Tigercat®

S855C/LS855C SHOVEL LOGGER

SERVICE MANUAL

SERIAL NUMBER 85551001 TO 85552000
SERIAL NUMBER 85501001 TO 85502000

ISSUE 1.1, JULY 2015

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VIBRATION AND NOISE LEVEL INSIDE CAB

Noise Level Inside Cab dB(A) As per Tigercat test ETR00047				
	Microphone direction:			
	Forward	Rear	Left	Right
Driving max speed (High)	77	76	77	76
Driving max speed (Low)	73	72	72	73
Boom opertation	72	73	72	73

NOISELEVELS.PDF

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

Check with your local Safety Commission to determine if hearing protection is required at these levels.

Vibration Level - Whole-body As per Tigercat test ETR007 & ISO 2631-1 Weighted rms acceleration (m/s^2)				
	Seat		Seat-back	Feet
	Health	Comfort		
Driving max speed (High)				
x-axis (back-to-chest)	0.2370		0.5630	0.4020
y-axis (right-to-left)	0.2310		0.3200	0.4200
z-axis (buttocks-to-head)	0.4660		0.2110	0.6140
S	0.6571	0.5700	0.4850	0.2850
Driving max speed (Low)				
x-axis (back-to-chest)	0.1140		0.2150	0.1200
y-axis (right-to-left)	0.0764		0.0977	0.1440
z-axis (buttocks-to-head)	0.2170		0.0669	0.2230
S	0.2890	0.2568	0.1800	0.1000
Boom opertation				
x-axis (back-to-chest)	0.4510		0.6140	0.1830
y-axis (right-to-left)	0.3710		0.2470	0.3300
z-axis (buttocks-to-head)	0.4440		0.0838	0.3670
S	0.9304	0.7310	0.5070	0.1740

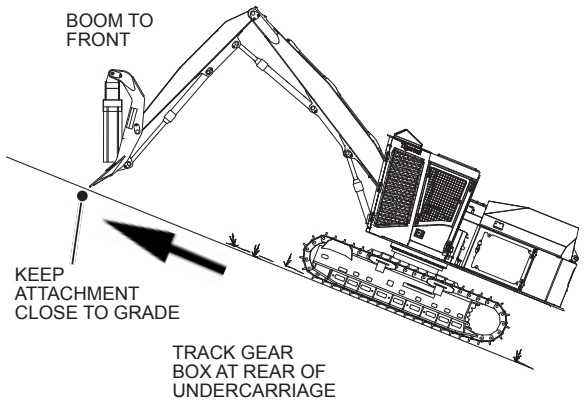
Vibration Level - Hand/Arm As per Tigercat test ETR007 Weighted rms acceleration (m/s^2)	
Driving max speed (High)	
S	1.770
Driving max speed (Low)	
S	1.170
Boom opertation	
S	0.770

**Note for hand/arm, all weighted RMS acceleration values are below 2.5 m/s^2 as per clause 3.6.3 Machinery Directive 98/37/EC Annex 1.*

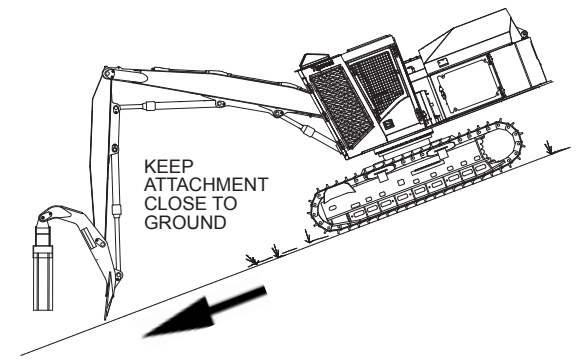
VIBRATION LEVELS.XLS

OPERATING SAFETY PRECAUTIONS continued

- **NEVER** travel across a STEEP slope or side hill.
- Always carry any load on the uphill side of the machine.
- Do not lift or move objects that exceed machine stability.
- Always be prepared to release the load in case it causes the machine to tip.
- Always position the cab so that you have a clear view in the direction of travel. Be aware of ground conditions and obstacles in the machine's path before moving the machine.
- When crossing obstacles (boulders, stumps, ditches etc.) the machine can shift rapidly, greatly affecting the stability of the machine. Move slowly over obstacles, and position the boom against the ground to reduce the risk of the machine shifting rapidly.
- Backing over obstacles unexpectedly while travelling down a slope poses a tipping risk. Know the path of the tracks whenever the machine is moved.
- When climbing a slope the boom should face uphill and the attachment should be kept close to the ground (FIG. 3). When descending a slope the boom should face down hill and the attachment should be kept close to the ground (FIG. 4). Be aware that the machine is in its least stable position on a slope with the boom to the rear. Be particularly aware of machine stability when changing directions on, or travelling back down a slope.
- As you gain experience, recognize that the maximum slope on which the machine can operate cannot be defined simply by an angle value. Variables in surface terrain, soil types, rocks, boulders, stumps, and fallen trees, changing weather conditions, and first and foremost the operator's experience and skill levels greatly affect the maximum slope limitations. Be aware that these factors can result in a shallow slope posing greater risk than a relatively steeper slope. **DO NOT attempt to work on slopes beyond your personal capability level**.



860CS-004 **FIG. 3 - CLIMBING SLOPE**



860CS-003 **FIG. 4 - DESCENDING SLOPE**

SERVICING SAFETY PRECAUTIONS continued

Work in a ventilated area. If it is necessary to run an engine in an enclosed area, use an exhaust pipe extension to remove toxic exhaust fumes.

If you don't have an exhaust pipe extension, either work outside, or open the shop doors.

Dispose of fluids properly.

Do not pour fluids into the ground, stream, pond or lake.

Before draining any fluids, know the proper way to dispose of them.

When performing required hydraulic checks and blade speed adjustments. **Install the saw blade guard.** Refer to attachment manufacturer's instructions.

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

MACHINE MODELS EQUIPPED WITH A LEVELING SYSTEM

Always install support braces in the leveling mechanism while performing service and maintenance tasks. This area is a crush zone. Keep clear to avoid personal injury or death.

DRY CHEMICAL CLEANUP PROCEDURES

Both ABC dry chemical fire extinguishers and fire suppression systems discharge a chemical powder to extinguish the fire. The chemical makeup and the small particle size of the powder as well as the force of the discharge all contribute to the fire fighting capability. These same characteristics also permit the powder to penetrate into and fully cover all components in the vicinity of the discharge.

The following are recommendations for the cleanup and neutralizing of areas exposed to dry chemical powder.

Workers performing this work should wear protective clothing, safety goggles and a fine particle dust mask to minimize their personal exposure to the dry chemical powder.

Ensure that all electrical systems have been completely de-energized prior to any cleanup.

1. In areas of the machine that remained cool and dry during the fire, the dry chemical will stay in powder form.

   Be certain to clean these areas immediately to prevent any settled residual powder from coming into contact with moisture whether through direct contact or humidity in the air.

   Remove the powder residue by blowing off with air, sweeping, dusting or vacuuming using a HEPA filter capable of trapping the small dry chemical particles. Then wipe all surfaces with a damp cloth.

2. In areas exposed to moisture, the dry chemical powder will combine with water to form a paste that is mildly acidic.

   NOTE: that all surfaces covered by this dry chemical paste including electrical contacts are vulnerable to corrosive attack.

   To neutralize the acidic paste on large surfaces, spray or wash these areas with a mixture of three parts hot water to one part baking soda. Allow this mixture to stand for several minutes before rinsing with warm water. Wash the area with a mild soap and water solution. Rinse thoroughly with water. Blow-dry to remove all residual water.

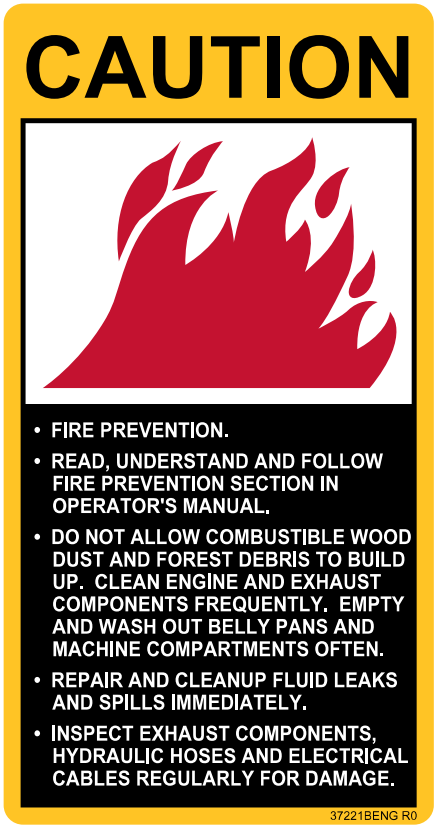
   Cleaning of electrical contacts should be done using an electrical contact cleaner that has no flash or fire point and is noncorrosive and non-conductive such as CRC Contact Cleaner 2000.

3. In areas exposed to heat during the fire, the dry chemical powder will melt forming a coating that cakes or crusts on all surfaces.

   To break down the caked dry chemical, spray or wash these areas with a 50/50 mixture of hot water and isopropyl alcohol. Allow this mixture to stand in place for several minutes.

   The caked dry chemical when exposed to moisture is also mildly acidic. Therefore when the break down procedure has been completed, follow this immediately with the neutralizing procedure as described in step 2

FIRE PREVENTION!



This label advises operators of the following:

READ, UNDERSTAND AND FOLLOW THE FIRE PREVENTION GUIDELINES IN THIS MANUAL. These guidelines provide all the necessary action required to preventing fires on this machine. **DO NOT OPERATE THIS MACHINE** until you have read these instructions and have performed any necessary maintenance required that will prevent the potential of a fire from starting on this machine.

It is also important to note that fire prevention inspections and maintenance **MUST BE PERFORMED FREQUENTLY** (several times per day). A clean combustible free machine as well as frequent inspections of the exhaust components, hydraulic hoses and electrical cables and performing any necessary repairs immediately will help prevent fires.

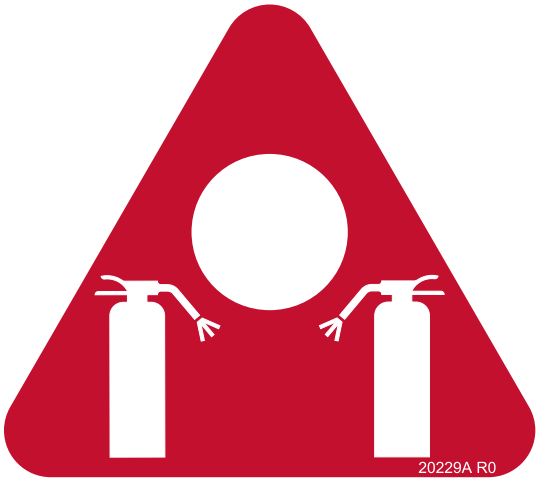
Maintain a CHARGED fire extinguisher on the machine at all times, know where it is and **KNOW HOW TO USE IT**!

CHECK DAILY

In addition to the previous label this label is a reminder to check the machine daily for the possibility of debris build-up, leaks, damaged wires and hoses and take the necessary action required to clean up any debris accumulation, repair any leaks, damaged wires or hoses.

The label also advises to check and ensure that all fire fighting devices are in good working order.

FIRE EXTINGUISHER ACCESS HOLE



This label indicates the location of each **FIRE EXTINGUISHER ACCESS HOLE**. The label is installed on each fire extinguisher hole on the engine door, pump compartment door and L.H. service door.

SCHEDULED MAINTENANCE

FREQUENTLY:

- **Check engine cooling** air intake screens for possible restriction
  In broad leaf applications it may be necessary to reverse the cooling fan as frequently as every **10 mins**.
- **Check for debris,** snow and ice buildup on emergency exits and remove accumulation immediately.
- **ER Boom system:**
  Periodically, the main boom must be lifted up as far as it will go and then lowered to operating height in an area free from overhead obstructions in order to circulate hydraulic oil from the cylinders back through the cooler and filters. This oil does not circulate through the cooler or filters during normal horizontal motion and the oil does not get completely changed during normal vertical motion, so it is important that this procedure be followed at least once every hour.

EVERY 8 HOURS:

- **Perform frequently maintenance**

And in addition:~

- Check engine coolant level.
- Check engine oil level.
- Drain water from fuel/water separator.
- Check air intake pre-cleaner operation.
- Check air cleaner unloader valve if equipped.
- Check air intake filter restriction indicator.
  Replace primary filter if indicator is in red zone.
  Replace secondary (safety) filter every third primary filter change to guarantee maximum performance and reliability.
- Check hydraulic oil level.
- Check swing drive gearbox upper gearing gear oil level.

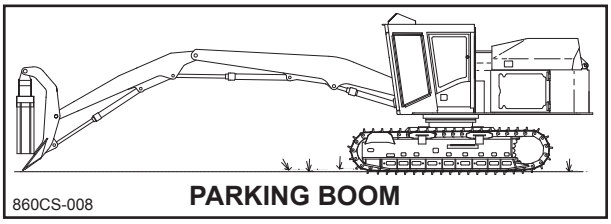
Lubricate:

- Swing pinion; 2-fittings - 10 shots each
- Cylinders, Leveling; 4-fittings total - purge (If equipped with leveler)
- Thrust bearing, Leveling; 2-fittings - purge (If equipped with leveler)
- ‡ Boom joints:
  Conventional Boom; 6-fittings - purge
  Conventional w/Tilt Link; 12-fittings - purge
  ER Boom System; 12-fittings - purge
- ‡ Cylinders; hoist, stick & heel;
  Conventional Boom; 8-fittings - purge
  ER Boom System; 10-fittings - purge

‡ **Lubricating cylinder pins and boom joints:-**

1. Ensure machine is on level ground.
2. Fully retract telescopic stick (if equipped).
3. Lay attachment on ground.
4. Force tip of stick boom onto support.
5. While in this position lubricate all cylinder retaining pins and boom joints.

   NOTE: This procedure will allow grease to flow to the normally "loaded side" of the pin/bearing surfaces.



860CS-008 **PARKING BOOM**

Clean:

- Oil cooler, engine radiator and enclosure screens.
- Remove potentially damaging limbs or sticks.

Check:

- All air intake system components (including charge air cooler) rubber elbows, connector hoses, tubes and clamps for damage, hardening, wear, cracks, leaks, loose clamps or loose hanger bracket hardware and repair or replace immediately.
- Charge Air Cooler for damage, wear, cracks, or leaks and repair immediately.
- For leakage around hydraulic components and flexible hoses.
- For loose nuts, bolts and fittings.
- Condition and tension of belts.
- Visually check condition of tracks.
- Exhaust system for leaks.
- Conduct an overall visual inspection.
- Refer to diesel engine service manual and attachment manual for additional required maintenance at this scheduled time period.

APPROVED HYDRAULIC OILS

Use one of the following oils to fill or replenish the hydraulic system.

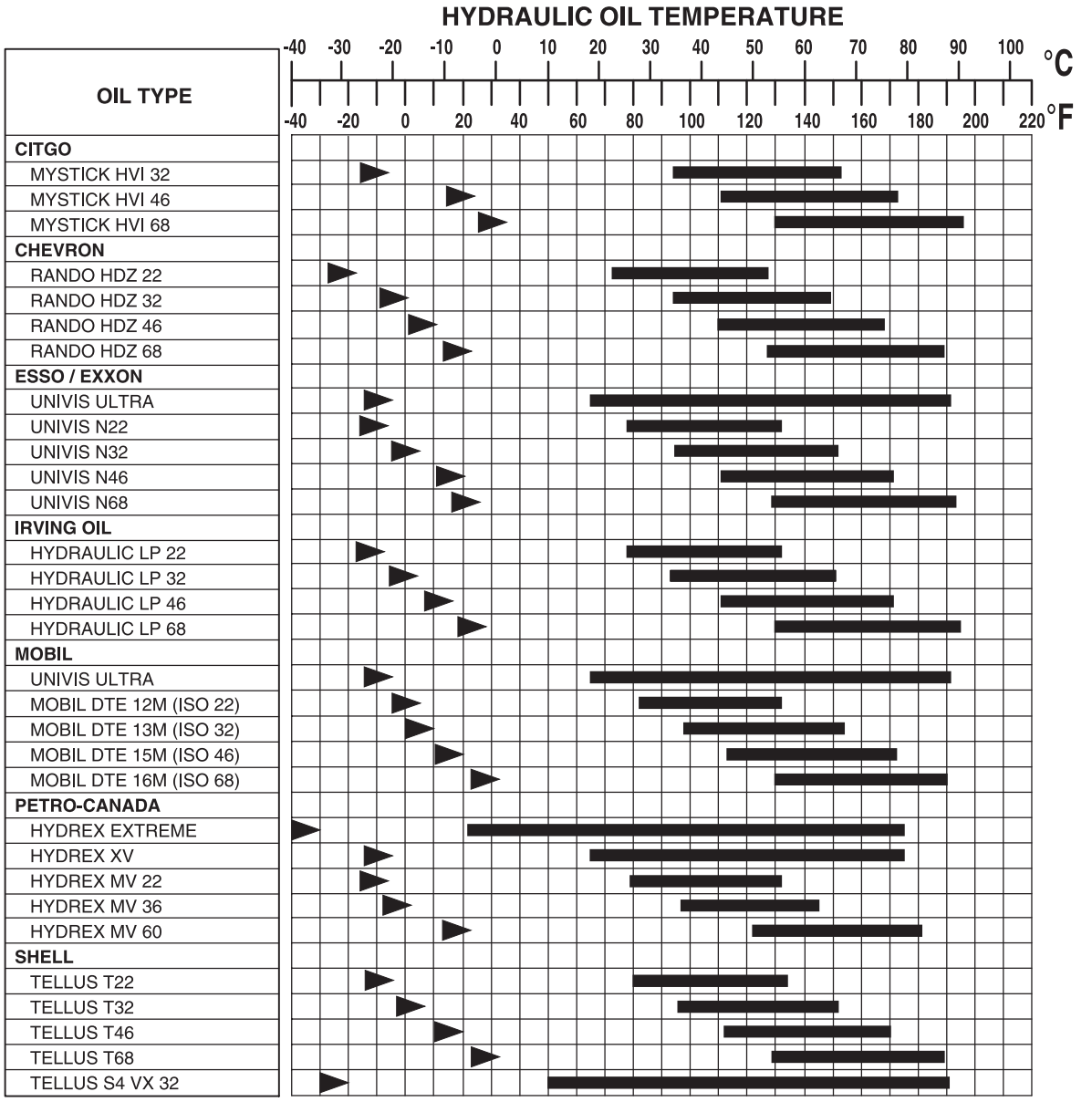
HYDRAULIC OIL OPERATING RANGE

(Not suitable for axle applications)

Tigercat

OPERATING TEMP. RANGE

LOWEST START-UP TEMP.



NOTICE OPERATING MACHINE OUTSIDE LIMITS SHOWN WILL RESULT IN FAILURE OF HYDRAULIC COMPONENTS.

5168AR05

HYDRAULIC FILTER SERVICING GUIDELINES

IMPORTANT!

NEVER PRE-FILL

HYDRAULIC FILTERS

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

Contaminated hydraulic fluid can lead to premature failure of hydraulic components and costly repairs. Filters must be replaced at the recommended time intervals, Refer to SCHEDULED MAINTENANCE in THIS SECTION.

Use of hydraulic oil filters other than the Tigercat brand could lead to severe wear and rapid failure of hydraulic system components.

⚠ WARNING

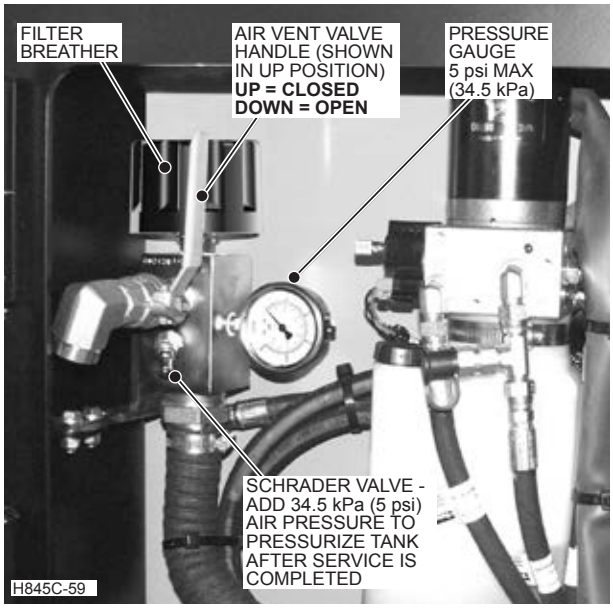
WARNING, HOT HYDRAULIC OIL AND HOT MACHINE SURFACES CAN CAUSE SERIOUS BURNS!

- Before servicing the machine, allow the hydraulic system and machine surfaces to cool down.
- Use a thermometer to check surface and system temperatures to ensure it is safe to begin service work.
- **DO NOT** begin service work until the surface or system temperature has cooled down to below 38°C (100°F).

HYDRAULIC TANK PRESSURIZATION INSTRUCTIONS.

IMPORTANT! PRESSURIZED HYDRAULIC TANK. 34.5 kPa (5 psi) MAXIMUM.
Before servicing hydraulic system, release air pressure from tank using air vent valve.

To release pressure from the hydraulic tank:



Wearing eye protection, release air from the hydraulic tank by opening the AIR VENT VALVE. Pull valve handle down 90° to open. Push valve handle up to close.

Note: Expelled air from vent valve will blow accumulated loose debris in the enclosure.

Releasing hydraulic tank pressure in the event of a hose breakage may reduce oil loss.

IMPORTANT! AIR VENT VALVE MUST BE OPENED BEFORE CHANGING HYDRAULIC FILTERS AND STRAINERS OR PERFORMING ANY OTHER SERVICE ON HYDRAULIC CIRCUITS. DO NOT OPERATE MACHINE WITH THE AIR VENT VALVE IN THE OPEN POSITION.

During a filter change or return hose replacement, air is able to enter the return hydraulic circuit. It is important to bleed as much of this air as possible out prior to restarting the machine. See **HYDRAULIC OIL RETURN FILTERS *"filter change procedure"*** for instructions on bleeding air from return circuit. AIR BUBBLES IN THE HYDRAULIC SYSTEM WILL DAMAGE THE PUMPS.

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)**.

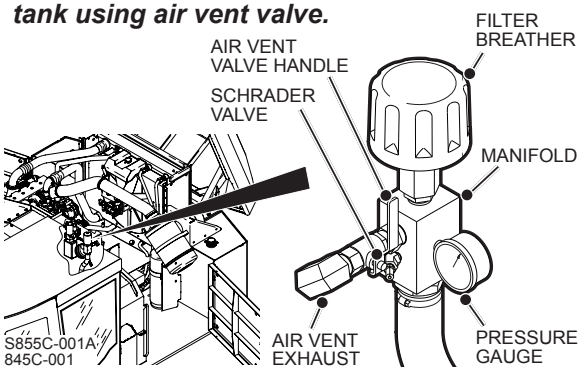
CASE DRAIN STRAINERS

IMPORTANT

PRESSURIZED HYDRAULIC TANK.

34.5 kPa (5 psi) MAXIMUM.

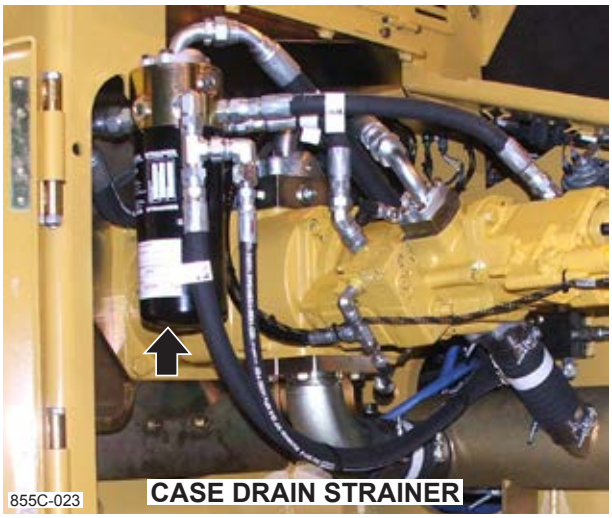
Before servicing hydraulic system, wearing eye protection, release air pressure from tank using air vent valve.



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)**.

Two case drain strainer elements are located on the machine.

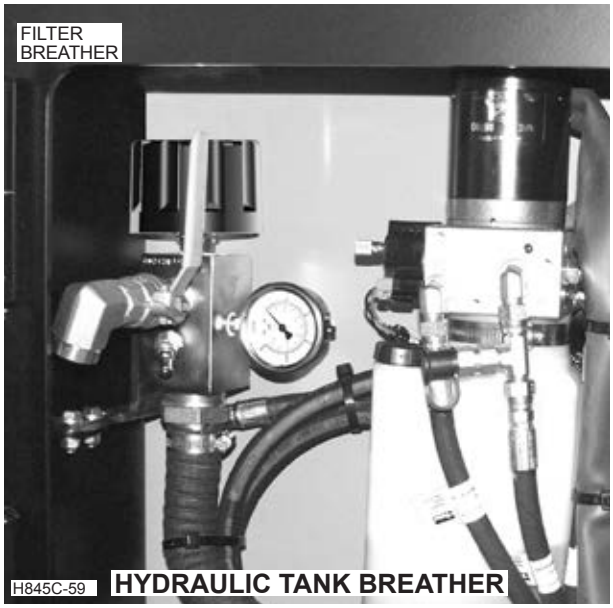
IMPORTANT!
Only in the event of a catostrophic failure of the pump or motor should these elements be serviced. Always use the correct replacement element.



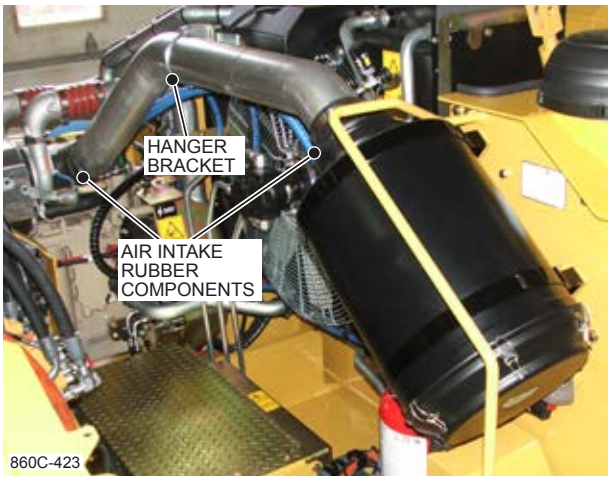
One strainer is located in the pump compartment and services most pump case drains.

The other strainer is located under the main valve in the valve compartment. This element is dedicated to case returns from the attachment head.

HYDRAULIC TANK BREATHER



The hydraulic tank breather is located in the compartment at the rear of the operator cab. This breather should be replaced every 2000 hours.



INTAKE TUBING AND JOINTS

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

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

NOTE: High temperature silicone connectors do not need to be replaced unless damaged.

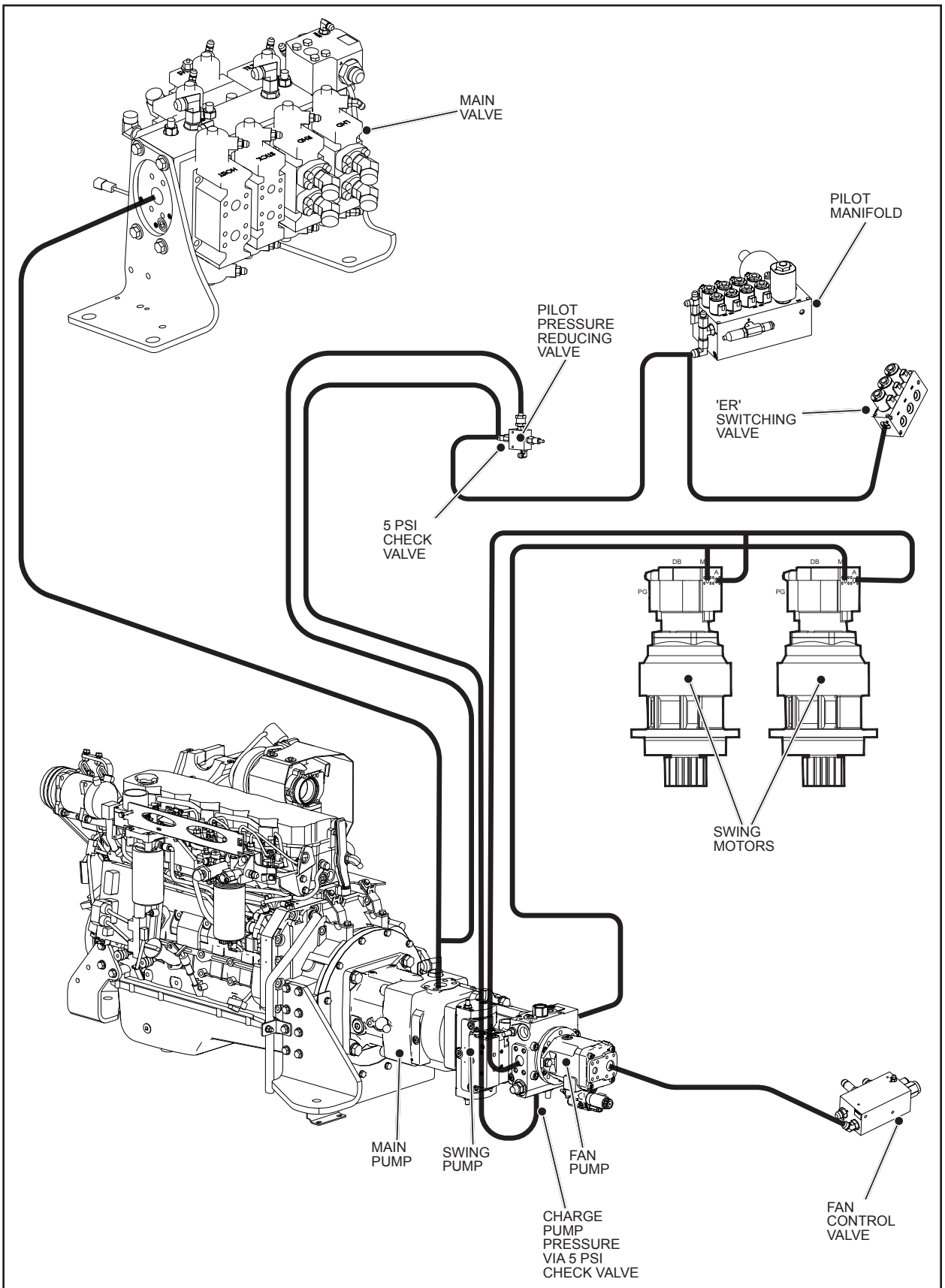
Tigercat wire colour code chart applicable to all products manufactured by Tigercat Industries Inc.

COLOUR	FUNCTION	EXAMPLE
Red	Power	(fused and unfused)
Black	Ground	
White	Engine control	(fuel shut-off, start aid)
Blue	Propulsion Control	(transmission/reverser solenoids)
Purple	Monitor, electrical and mechanical systems	(air cleaner, alternator, wheel speed, engine speed)
Tan	Electrical and electromechanical control	(park brake, alternator excitation) (power door motor, backup alarm)
Yellow	Monitors	(flow, pressure, temperature, level)
Grey	Standard monitor system	(logic module to monitor)
Brown	Lights	
Green	Electro-hydraulic control	(pilot solenoids)
Orange	Accessories	(horn, A/C, heater)

COMMON CONVERSIONS

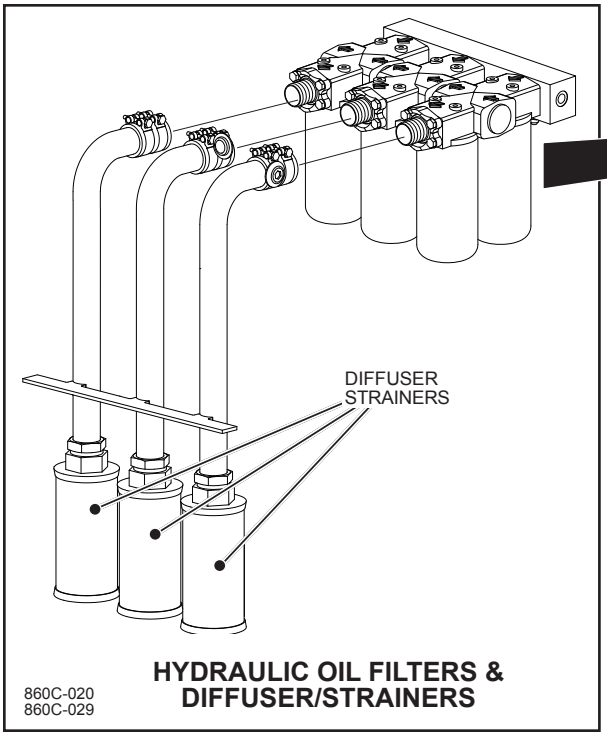
To Convert	Into	Multiply By
bar	psi	14.5
cm^3	in^3	0.06102
°C	°F	(°C x $^9/_5$) + 32
kg	lb	2.205
kW	hp	1.341
L	US gal	0.2642
mm	in	0.03937
N•m	lbf•ft	0.7375
N	lbf	0.22481

To Convert	Into	Multiply By
in^3	cm^3	16.39
°F	°C	(°F - 32) / 1.8
US gal	L	3.785
hp	kW	0.7457
in	mm	25.4
lb	kg	0.4535
lbf•ft	N•m	1.356
psi	bar	0.06896
in Hg	psi	0.4912
in H_2O	psi	0.03613
lb	N	4.4482



SHOVEL LOGGER
S855C-107 **HYDRAULIC SYSTEM PUMPS AND VALVES - 855*1001 TO 855*1070**

RETURN FILTERS ~ HYDRAULIC OIL



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HYDRAULIC OIL FILTERS & DIFFUSER/STRAINERS

The majority of return oil entering the tank first passes through six spin-on hydraulic oil filters mounted onto three double filter heads. The input side of the filter heads are connected in parallel to a return manifold. The output side of the filter heads direct the oil to tank via three return lines.

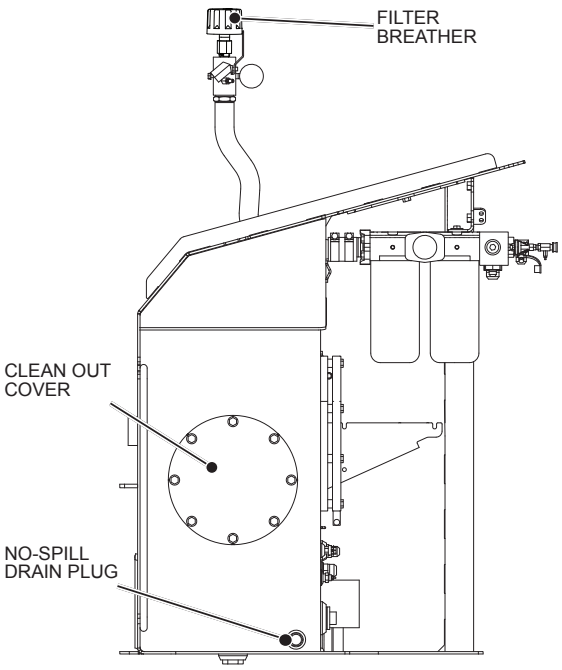
RETURN DIFFUSER/STRAINERS

Return diffuser/strainers located inside the hydraulic tank act as a final backup for preventing foreign material from entering and contaminating the hydraulic tank.

860C-496 **HYDRAULIC TANK**

STRAINER SERVICE NOTE

The strainers should be checked/changed at the intervals specified in the LUBRICATION AND MAINTENANCE SCHEDULE in SECTION 3 of THIS MANUAL. For instructions on changing these diffusers/strainers, refer to DIFFUSERS/ STRAINERS, HYDRAULIC TANK in SECTION 3 of THIS MANUAL.



860C-453 **REAR VIEW OF HYDRAULIC TANK**

LOAD SENSING

BASIC PRINCIPLES

Figs. 1 & 2 Early hydraulic systems used a fixed displacement pump, with valves to control or adjust flow rates or speeds. This throttling or restricting pump flow to achieve control over the functions causes excess oil to flow over the relief valve. This results in wasting power and at the same time creates heat. SEE FIGS. 1 & 2.

Figs. 3 & 4 In an attempt to recover some of the wasted energy, variable volume pumps evolved. These pumps are power regulated or horsepower controlled and since they reduce the pumps output to maintain a constant system hp, oil flow over the relief valve is less, therefore reducing the wasted power losses and heat generation. SEE FIGS. 3 & 4.

The power wasted in the horsepower control system is still considerable and still requires constant "throttling" by the operator if he wants the speeds to remain as selected.

Figs. 5 & 6 The load control system was developed to address the problems outlined above.

This system combines the energy saving benefits of *flow on demand* with *load compensation at each work port*. The compensator eliminates the need for operator flow adjustments (throttling). SEE FIGS. 5 & 6.

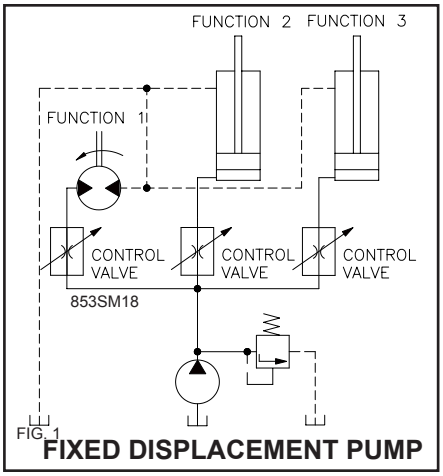


FIG. 1 **FIXED DISPLACEMENT PUMP**

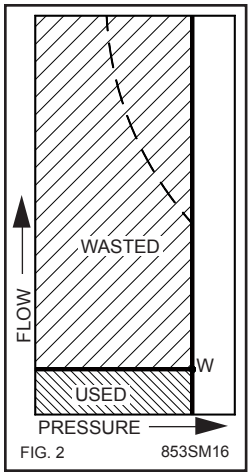


FIG. 2 853SM16

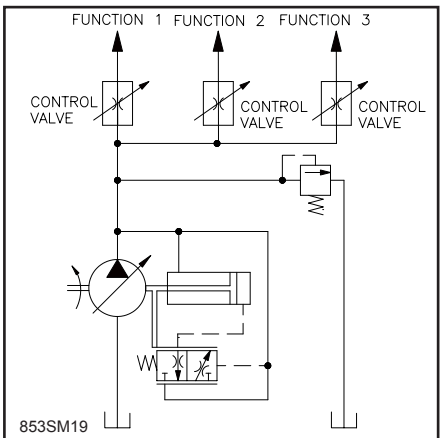


FIG. 3 **HP REGULATED PUMP**

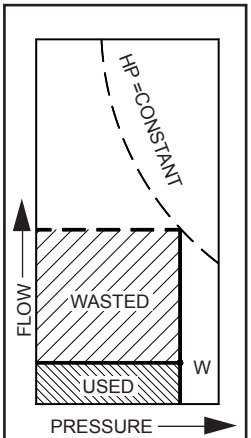


FIG. 4 853SM16

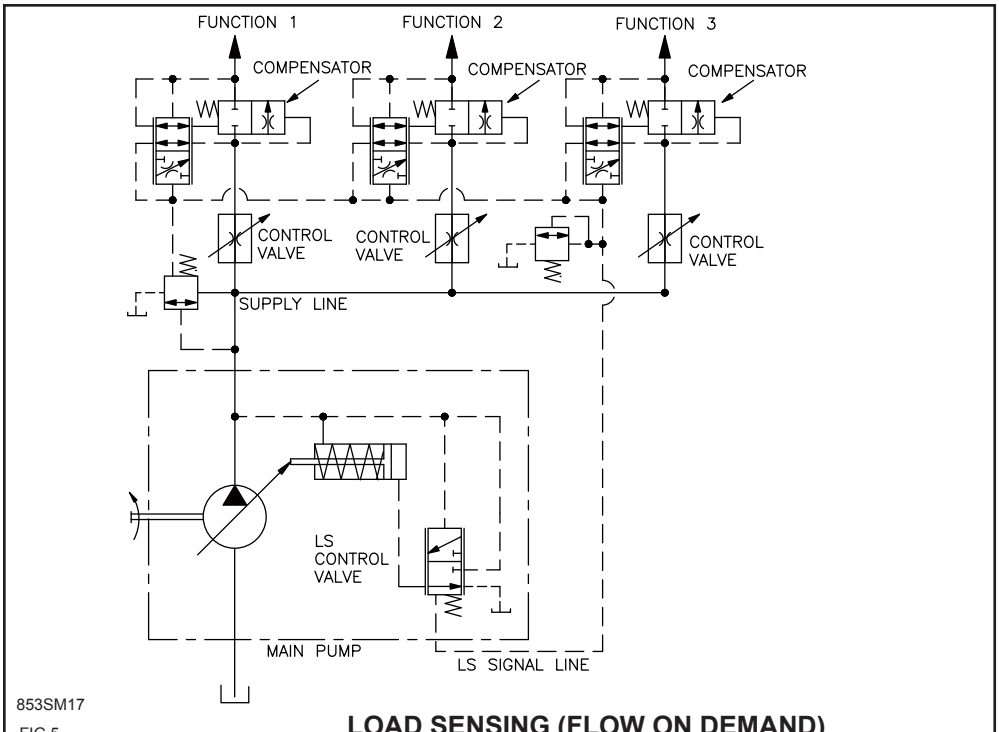


FIG.5 **LOAD SENSING (FLOW ON DEMAND)**

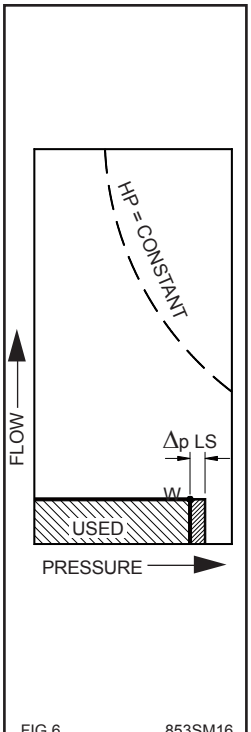
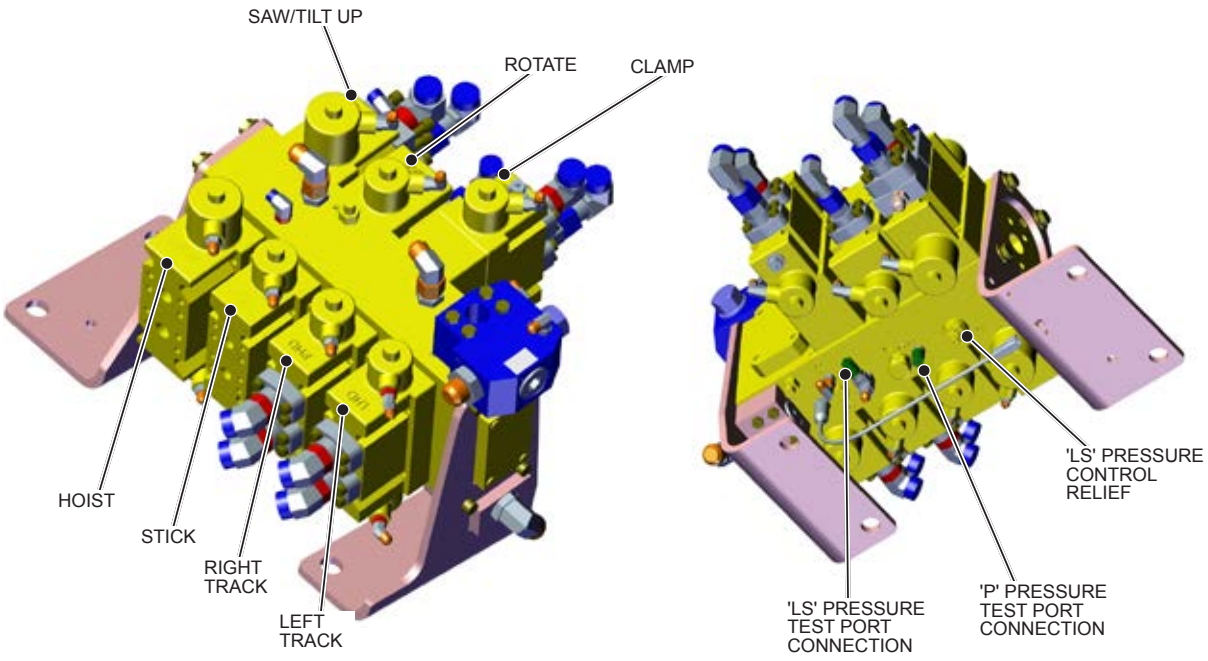


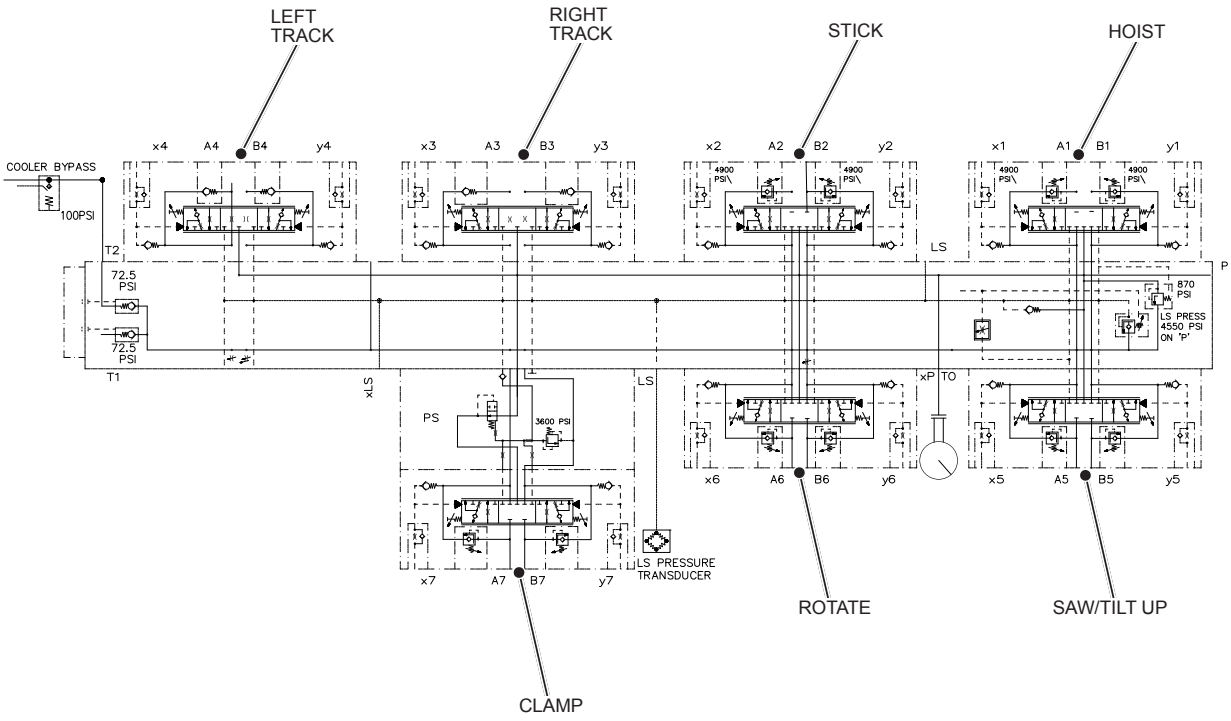
FIG.6 853SM16



S855C-061

FELLER DIRECTOR
MAIN CONTROL VALVE

S855C-062



S855C-119

FELLER DIRECTOR
MAIN CONTROL VALVE - SCHEMATIC

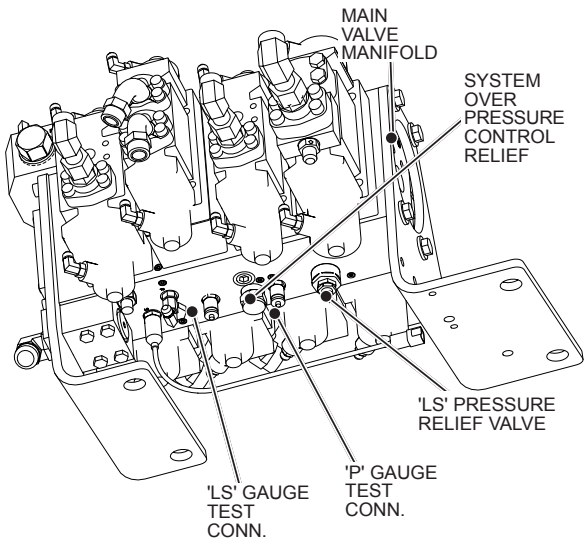
HIGH PRESSURE LIMITING CONTROL VALVE

The main pump is protected by two relief valves that are installed in the bottom of the main control valve. These two valves provide High Pressure Limiting Control for the main pump in the following form:

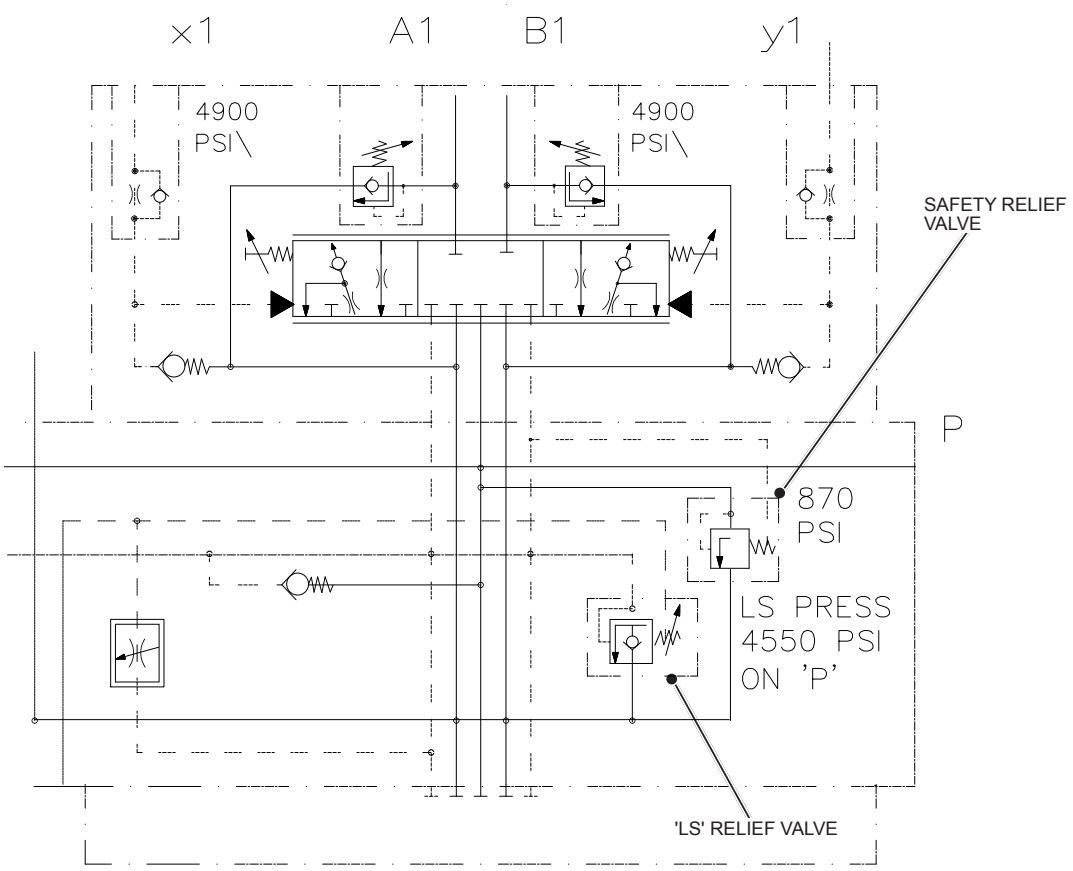
The first relief valve limits L.S. pressure to approx. 296 bar (4300 psi). (Gauge at 'L.S.' test port) which in turn limits the pump output pressure to 314 bar (4550 psi). (Gauge at 'P' test port) The 17 bar (250 psi) differential is known as margin pressure. See SET MARGIN PRESSURE in THIS SECTION.

Margin pressure is the difference between 'P' port pressure and L.S. port pressure, observed while a function is operating.

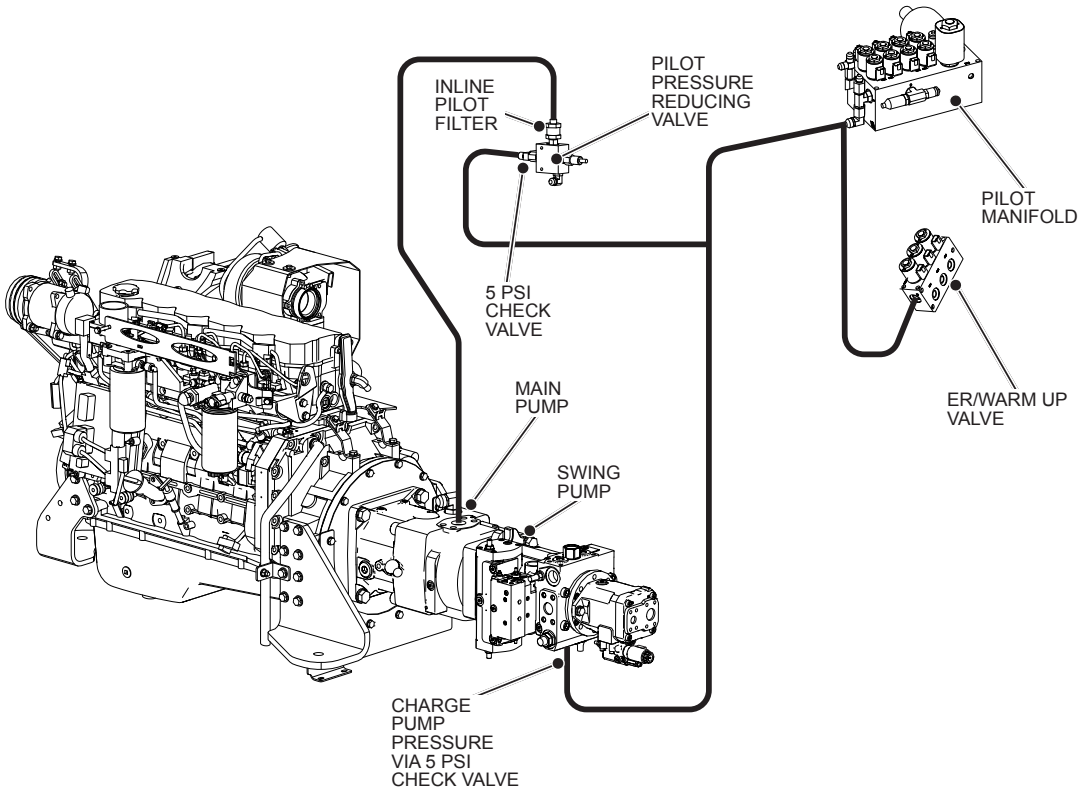
The second relief is a safety (PCO) system relief valve (see description earlier in this section) which limits the pump output pressure to 60 Bar/870 psi above L.S. pressure, this relief is non-adjustable.



855C-210 **MAIN CONTROL VALVE TEST PORTS AND RELIEF VALVE LOCATIONS**

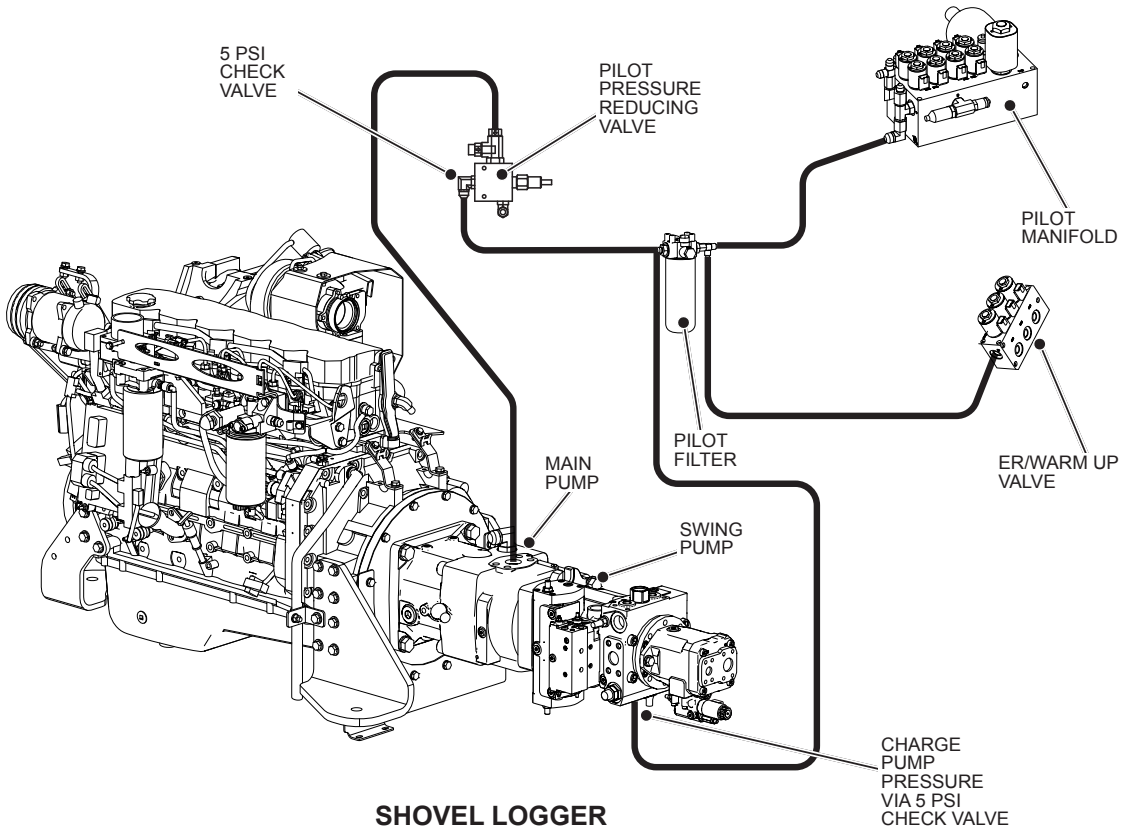


S855C-203 **MAIN CONTROL VALVE RELIEF VALVES**



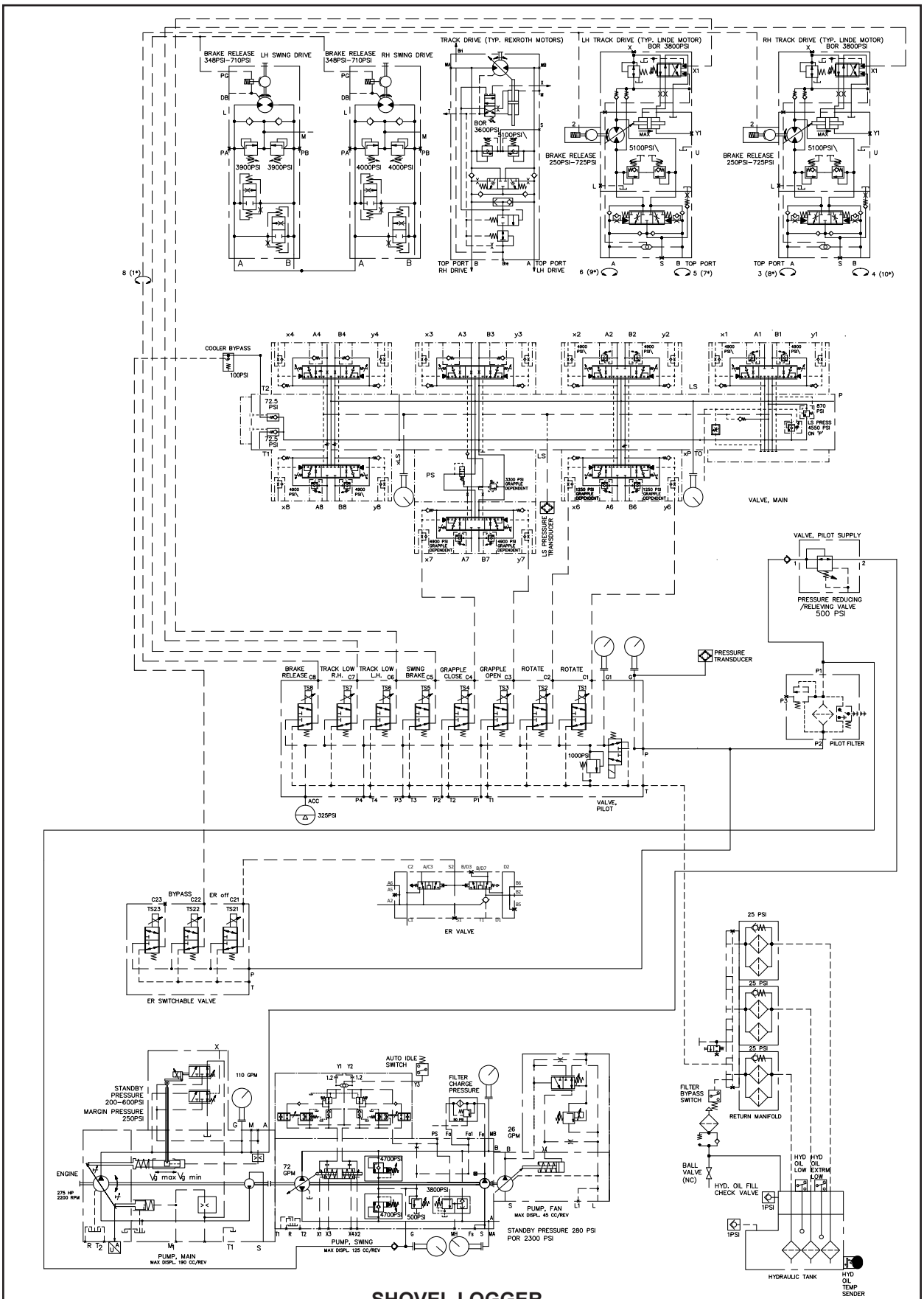
SHOVEL LOGGER
PILOT CIRCUIT SUPPLY 855*1001 TO 855*1070

S855C-120



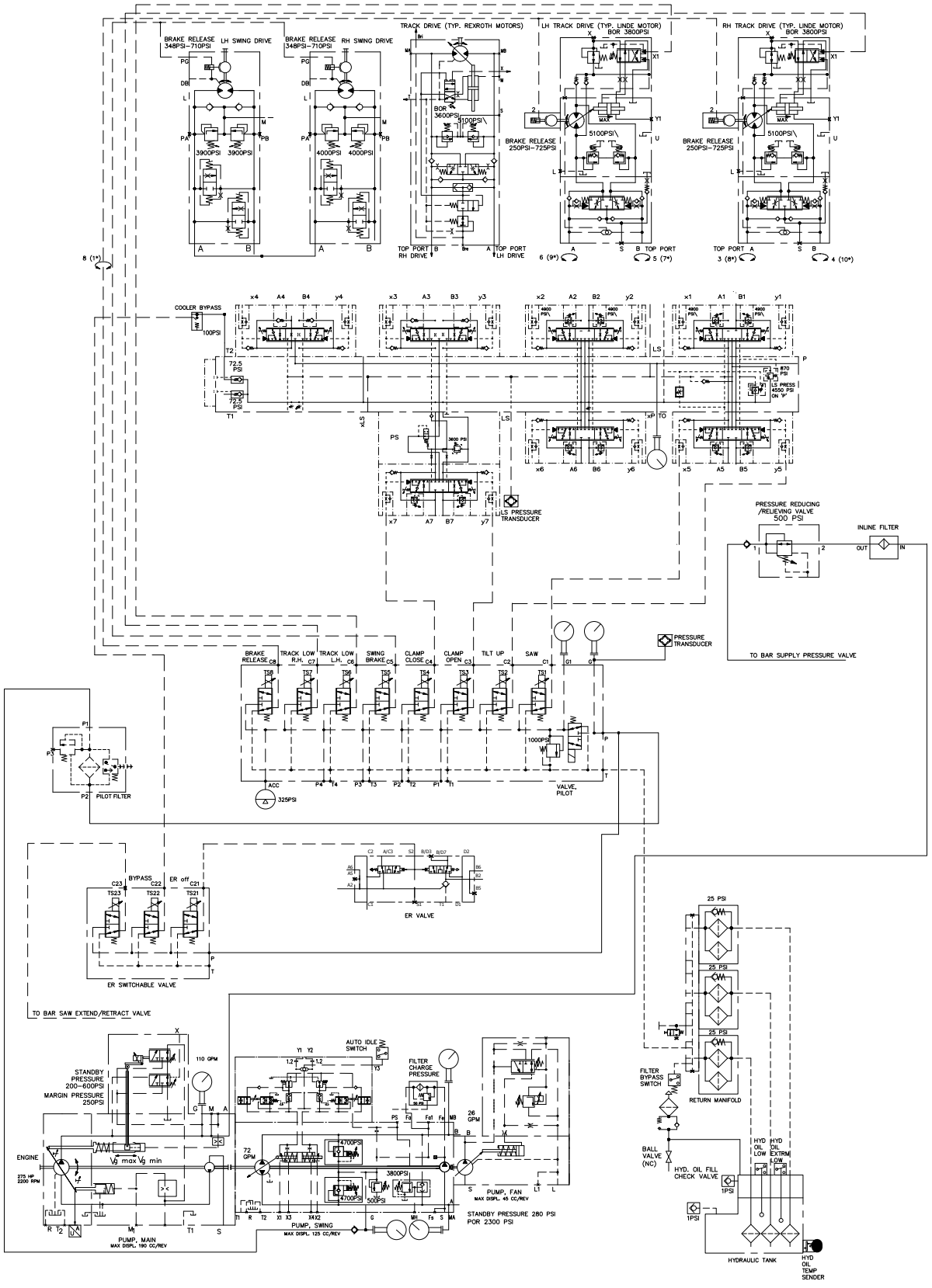
SHOVEL LOGGER
PILOT CIRCUIT SUPPLY 855*1071 TO 855*2000

S855C-121



SHOVEL LOGGER
PILOT SYSTEM SCHEMATIC (C PORTS & ER VALVE) 855*1071 TO 855*2000

S855C-128



S855C-142 **FELLER DIRECTOR PILOT SYSTEM SCHEMATIC (C PORTS & ER VALVE)**

SYSTEM FUSES AND RELAYS

IMPORTANT
24 VOLT ELECTRICAL SYSTEM

There are three areas where Fuse and Relay Electrical Components are located. They are as follows:

- Engine compartment
- Rear panel behind cab
- Cab

Two 125A and three 60A fuses are installed in the Fuse and Relay Rear Panel ahead of the system circuit fuses and are there to prevent major damage to the electrical systems of the machine in the event of a short circuit in any of the main battery feed lines.

Each circuit on the machine is further protected against current overload by individual circuit fuses. The circuit fuses on the Fuse, Relay and Electrical Panel in Cab protect the cab electrical components.

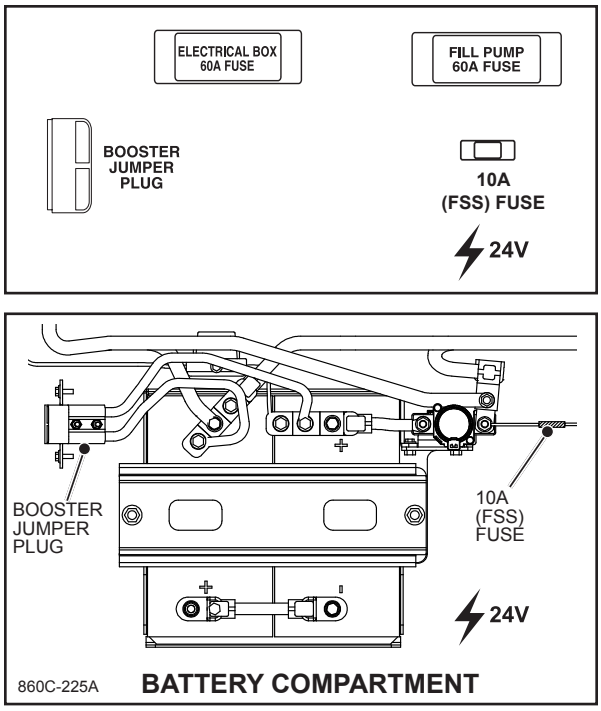
The fuses in the Fuse and Relay Rear Panel protect the circuits for the work lights, engine ECU, engine enclosure power door and many other machine operating circuits. Refer to the label on the previous page for specific fuse designation and location.

A 60A fuse located in the battery compartment provides unswitched power for cab lights and service lights.

A second 60A fuse is located between the battery compartment and the hydraulic fill pump electrical circuit to provide unswitched power for the electrically operated fill pump.

A 10A in-line fuse protects the fire suppression system when a fire suppression system is installed. This fuse is located in the fire suppression power lead from the battery.

If a fuse “blows” it should be replaced with a fuse of the same amperage rating. If the fuse “blows” again, the circuit in question must be inspected for possible short circuit.

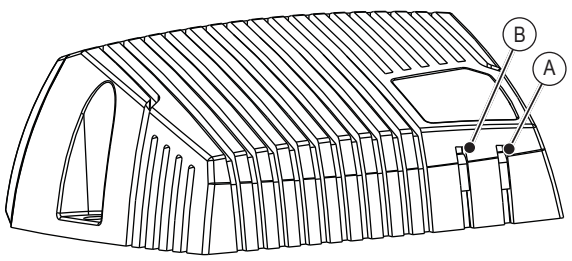


BATTERY BOOSTER JUMPER PLUG

A battery booster jumper plug is located in the battery compartment. This special JUMPER CONNECTOR is used in conjunction with jumper cables with matching ends. Cables with matching ends are available through your Tigercat Dealer Parts Department. If standard jumper cables are used the NEGATIVE connection can be made anywhere on the upper frame, as close to the batteries as possible on bare metal.

XS2-A0 MODULE

X-MODULE LED



XS2-A0 MODULE LED INDICATORS

XS2-A0 MODULE LED INDICATORS

If there is an error detected, the master (MD3) will present a message on the display. The XS2-A0 module also indicates error status through the red blinking LED. This gives an immediate diagnosis as to the nature of the error that has occurred.

A. Supply Voltage LED (green).

LED with green light ON indicates supply voltage is ON.

LED OFF indicates supply voltage is OFF.

B. Status indicator LED (yellow/red).

LED yellow flashing light indicates status is correct.

LED flashing red light indicates error status as follows:

- One red primary flash and one, two or three secondary yellow flashes indicates an error controlled by the master (MD3).
- Two red primary flashes in a row and one or two yellow secondary flashes indicates an error controlled by the master (MD3).
- Three red primary flashes in a row and one yellow secondary flash indicates that the fault is related to the CAN-bus.
- Three red primary flashes in a row and two yellow secondary flashes in a row indicates that the fault is related to the address.
- Four red primary flashes in a row and one yellow secondary flash indicates a memory error.
- Continuous red primary flashing indicates a fatal error.

LED indicator showing different XS2 and XA2 modes

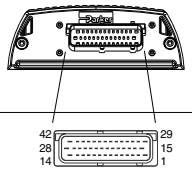
Status		Flash	
Normal operation (yellow)			
Error code	**Error**	**Primary Flash (red) Error category**	**Secondary Flash (yellow) Error description**
1:1	Output error[a]		
1:2	Input error[a]		
1:3	Vref error[a]		
2:1	Voltage High/Low error[a]		
2:2	Low/High temperature[a]		
3:1	CAN error		
3:2	Address error		
4:1	Memory error[b]		
FE	Fatal error		

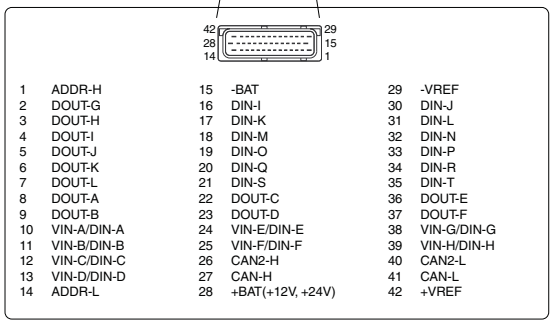
a. Error groups 1:n and 2:n are controlled by the master, see also on screen warnings.
XA2 ERROR CODE ror.

Internal diagnostics in the master (MD3) can be used to get more information about the XS2-A0 module. The following values are supervised:

- Internal temperature (°C)
- Power supply (V)
- Reference voltage (V)
- CAN address voltage (V)

XS2-WIREASSIGN





1	ADDR-H	15	-BAT	29	-VREF
2	DOUT-G	16	DIN-I	30	DIN-J
3	DOUT-H	17	DIN-K	31	DIN-L
4	DOUT-I	18	DIN-M	32	DIN-N
5	DOUT-J	19	DIN-O	33	DIN-P
6	DOUT-K	20	DIN-Q	34	DIN-R
7	DOUT-L	21	DIN-S	35	DIN-T
8	DOUT-A	22	DOUT-C	36	DOUT-E
9	DOUT-B	23	DOUT-D	37	DOUT-F
10	VIN-A/DIN-A	24	VIN-E/DIN-E	38	VIN-G/DIN-G
11	VIN-B/DIN-B	25	VIN-F/DIN-F	39	VIN-H/DIN-H
12	VIN-C/DIN-C	26	CAN2-H	40	CAN2-L
13	VIN-D/DIN-D	27	CAN-H	41	CAN-L
14	ADDR-L	28	+BAT(+12V, +24V)	42	+VREF

XS2-A0 MODULE WIRING PIN ASSIGNMENT

Note that the XS2-A0 module is equipped with eight voltage inputs (VIN-A to VIN-H) which may be configured as digital inputs (DIN-A to DIN-H). The function of these inputs determined by the machine program.

NOTE: Refer to the XS2-A0 CAB MODULE SCHEMATIC in THIS SECTION or MACHINE ELECTRICAL SCHEMATIC for detailed pin and wiring assignment.

COOLING FAN SERVICE MODE

Press the F1 button to select **FAN SERVICE MODE** Menu from the ADJUSTMENT MENU. The fan service mode menu appears. Two choices are given, ON or OFF. Press the up or down arrow buttons to scroll to the desired selection and press the OK button to set the selection.

This mode is for when a mechanic has to be in the engine compartment. This mode will run the fan in the CLEAN direction and will adjust the speed according to the requirements of the cooling system so that the mechanic doesn't get blasted with hot air. The A/C will be switched off as well.

OIL GRADE SELECTION

Press F2 button to select OIL GRADE Menu from the ADJUSTMENT MENU.

The oil grade menu will appear.

ISO22
ISO32
MULTI
ISO46
ISO68

Press the up or down arrow buttons to scroll to the desired oil grade and press OK when complete.

This information is used by the machine program to adapt hydraulic oil temperature warning messages for the operating range of each Hydraulic Oil Grade.

Hydraulic oil grade information is shown on the Main Display below the hydraulic oil temperature gauge.

Refer also to APPROVED HYDRAULIC OILS in SECTION 3 of THIS MANUAL for hydraulic oil operating range information.

Refer also to COMPUTER ~ MESSAGES - CRITICAL ~ HYDRAULIC OIL TEMPERATURE HIGH in THIS SECTION for more information about the hydraulic oil temperature warning.

Press the back button to return to the Main Display.

ROTATE FUNCTION CCW (SHOVEL LOGGER)

Use the up or down arrow buttons to scroll to the Wrist/Rot/Pump 2 /LVL in the Hydraulics Menu and press OK.

Push the F3 button to access the Counterclockwise Rotate adjust menu and press OK.

NOTE: When in the Min Adjust menu only the Min current will be applied to the counterclockwise rotate valve when the function is activated.

Activate and hold the counterclockwise rotate function on the joystick and at the same time using the up or down arrow buttons adjust the Min setting so the grapple just begins to rotate.

NOTE: An innacurate adjustment of the Min setting renders the start and stop ramps innacurate.

Once the setting has been adjusted press OK.

The default setting is 200 mA.

NOTE: When in the Max Adjust menu only the Max current will be applied to the counterclockwise rotate valve when the function is activated.

Activate and hold the counterclockwise rotate function on the joystick and at the same time using the up or down arrow buttons adjust the Max setting so the grapple rotates at the disired speed. It may be necessary to switch between Rotate CCW and CW to set this adjustment.

Once the setting has been adjusted press OK.

The default setting is 500 mA.

This is the Start ramp setting. This is the amount of time it will take the current to climb from the Min to the Max setting when the valve is activated.

Increasing this setting will result in a less aggressive start of the rotate function while decreasing the setting will result in a more aggressive start. Use the up or down arrow buttons to adjust this setting and press OK.

The default setting is 250 mS.

The stop ramp setting controls the rate at which the saw turns off when it is deactivated. Using the up or down arrow buttons adjust the stop ramp setting to 750 mS.

IMPORTANT!
The default setting is 250 mS however on a Feller Director 750 mS should be used so that the saw can continue to run for a period as the saw bar retracts.

TILT UP FUNCTION (FELLER DIRECTOR)

Use the up or down arrow buttons to scroll to the Wrist/Rot/Pump 2 /LVL in the Hydraulics Menu and press OK.

Push the F4 button to access the Warm Up menu and press OK twice. The Warm Up menu is used for the Tilt Up adjustment .

NOTE: When in the Min Adjust menu only the Min current will be applied to the tilt up valve when the function is activated.

Activate and hold the tilt up function on the joystick and at the same time using the up or down arrow buttons adjust the Min setting so that the attachment head just starts to creep.

The default setting is 200 mA.

NOTE: An inaccurate adjustment of the Min Current renders the start and stop ramps inaccurate.

ADJUSTING CYLINDER TRACKING AND MIN/ MAX SETTINGS.

Press the menu button to go to the MAIN MENU.

Press F1 to access the Adjust menu.

The Adjust Menu appears.

Using the up or down arrow buttons scroll to the Leveling Menu item. Press OK to confirm the selection.

Using the up or down arrow buttons scroll to the RIGHT LEVEL CYLINDER (CYL OL) menu item and press OK.

Using the up or down arrow buttons set the desired % value. This value will determine how quickly the anti-stall output will be deactivated and restore full hydraulic power once the engine returns to max RPM.

Setting the value to 100% will deactivate the output in 1 second and setting it at 50% will deactivate the output in 2 seconds.

Press OK once the value has been set. The default setting is 100%.

The Anti-Stall adjustment is now complete.

INFO MENU

From the main menu page press the F4 button (Info) and the Info menu page appears.

The following menu items can be selected.

- Modules - Select F1
- Logs - Select F3

The Machine ID information will be displayed on the screen along with the part number of the MD3 program installed.

MODULES

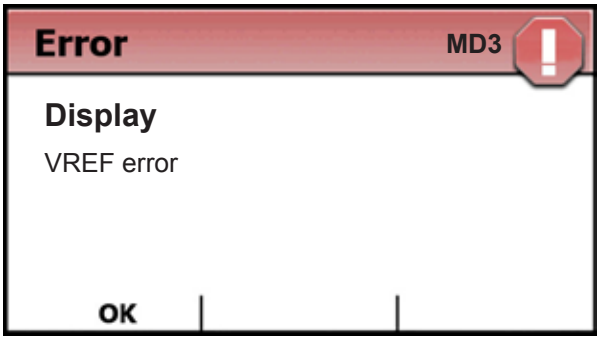
Press F1 to select the modules menu. This menu provides information on the following machine modules:

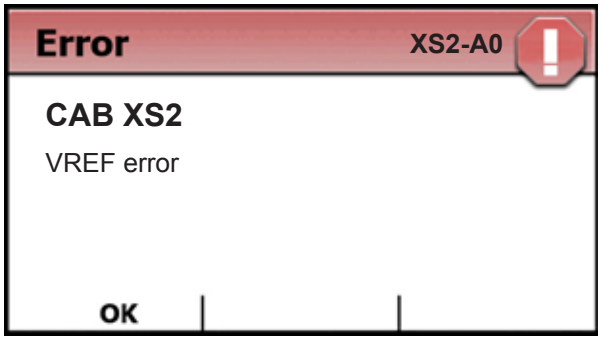
- MD3 (Computer Module)
- Cab XS2
- Frame Module 0 XA2
- Frame Module 1 XA2
- Cummins Engine ECM

Shown above, the **MD3** module has been selected. Specific information for the MD3 is displayed on the screen.

This menu is used by Tigercat service technicians. Press the back button (or F1) to return to the main menu page.

ERROR MESSAGES





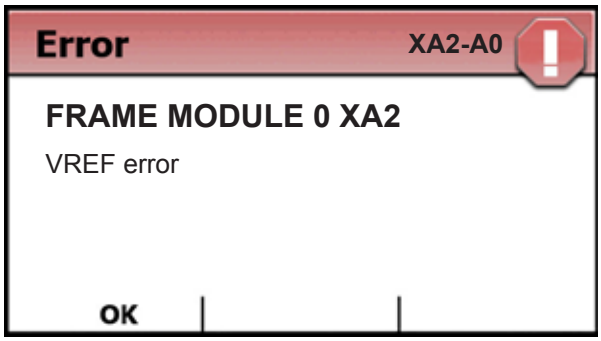
MODULE VREF ERROR

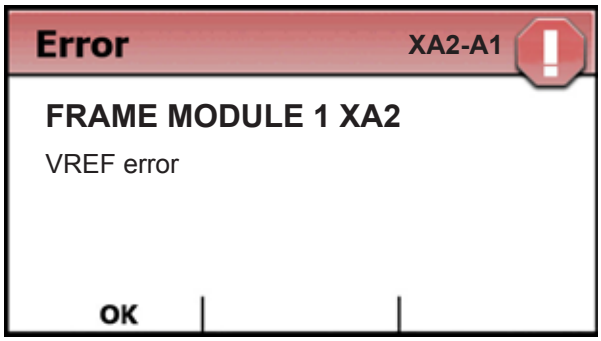
The module VREF message will be displayed to indicate a problem related to the 5 V reference signal coming from the module.

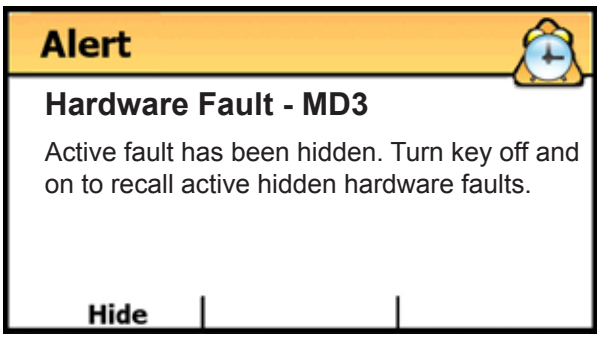
The module is identified on the display screen.

This message indicates a problem with a sensor, connecting wires or the 5V reference signal itself.

Once acknowledged this message will be replaced with a hardware fault message for the corresponding module when active faults are recalled to the screen. Refer to COMPUTER ~ MESSAGES - CRITICAL ~ HARDWARE FAULT in THIS SECTION.





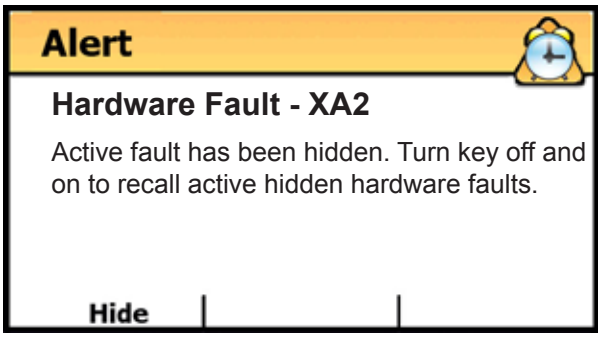


HARDWARE FAULT - MD3

This message will be displayed when an alert level active hardware fault related to the MD3 Display 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.

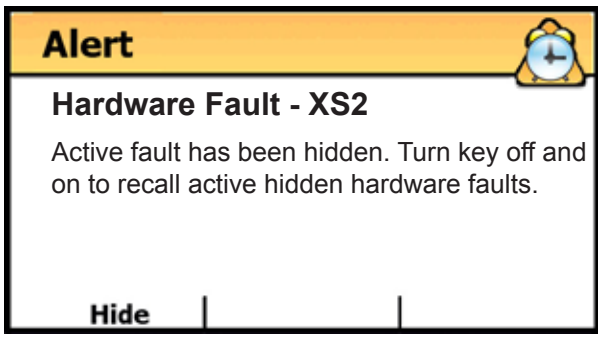


HARDWARE FAULT - XA2

This message will be displayed when an alert level active hardware fault related to an XA2 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 - XS2

This message will be displayed when an alert level active hardware fault related to the XS2 module has been hidden.

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

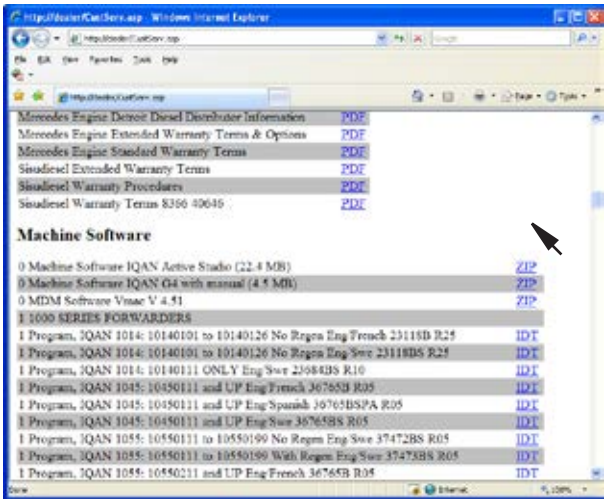
High temperature, low supply voltage and high supply voltage module alert messages are examples of the type of hardware fault which will be the original active faults which trigger this message.

IQAN SOFTWARE

IQAN Active Studio software can be downloaded from the Tigercat Dealer Website.

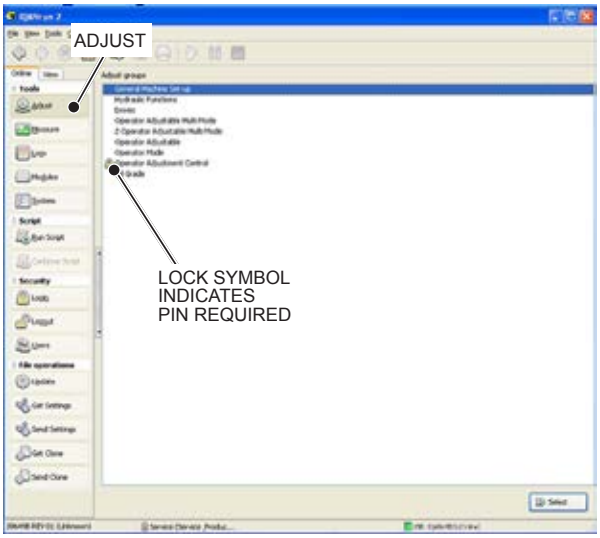
All software required for PC/Laptop use is included in this download. A user's manual in PDF format is also included. Some of the software requires a software key (available from Tigercat).

Contact Tigercat Customer Service for more information about specific hardware requirements for PC/Laptop.



ADJUST

1. Click on the Adjust button on the left.



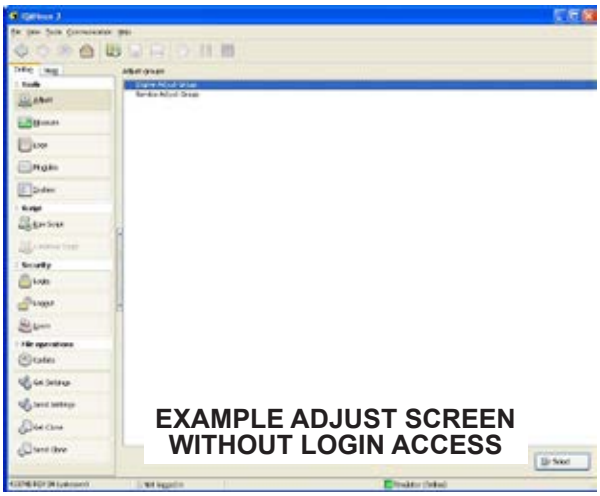
2. The adjust groups available will be shown on the right.
3. Double click an adjust group to adjust channels in that group.

   Note that a lock symbol to the left of an adjust group indicates that a PIN/password is required to access that group. Contact Tigercat Service department to obtain password information.

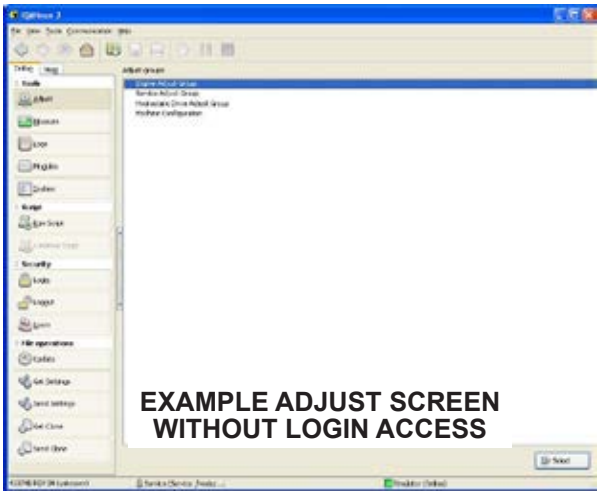
   Note also that some adjust groups are accessible through the MD3 menus unrestricted during normal operation.

   Other service related or owner/supervisor use related adjust groups are restricted by passwords on screen or available only through IQANrun 2 with username and password restrictions.

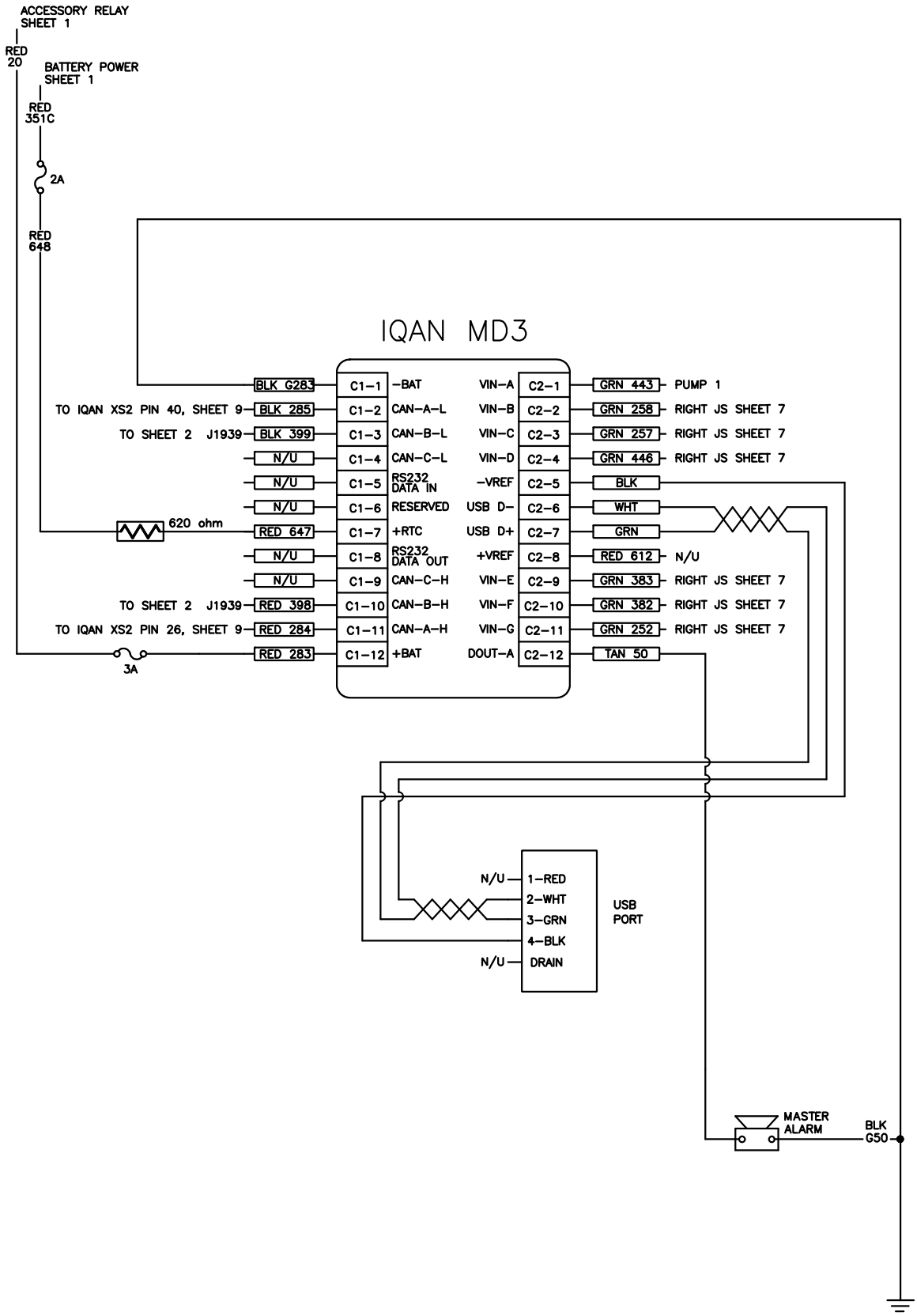
   Some adjust groups are only visible on screen for users with the appropriate username and password login rights.



EXAMPLE ADJUST SCREEN WITHOUT LOGIN ACCESS

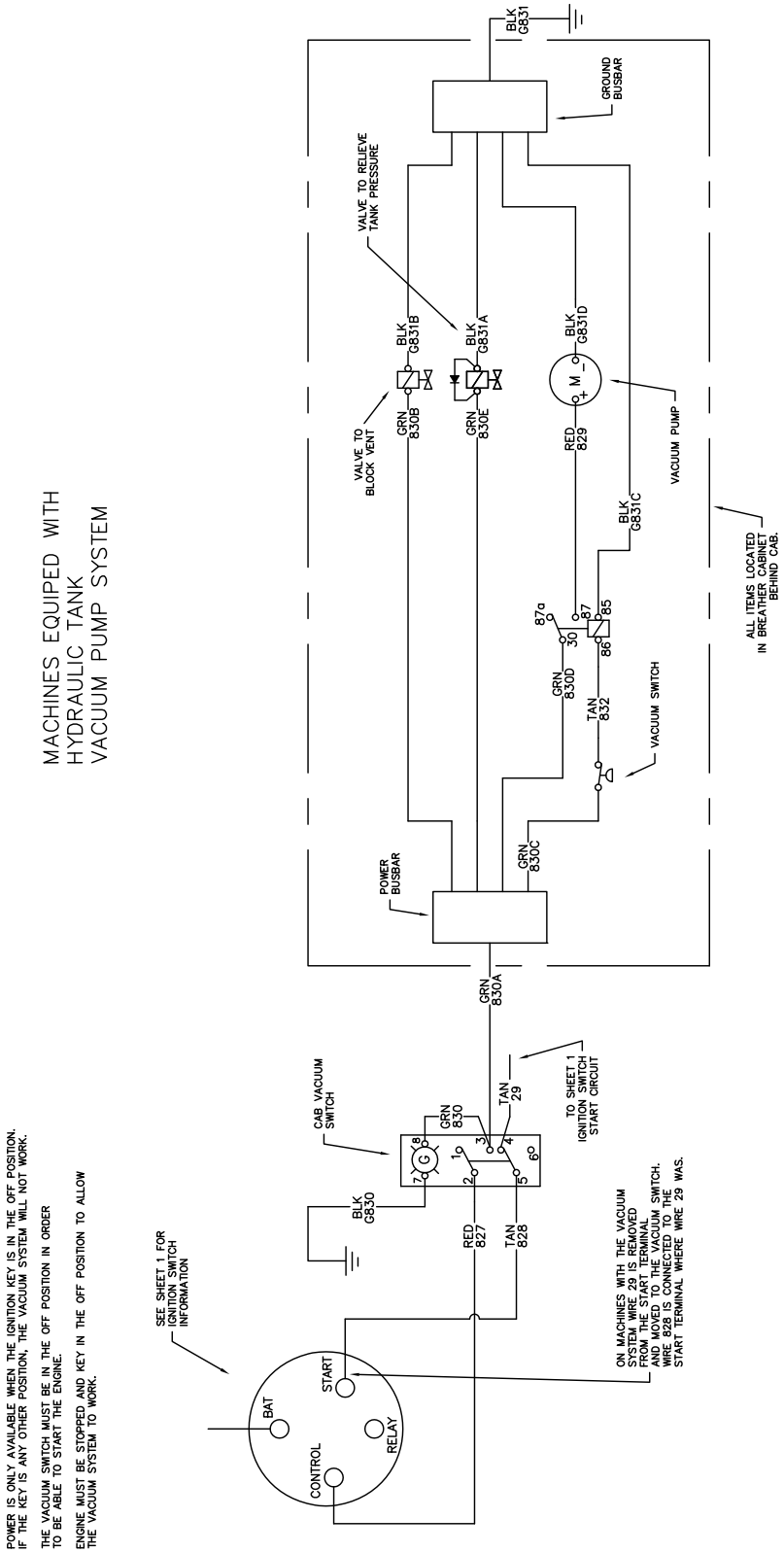


EXAMPLE ADJUST SCREEN WITHOUT LOGIN ACCESS



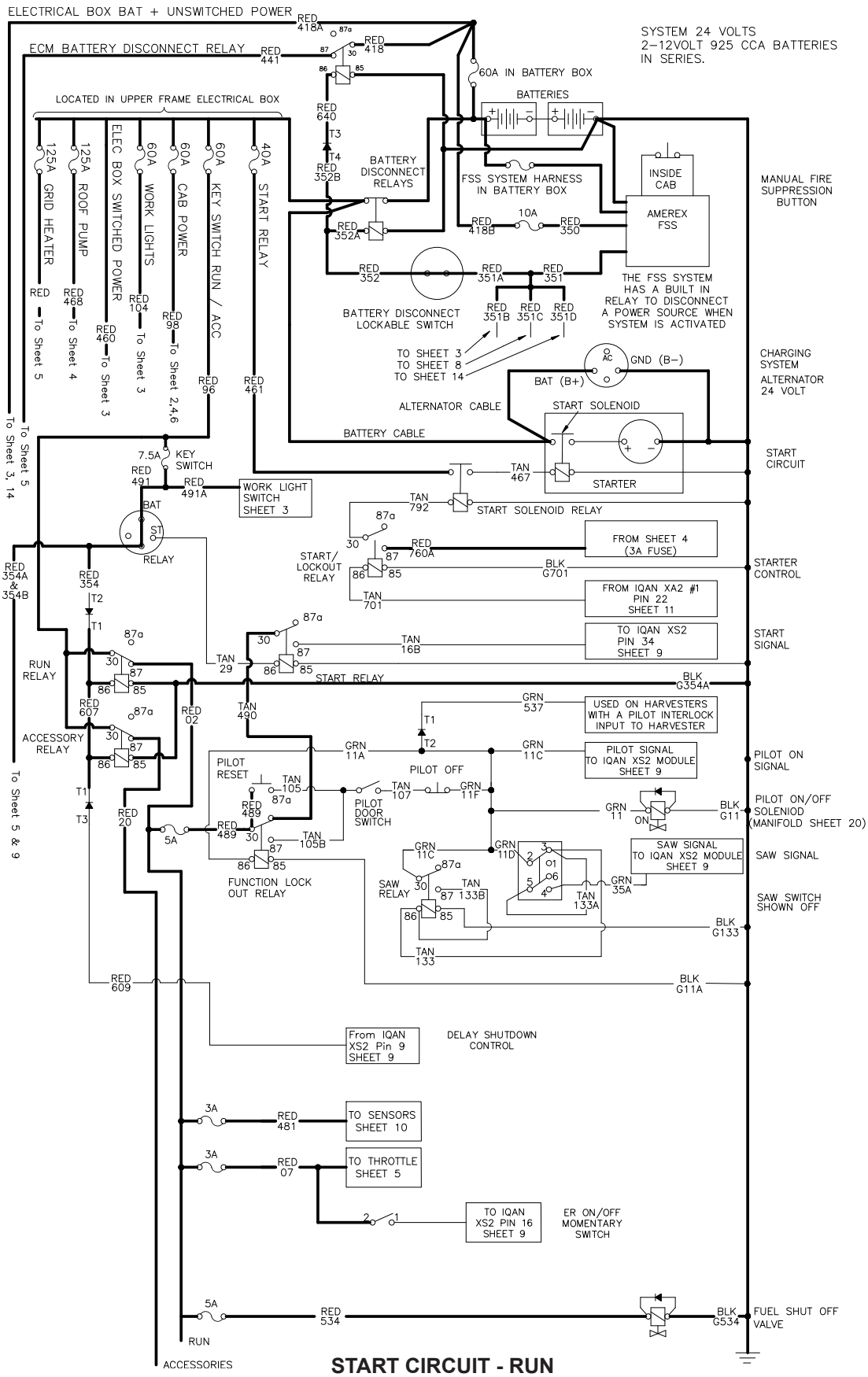
855C-261

ELECTRICAL SCHEMATIC - SHEET 8



56549BS15

ELECTRICAL SCHEMATIC - SHEET 15



START CIRCUIT - RUN

IGNITION KEY - RUN POSITION

56549BS1-4

FLEX DRIVE COUPLING INSTALLATION

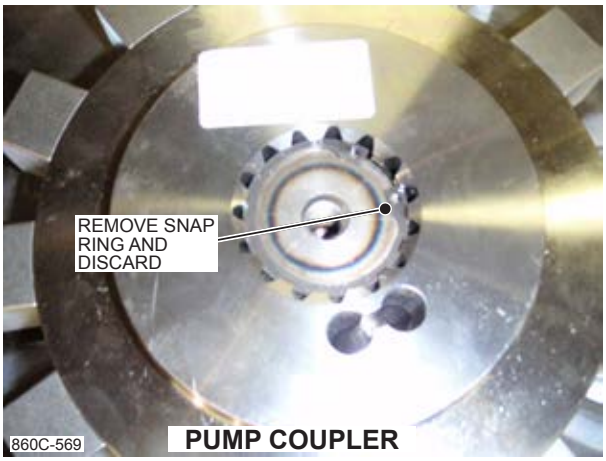
When installing a new flex drive coupling, care must be taken to align the coupler correctly on the pump shaft.

If the coupler is installed too far onto the pump shaft the result will be insufficient engagement with the flex drive coupler on the engine causing premature failure.

If the coupler is not installed far enough onto the shaft interference may occur with the engine crank shaft.

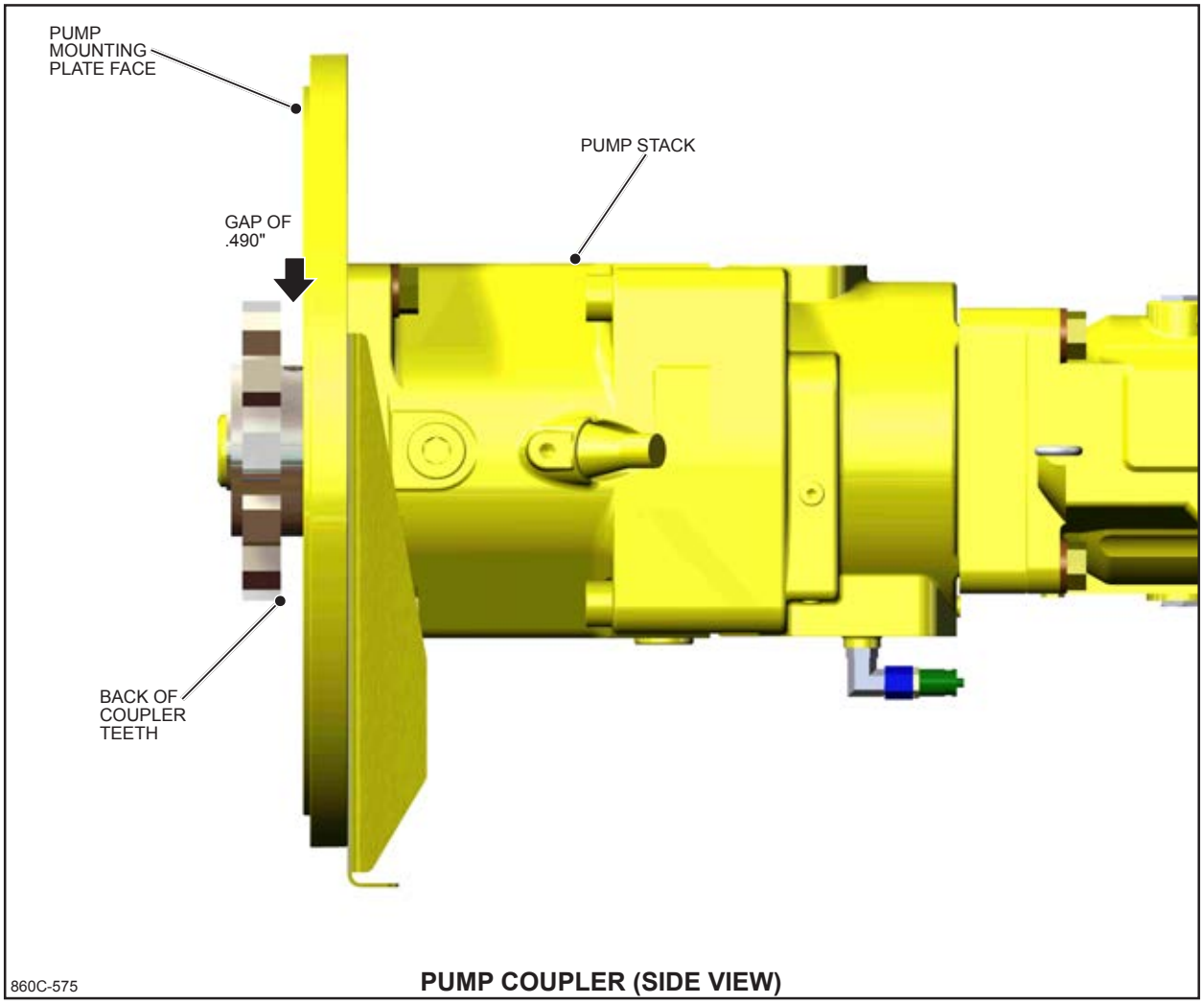
INSTALLATION PROCEDURE

1. When the main pump is not mounted on the engine check and record the crank shaft end play. (This will need to be checked again once the pump is installed)

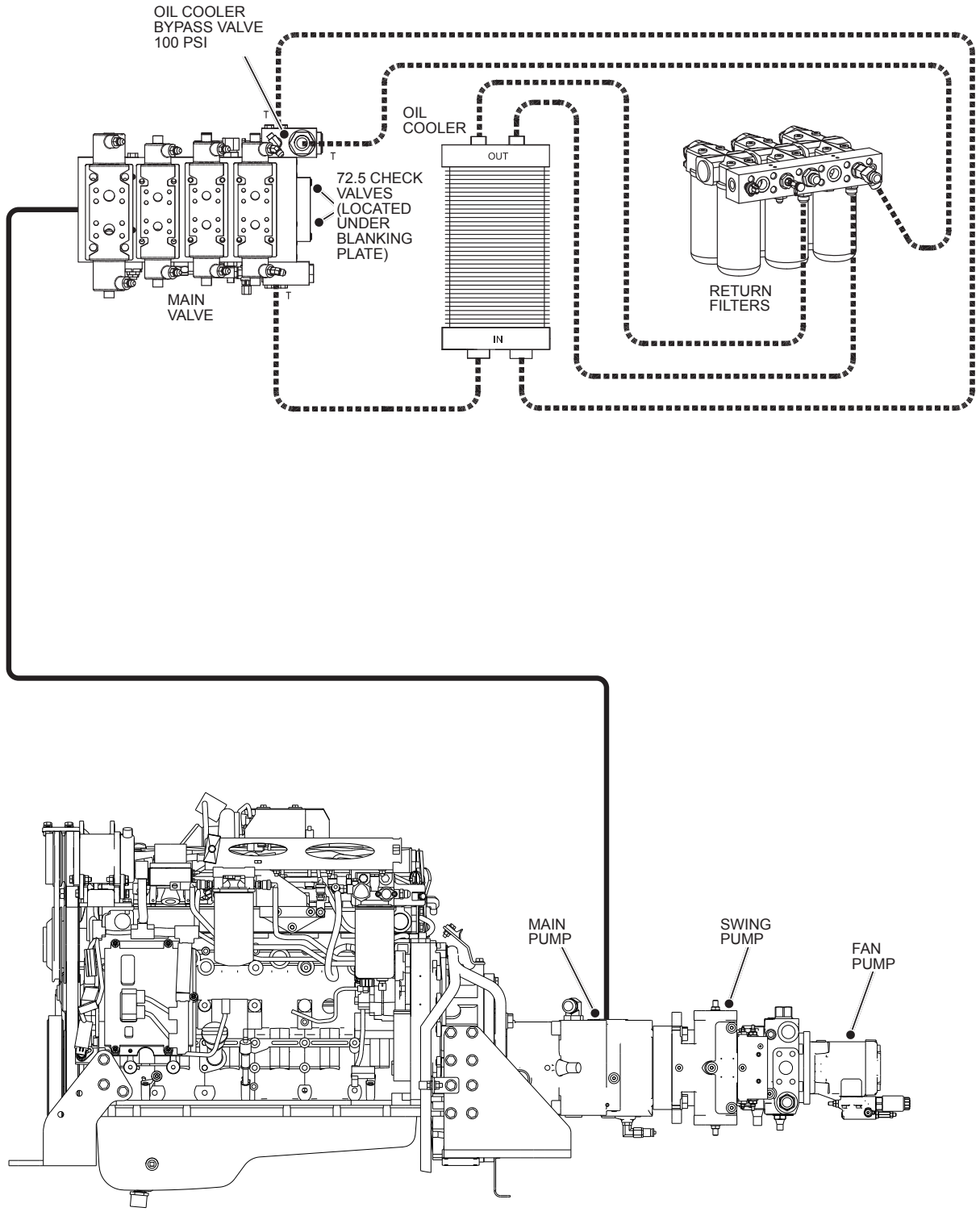


PUMP COUPLER

2. If the coupler is supplied with a snap ring remove and discard.
3. Slide coupler onto the pump shaft and check that the clearance from the back of the coupler teeth to the face of the pump mounting plate is .490".
4. Apply Blue 243 Loctite to set screws and torque to 120 N-m (89 lbf-ft)

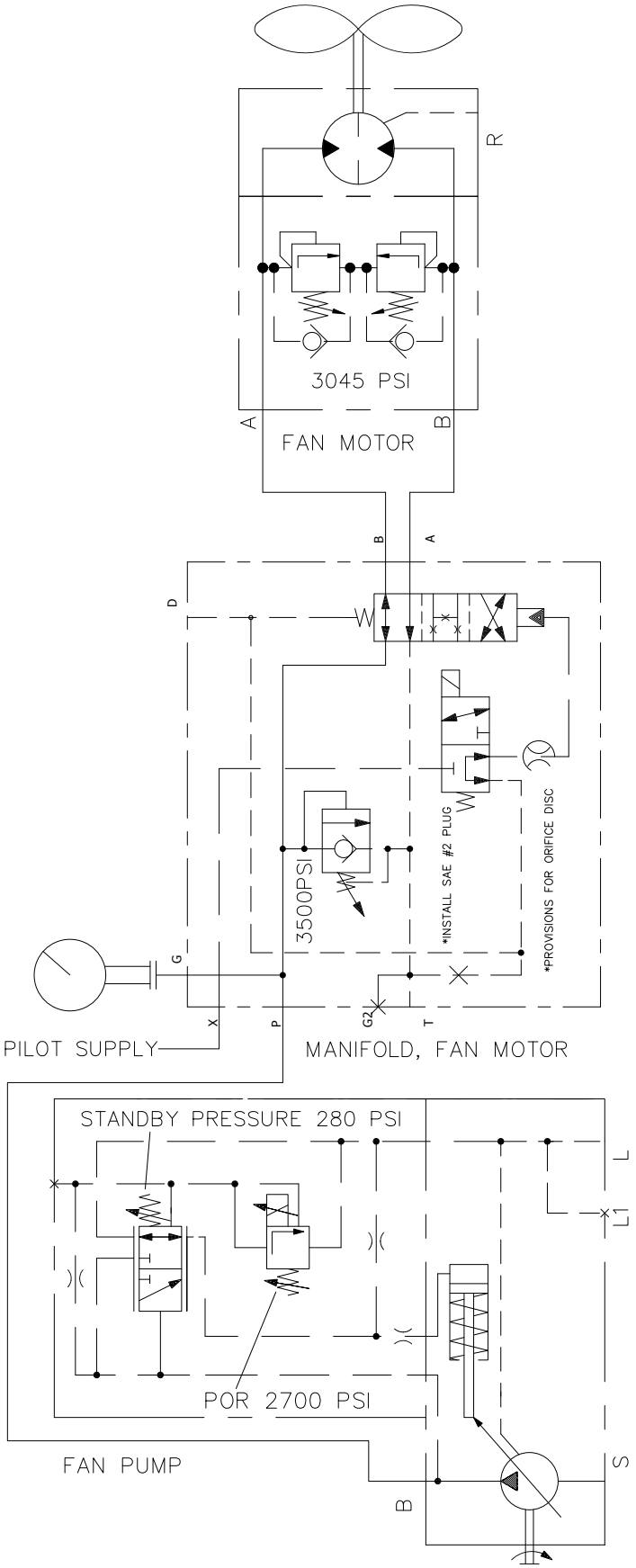


PUMP COUPLER (SIDE VIEW)



S855C-150

OIL COOLER CIRCUIT



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FAN CIRCUIT HYDRAULIC SCHEMATIC

Tigercat S855C/LS855C Shovel Logger
SECTION 11 – TRACK DRIVE

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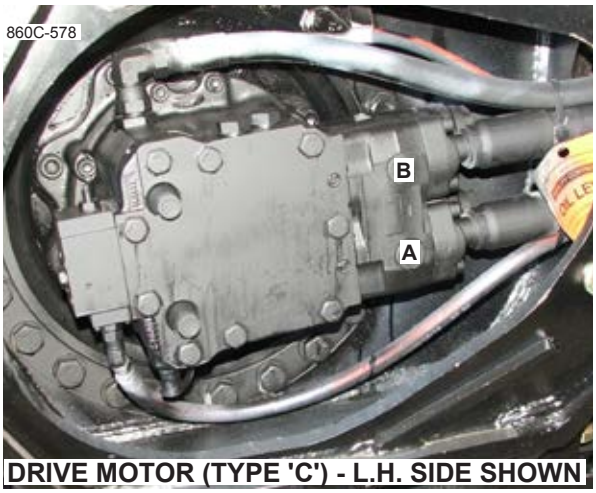
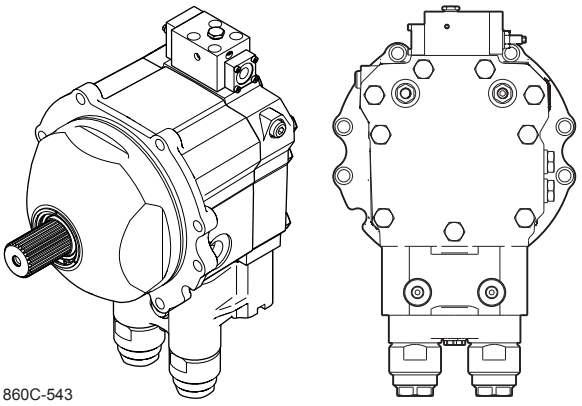
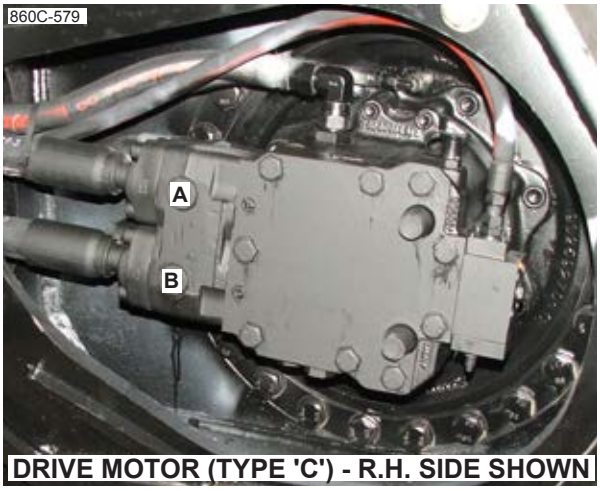
DRIVE MOTOR TYPE - IDENTIFICATION CONT'D

TYPE 'C' DRIVE MOTOR

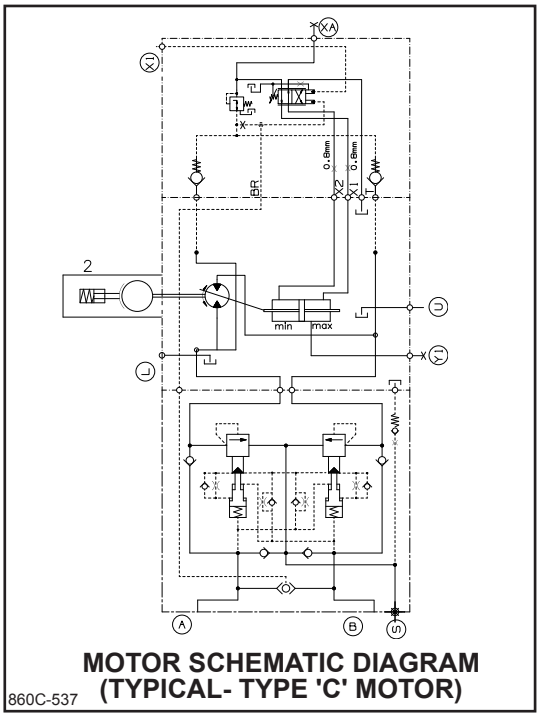


DRIVE MOTOR (TYPE 'C') - L.H. SIDE SHOWN

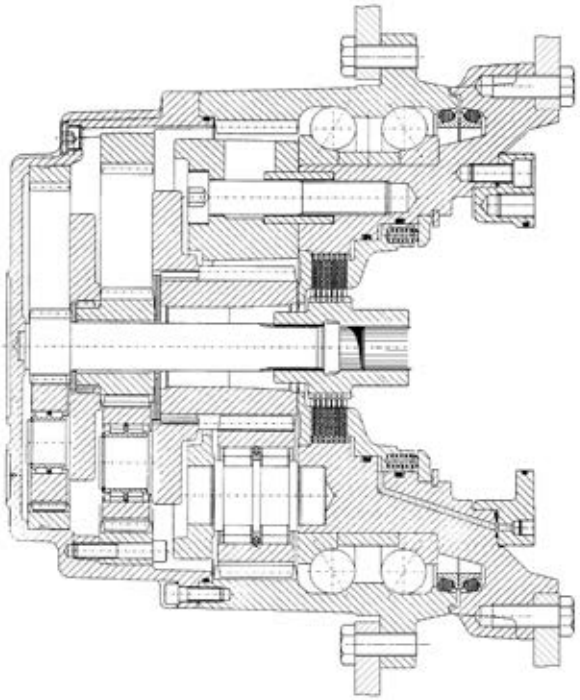


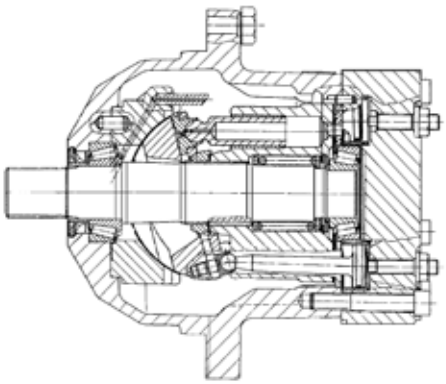


DRIVE MOTOR (TYPE 'C') - R.H. SIDE SHOWN



MOTOR SCHEMATIC DIAGRAM (TYPICAL- TYPE 'C' MOTOR)





860C-290A

TRACK DRIVE MOTOR AND GEARBOX CROSS SECTION

TRACK BRAKE RELEASE DELAY

When the travel pedals are deactivated the current to the brake release solenoid on the pilot manifold is turned off allowing the gearbox brakes to be applied. An adjustable delay is used when turning off the solenoid to allow time for the track motors to stop before the gearbox parking brakes are applied.

The adjustment can be made through the MD3 screen.

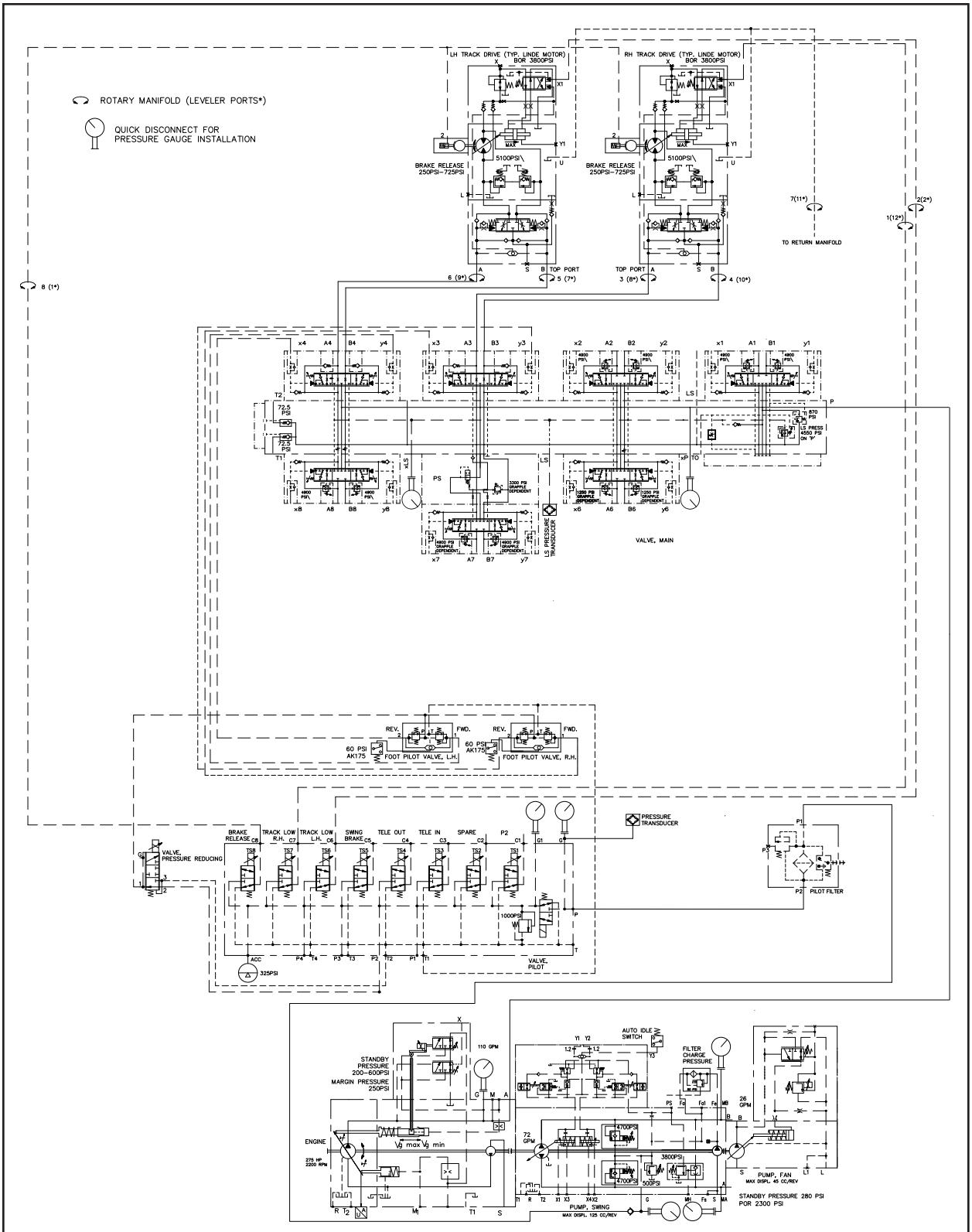
Press the menu button ☰ to go to the MAIN MENU.

Press F1 to access the Adjust menu.

Use the up or down arrow buttons to scroll to the Hydraulics Menu and press OK.

Use the up or down arrow buttons to scroll to the Tr. Brake Release Delay Off selection in the Hydraulics Menu and press OK.

Using the up or down arrow buttons to adjust the value of the delay and then press OK. The default setting is 500 mS.



SHOVEL LOGGER
TRACK DRIVE CIRCUIT SCHEMATIC - TYPE 'A' DRIVE MOTORS
855*1071 TO 855*2000

S855C-161

DRIVE SYSTEM PRESSURE SETTINGS FOR TYPE 'A' DRIVE MOTOR

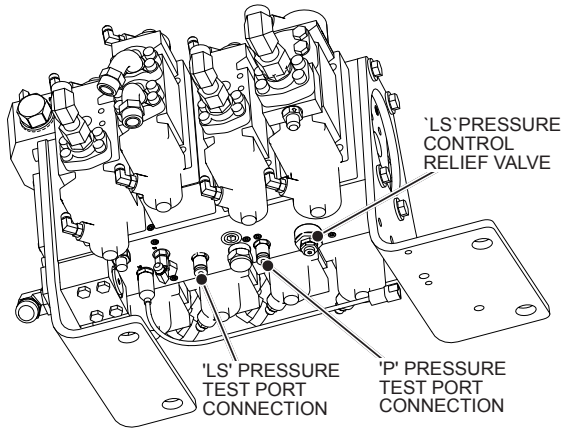
DRIVE MOTOR CROSSOVER RELIEF VALVES

Pressure Setting:

TEST PROCEDURE:

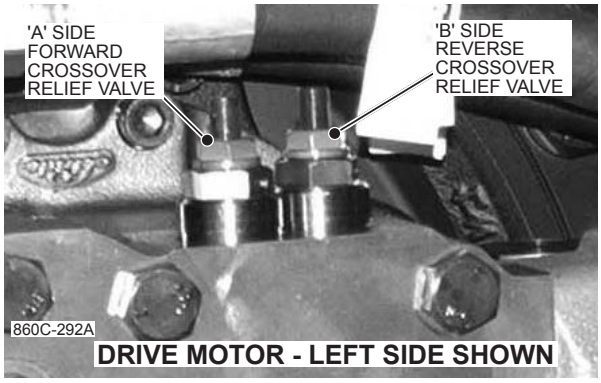
Place attachment head securely on the ground before performing any service work.

1. Ensure hydraulic oil is at operating temperature.
2. Remove both left and right drive motor inspection covers.
3. Install a 0 to 700 bar (0 to 10,000 psi) gauge on 'P' test port on main valve manifold.

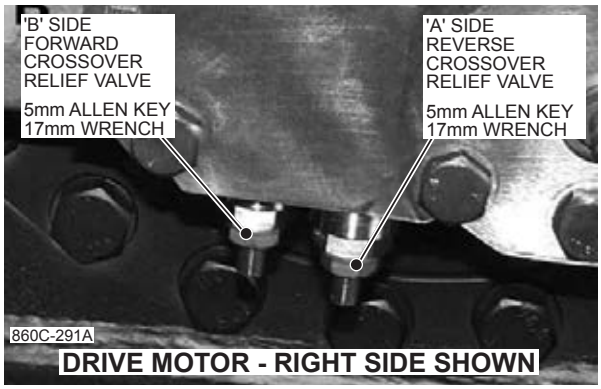


855C-210 **MAIN CONTROL VALVE TEST PORTS AND RELIEF VALVE LOCATIONS**

4. Disconnect left and right brake lines at ports on final drive gearboxes. Plug hoses and cap port adapters on gearboxes.
5. Start engine and set throttle speed to above 1500 RPM.
6. From inside the cab close and latch the front door and press the pilot reset switch to activate the pilot system.
7. Place anti-stall switch to off position. Set fan to service mode using the computer.
8. Place drive/low switch to low.
9. Activate left and right track drive foot pedals in both forward and reverse directions to ensure that the tracks do not move.
10. With the aid of an assistant, activate left track drive foot pedal in either forward or reverse and check pressure reading on gauge at 'P' port. the gauge should show Main system LS. relief pressure, refer to specifications in section 3 of this manual.
11. Set throttle switch to idle position.
12. Activate left drive foot pedal in forward or reverse and temporarily set the LS. relief valve to 345 bar (5000 psi) on gauge at 'P' test port.



DRIVE MOTOR - LEFT SIDE SHOWN

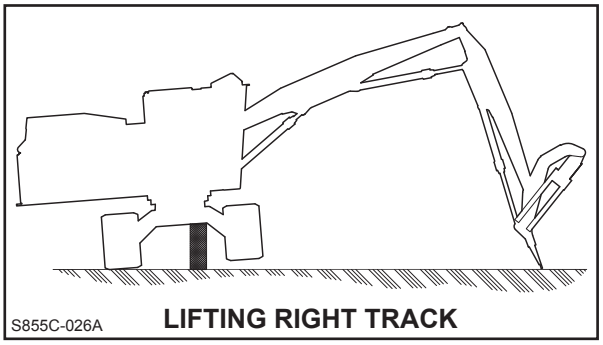


DRIVE MOTOR - RIGHT SIDE SHOWN

13. With the aid of an assistant; While holding the left drive foot pedal in the forward position, observe gauge on 'P' test port to ensure that pressure is set to specifications (refer to 'TYPE A', Crossline relief, PRESSURE AND SPEED SETTINGS in SECTION 3 of THIS MANUAL). If required loosen locknut on forward crossover relief valve adjusting screw, turn adjusting screw in to increase pressure and out to decrease pressure then tighten locknut.
14. Repeat step (13) for the left reverse crossover relief valve.
15. Repeat steps (12) through (14) for right track drive motor.
16. Reset the LS. relief valve to Main system LS. relief pressure, (refer to specifications in section 3 of this manual) on gauge at 'P' test port. Refer to SET LOAD SENSE RELIEF VALVE in SECTION 4 of THIS MANUAL.
17. Set fan to run mode using the computer, then shut engine off.
18. Re-connect brake line(s) to both gearboxes.
19. Remove pressure gauge and wipe up any spills.
20. Replace both left and right drive motor inspection covers.

TRACK SPEED SET-UP PROCEDURE continued;

RIGHT TRACK ADJUSTMENT



S855C-026A **LIFTING RIGHT TRACK**

24. Re-position machine to raise right track.
25. Repeat steps 3 through 13 to set right drive motor maximum displacement.

LOW FORWARD (valve flow setting)

26. Repeat steps 14 to 17 to set right valve flow setting.

HIGH FORWARD (motor minimum displ.)

27. Repeat steps 18 to 21 to set right drive motor minimum displacement.

HIGH REVERSE (valve flow setting)

28. Repeat steps 22 and 23 to set right track valve flow setting.
29. Place the fan switch to run mode and Stop engine.
30. Replace final drive inspection covers for both right and left track drives.

SUMMARY OF PROCEDURE

- REMOVE INSPECTION COVERS

LEFT TRACK ADJUSTMENT

- POSITION MACHINE, LEFT track off ground
- LOW FORWARD (max displacement and valve flow setting)
- HIGH FORWARD (motor minimum displacement)
- HIGH REVERSE (valve flow setting)

RIGHT TRACK ADJUSTMENT

- POSITION MACHINE, RIGHT track off ground
- LOW FORWARD (max displacement and valve flow setting)
- HIGH FORWARD (motor minimum displacement)
- HIGH REVERSE (valve flow setting)
- REPLACE INSPECTION COVERS

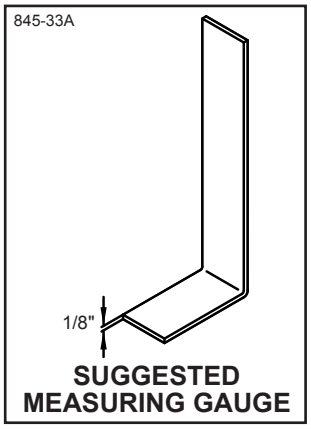
SET STRAIGHT TRAVEL

Following completion of TRACK SPEED SET-UP PROCEDURE, drive the machine in both forward and reverse directions with the drive/low switch in drive and again with the switch in low position. Ensure that both drive pedals are equally and fully depressed.

If the machine continuously drifts to the left or to the right, the above set-up procedure should be reviewed. It is important that the left and right track speeds are synchronized with each other to prevent unnecessary wear from occurring to the track components.

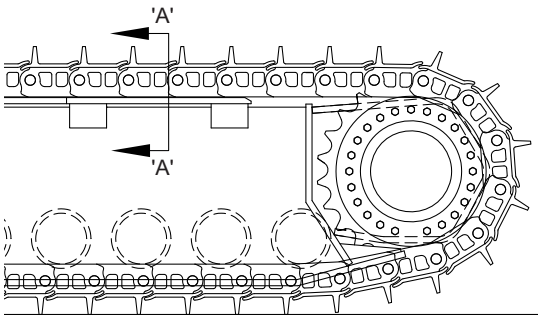
TRACK SLIDE WEAR

Track slide wear should be checked periodically to ensure that it does not go over the limit and cause damage to the chain link bushings.

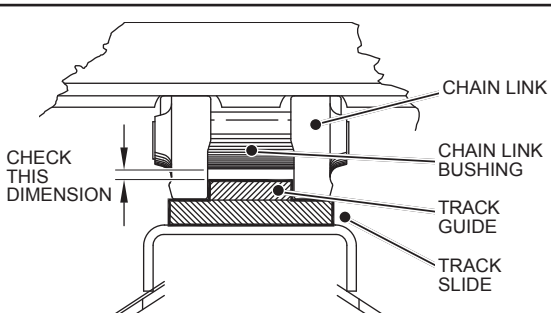


SUGGESTED MEASURING GAUGE

Since the checking area is not immediately visible, the measuring may be done using a "go/no go" gauge made from a piece of 1/8" flat bar. The gauge is inserted down through the holes in the track and placed between the track guide and the track bushing. Make sure that dirt build-up does not interfere with the reading. Check at several locations. The ends of the track slides tend to wear first. The slides should be replaced if excessive wear is found.



845-32 **TRACK SLIDE WEAR**



845-33 **SECTION A-A**

The wear occurs on the top of the track slide as the chain links slide along and this wear will reduce the clearance between the track guide and the chain link bushings. When this clearance disappears the chain link bushings will start to wear.

Tigercat S855C/LS855C Shovel Logger
SECTION 12 – BOOM FUNCTIONS

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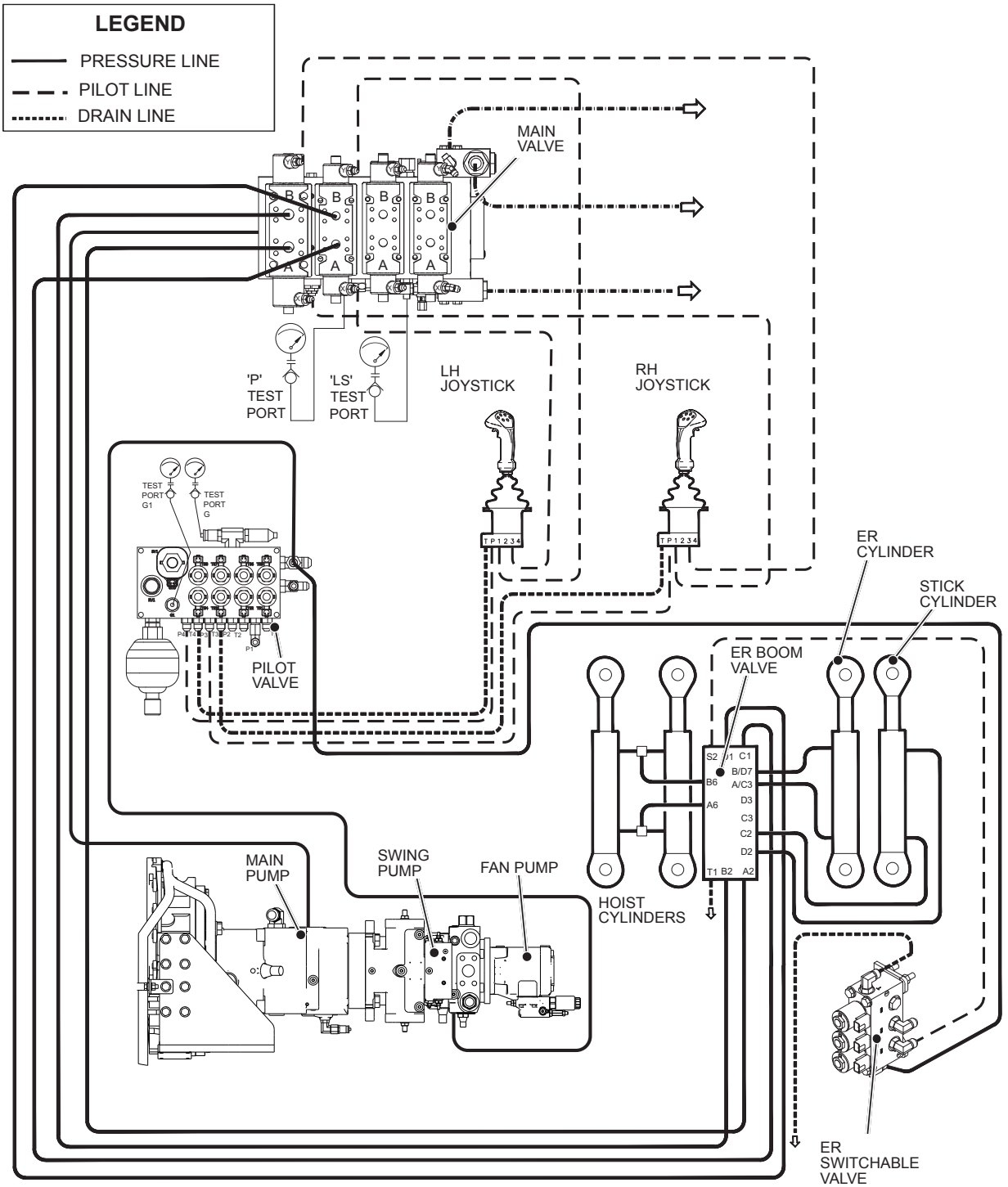

S855C-173

FELLER DIRECTOR
'ER' BOOM SYSTEM HYDRAULIC CIRCUIT 855*1001 TO 855*1070

Tigercat S855C/LS855C Shovel Logger
SECTION 13 - LEVELING

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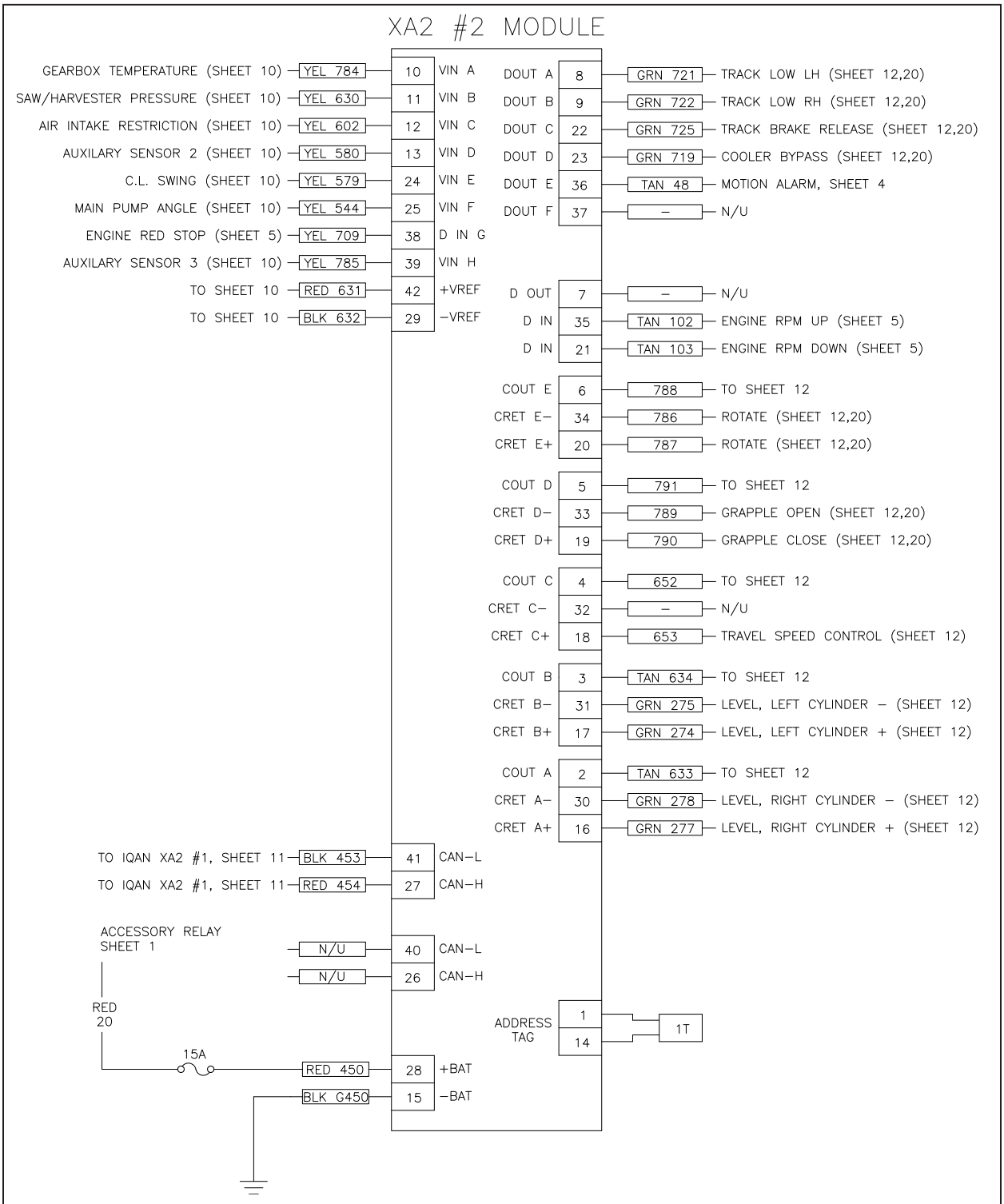

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XA2 #2 MODULE ELECTRICAL SCHEMATIC

CHECKING PORT RELIEF VALVES

DANGER

Extreme care and attention must be exercised when making adjustments to the leveling hydraulic and electrical circuits. Ensure that all personnel not directly associated with the servicing are well clear of the machine.
The whole upper structure can tilt unexpectedly from side to side or forward and backwards during servicing, creating "pinch points" between the upper frame and track assembly and the ground.

NOTE: The leveling port relief valves are cartridge type relief valves and are not adjustable. Service of the relief valves is limited to checking the relief pressure and removal and replacement of the valve cartridge.

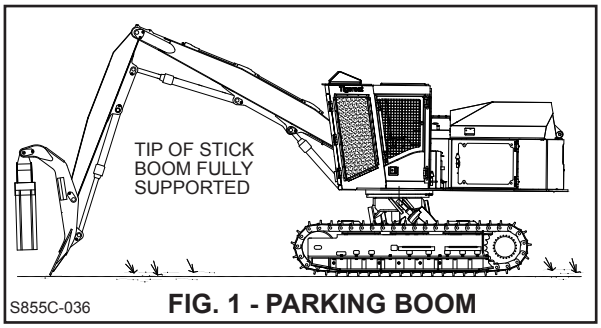
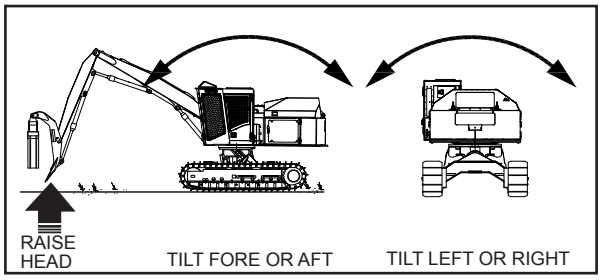
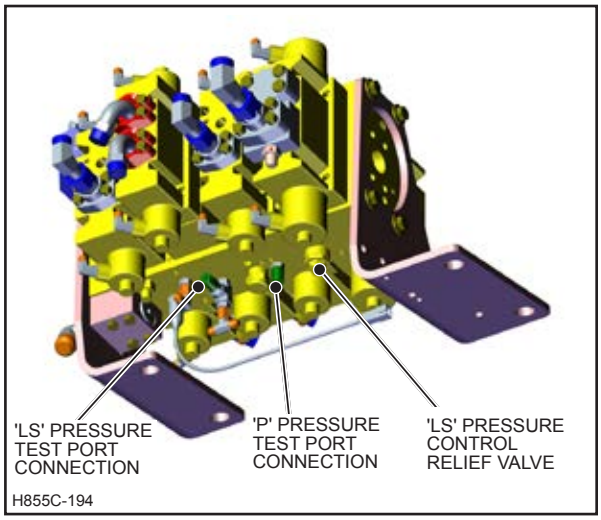


FIG. 1 - PARKING BOOM

1. Park machine on level ground, lower the attachment to the ground, engage the swing brake and turn OFF the engine. Turn battery disconnect switch off. Install leveling cylinder support brace to prevent tilting of the upper frame during this procedure.
2. Ensure hydraulic oil is at operating temperature.





3. Connect a 0-350 Bar/0-5000 psi pressure gauge on 'LS' test port of the main valve manifold.
4. Start engine and set throttle speed to idle position.

NOTE: It may be necessary to increase the engine RPM sufficiently to prevent the engine from stalling.

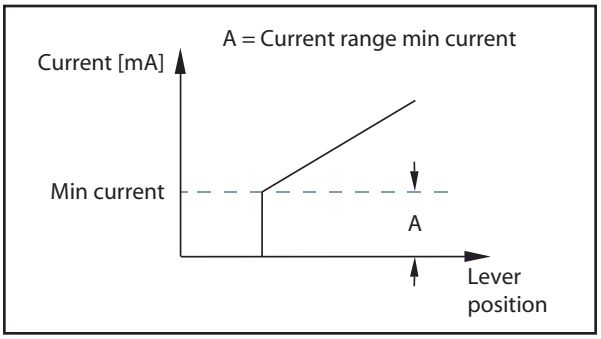
5. Close cab door and press pilot reset switch to activate pilot system.
6. Place anti-stall switch in off position.
7. With the aid of an assistant, bottom out the cylinder of the function being tested, then turn the L.S. pressure relief valve in. The pressure reading on the gauge should rise to specifications. Refer to pressure and speed specification chart in SECTION 3 of this manual.

NOTE: All Leveling functions are checked this way. The pressure readings should be within +/- 3.5 Bar/50 psi of specifications. If the pressure reading is above or below these specifications, a relief valve cartridge on the leveling control valve should be replaced. See REPLACING PORT RELIEFS later in this SECTION for details.

LEVELER ADJUSTMENT SETTINGS

These settings (defined below) fine tune the operating speeds, start/stop ramps and cylinder tracking for the leveler functions.

MIN = MINIMUM CURRENT (mA)

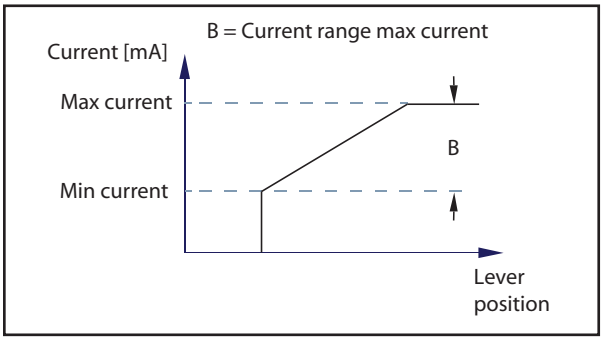


Minimum current settings control function start speed. Coils on hydraulic valves require a certain amount of current before they begin to operate the valve. The Min current value is the current that will be sent to the hydraulic valve coil when the function switch is activated.

The Min current is adjusted to a value that causes the function to just begin to creep.

NOTE: Use the default setting of 300 mA when setting the Min Current.

MAX = MAXIMUM CURRENT (mA)



Maximum current settings control the maximum speed the function will operate at. Increasing this value will increase the travel speed of the cylinder.

NOTE: The mA +(extend) and mA- (retract) settings for the left and right cylinders need to be set separately to avoid tracking (one cylinder extending or retracting faster then the other).

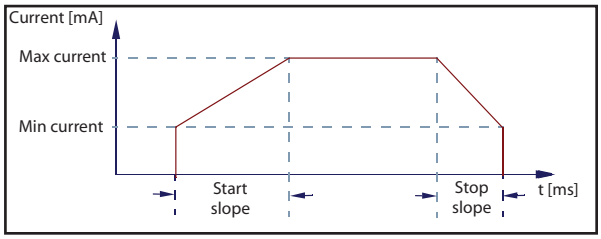
START RAMP

This is the amount of time in mS that it takes for the current to get from the Min Current value to the Max Current when turning on a function. A higher setting will cause a delay in the time that it takes the function to reach top speed. Note that if the mS setting is set to 0ms then the min current setting is negated as the function will start at max current as soon as it is turned on.

STOP RAMP

This is the amount of time in mS that it takes for the current to get from the Max Current to the Min current when turning off a function. A higher setting will cause a delay in the time that it takes for the function to come to a stop from top speed. Note that if the mS setting is set at 0mS then the min current setting is negated and the function would stop as soon as it is turned off.

Below is a typical graph showing the four settings.



NOTE: The start and stop ramps adjust both the left and right cylinders to the same value.

FORWARD LEVELING SPEED

This adjusts both the left and right cylinder speeds proportionally to their respective Max mA+(cylinder extend) settings.

REAR LEVELING SPEED

This adjusts the left and right cylinder speeds proportionally to their respective Max mA-(cylinder retract) settings.

Tigercat S855C/LS855C Shovel Logger
SECTION 15 - SWING

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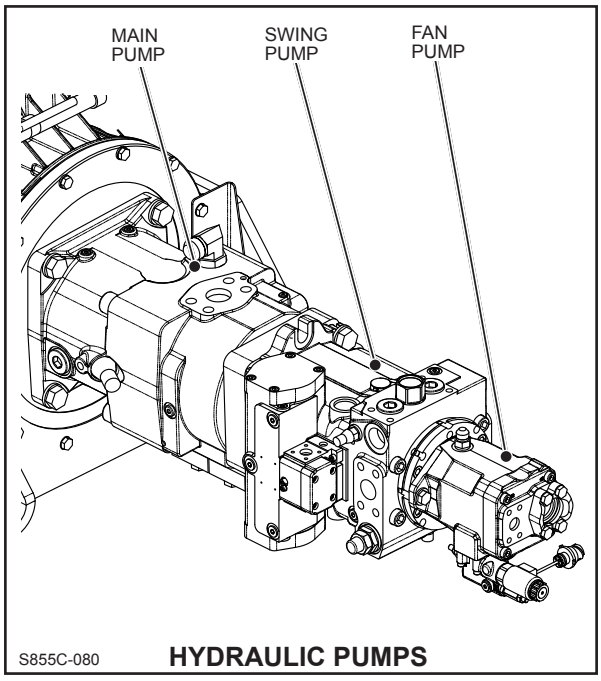
SWING PUMP

All hydraulic functions are powered by three pumps mounted one behind the other on the flywheel housing of the engine. The first pump is the main pump.

Mounted and coupled to the main pump is the swing pump. The primary components of the swing system are the hydraulic pump, hydraulic motor and swing drive gearbox. The hydraulic pump and hydraulic motors are connected together by two hydraulic hoses. The pump converts the mechanical power of the diesel engine into hydraulic power. This high pressure flow of hydraulic oil is then transmitted to the hydraulic motors through a connecting hose.

The motors then reconvert the hydraulic power back into mechanical power to drive the swing gearbox used to swing the upper structure. Low pressure hydraulic oil flow then returns from the motors to the pump through the other connecting hose thereby completing a continuous closed loop hydraulic circuit.

A hydraulic system is termed closed loop when the hydraulic oil returning from the motors is fed straight back to the pump without first returning to tank. When the swing system is operating, one side of the closed loop is a high pressure supply while the other side is a low pressure return. The supply and return will alternate from side to side of the closed loop as the direction of swing rotation is changed from left to right (counterclockwise to clockwise).



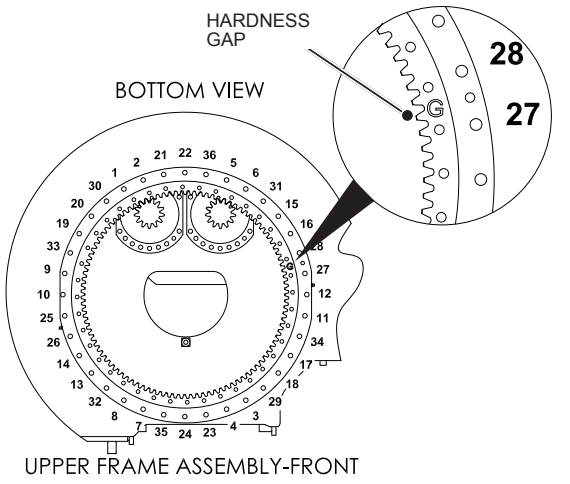
HYDRAULIC PUMPS

The swing drive pump is actually two separate hydraulic pumps mounted in a common case and driven by the same input drive shaft.

The primary pump is a variable displacement, swashplate, in line axial piston type pump. The volume and direction of oil flow from the piston pump is determined by the angle of the tiltable swashplate. When the swashplate is stroked to a maximum displacement angle, the piston pump will produce maximum flow in one direction in the closed loop. As the swashplate is de-stroked, the flow smoothly decreases until there is no flow at an angle of zero (0°). Continuing to angle the swashplate past this neutral position steplessly reverses the direction of flow from the piston pump.

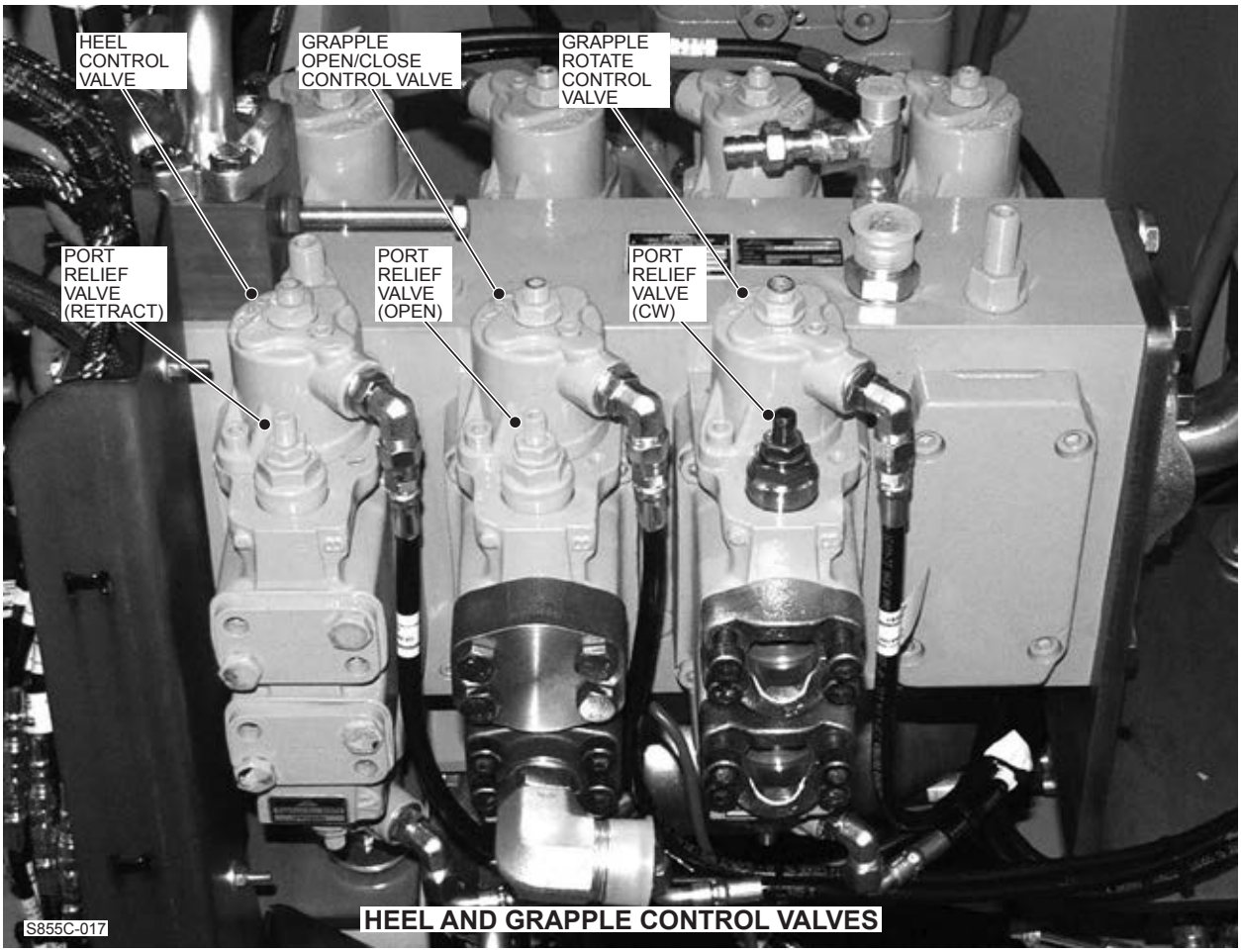
The swing pump relief valves provide a cushion to the high forces that occur during start and stop of the upper structure swing function.

The secondary pump of the swing drive pump is a fixed displacement, internal gear type charge pump that provides pilot oil to the pilot valve, ER warm up valve and the fan motor manifold.



880-234B **SWING BEARING POSITIONING**

14. Position the inner bearing race hardness gap 90º from the front of the upper structure.
15. Apply with a brush lithium based EP2 grease containing molybdenum disulfide to the swing bearing and pinion gears. Completely cover both sides of every gear.

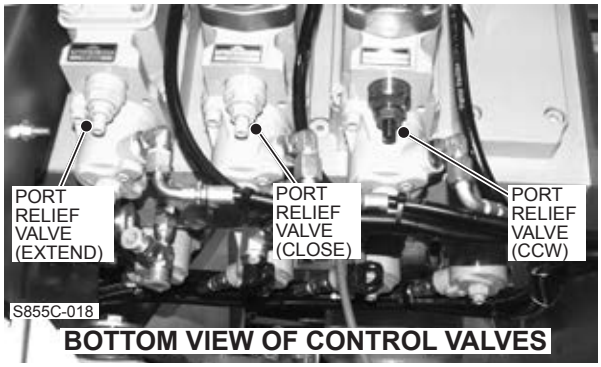


HEEL AND GRAPPLE CONTROL VALVES

GRAPPLE CONTROL VALVES

The grapple open/close function is controlled by one of seven spool sections in the main control valve and the grapple rotate motor is controlled by one of seven spool sections in the main control valve. The main control valve is located in the valve compartment.

For a detailed description of the main control valve, refer to SECTION 4 in THIS MANUAL.



BOTTOM VIEW OF CONTROL VALVES

GRAPPLE OPEN/CLOSE FUNCTION

Use the up or down arrow buttons to scroll to the Teles/Grapple in the Hydraulics Menu and press OK.

GRAPPLE CLOSE

Push the F3 button to access the Grapple Close adjustment menu and press OK.

NOTE: When in the Min Adjust menu only the Min current will be applied to the grapple close valve when the function is activated.

Activate and hold the grapple close function on the joystick and at the same time using the up or down arrow buttons adjust the Min setting so that the grapple arms just start to creep.

NOTE: An inaccurate adjustment of the Min Current renders the start and stop ramps inaccurate.

Once the setting has been adjusted press OK.

The default setting is 300 mA.

Tigercat S855C/LS855C Shovel Logger
SECTION 22 - BAR SAW

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PILOT MANIFOLD

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 'IN' and is then distributed to the various pilot functions of the machine through the 'C' and 'P' ports. The pilot manifold controls 4 bar saw functions.

The saw motor is controlled by solenoid TS1 and sends oil to port C1. The signal to TS1 is on wire 787 from the XA2#2 module.

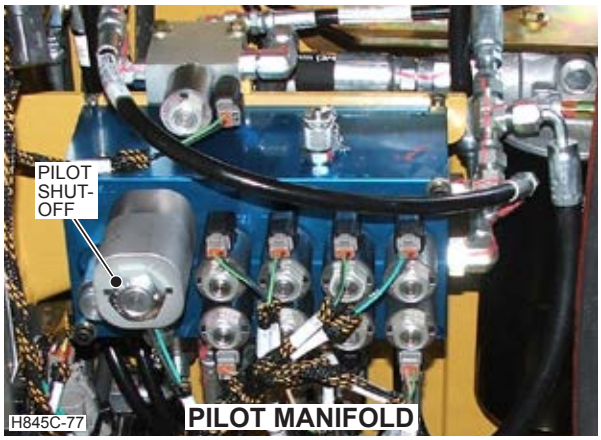
The tilt up function is controlled by solenoid TS2 and sends oil to port C2. The signal to TS2 is on wire 786 from the XA2#2 module.

The clamp open and close functions are controlled by solenoids TS3 (open) and TS4 (close) and send oil to ports C3 and C4. The signal to TS3 is on wire 789 and TS4 on wire 790 both from the XA2#2 module.

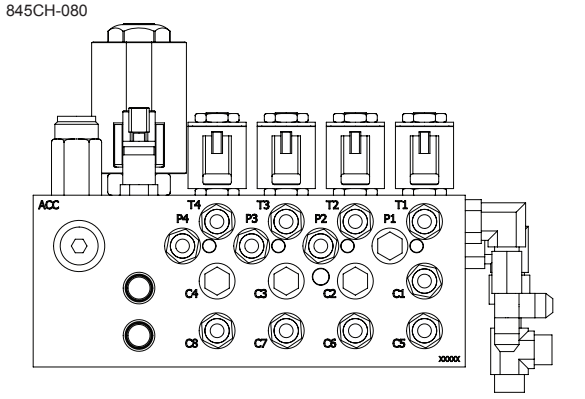
NOTE: The pilot system must be on to allow any functions on the pilot manifold to operate.

The 4 bar saw valves on the pilot manifold are proportional and can be adjusted using the IQAN MD3 controller. See ELECTRONIC ADJUSTMENT PROCEDURE in THIS SECTION.

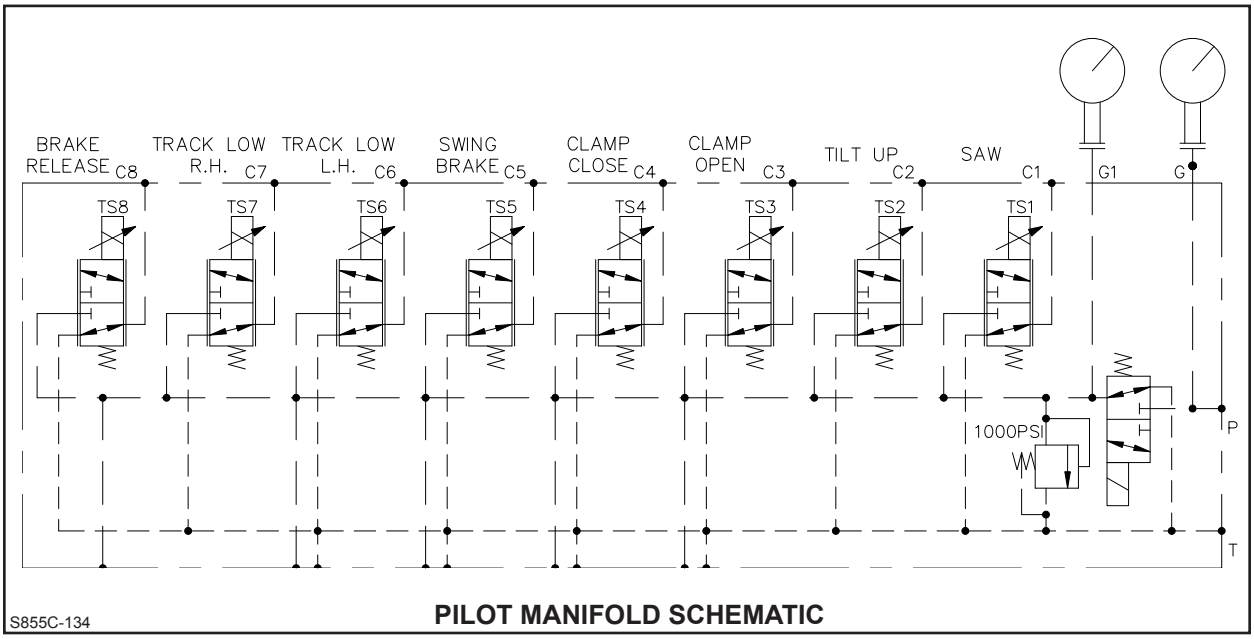
Refer to SECTION 5 of THIS MANUAL for a more complete description of the pilot manifold and its operation.



PILOT MANIFOLD



PILOT MANIFOLD – BOTTOM VIEW



PILOT MANIFOLD SCHEMATIC

SAW MOTOR SETUP
(FD5195 ON S855C)

1. Park machine on firm level ground. Set head firmly on ground with tilt up locks installed. Stick boom fully extended to prevent boom creep.
2. Close clamp arms.
3. Turn pilot switch OFF, engage swing brake and turn OFF the engine. Block tracks.
4. Remove saw manifold cover.
5. Remove the saw chain. Refer to BAR SAW OPERATION, REPLACING SAW CHAIN, HYDRAULIC TENSION in BAR SAW OPERATING AND SERVICE MANUAL.
6. Install reflective tape on side of chain catcher.
7. Start the engine and set throttle to idle.
8. Use the IQAN MD3 controller to adjust SAW outputs to:

   Min 300mA, Max 460mA,
   Start 0ms, Stop 750ms

8a. Press the menu button to go to the MAIN MENU.

8b. Press F1 to access the Adjust menu.

8c. Using the up or down arrow buttons scroll to the Hydraulics menu and press OK.

8d. Use the up or down arrow buttons to scroll to the WRIST/ROT/PUMP 2 /LVLR(LX) in the Hydraulics Menu and press OK.

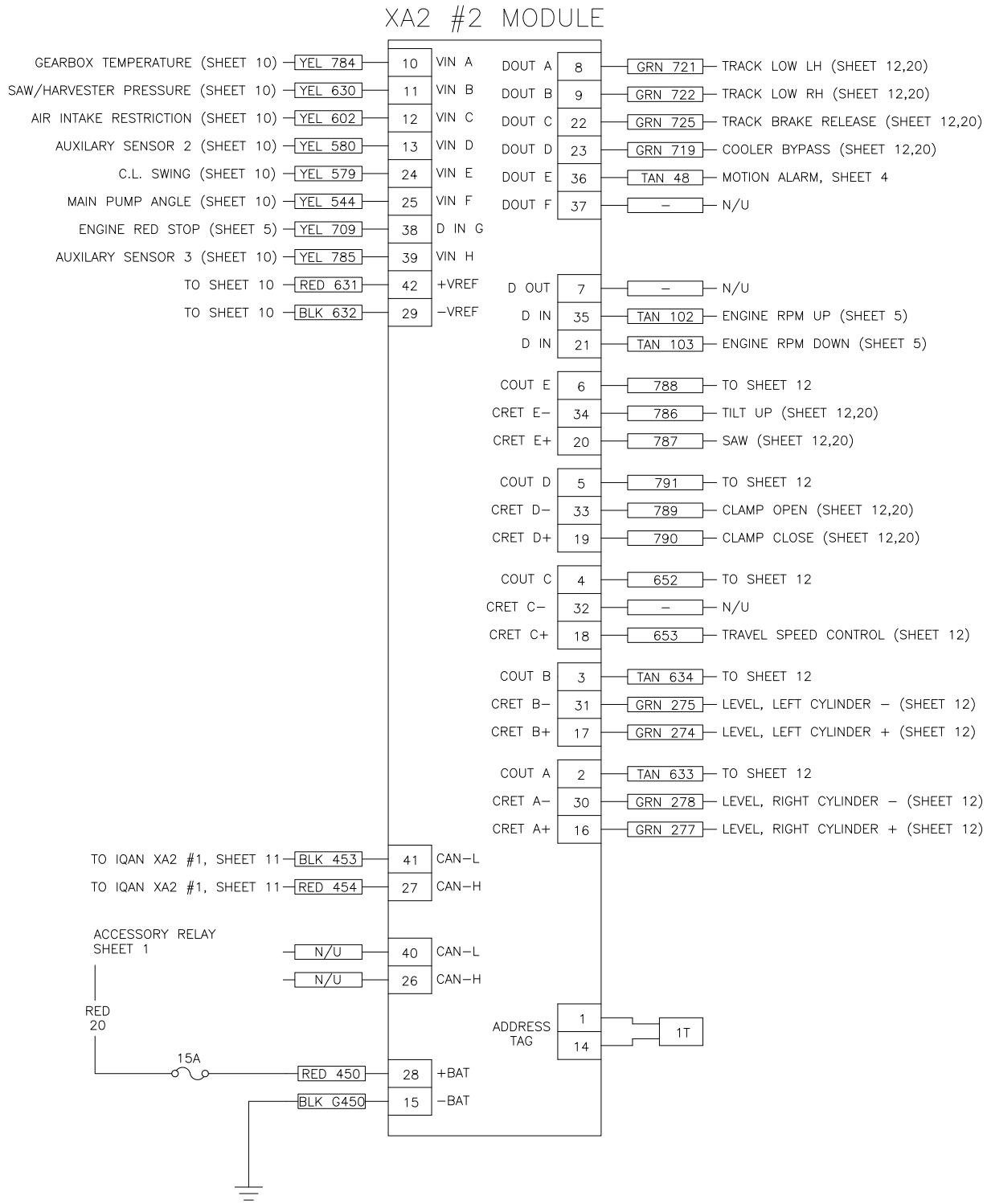
Using the up or down arrow buttons adjust the CLAMP OPEN start setting. Adjustment of this setting (along with the Min setting) will determine how the clamp arms will start when opening. Increasing this setting will result in a less aggressive start while decreasing the setting will result in a more aggressive start. Once the setting has been adjusted press OK.

The default setting is 0 mS.

Using the up or down arrow buttons adjust the CLAMP OPEN stop setting. Adjustment of this setting (along with the Min setting) will determine how the clamp arms stop when the CLAMP OPEN function is deactivated. Increasing this setting will result in a less aggressive stop while decreasing the setting will result in a more aggressive stop. Once the setting has been adjusted press OK.

The default setting is 0 mS.

The CLAMP OPEN adjustment is now complete.



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XA2 #2 MODULE ELECTRICAL SCHEMATIC