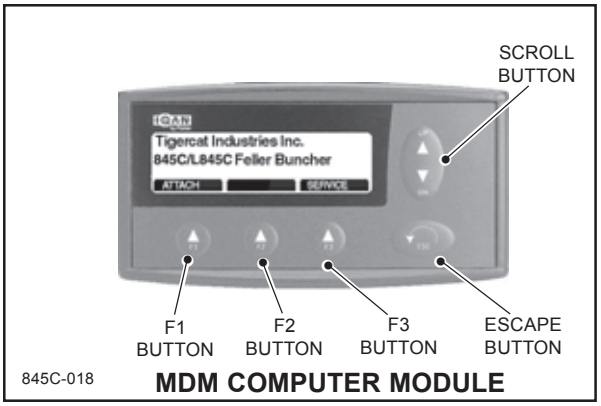
Press the top of the MENUS switch to display the ALTERNATE MENUS.

The display will appear as shown. If the display does not appear as shown press the ESCAPE button repeatedly until it does appear as shown.

Press the F1 or F3 buttons on the IQAN-MDM display unit to view the ATTACH or SERVICE menu displays as indicated on the LCD menu display.

Use the F1, F2 or F3 function button to move through the menus as indicated on the LCD menu display.

Use the ESCAPE button to move back to the previous menu display.



MDM COMPUTER MODULE

ATTACH

1. Tree Counter

   This electronic menu display provides access to the tree counter function.

   Pressing RESET (F3) will reset the tree counter to zero.

   The tree counter function provides the operator with an automatic count of the number of times the CLAMP CLOSE button is pressed. Refer also to CLAMP ARMS CONTROL, JOYSTICK in THIS SECTION.

2. Cycle Counter

   This electronic menu display provides access to the cycle counter function.

   Pressing RESET (F3) will reset the cycle counter to zero.

   The cycle counter function provides the operator with a count of the number of times right joystick button # 1 is pressed. This function provides a custom counter for use as required by the operator.

RIGHT HAND JOYSTICK

Use UP/DOWN scroll buttons adjust parameter setting or press RESET (F1) to return to factory default setting.

Select OK (F1) to confirm new setting.

ADJUST START SLOPE

8. The start slope is an adjustment for the amount of time that it takes for the function to ramp from the Minimum value to the Maximum value. If either the min MR or max MR values are improperly adjusted, the startslope may not produce the desired results.

   The standard setting for the start slope on the wrist is 500ms (1/2 of a second).

   Increasing this value will make the start acceleration smoother.

   Decreasing this value will make the start acceleration more harsh (additional stresses on attachments, wrists, and boom systems).

   Use UP/DOWN buttons to scroll to START SLOPE. Press SELECT (F1).

   Use UP/DOWN buttons to set to desired value and press OK (F1) to save new value.

ADJUST STOP SLOPE

9. The stop slope is an adjustment for the amount of time that it takes for the function to ramp from the Maximum value to the Minimum value. If either the min MR or max MR values are improperly adjusted, the stopslope may not produce the desired results.

   The standard setting for the stop slope on the wrist is 500ms (1/2 of a second).

   Increasing this value will make the deceleration smoother.

   Decreasing this value will make the deceleration more harsh (additional stresses on attachments, wrists, and boom systems).

   Use UP/DOWN buttons to scroll to STOP SLOPE. Press SELECT (F1).

   Use UP/DOWN buttons to set to desired value and press OK (F1) to save new value.

   Note that an excessively long start slope can give the operator a poor feel for the head, as if the function is always overshooting its intended target. The purpose for making this adjustable is to accommodate the various preferences of different operator's for the "feel" of functions.

ADJUST FINE CONTROL

10. In this application, the fine control is not typically used. Fine control is a feature that becomes very useful when using a proportional type input. In this case, the standard inputs from the joystick are all digital switches.

    Fine Control should be set to 0% for this application.

11. Repeat steps 6 to 10 for the (-) Wrist-Attachment function.

XP2 MODULE OFFLINE ERRORS (LEVELER)

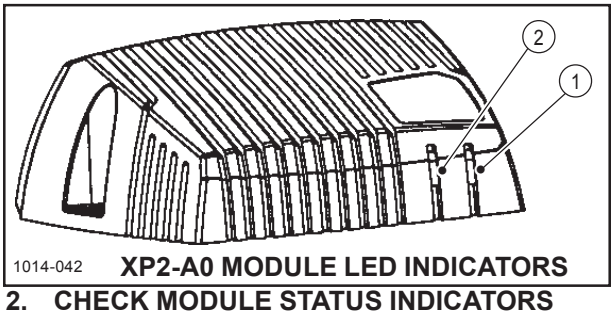
Expect all machine functions controlled by this module to cease and all alarms and warnings associated with this module to be triggered.

1. CHECK FOR OTHER ERROR/ALARM MESSAGES ON SCREEN

Press OK to acknowledge each error message. Note that module offline errors will be followed by other alarm messages associated with the module(s) which is(are) offline.

If the XT2-A0 MODULE IS OFFLINE is the only module is offline error message the likely causes are:

- Power - Fuse (XP2 MODULE)
- Ground
- Address (ID-Tag)
- CAN wire connection



XP2-A0 MODULE LED INDICATORS

2. CHECK MODULE STATUS INDICATORS

Status lights can also give an immediate indication of the nature of the error.

(1) Supply Voltage LED.

LED ON solid green light indicates supply voltage is ON.

LED OFF indicates supply voltage is OFF.

(2) Status indicator LED (yellow/red).

LED yellow flashing light indicates status is correct.

LED flashing red light indicates error status as follows:

- One flash indicates fault on inputs/outputs or that supply voltage is to low or to high.
- Two flashes in a row indicates that the internal temperature of the unit is to high or to low.
- Three flashes in a row indicates that the fault is related to the CAN-bus.
- Four flashes in a row indicates an internal fault on the hardware of the unit.
- Five flashes in a row indicates that the fault is related to the address.
- Continuous flashing indicates the fault is related to software.

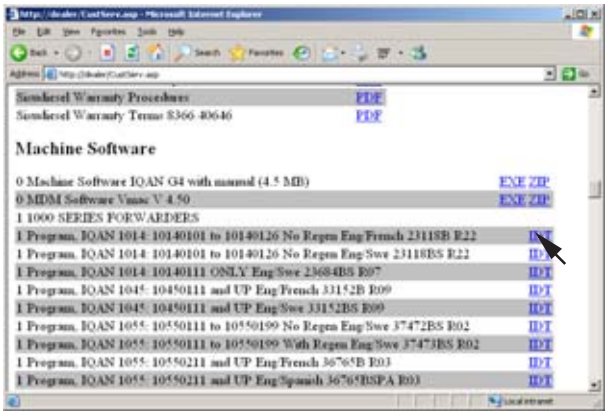
LX-, XP2- and XT2- module

Error code	Blink (red light)
I/O and voltage errors	
Low/High temperature	
CAN error	
Hardware error	
Address error	
Software error	

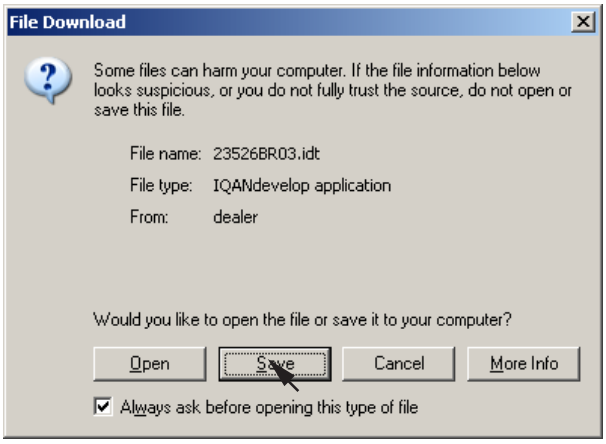
DOWNLOADING APPLICATIONS FROM THE TIGERCAT DEALER WEBSITE

NOTE: The following downloading instructions apply to the Tigercat dealer website format at the time of printing. If you experience difficulty due to changes on the website contact Tigercat Customer Service for assistance.

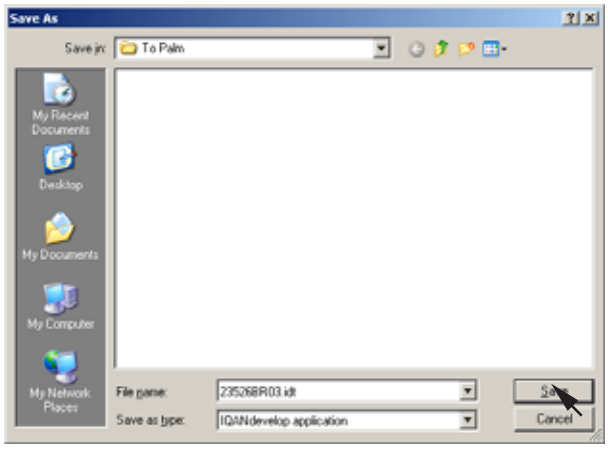
DOWNLOADING APPLICATIONS AS IDT FILES



1. Click on the IDT to the right of the file you wish to download.



2. Click on Save.



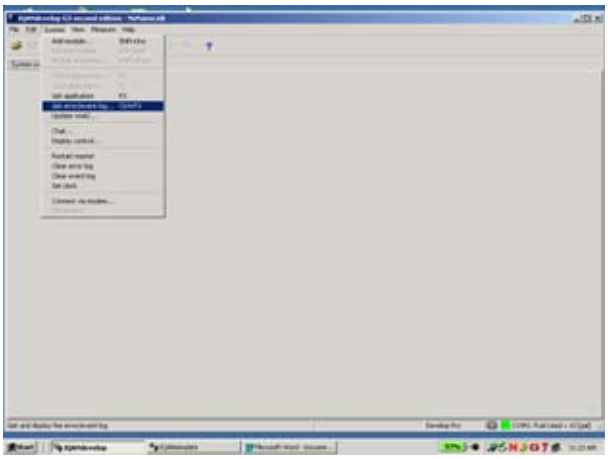
3. The correct folder location must be manually chosen. C:\Program Files\IQANdevelop 4\ Applications.
4. Click on Save.
5. The IQAN program file has now been downloaded to the correct folder.

8. If you tap on one of the errors/events you will get the description and the time at the bottom of the screen

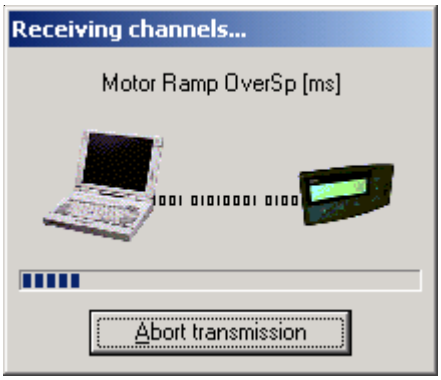
B. GET ERROR/ EVENT LOG USING A PC/LAPTOP

The following procedure instructs how to get an error/event log using a PC/Laptop

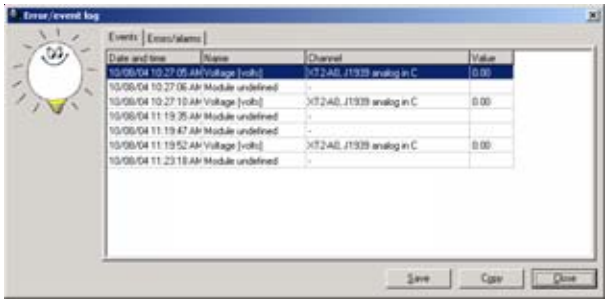
1. Get application from the MDM. Refer to IQAN SOFTWARE~GET APPLICATION procedure in THIS SECTION.

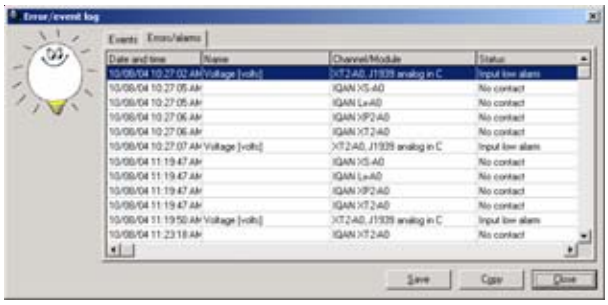


2. Using the drop-down menus select System then Get error/event log.

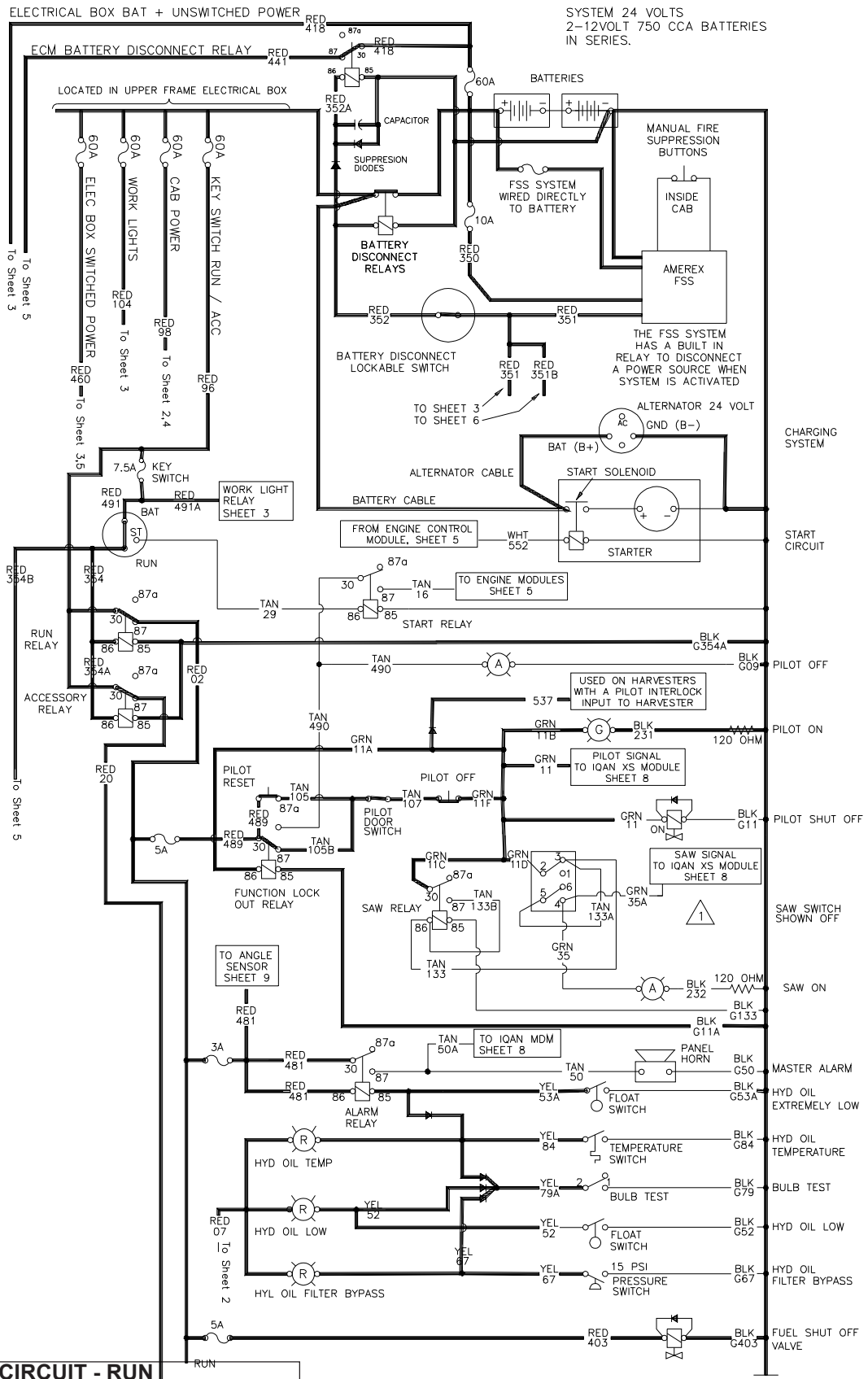


3. The receiving channels pop up box will appear.



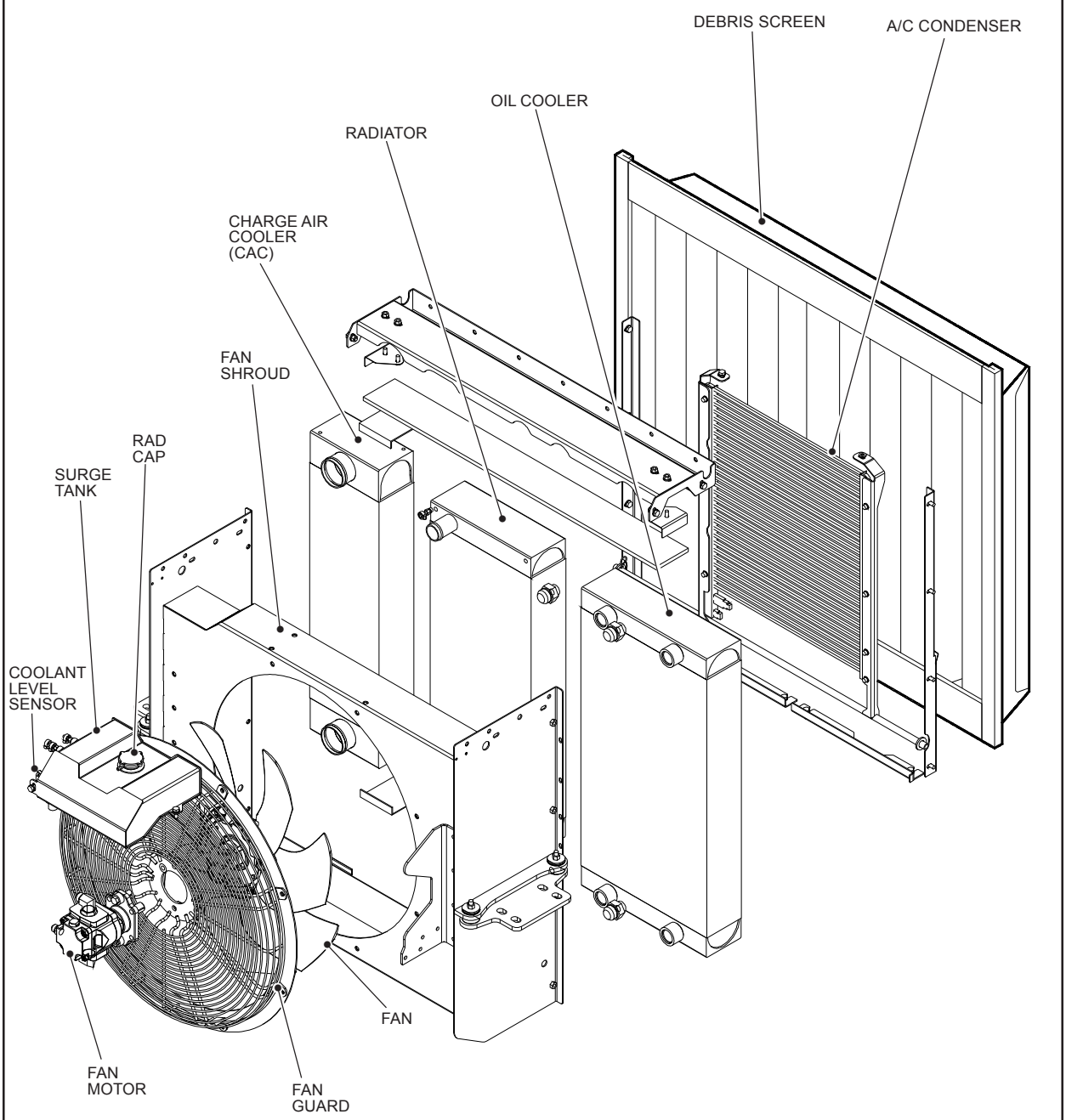


4. When the transmission is complete the Events or Errors/alarms can be viewed by selecting one of the tabs at the top of the display.
5. Error/event logs can be copied or saved.



START CIRCUIT - RUN

IGNITION KEY - RUN POSITION
PILOT RESET SWITCH - HELD ON
FRONT DOOR CLOSED/DOOR SWITCH - ON

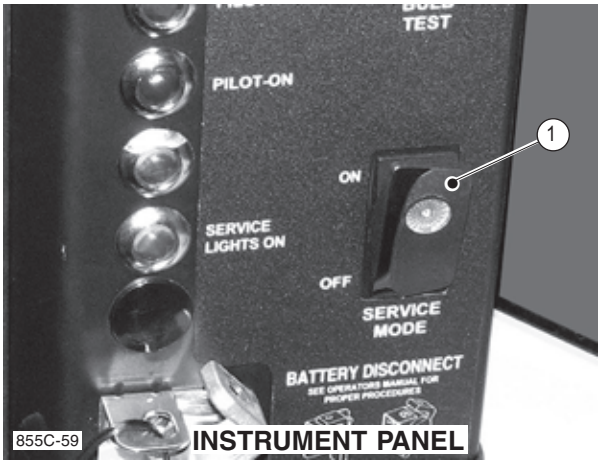


855C-059

COOLING ASSEMBLY COMPONENTS

NOTE: REGULARLY CHECK FOR DEBRIS ACCUMULATION BETWEEN RADIATOR/ OIL COOLER AND A/C CONDENSER

SERVICE MODE - SWITCH



INSTRUMENT PANEL

The cooling fan circuit also has a SERVICE MODE SWITCH . The SERVICE MODE SWITCH (1) (with light) has two positions, ON and OFF.

OFF is the position this switch should be in to allow the cooling fan to operate in the normal mode.

The service mode switch is used in the ON whenever a Service Technician is in the Service Compartment performing tests with the engine running. Reversing the fan rotation redirects the airflow away from the service technician. Note that one of the four service access doors equipped with sensors (left access door, right access door, pump compartment door or radiator access door) must be open to reverse the fan rotation using the service mode switch.

When service checks are complete place the switch in the OFF position.

Refer also to INSTRUMENT PANEL ~ SERVICE MODE SWITCH in SECTION 2 of the OPERATOR'S MANUAL.

Tigercat 855C/L855C Feller Buncher
SECTION 11 - TRACK DRIVE

AUGUST, 2008

CONTENTS - SECTION 11

TRACK SPEED SET-UP PROCEDURE

IMPORTANT:

EACH motor **maximum displacement** setting must be correctly set **before** making adjustments to the *valve spool stops* described here in. Refer to the following SET MOTOR MAX. DISPL. (SLOW SPEED) procedure.

Also note that changes in **margin pressure** will also affect track speeds.

NOTE:

Both left and right track drives have 4 (speed) settings which are dealt with in the following procedures, they are:

1, Forward-Drive
2, Forward-Low
3, Reverse-Drive
4, Reverse-Low.

However, there are only **3** adjustments required to accomplish this;

1, Forward flow stop adjusting screw
2, Reverse flow stop adjusting screw
3, Motor minimum displacement adjustment stop

SET TRACK SPEED

Low speed 13 rpm. High speed 28 rpm.**

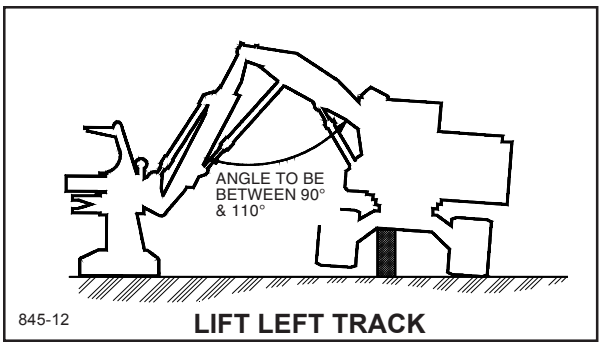
****NOTE:** This value is dependant on engine HIGH IDLE speed or FULL throttle. **13 rpm** is based on **2200 rpm.**

1. Park machine on flat hard ground and ensure hydraulic oil is at **operating temperature.**
2. Remove both left and right final drive inspection covers to access track motors.

LEFT TRACK ADJUSTMENT

POSITION MACHINE

3. Position felling head in vertical position and swing boom to LEFT side of machine.
4. Place felling head on ground and by forcing down with boom controls, lift track clear of ground. (Hoist down and stick out)



LIFT LEFT TRACK

Refer to serial number plate for machine weight (less attachment).

Refer to attachment manufacturer's manual for correct attachment weight information.

WARNING

DO NOT place arms, legs or body under track while in the raised position.

5. Use blocks to firmly support track frame in raised position.

SET MOTOR MAX. DISPL. (SLOW SPEED)

NOTE: The motor maximum displacement setting is the SLOW speed setting and is factory set to:

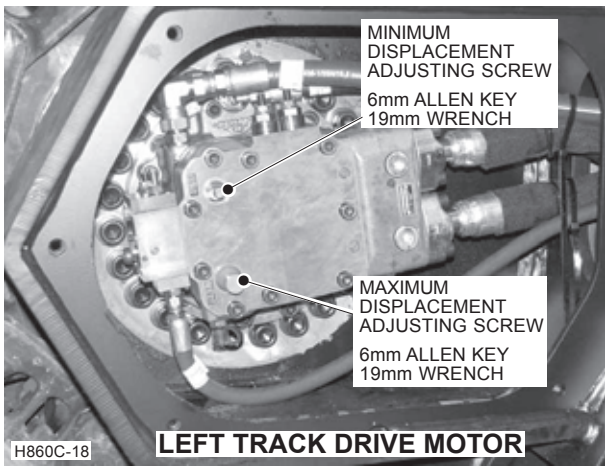
For S855C

AQ019, MAXIMUM DISPLACEMENT = 105cc/rev.

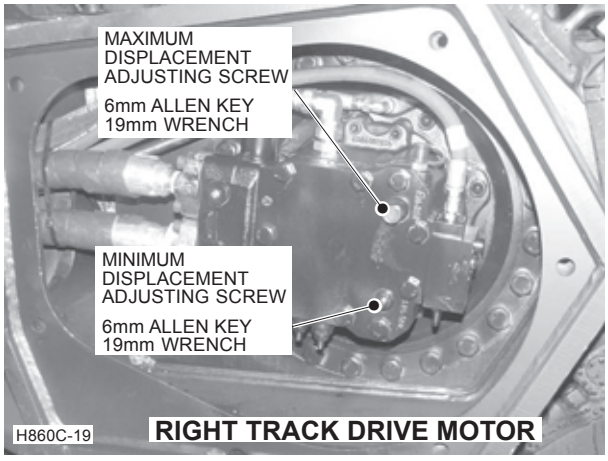
For LS855C

AQ047, MAXIMUM DISPLACEMENT = 135cc/rev.

NOTE: Turn the screw either IN (clockwise) to speed up or OUT (counterclockwise) to slow down the final drive.



LEFT TRACK DRIVE MOTOR



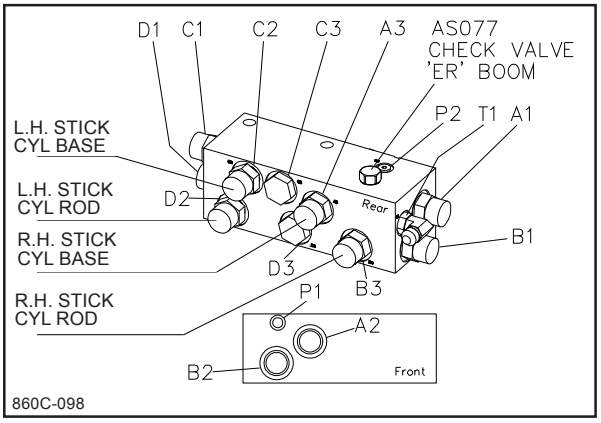
RIGHT TRACK DRIVE MOTOR

Tigercat 855C/L855C Feller Buncher

SECTION 12 - BOOM FUNCTIONS

AUGUST, 2008

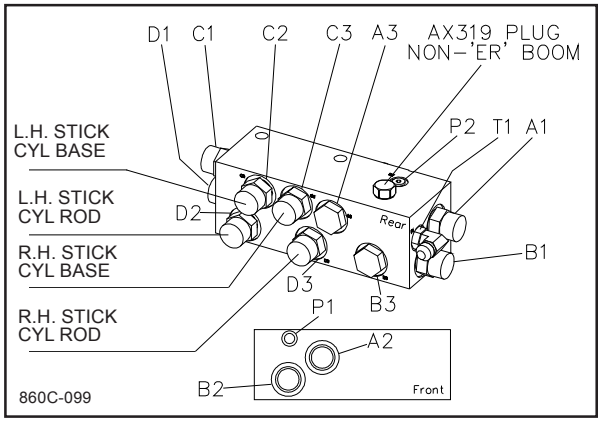
CONTENTS - SECTION 12



'ER' BOOM MANIFOLD CONNECTIONS

The Boom Manifold connections for 'ER' boom systems are as follows:

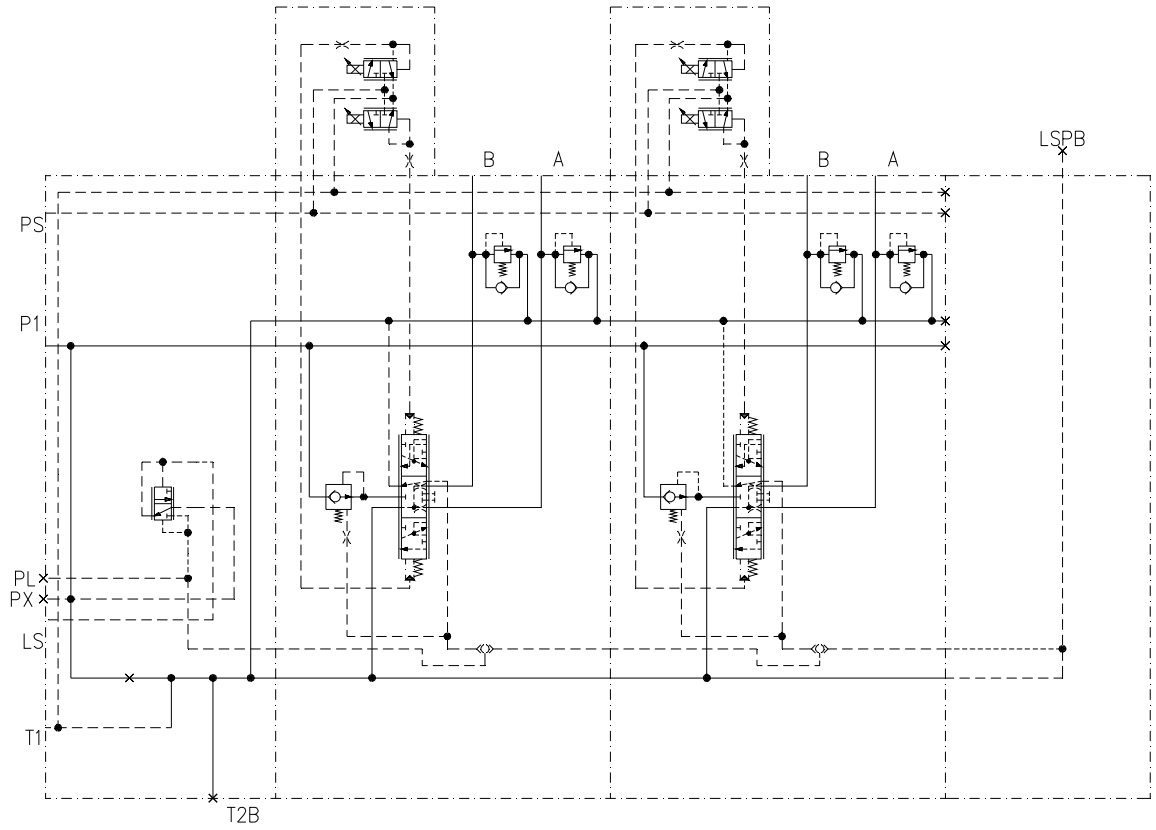
- A1 Hoist Valve 'A' Port
- A2 Hoist Cylinders Base End
- A3 R.H. Stick 'ER' Cylinder Base End
- B1 Hoist Valve 'B' Port
- B2 Hoist Cylinders Rod End
- B3 R.H. Stick 'ER' Cylinder Rod End
- C1 From Stick Valve 'B' Port
- C2 L.H. Stick Cylinder Base End
- C3 Plugged
- D1 From Stick Valve 'A' Port
- D2 L.H. Stick Cylinder Rod End
- D3 Plugged
- ER AS077 Check Valve
- P1 Plugged
- P2 Plugged
- T1 Return to Tank



NON-'ER' BOOM MANIFOLD CONNECTIONS

The Boom Manifold connections for NON-'ER' boom systems are as follows:

- A1 Hoist Valve 'A' Port
- A2 Hoist Cylinders Base End
- A3 Plugged
- B1 Hoist Valve 'B' Port
- B2 Hoist Cylinders Rod End
- B3 Plugged
- C1 From Stick Valve 'B' Port
- C2 L.H. Stick Cylinder Base End
- C3 R.H. Stick 'ER' Cylinder Base End
- D1 From Stick Valve 'A' Port
- D2 L.H. Stick Cylinder Rod End
- D3 R.H. Stick 'ER' Cylinder Rod End
- ER AX319 Plug
- P1 Plugged
- P2 Plugged
- T1 Return to Tank



860C-160 **LEVELLING VALVE SCHEMATIC**

SPOOL SECTIONS

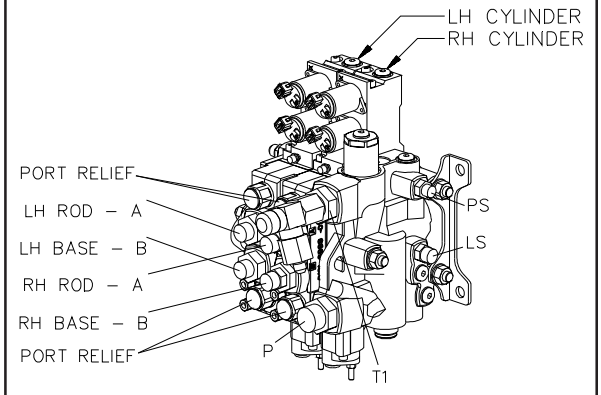
The valve spool sections are equipped with proportional, electro-hydraulic spool actuators. The actuators are spring centered to the neutral position. The actuators are shifted by a variable voltage signal sent to the appropriate solenoid. Each section has a pilot restrictor installed in the 'A' and 'B' side to create a 'ramping' effect and result in smooth, gentle function operation.

Pressure Compensation

The primary purpose of pressure compensation is to maintain a constant flow rate to functions (ie: maintain the same speed of movement), regardless of pressure variations in the system. The pressure compensator also contains a load-hold check valve. An orifice is installed immediately down stream of the pressure compensator to smoothly regulate the response of the compensator.

Port Reliefs

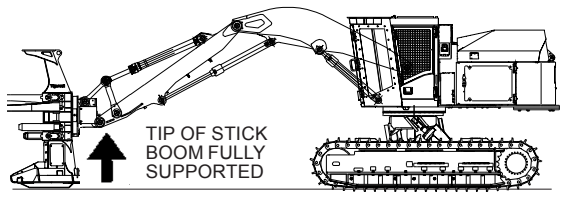
The levelling valve is equipped with port reliefs on each side of the spool sections. The function of the port relief is to protect the valve and the function from pressure peaks in the system.



860C-162 **LEVELLING VALVE**

The port reliefs also act as anti-cavitation valves, which means they allow oil to flow from the tank gallery in the valve to the service ports in the event of underpressure. Port reliefs cannot be adjusted. Port reliefs installed in each section are specifically designed for use in that section and should not be interchanged with port reliefs from other valve sections . Refer to REPLACING PORT RELIEF in THIS SECTION.

PRESSURIZING THE HYDRAULIC TANK OR INSTALLING A VACUUM PUMP ON THE HYDRAULIC TANK



860C-055 **SERVICE POSITION FIG.1**

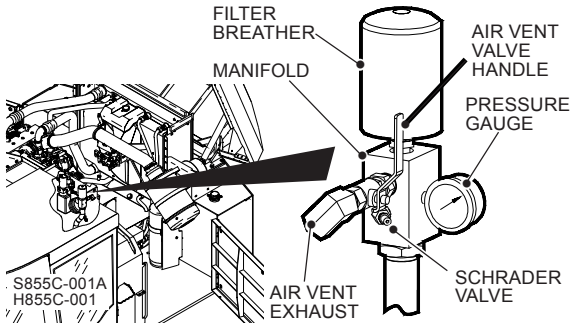
1. Ensure that the attachment is resting squarely on a solid footing and engine is shut off before disconnecting any hydraulic lines.

IMPORTANT

PRESSURIZED HYDRAULIC TANK.

34.5 kPa (5 psi) MAXIMUM.

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



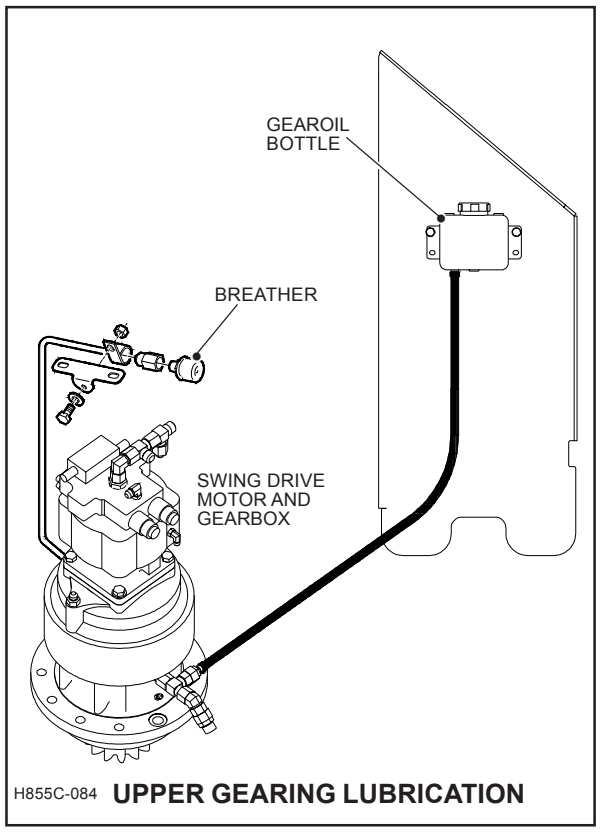
After service is completed, close air vent valve and add air pressure from a clean air source to the hydraulic tank via the schrader valve. **Do not exceed 34.5 kPa (5 psi)**.

Install Vacuum Pump

B. Vent the tank has mentioned above. Remove the hydraulic tank breather filter hose clamp at the tank and lift the hose off the tank spout. Install a vacuum pump hose on tank breather port spout. Turn vacuum pump on to apply a vacuum in hydraulic tank.

C. When service is complete, turn off vacuum pump, remove hose and reinstall hydraulic tank breather filter hose and clamp on the tank spout.

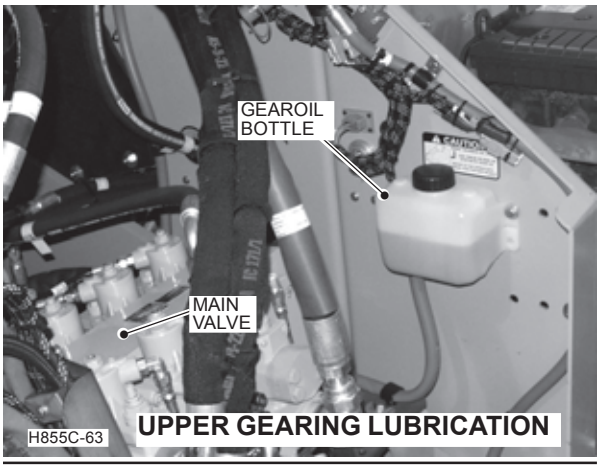
D. Close air vent valve and add air pressure from a clean air source to the hydraulic tank via the schrader valve. **Do not exceed 34.5 kPa (5 psi)**.



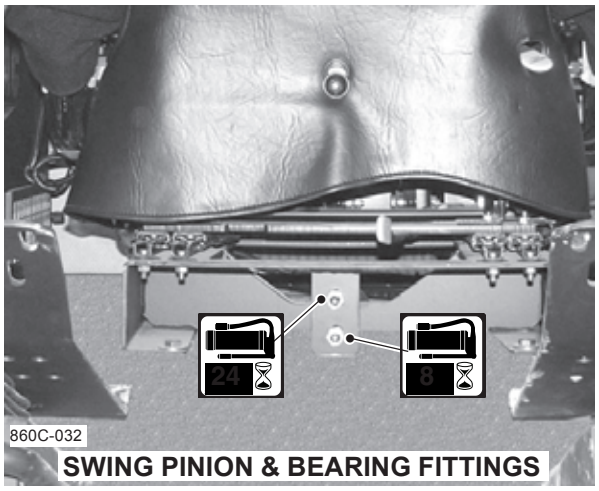
H855C-084 **UPPER GEARING LUBRICATION**

LUBRICATION OF SWING DRIVE GEARBOX UPPER GEARING

The swing gearbox upper gearing is filled with gear oil. Use 75W-90 or 80W-140 synthetic gear oil. Follow the lubricating procedure on the label located beside the gear oil bottle and also refer to LUBRICATION SCHEDULE and SCHEDULED MAINTENANCE - 250 HOURS in SECTION 3 of THIS MANUAL.



H855C-63 **UPPER GEARING LUBRICATION**

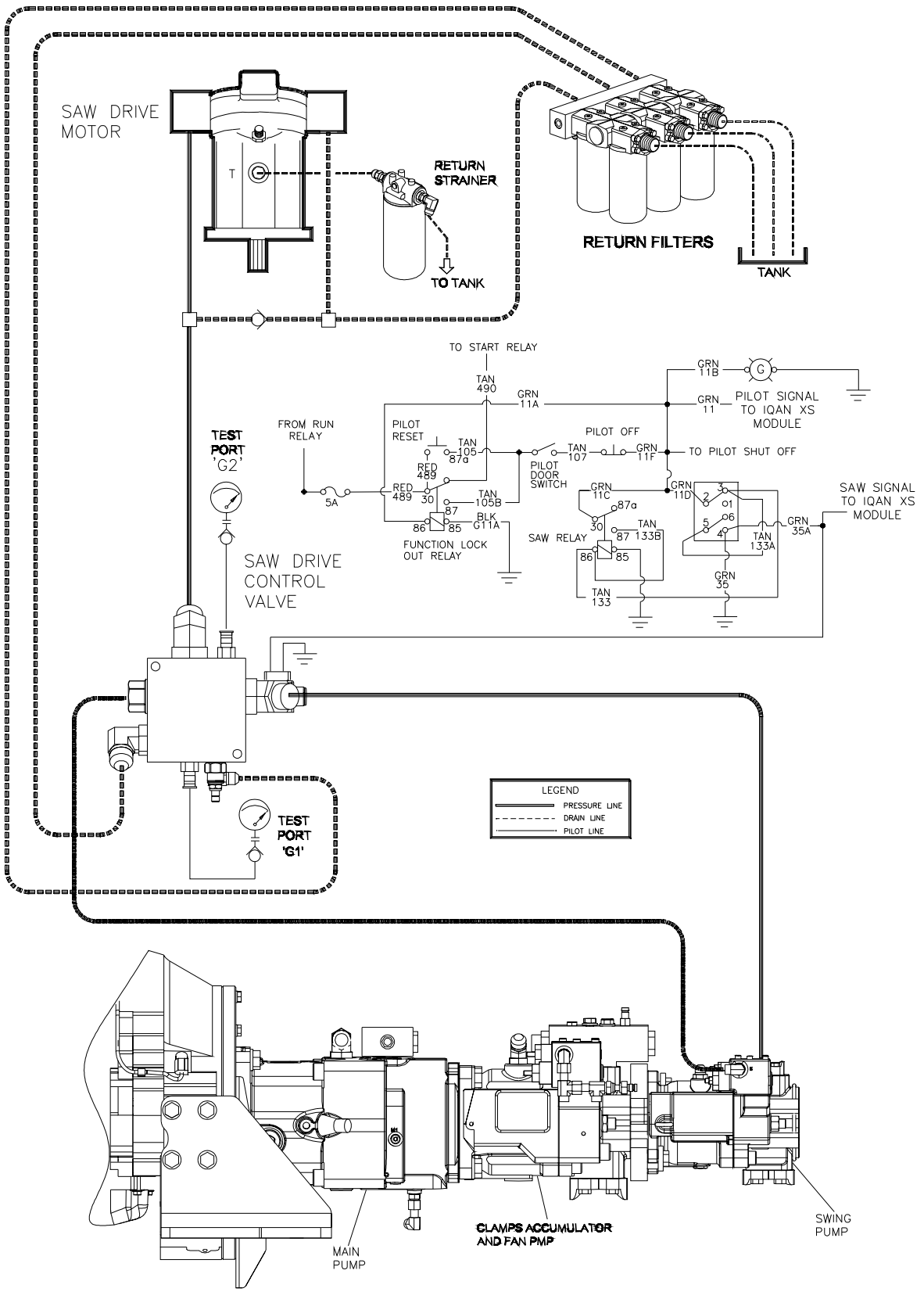


860C-032 **SWING PINION & BEARING FITTINGS**

LUBRICATION OF SWING PINION AND SWING BEARING

To lubricate the **swing bearing**, apply **10 shots** of grease (while swinging) every **24 hours** to one of the two grease fittings located on the seat pedestal in the operator's cab. To lubricate the swing pinion (or teeth) apply **10 shots** grease every **8 hours** while swinging to the other grease fitting located on the seat pedestal. The grease fittings are clearly labelled.

For lubrication schedule, refer to SECTION 3 of THIS MANUAL.



855C-031

SAW DRIVE COMPONENT CIRCUIT DIAGRAM

INLET SECTION

The inlet section is equipped with a connection port to the attachment pump 'P' port. Integrated into the inlet section is the main pressure relief valve.

Pressure Relief Valve

The inlet section of the valve houses a relief. This pressure relief valve is intended to protect the attachment circuit from pressure peaks in the system. The relief cartridge is adjustable and set to 185 bar (2700 psi).

Pilot Pressure Supply

The pilot pressure is supplied by the pilot manifold via P4 port to the 'PS' port on the end section of the attachment valve.

END SECTION

The end section is equipped with four connection ports, 'PS' connecting the valve to the 'P4' port on the pilot manifold. This feeds pilot pressure back to the attachment valve when the pilot system is ON. 'T1' and 'T3' outlet return ports and 'TP' port

SPOOL SECTIONS

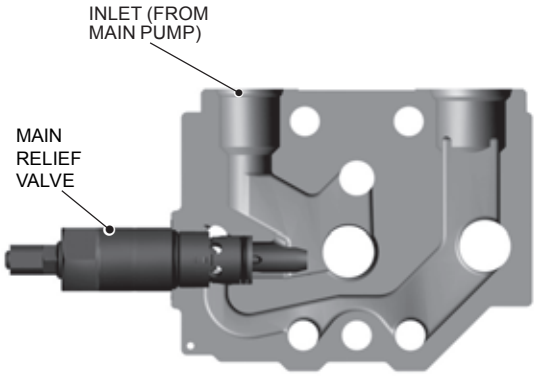
The spool sections are equipped with proportional, electro-hydraulic spool actuators. The actuators are spring centered to the neutral position, and are shifted by sending a variable voltage signal (from the Iqan XT2 module) to the appropriate solenoid. Each section has a pilot restrictor installed in the ‘A’ and ‘B’ side to create a ‘ramping’ effect and result in smooth, gentle function operation.

Port Reliefs

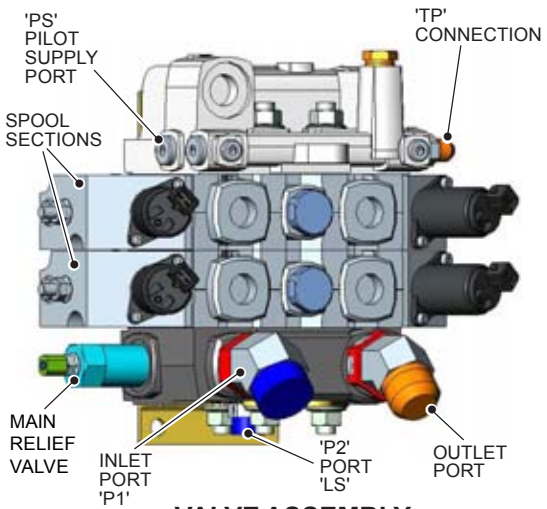
The attachment valve is equipped with port reliefs on each side of all spool sections. The function of the port relief is to protect the valve and the function from pressure peaks in the system.

Port reliefs cannot be adjusted. Port reliefs installed in each section are specifically designed for use in that section and should not be interchanged with port reliefs from other valve sections.

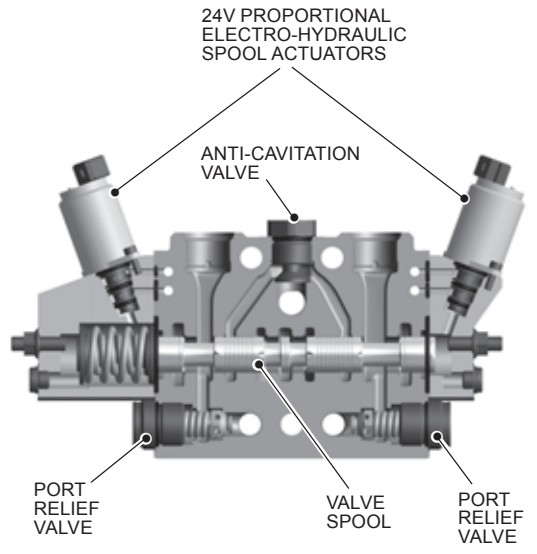
The spool sections are also equipped with anti-cavitation valves, which allow oil to flow from the tank gallery in the valve to the service ports in the event of underpressure.



845C-041 **INLET SECTION**



VALVE ASSEMBLY



SPOOL CROSS SECTION

DETERMINE MINIMUM MR VALUE

6. Temporarily set the minimum MR value to zero.

   At the MIN MR screen press SELECT (F1).

   Use the SCROLL DOWN button to reduce the value to zero and press OK (F1).

   Press ESCAPE button to return to the SELECT FUNCTION screen. (This step is necessary to ensure that the zero setting is recognized by the computer control system. If this step is skipped the control system will not allow the operator to lower the MAX MR setting to zero as required for this procedure)

   Select the same function and direction again.

   Scroll to the Max MR adjustment screen.

   Temporarily reduce the maximum MR value to zero.

   At the MAX MR screen press SELECT (F1).

   Use the SCROLL DOWN button to reduce the value to zero. Do NOT press OK (F1).

   Activate and hold the function being adjusted, in the direction being adjusted. (In this example, (+) Wrist-Attachmt, operate the wrist CLOCKWISE rotation function.)

   There should be no movement (notice that the value shown in brackets at the top right of the screen indicates the actual output to the control valve). Begin increasing the Max MR value, while still holding the function. Use the scroll UP button.