

Tigercat[®]

H845C/LH845C HARVESTER

SERVICE MANUAL

SERIAL NUMBER 84531861 TO 84532500

SERIAL NUMBER 84581861 TO 84582500



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This manual is the ORIGINAL INSTRUCTIONS for the H845C/LH845C Harvester.

EC Declaration of Conformity

In accordance with EN ISO 17050-1:2004

We

Tigercat Industries Inc

Of

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 P.O. Box 637
 Brantford, Ontario, Canada
 N3T 5P9

in accordance with the following Directive(s):

2004/108/EC The Electromagnetic Compatibility Directive
 2006/42/EC The Machinery Directive

hereby declare that:

Equipment

The H845C Harvester is designed for harvesting trees, at-the-stump processing or roadside processing applications in thinning, selective felling and clear felling applications in plantations and natural stands.

Model number

H845C

Serial Number

84531508 to 84531999

are in conformity with the applicable requirements of the following

ISO STANDARDS

11850:2003	Machinery for forestry – Self-propelled machinery – safety requirements
2860	Earth-moving machinery -- Minimum access dimensions
2867:1994	Earth-moving machinery -- Access Systems
3411:1995	Earth-moving machinery-- Human physical dimensions of operators and minimum operator space envelope
3457	Earth-moving machinery – Guards and shields -- Definitions and specifications
3471	Earth-moving machinery -- Roll-over protective structures -- Laboratory tests and performance requirements
3600	Tractors, machinery for agriculture and forestry, powered lawn and garden equipment -- Operator's manuals -- Content and presentation
3767-1	Tractors, Machinery for agriculture and forestry, powered lawn and garden equipment -- Symbols for operator controls and their displays -- Part 1: Common symbols
3767-4	Tractors, machinery for agriculture and forestry, powered lawn and garden equipment -- Symbols for operator controls and other displays -- Part 4: Symbols for forestry machinery
3795	Road vehicles, and tractors and machinery for agriculture and forestry -- Determination of burning behaviour of interior material
6405-1	Earth-moving machinery -- Symbols for operator controls and other displays -- Part 1: Common symbols
6682	Earth-moving machinery – Zones of comfort and reach for controls
6683	Earth-moving machinery -- Seat belts and seat belt anchorages

MACHINE STABILITY AND TRACTION - MACHINES WITHOUT LEVELER

When working on slopes, travel straight up or down the slope to prevent roll-over.

NEVER travel across a STEEP slope or side hill:

- As a load is added to the harvesting head the handling and the stability of the machine will change.
- To avoid tip over, keep the harvesting head as low as possible to maintain a low centre of gravity.
- Always be prepared to dump the load in case of an emergency.
- **DO NOT** overload the machine as this can create an unstable condition and cause a roll-over.

IMPORTANT! 24 VOLT ELECTRICAL SYSTEM

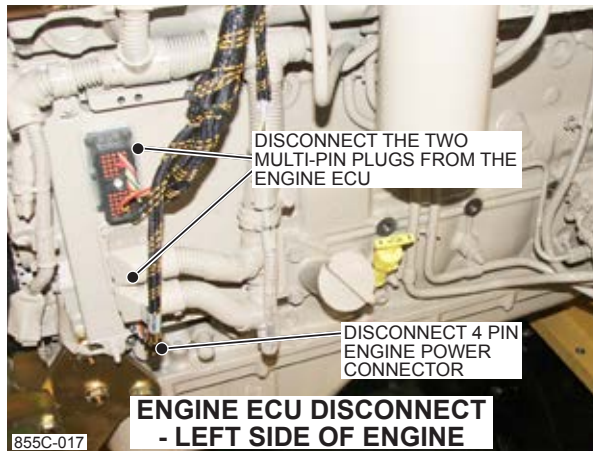
Prior to welding on any part of the machine, the repair area should be cleaned and a fire extinguisher should be made available at the welding location.

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

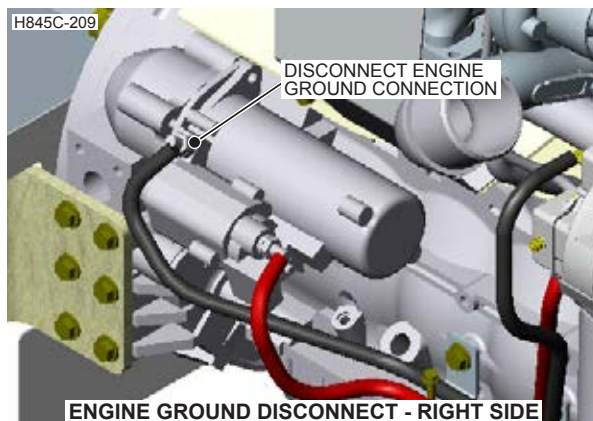
Turn OFF the battery disconnect switch.

Disconnect the battery cables from the batteries, negative (-) cables first.

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



Disconnect the engine ECU (Electronic Control Unit) by unplugging the four pin engine power connector and the two multi-pin connectors from the left side of the engine.



Disconnect the engine ground connection at the chassis.



Disconnect the IQAN XS2 Module multi-pin connector and the **two multi-pin connectors in the wiring harness** and remove the IQAN MD3 module fuse in the cab fuse and relay electrical cabinet.



Disconnect the multi-pin connectors on the two **XA2 Modules** mounted on the hydraulic tank.

When welding is completed reconnect all connectors, engine ground and IQAN MD3 fuse then attach the battery cables reconnecting the positive (+) cables first and turn the battery disconnect switch ON.

FIRE PREVENTION



When working in a forest environment, it is impossible to prevent combustible debris from collecting in tight corners of the machine. This debris, in itself, may cause a fire; however, when mixed with fuel, oil or grease in a hot or confined place, the danger of fire is greatly increased.

The following fire prevention guidelines should be used to supplement the operator's fire prevention efforts. In no case should the guidelines be used, or assumed, as replacements for diligent operator efforts at preventing fires.

The following guidelines will help to keep your equipment up and running efficiently and **keep the risk of fire to a minimum.**

1. **Maintain a CHARGED fire extinguisher** on the machine at all times and **KNOW HOW TO USE IT.**
2. **Remove debris and blow out dust regularly** from the air intake doors, engine radiator and charge air cooler, hydraulic oil cooler, diesel fuel cooler and air conditioning condenser core to prevent overheating of the engine and hydraulics and to maintain efficient operation of the machine. Refer to **CLEANING A/C CONDENSER, OIL COOLER AND RADIATOR** in SECTION 2 of the OPERATOR'S MANUAL.
3. **Blow off all forest debris and fine organic material accumulated** near hot engine exhaust components (turbocharger and exhaust manifold as well as exhaust pipes and muffler) at the completion of each work shift or more frequently when working in logging conditions where large amounts of combustible forest debris are present. Visual inspection after blow off to ensure thorough cleanliness is vital. Engine exhaust systems provide numerous small pockets where saw dust, small wood chips and other flammable forest debris can gather. Even small accumulations close to hot exhaust components can ignite and smoulder. If dislodged this smouldering debris can fall into other areas of the machine and thereby spread a fire.
4. **Clean out all accumulated forest debris** (twigs, pine needles, branches, bark, leaves, saw dust, small wood chips) and any other combustible materials from inside the machine belly pans or lower machine structures as well as from areas in proximity to the engine, fuel and hydraulic oil systems no less frequently than at the completion of each work shift.
5. **Inspect the machine regularly** for any signs of diesel fuel or hydraulic system leakage. Check for worn or eroded fuel or hydraulic lines before starting any equipment.
6. **Clean up any grease, diesel fuel, hydraulic and lubricating oil** accumulation and spillage immediately.
7. **Steam clean the engine**, hydraulic pumps, transmission, brake, fuel and hydraulic tank compartments and all belly pans at least once a month or more frequently when working in logging conditions where large amounts of combustible forest debris are present.
8. **Use only non-flammable solutions for cleaning** the machine and components.
9. **Inspect the exhaust system daily** for any signs of **leakage**. Check for worn, cracked, broken or damaged pipes or muffler. Also check for missing or damaged bolts or clamps. Should any exhaust leaks or defective parts be found, repairs must be made immediately. Engine exhaust leaks can cause fires. **Do not operate** the machine until the exhaust leak is repaired.
10. **During daily operation** of the machine, the occurrence of **exhaust leaks** are usually accompanied by a **change or increase in engine exhaust noise levels**. These **audible warnings** cannot be ignored. Should any exhaust leaks occur during operation, the machine must be **shut down immediately** and not put back to work until the necessary repairs have been completed.
11. **Park the machine at least 15 m (50 ft) away** from other equipment at the end of each shift.
12. **Never leave the machine parked with boom, arch or blade suspended off the ground**. Should their supporting hydraulic hoses burn through during a fire, pressurized hydraulic oil may be injected into the fire and the boom, arch or blade will fall rapidly to the ground.

HOT SURFACES



This label warns of hot machine and machine component surfaces. Be aware when performing service and maintenance tasks that surfaces and grab handles in and around the engine hydraulic tank and cooling system may become very hot when the machine has been running. **DO NOT TOUCH** these hot surfaces, contact with hot surfaces may cause injury.

- Before servicing the machine, allow the engine cooling system, fuel system, exhaust system, 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 to below 38°C (100°F).

STORED ENERGY HAZARD



This label warns of a **STORED ENERGY HAZARD**. This label is located near the hydraulic tank.

The machine is equipped with an accumulator (located in the hydraulic tank area, attached to the pilot manifold). The accumulator has **stored energy** in the form of hydraulic pressure. Servicing the accumulator, hydraulic tank or any hydraulic components before releasing pressure **could result in death or serious injury**.

DO NOT SERVICE ACCUMULATOR OR ANY HYDRAULIC COMPONENTS BEFORE RELEASING PRESSURE.

TIGERCAT OIL ANALYSIS PROGRAM

Using the Tigercat Advanced Oil Analysis Program on a regular basis is an excellent preventative maintenance tool.

Studies have shown that it is possible to receive a 10 to 1 payback when looking at the amount saved on repair costs to the amount invested in a scheduled oil analysis program. Some of the benefits of a sampling program include:

- Detect problems early before they become major catastrophic failures.
- Better ability to schedule downtime and forecast cost of repairs.
- Monitor maintenance schedules and practices and confirm that the required maintenance is being done on time.
- Increase used equipment value by providing proof of proper maintenance.

This Program uses the most modern technology available to analyze all oil samples. Most test results are available within 24 hours after receipt of the sample and are supplied in an easy to understand report, which calls for specific action and makes detailed recommendations. This report is available as a mailed or faxed hardcopy, sent via e-mail or can be viewed on the internet.

This program will provide Tigercat machine owners access to an Advanced Oil Analysis Program for all major machine components including Engines, Hydraulic Circuits, Axles, Final Drives, Gearboxes, etc.

800 Series Models Recommended Testing Schedule		
Location	First Sample	Follow-up Samples
Hydraulic Oil	125 Hours	Every 1000 Hours or 6 Months
Swing Drive Gearbox (if applicable*)	125 Hours	Every Oil Change (250 Hours or 1.5 Months)
Track Drive Gearboxes	125 Hours	Every 1000 Hours or 6 Months
Pump Drive Gearbox (if applicable)	125 Hours	Every 1000 Hours or 6 Months

* Note that swing drive gearbox oil sampling applies only to machines that use gear oil in the swing drive gearbox.

Tigercat Oil Analysis Kits are available from your Tigercat dealer parts department. If required, arrangements can also be made with your Tigercat dealer to supply and perform all of the required follow-up oil samples.

Refer also to OIL SAMPLE COLLECTION PROCEDURES in THIS SECTION for sample valve and drain plug locations.

TIGERCAT OIL ANALYSIS KITS

Each kit includes a Pre-paid Sample Bottle and Sample Information Form. Pre-printed mailing labels are also included to ensure all samples are quickly returned directly to the lab for immediate analysis and results within 24 hours of receipt.

The same type of sample bottle can be used for all types of oil testing including:

Hydraulic Circuits, Final Drives, Axles, Gearboxes, Engines, etc.

To ensure accurate and meaningful results are obtained, each kit also includes detailed instructions on how to properly collect, prepare and ship the oil samples.

Contact your Tigercat Dealer Parts Department to order Kits.

Tigercat Model H845C/LH845C FILTER AND LUBRICATION SCHEDULE												
REFER TO Tigercat OPERATOR'S MANUAL FOR FURTHER INFORMATION												
SERVICE POINT NO.	DESCRIPTION	SERVICE EVERY						CAPACITY			REMARKS/LUBRICANT	
		88	1258	2508	5008	10008	20008	LITER	US gal	QTY		
1	COOLING SYSTEM	CHK	CHANGE COOLANT EVERY 2 YEARS						36	9.5		60% ANTIFREEZE * 40% DISTILLED WATER
2	ENGINE OIL/FILTER	CHK									* SEE ENGINE MANUFACTURER'S SERVICE MANUAL FOR PROCEDURES, CAPACITIES AND REPLACEMENT INTERVALS.	
3	FUEL FILTER (ENGINE)				REP					1		
4	FUEL/WATER SEPARATOR	DRN			REP					1		
5	IN-TANK FUEL STRAINER					CHK					DRAIN TANK, CLEAN OR REPLACE AS NECESSARY.	
6	AIR INTAKE PRECLEANER	CHK								1	CLEAN AS REQUIRED	
7	AIR INTAKE PRIMARY ELEMENT	CHK								1	CHECK FILTER RESTRICTION INDICATOR. REFER TO 8 HOUR SCHEDULED MAINT. FOR DETAILS.	
8	AIR INTAKE SAFETY ELEMENT	CHK								1		
9	AIR CLEANER UNLOADER VALVE	CHK				REP						
10	AIR INTAKE CONNECTIONS	CHK					REP				CHECK FOR LOOSE CLAMPS AND DAMAGED RUBBER COMPONENTS. REPLACE RUBBER COMPONENTS.	
11	HYDRAULIC TANK	CHK					D/R	190	50	1	DRAIN AND REFILL AT SEASONAL OIL CHANGE SEE APPROVED HYDRAULIC OILS* *Tigercat RECOMMENDS REGULAR USE OF AN OIL TESTING PROGRAM.	
12	HYDRAULIC OIL RETURN FILTERS, 1 BLUE WATER ABSORBING ELEMENT 5 WHITE HIGH PERFORMANCE FILTERS		CHK		REP †					6	IF THE FILTER BYPASS ICON ON THE COMPUTER DISPLAY TURNS RED BETWEEN SCHEDULED MAINTENANCE SCHEDULES, CHANGE THE ELEMENTS.	
13	HYDRAULIC TANK BREATHER						REP			1		
14	TRACK DRIVE GEARBOX		†† CHK	D/R				6	1.5	2	FILL WITH 75W-90 (SPEC) RECOMMENDED SYNTHETIC GEAR OIL FOR SEVERE DUTY APPLICATIONS †† CHECK OIL WITH LEVEL PLUGS AT 6 AND 9 O'CLOCK POSITIONS.	
15	TRACK ROLLERS AND IDLERS CHECK FOR LUBRICANT LEAKAGE				CHK			7.6	2	1	IF LEAKING REMOVE AND REPAIR, FILL WITH SAE 75W-90 HT OR 80W-140 HT OIL, REFER TO 500 HOURS SCHEDULED MAINTENANCE FOR DETAILS	
16	SWING BEARING	LUB 24HR						10 SHOTS		1	GREASE EVERY 24 HOURS WHILE SWINGING LITHIUM BASE EP2 GREASE ◆	
17	SWING PINION	LUB						10 SHOTS		1	GREASE WHILE SWINGING. LITHIUM BASE EP2 GREASE ◆	
18	SWING GEARBOX LOWER BEARINGS			LUB				5 SHOTS EACH FITTING		2	REFER TO 250 HOURS SCHEDULED MAINTENANCE FOR DETAILS. LITHIUM BASE EP2 GREASE ◆	
19	ROTARY MANIFOLD TOP SEAL			LUB				2 SHOTS		1	REFER TO 250 HOURS SCHEDULED MAINTENANCE FOR DETAILS. LITHIUM BASE EP2 GREASE ◆	
20	SWING GEARBOX UPPER GEARING	CHK		D/R						1	FILL WITH 75W-90 OR 80W-140 SYNTHETIC GEAR OIL UNTIL BOTTLE REMAINS HALF FULL WHEN OIL IS HOT.	
21	HOIST & STICK BOOM JOINTS	LUB						PURGE		12	LITHIUM BASE EP2 GREASE ◆	
22	CYLINDERS; HOIST, STICK, TELESCOPIC	LUB						PURGE		8	LITHIUM BASE EP2 GREASE ◆	
23	DOOR AND ROOF HINGES				LUB			1 SHOT		13	LITHIUM BASE EP2 GREASE ◆	
24	ROOF CYLINDER PINS				LUB			LUBRICATE		4	APPLY OIL LIBERALLY	
25	ATTACHMENT										SEE MANUFACTURER'S MAINTENANCE SCHEDULE	

61320BENG R0

REFUELING PROCEDURE

Park machine on level ground, shut off engine and allow machine to cool.



DO NOT refuel while smoking or near an open flame or sparks.

Clear obstructions from steps and handles needed to access fuel tank.

Open cover on top of fuel tank (if equipped) and clear any debris from around the fill cap.

Remove filler cap slowly to allow pressure to escape from tank.

Inspect fill cap gasket.

Inspect fuel strainer located under the fill cap for debris or damage.

Attach grounding strap if the fueling tank or nozzle is so equipped.

Fill tank until fuel level reaches the strainer or the full mark on the sight gauge if equipped. Do not leave nozzle unattended or spillage may occur.

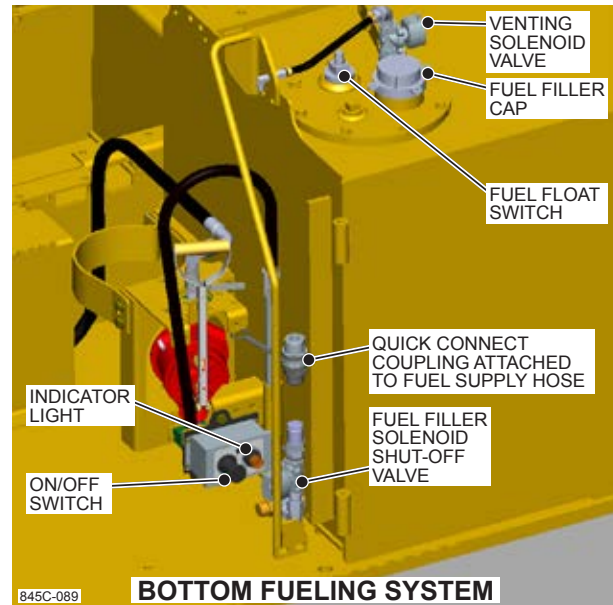
Remove nozzle and ground strap (if applicable), then install fill cap hand tight before closing fill cap cover.

Before restarting the machine, check that no other personnel have moved into the hazardous area and sound the horn.

OPTIONAL BOTTOM FUELLING SYSTEM

The bottom fuelling system includes a "dry break" quick disconnect which can be reached from ground level, a solenoid operated fuel filling shut off valve, an interior mounted fuel float switch to activate the shut off valve when the tank is full and an ON/OFF switch box with an indicator light.

NOTE: This system relies on a remote fuel transfer pump mounted on the fuel supply truck or tank. There is no fuel transfer pump mounted on the machine.

**BOTTOM FUELLING OPTION - FUEL FILLING INSTRUCTIONS**

1. Park machine with the upper level.
2. Remove dust cap from quick disconnect ends and attach fuel truck supply line to machine.
3. Turn on fuel transfer pump (on fuel supply truck or tank).
4. "Pull" FUEL FILL ON/OFF switch.
5. The amber signal light will indicate the fuel fill valve is open.
6. When the tank is full the fuel fill valve will close and the amber light will turn off.
7. Turn off fuel transfer pump.
8. Disconnect lines and return dust caps to quick disconnects.
9. The fuel fill valve can be closed at any time during the filling procedure by pushing the mushroom head switch.
10. A solenoid operated vent valve at the top of tank opens when filling to allow fuel vapours to escape and closes when the fuel fill switch is shut off.
11. **Caution:** Never leave the machine unattended during the fuel filling process.
12. Regularly inspect and repair all fuel fill system components to reduce the risk of spillage or fire.

IMPORTANT STEPS TO FOLLOW WHEN CHANGING FILTER ELEMENTS

1. Release the cover latch gently to reduce the amount of dust dislodged.
2. Avoid dislodging dust from filter element(s) by gently pulling the element off the outlet tube.
3. Always clean the sealing surface of the outlet tube before inserting a new filter element.
4. Always clean the inside of the outlet tube.
5. Check your old filter. It can help you detect foreign material on the sealing surface that is causing leakage.

NOTE: Filter elements should never be cleaned and reused. Cleaning causes dust to bypass the filter and be deposited on the inner surface of the filter media. The dust is then drawn directly into the engine.

6. Inspect the new filter for damage.
7. Insert the new filter properly. Apply pressure to the outer rim of the filter not the flexible centre.
8. Inspect connections and ducts for air tight fit. Ensure that all clamps, bolts and connections are tight. Check rubber elbows for splits or wear points and replace as needed. Leaks in these locations send dust directly to the engine.

**AIR CLEANER UNLOADER VALVE**

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

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

Parker

Assembly Torque

JIC 37 Degree Flare			
SAE Dash Size	Thread Size	Tube Connection FFWR	Swivel or Hose Connection FFWR
-2	5/16-24	NA	NA
-3	3/8-24	NA	NA
-4	7/16-20	2	2
-5	1/2-20	2	2
-6	9/16-18	1 1/2	1 1/4
-8	3/4-16	1 1/2	1
-10	7/8-14	1 1/2	1
-12	1 1/16-12	1 1/4	1
-14	1 3/16-12	1	1
-16	1 5/16-12	1	1
-20	1 5/8-12	1	1
-24	1 7/8-12	1	1
-32	2 1/2-12	1	1
-40	3-12	1	1

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

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

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

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

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

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

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

SAE J1926 Straight Thread Port Assembly Torques

SAE Dash Size	Thread Size	ASSEMBLY TORQUE (+10% - 0)											
		Non-Adjustable				Adjustable				Plugs			
		Seal-Lok		Triple-Lok Ferulok Pipe Fittings		Seal-Lok		Triple-Lok Ferulok		Hollow Hex HP50N-S		Hex Head P50N-S	
		ft. lbs (in. lbs)	N-m	ft. lbs (in. lbs)	N-m	ft. lbs (in. lbs)	N-m	ft. lbs (in. lbs)	N-m	ft. lbs (in. lbs)	N-m	ft. lbs (in. lbs)	N-m
2	5/16-24	(310)	20	(85)	10	(310)	20	(60)	7	(30)	3.5	(85)	10
3	3/8-24	(310)	20	(155)	18	(310)	20	(100)	11	(55)	6	(155)	18
4	7/16-20	(310)	20	(260)	29	(310)	20	(180)	20	(120)	13.5	(260)	29
5	1/2-20	(360)	40	(280)	32	(360)	40	(250)	28	(170)	19	(280)	32
6	9/16-18	(420)	46	(350)	40	(420)	46	(350)	40	(410)	46	(350)	40
8	3/4-16	60	80	(620)	70	60	80	(620)	70	60	80	(620)	70
10	7/8-14	100	135	85	115	100	135	85	115	100	135	85	115
12	1 1/16-12	135	185	135	183	135	185	135	183	135	185	135	183
14	1 3/16-12	175	235	175	237	175	235	175	237	175	235	175	237
16	1 5/16-12	200	270	200	271	200	270	200	271	200	270	200	271
20	1 5/8-12	250	340	250	339	250	340	250	339	250	340	250	339
24	1 7/8-12	305	415	305	414	305	415	305	414	305	415	305	414
32	2 1/2-12	375	510	375	509	375	510	375	509	375	510	375	509

HYDRAULIC SYSTEM OPERATION

The hydraulic system consists of the following basic circuits:

1. Variable displacement main hydraulic circuit with 'LS' (load sensing) for the **boom, swing, track drive, pump2, attachment rotate, and telescopic** functions. Also, when applicable, the main pump provides hydraulic pressure and flow for the **leveling** functions.
2. The main pump also provides oil via a pressure reducing valve for the **pilot system**.
3. Variable displacement closed centre circuit with 'LS' for the pump1 valve
4. Fixed displacement tandem hydraulic pump for
 - **Hydraulic oil cooling circuit.**
 - **Cooling fan hydraulic circuit.**

1. THE MAIN HYDRAULIC SYSTEM

This is a closed centre circuit utilizing a variable displacement axial-piston pump with load sensing and horsepower limiting control. The load sensing system ensures that the pump will deliver only the amount of oil that is required by an individual boom or swing function or combination of functions.

This feature improves fuel economy and reduces heat generation because power is not wasted on excess pump flow that is not being used. Refer to LOAD SENSING in THIS SECTION.

The horsepower limiting control ensures that the engine will not lug down below a predetermined rpm by reducing the output from the main hydraulic pump. For detailed description of ENGINE ANTI-STALL, refer to SECTION 9 of THIS MANUAL.

The **main control valves** are pressure and flow compensated to provide **independent and load independent** operation for all functions. The control valves are mounted on a common base manifold. A single 'P' (pressure) port on the side of the manifold receives supply oil from the main pump. Return oil from the **main control valves** exits the base manifold through two return manifolds, one on the top and one on the bottom of the base manifold. From there the oil passes through the **oil cooler** and on to the return filters and then to the hydraulic tank. A **1.7 bar (25 psi)** bypass valve is incorporated into each pair of return filter heads. The top return manifold on the main valve base manifold also includes a **6.9 bar (100 psi)** bypass valve for the oil to bypass the oil cooler during cold weather startup and provide a bypass in the event the oil cooler is plugged.

Boom cylinders

The boom hydraulic circuits are incorporated in the main hydraulic load sensing system. All hoist and stick cylinders have cushions at both ends. All cylinder rods are ground, heat treated, chrome plated and polished.

Swing system

The swing hydraulic circuit is incorporated in the main hydraulic load sensing system. It utilizes a piston motor incorporating two relief valves and anti-cavitation valves. The motor is connected to a double reduction planetary gearbox which provides variable swing speeds up to **7 rpm**. A rotary manifold facilitates the hydraulic connection to the undercarriage of the vehicle and permits continuous **360°** swing. The swing drive motor incorporates a wet, multi-disc brake. The swing brake is controlled by a switch on the instrument panel. The brake is spring-apply, hydraulic-release and will automatically apply whenever the pilot oil supply is shut off. For a detailed description of the SWING system, refer to SECTION 15 of THIS MANUAL.

Track drive system

The track drive hydraulic circuit is incorporated in the main hydraulic load sensing system and utilizes high-torque, axial-piston or bent-axis hydraulic motors. The motors are mounted to a three stage planetary drive gearbox and each is completely housed within the width of the track shoes. The gearboxes include wet, multiple-disc, spring-apply, hydraulic-release brakes which automatically release when driving and apply when stationary. Independent control of each track permits counter rotation. For a detailed description of the TRACK DRIVE SYSTEM, refer to SECTION 11 of THIS MANUAL.

Leveling system (LH845C only)

Two leveling cylinders are used to operate the leveling function. Each cylinder is equipped with a counterbalance valve or pilot operated check valve for crossline relief and load holding.

Electro-hydraulically operated leveling control valves are operated by the IQAN control system. For a detailed description of the leveling system refer to SECTION 13 of THIS MANUAL.

LOAD SENSING

BASIC PRINCIPLES

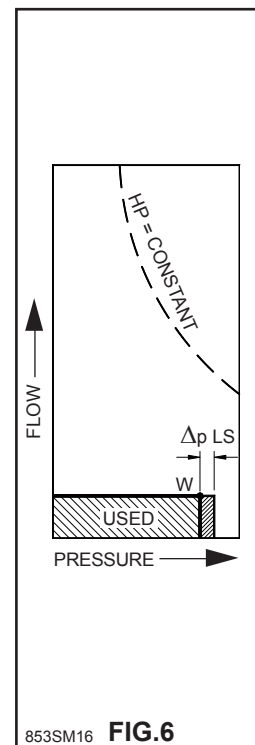
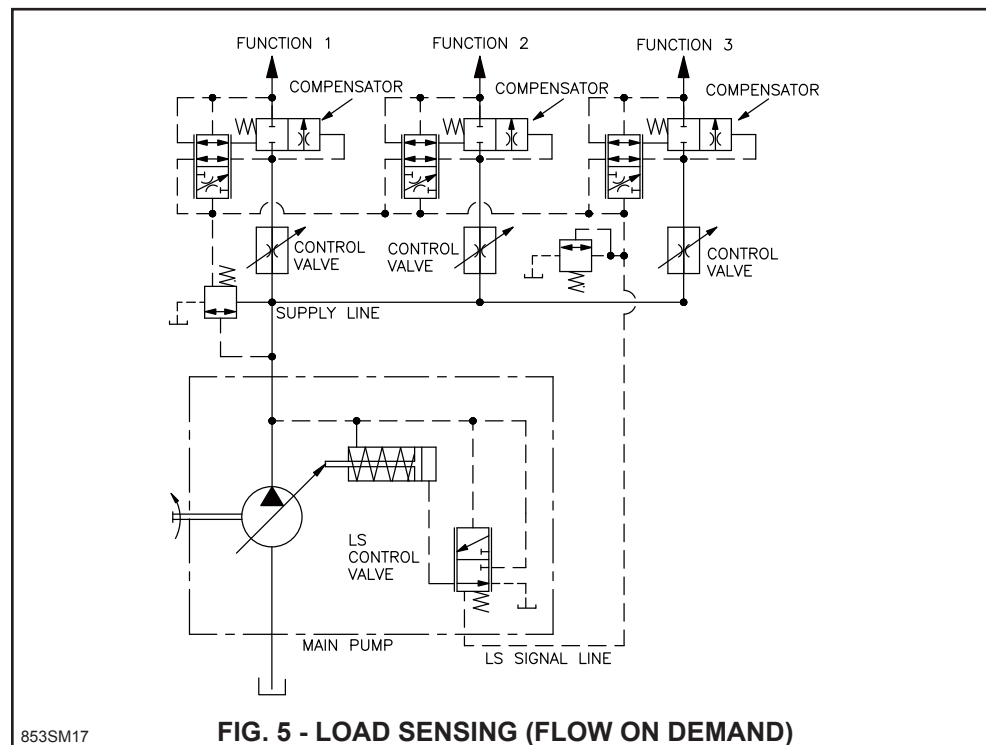
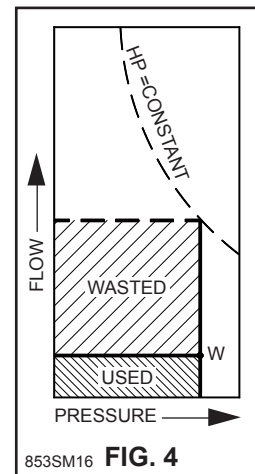
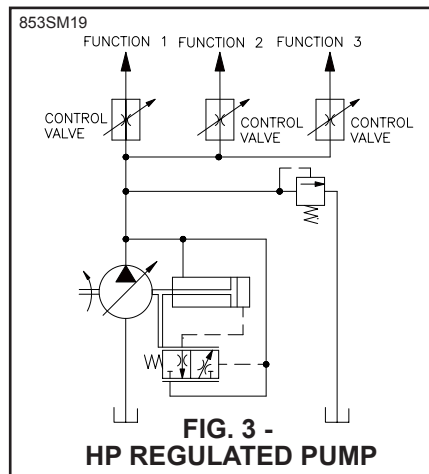
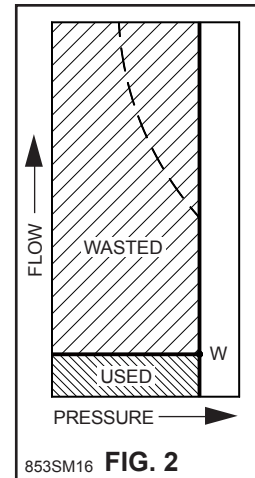
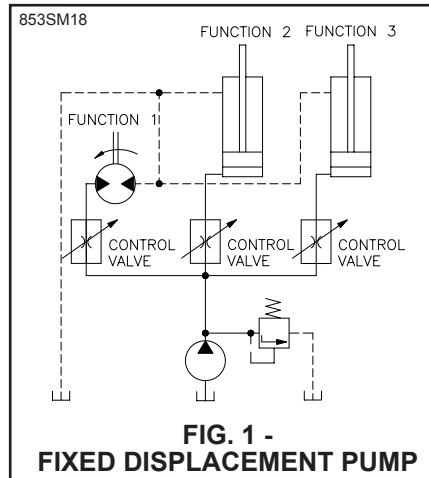
Figs. 1 & 2 Early hydraulic systems used a fixed displacement pump, with valves to control or adjust flow rates or speeds. This throttling or restricting pump flow to achieve control over the functions causes excess oil to flow over the relief valve. This results in wasting power and at the same time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

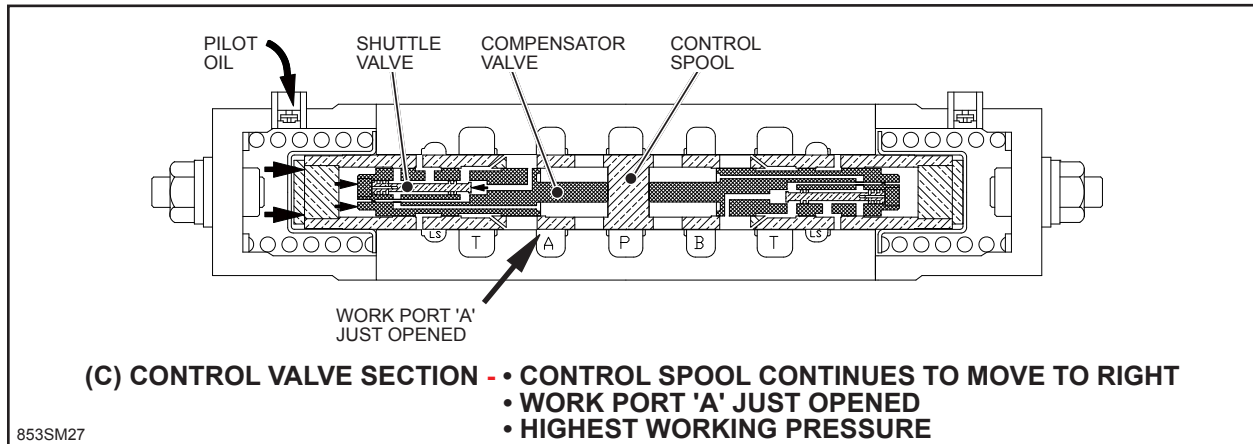
Figs. 3 & 4 In an attempt to recover some of the wasted energy, variable volume pumps evolved. These pumps are power regulated or **horsepower controlled** and since they **reduce** the pumps output to maintain a constant system hp, oil flow over the relief valve is less, therefore reducing the wasted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

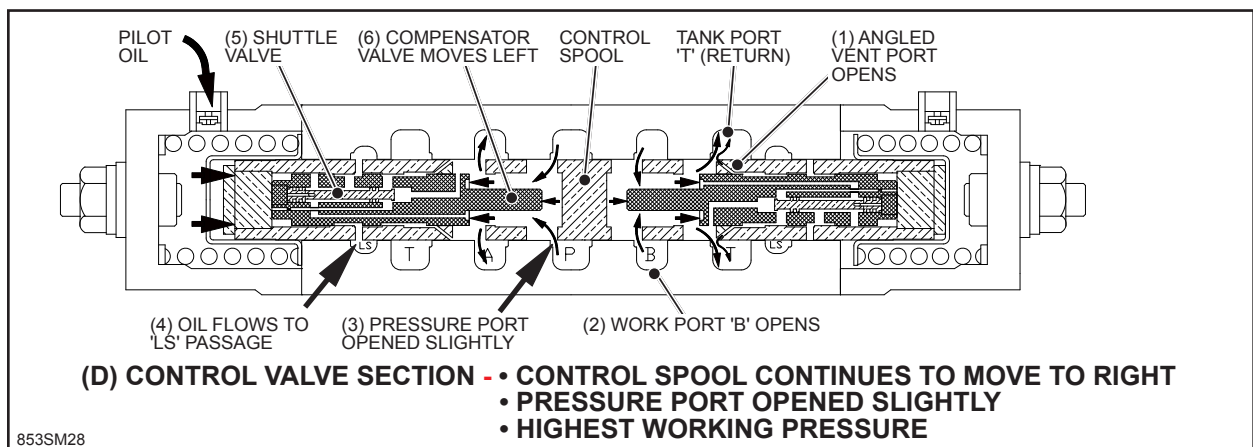
Figs. 5 & 6 The load control system was developed to address the problems outlined above.

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.





(C) The second port to open is work port 'A' (port 'B' if the control spool moves to the left). The left compensator valve stays to the right as in the neutral condition and the shuttle valve moves to the left directing work port pressure to the area behind the compensator valve to hold it shut until it can be opened by pressure in the 'P' port. In this mode, the compensator valve is functioning as a load check valve would in a conventional valve.



(D) The next port to open is the angled vent port (1) on the right side of the control spool which connects to the tank port, 'T'. This connects all passages in the compensator spool to return pressure. There is no movement at this time but as soon as the work port 'B' (2) opens and oil flows, the returning oil will push the compensator valve to the right and connect 'B' to 'T'.

The pressure port (3) in the control spool is the last port to open. When it opens, pump discharge pressure flows through the passage in the compensator spool and through the shuttle cavity to the load sense passage (4).

The load sensing pressure increases causing the pump to increase its displacement and further increase the pressure. The compensator valve keeps the work port passage closed until the pump discharge pressure is higher than the work port pressure (load check feature).

Once the pump discharge pressure is higher, the shuttle valve (5) moves to the right and connects load sensing pressure to the cavity behind the compensator valve. The compensator valve (6) moves to the left allowing oil to flow to the work port. With the compensator valve open, the cavity to the right of the compensator valve assumes approximate work port pressure and this pressure flows through the passage to the shuttle cavity allowing work port pressure to control load sensing pressure. As the control spool moves further, in response to pilot pressure, the compensator valve and shuttle valve positions remain the same.

Tigercat H845C/LH845C Harvester

SECTION 5 – PILOT SYSTEM

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PILOT SYSTEM CIRCUIT DESCRIPTION

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

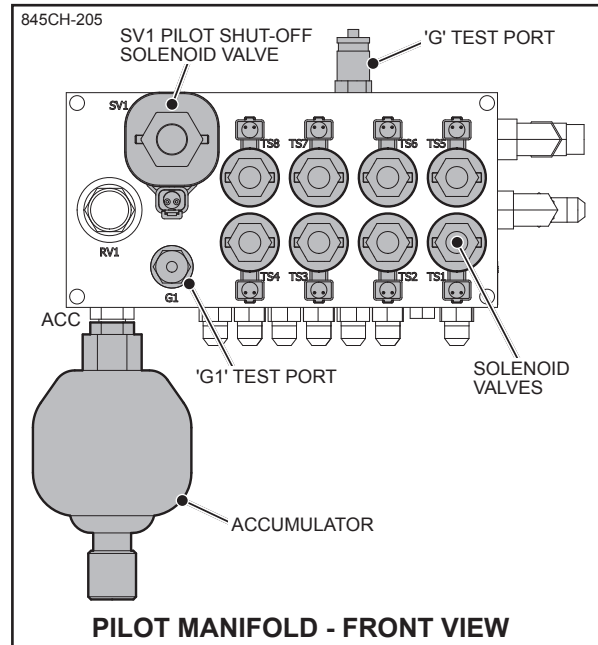
When the pilot shut-off solenoid valve is energized, pilot oil is made available to outlet pressure ports and eight solenoid valves. When the pilot shut-off solenoid valve is de-energized, pilot oil from the pilot pressure reducing valve is blocked, preventing pilot oil from entering the manifold, thereby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

The accumulator (ACC) outlet pressure port is connected to the pilot accumulator that maintains a constant pressure source of **34.5 bar (500 psi)**, ensuring that the controls remain responsive during heavy duty cycles.

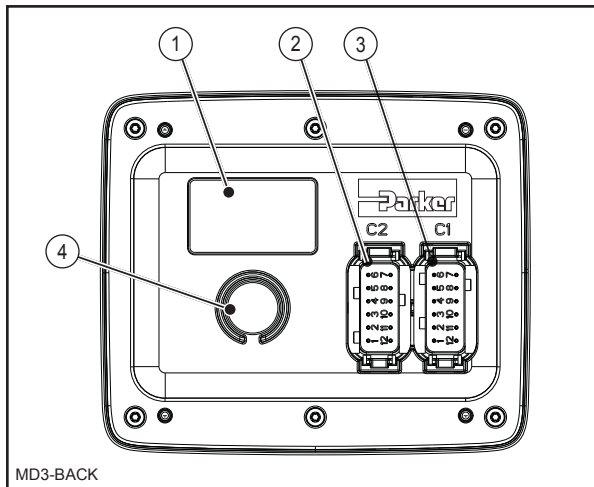
Movement of the joystick levers or the foot pedals will direct pilot oil to the pilot end caps of the main control valve to operate the various machine functions such as lifting the boom or driving the machine.

A gauge test port (G) located on the pilot manifold is provided for use when testing the pilot system pressure.

NOTE: The manifold has test ports before (G) and after (G1) the shut-off solenoid valve. A secondary relief is also added as a safety precaution.



MD3 DISPLAY AND MASTER MODULE



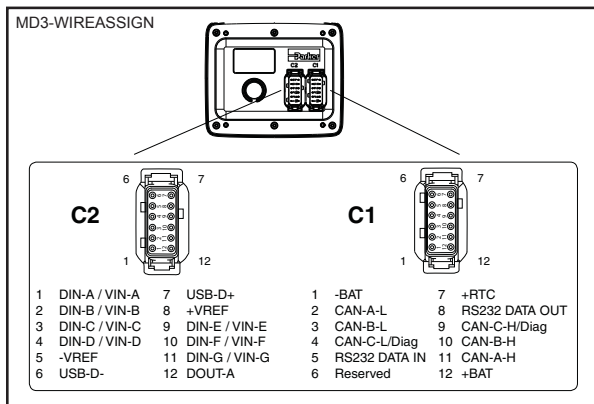
MD3-BACK

REAR OF MD3 MODULE

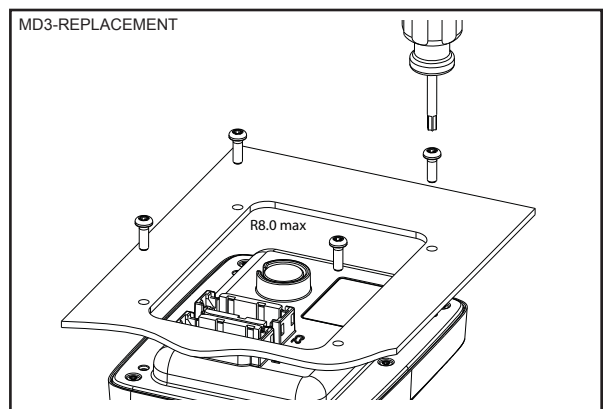
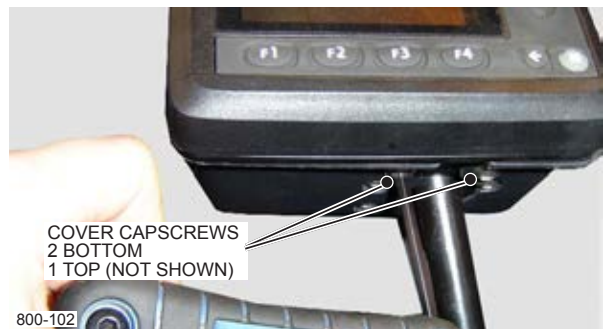
The back of the MD3 Module consists of the following.

1. Tag with serial number and part number.
2. Connector C2 (VIN inputs, USB communication and alarm output).
3. Connector C1 (voltage supply, CAN communication J1939 and expansion modules).
4. Membrane valve for condensation prevention inside unit.

MD3 MODULE WIRING PIN ASSIGNMENT



NOTE: Refer to the MD3 DISPLAY MODULE SCHEMATIC in THIS SECTION or MACHINE ELECTRICAL SCHEMATIC for detailed pin and wiring assignment.



MD3 MODULE REPLACEMENT

1. Turn battery disconnect switch OFF.
2. Remove back cover from the MD3, held by 3 hex capscrews (1 top, 2 bottom).
3. Disconnect the wiring harness at the module C1 and C2 connectors.
4. Remove the MD3 from the mounting bracket, held by 4 screws as shown in the illustration.
5. Install module in reverse order as removed.

NOTE: Refer to IQANRUN 2 – APPLICATION UPDATE in THIS SECTION for procedure to update the application in an MD3 module.

When replacing an MD3 module the machine serial number information will need to be reset. Refer to IQANRUN 2 – SYSTEM for more information regarding access and maintenance of logs using IQANrun 2.



ENGINE MENU



From the main menu press the F1 button to select the engine display.



When selected the engine menu icon is on display and the engine functions will also be displayed.

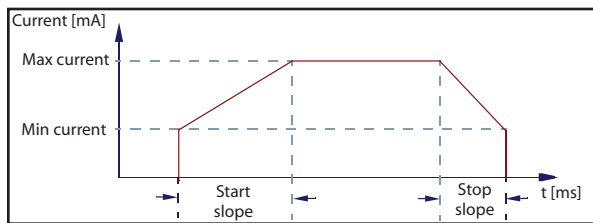
The engine functions on display are as follows:

- Charge Air Temperature (°C or °F)
- Turbocharger Boost Pressure (bar or psi)
- Engine Load %
- Engine Speed rpm
- Engine Coolant Temperature (°C or °F)
- Battery Voltage (Volts)
- Engine Oil Pressure (bar or psi)
- Fuel Rate (L/h or gph instantaneous)



Press the F1 button to toggle between metric or imperial units of measure.

The hydraulic oil Self Warmup Mode can also be started from the Engine Menu by pressing the F3 button - WARMUP INITIATE, only if the pilot is OFF.

START/STOP SLOPE

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

confirm the selection.

**LEVELING**

In the Leveling menu the following functions can be adjusted depending on working conditions:

- Leveller Stop Ramp
- Leveller Start Ramp
- Forward Leveling Speed
- Rear Leveling Speed
- Right Level Cylinder
- Left Level Cylinder

Use the up arrow or down arrow buttons to scroll to the desired selection and the OK button to confirm the selection.

SCREEN SAVER ADJUSTMENT



Select F3 to access the screen saver adjustment options. Use the up arrow or down arrow buttons to scroll through the choices. Three choices are available:

- SCREEN SAVER - **Off**
- SCREEN SAVER - **Dimmed**
Timeout - 5 seconds
Dimmed light - 80
- SCREEN SAVER - **Black**
Timeout - 5 seconds



After making a selection press the OK button to set the selection and press the back button (⬅️) to return to the Main Menu screen.

DATE/TIME ADJUSTMENT



Press F2 to select the DATE/TIME adjustments in the PREFERENCES menu.



The DATE/TIME menu screen opens. Two choices are available for adjustment:

- DATE - select F1
- TIME - select F2

Critical		STOP
Hardware Fault - MD3		
Active fault has been hidden. Turn key off and on to recall active hidden hardware faults.		
Hide		

HARDWARE FAULT - MD3

This message will be displayed, alarm warning light will flash and alarm will sound when a critical 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.

A VREF error is an example of the type of hardware fault which will be the original active fault which triggers this message.

Critical		STOP
Hardware Fault - XS2		
Active fault has been hidden. Turn key off and on to recall active hidden hardware faults.		
Hide		

HARDWARE FAULT - XS2

This message will be displayed, alarm warning light will flash and alarm will sound when a critical active hardware fault related to the XS2 Cab module has been hidden.

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

A VREF and no contact errors are examples of the type of hardware fault which may be the original active fault which triggers this message.

Critical		STOP
Hardware Fault - Engine		
Active fault has been hidden. Turn key off and on to recall active hidden hardware faults.		
Hide		

HARDWARE FAULT - ENGINE

This message will be displayed, alarm warning light will flash and alarm will sound when a critical active hardware fault related to the Engine has been hidden.

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

No contact error is an example of the type of hardware fault which may be the original active fault which triggers this message.

Critical		STOP
Hardware Fault - XA2		
Active fault has been hidden. Turn key off and on to recall active hidden hardware faults.		
Hide		

HARDWARE FAULT - XA2

This message will be displayed, alarm warning light will flash and alarm will sound when a critical active hardware fault related to the XA2 Front Chassis module has been hidden.

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

A VREF and no contact errors are examples of the type of hardware fault which may be the original active fault which triggers this message.

- Four red primary flashes in a row and one yellow secondary flash indicates a memory error.
- Continuous red primary flashing indicates a fatal error.

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

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

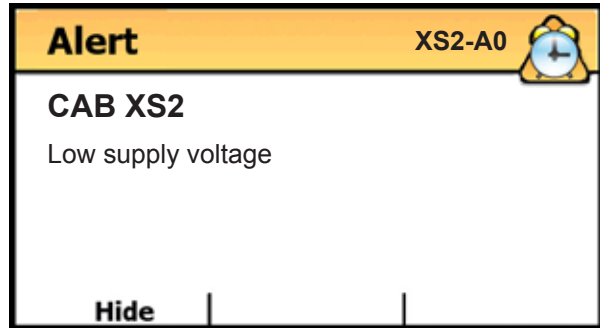
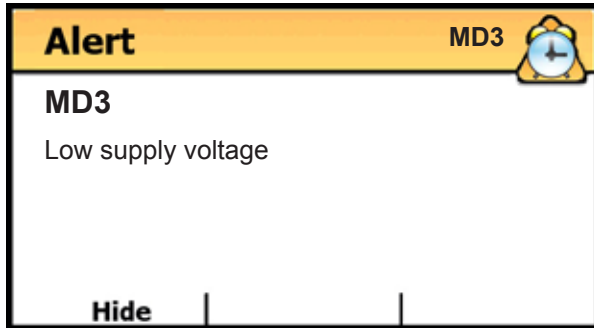
CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
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- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

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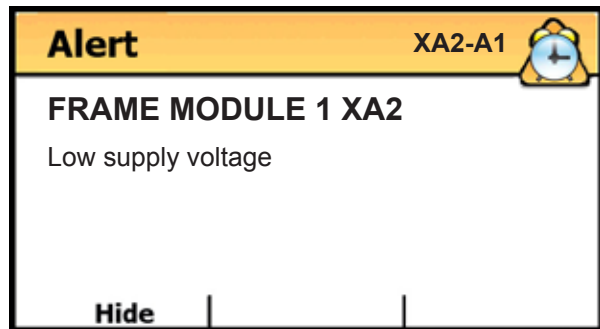
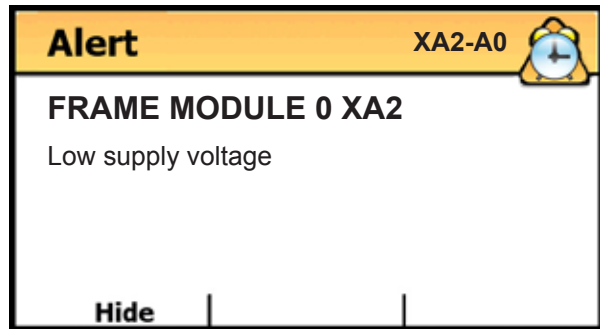


MODULE LOW SUPPLY VOLTAGE - ALERT

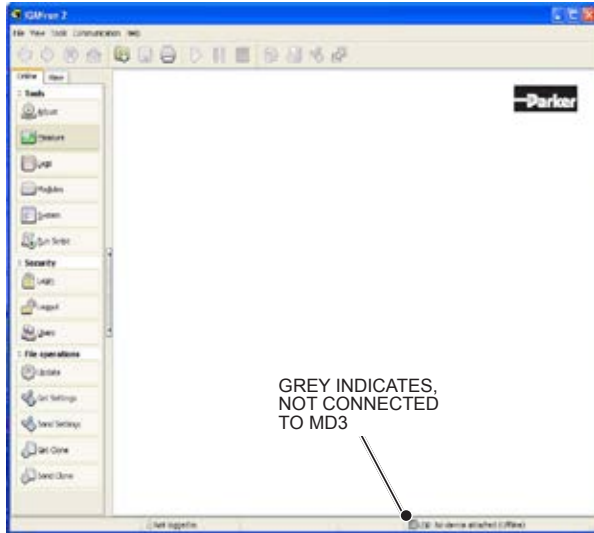
Module low supply voltage alert message will be displayed to indicate that the computer control system has detected low supply voltage readings in a system module.

The module is identified on the display screen.

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 - ALERT – HARDWARE FAULT in THIS SECTION.



CONNECT TO THE MD3 WITH IQANrun 2



GREY INDICATES, NOT CONNECTED TO MD3

1. Turn on PC/Laptop and launch IQANrun by double clicking the shortcut on your desktop. IQANrun is part of the IQAN Active Studio.



2. Turn the machine key switch to the 'ON' position, so the MD3 has power. Do not start machine.



3. Connect the USB Hub into the PC/Laptop USB jack. Then connect the USB cable into the hub.

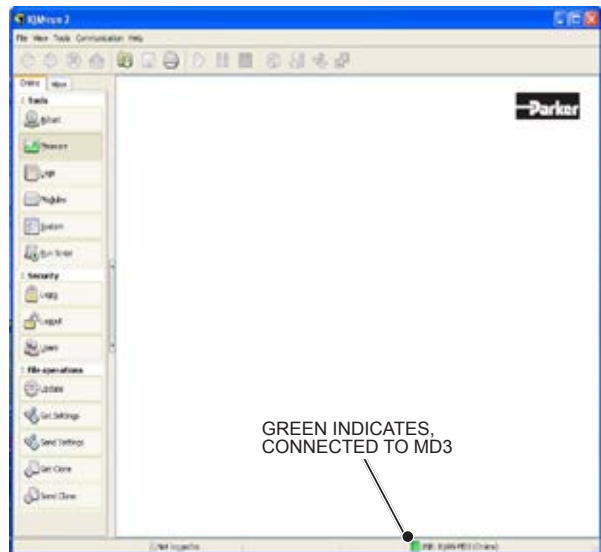
IMPORTANT !

Connecting the USB cable directly to the USB port on a PC/Laptop is NOT recommended. Using an isolated USB hub will protect

your PC/Laptop USB port and the MD3 module from ground loops which can cause communication signal problems or damage to the PC/Laptop and MD3 module.



4. Connect the other end of the USB A/B Cable to the MD3 USB connector. Exact location of the connector will vary between machine models.



GREEN INDICATES, CONNECTED TO MD3

5. IQANrun will now indicate that it is online. Proceed with service operations and login if required. Refer to LOGIN IN THIS SECTION.

NOTE: If the MD3 does not contain an application (replacement module), the application will have to be Updated, before a user can login. Refer to UPDATE APPLICATION and LOGIN IN THIS SECTION.

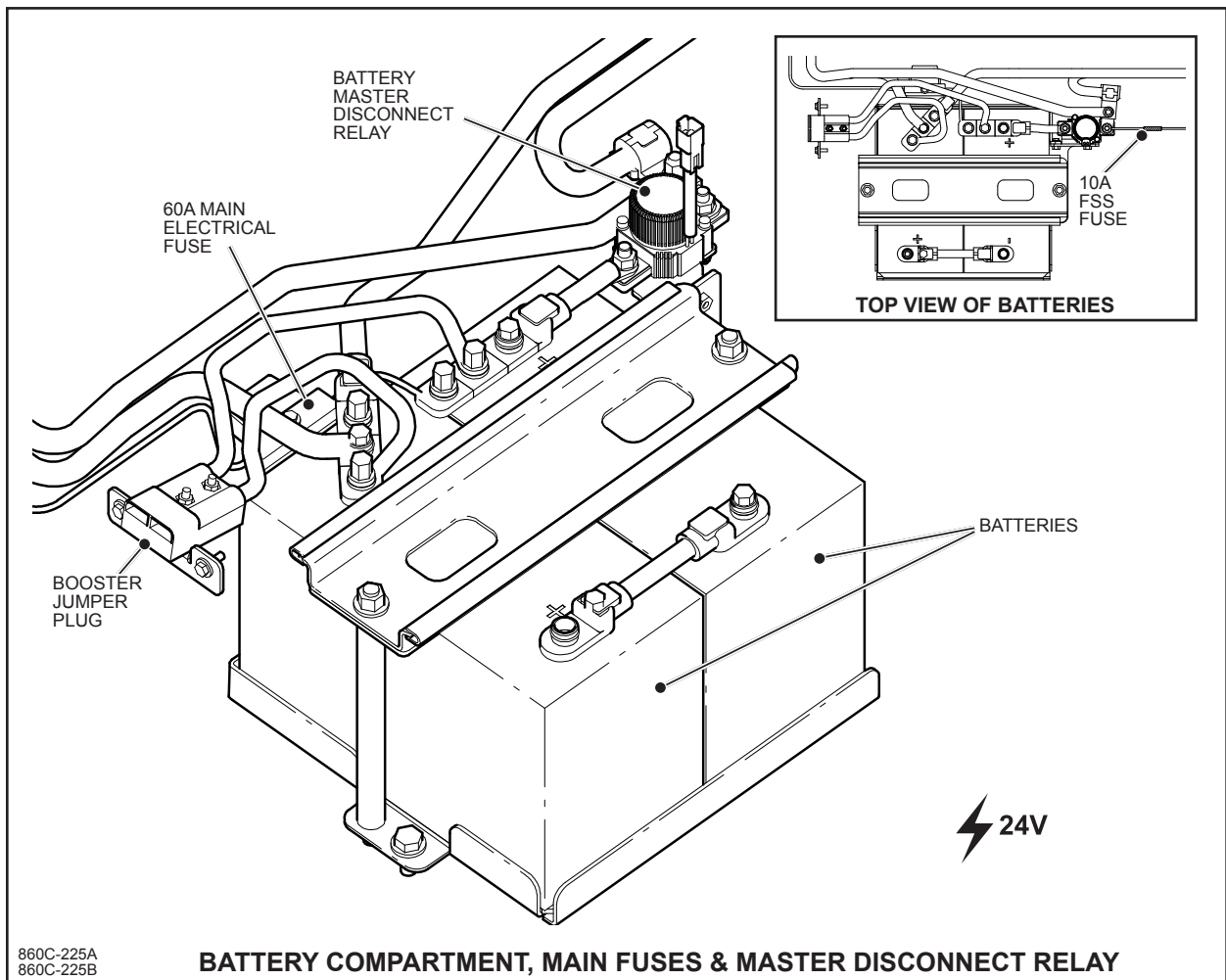
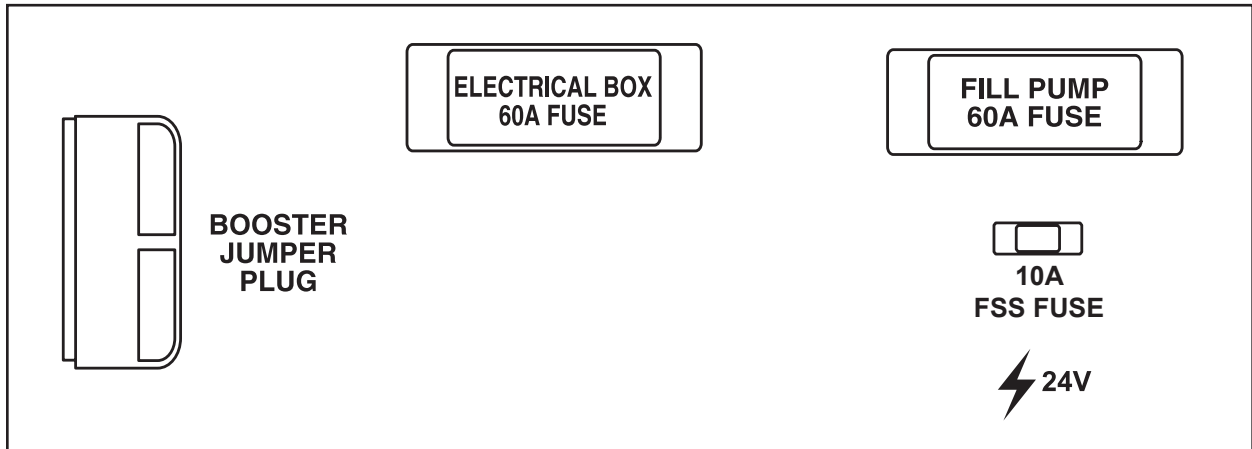
**FUSES AND RELAYS,
ENGINE COMPARTMENT**

There are three areas where Fuse and Relay Electrical Components are mounted as follows:

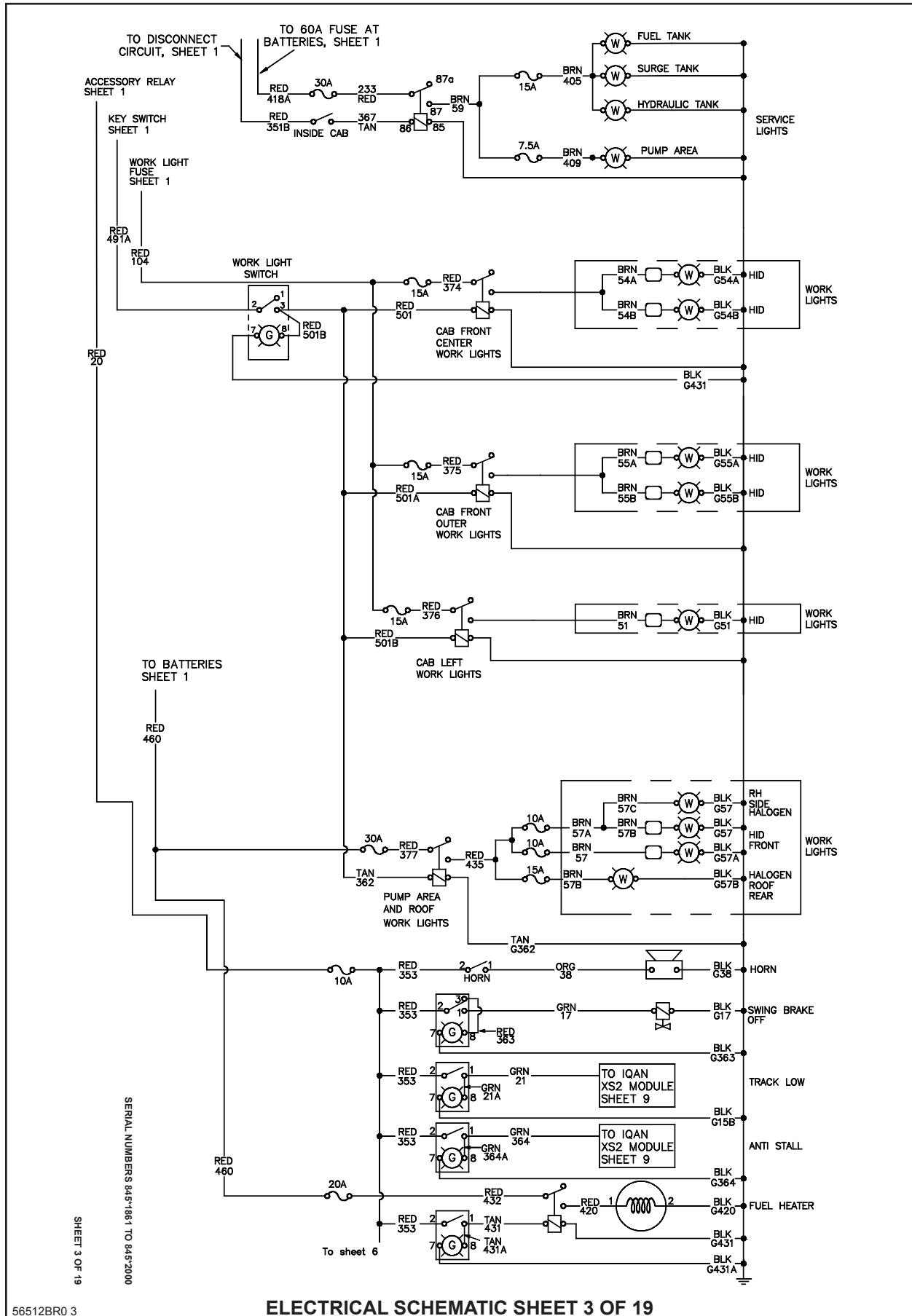
- **Main Electrical Fuse, Master Disconnect Relay and Amerex (FSS) 10A Fuse**, located in the engine compartment beside the battery box.

**IMPORTANT
24 VOLT ELECTRICAL SYSTEM**

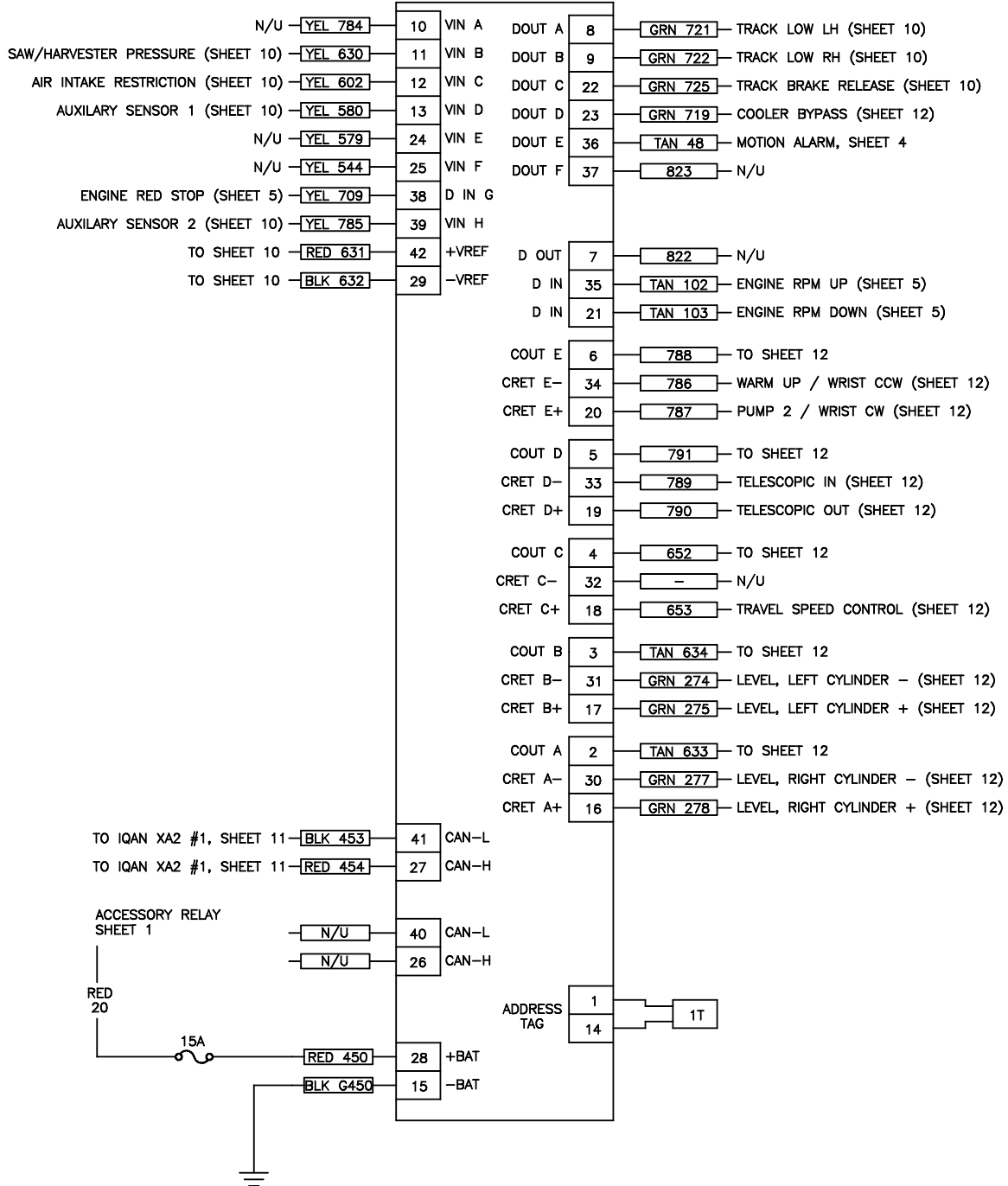
- **Fuse and Relay Rear Panel**
Located in the engine compartment behind the cab.



860C-225A
860C-225B



XA2 #2 MODULE



SERIAL NUMBERS 845*186 1 TO 845*2000

SHEET 13 OF 19

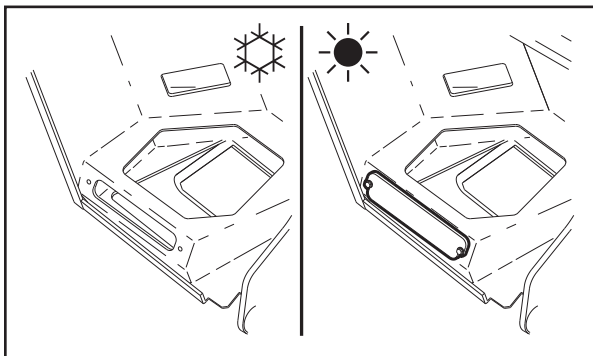
⚠ WARNING

Do not use ether! Engine is equipped with an electrical starting aid. Use of ether may cause an explosion and severe injury.



H845C-45

AIR INTAKE BY-PASS

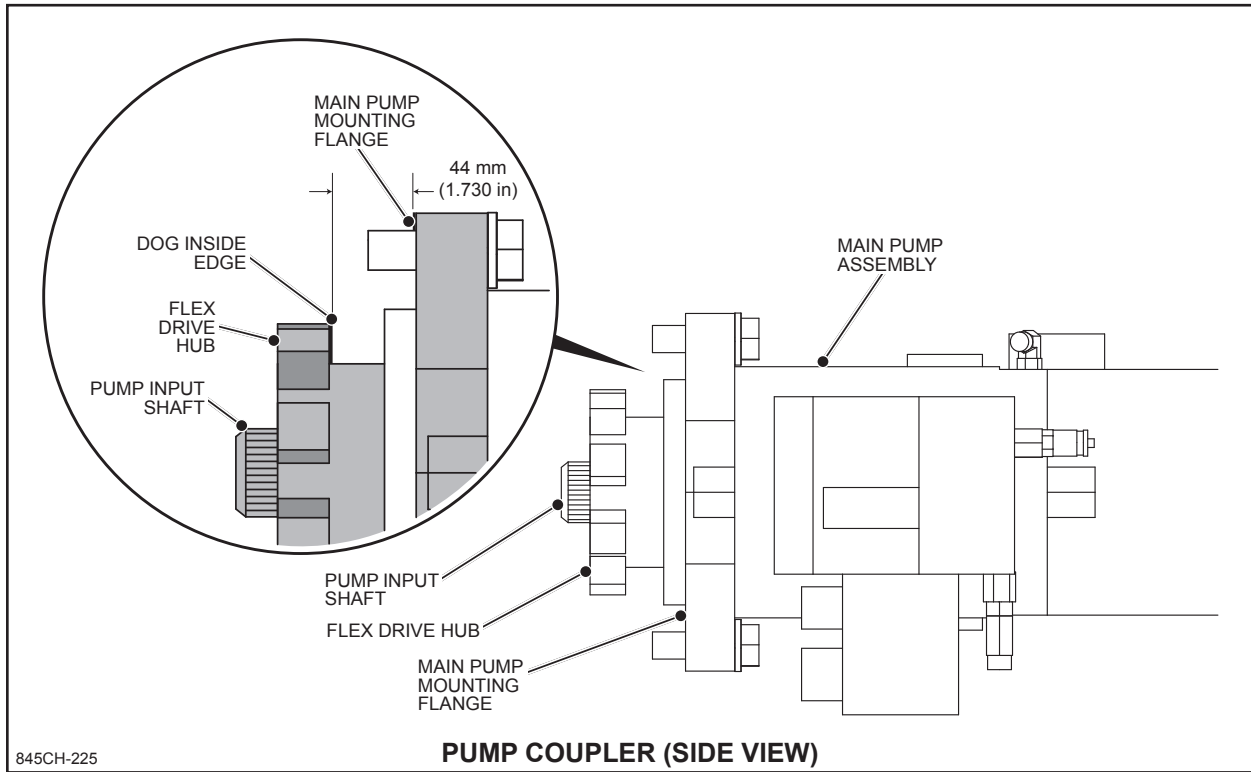


1. Start the engine, the warm up mode limits engine rpm and applies anti-stall so that the system can be warmed up gradually from a cold start. As hydraulic oil temperature increases the system will automatically allow

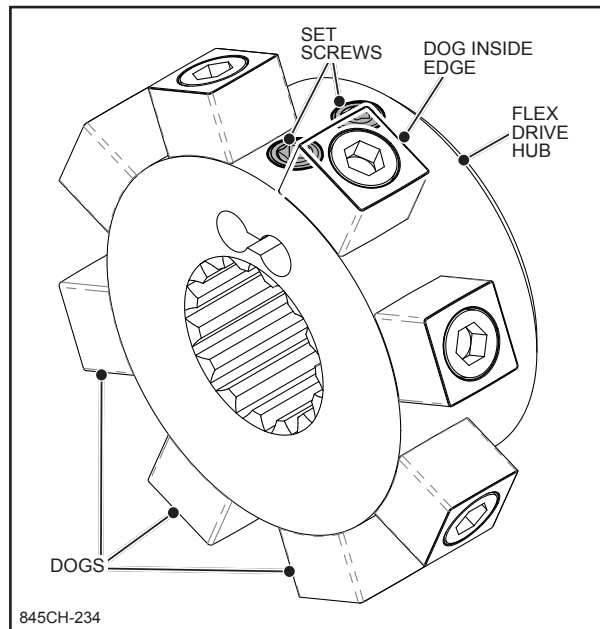
the engine rpm to increase. The warmup mode operates automatically on cold start ups within a hydraulic oil temperature range. The temperature range will vary based on computer control system hydraulic oil settings.

- Do not activate pilot system.
- Hydraulic filter bypass icon must be off before proceeding to Step 2.
- Check that the proper hydraulic oil grade is set in the computer selection.
- Engine coolant temperature must reach 60°C (140°F) before proceeding to Step 2.
- Hydraulic Oil temperature must reach -7°C (20°F) before proceeding to Step 2.
- Check that cooling fan is turning before proceeding to Step 2.

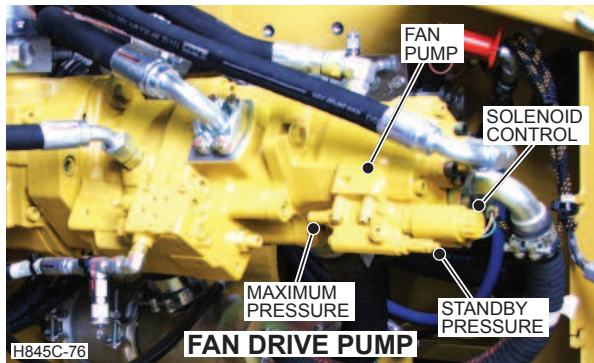
- NOTE:** At -18°C (0°F) starting temperature it will take approximately 30 minutes to complete step 1.
2. Increase engine speed to 1300 rpm and begin slow boom movements
 - Hydraulic filter bypass icon must be off.
 - Operate main boom to raise attachment off ground.
 - Operate stick boom slowly in and out.
 - Operate telescopic boom if applicable IN and OUT and check that it is operating correctly.
 - Rotate the harvesting head and check that it is operating correctly. Refer to manufacturer's manual for more information.
 3. Swing upper 360° to the left then 360° to the right.
 4. Place travel speed switch in LOW position and drive machine forward pressing the foot pedals very gradually. Do not exceed ½ pedal position.
 5. Watch hydraulic oil temperature, it must reach 10°C (50°F) before any work may begin.
 6. Increase engine speed to 1500 rpm, and begin driving to work area in LOW travel speed. Do not fully depress foot pedals until the hydraulic oil reaches 32°C (90°F). Harvesting may begin but work very slowly. The machine functions will seem to operate much slower until the systems are warmed up. Avoid operating the boom functions quickly until the hydraulic oil is above 32°C (90°F). Work the machine for 30 minutes at 1500 rpm.



8. Position the flex drive hub so the distance between the inside edge of the dog and the pump mounting flange is 44 mm (1.730 in)
9. Apply loctite 242 to the flex drive hub set screws. Install and torque set screws to 120 N-m (89 lbf-ft)



FAN PUMP



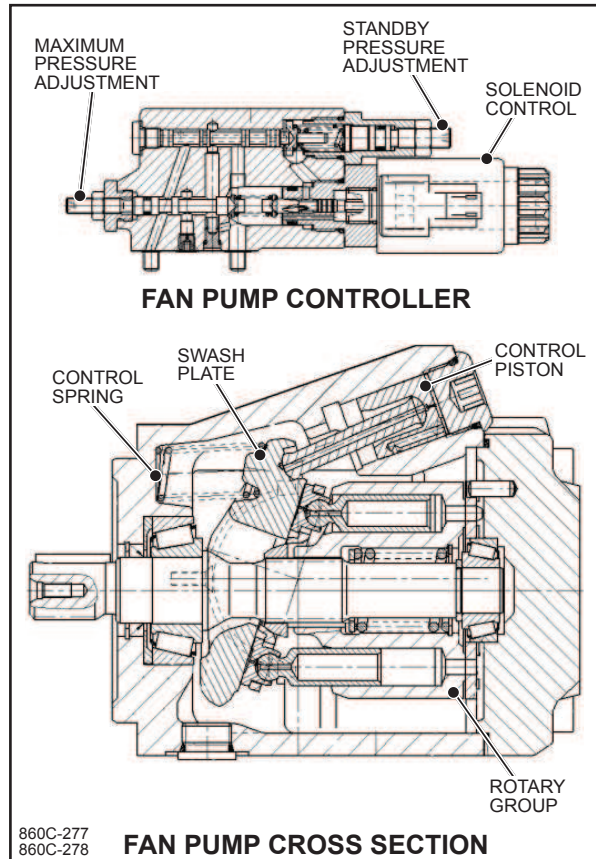
The fan pump is an axial-piston, variable-displacement pump with electronic controlled solenoid activated flow control. The pump operates in an open-loop hydraulic circuit, meaning that hydraulic oil is always returned to tank. The following components make up the hydraulic fan drive system:

- Fan Drive Pump
- Fan Control Valve/Manifold
- Fan Drive Motor
- IQAN Computer

When the COOLING FAN SWITCH is in the AUTO position, the computer control system activates/deactivates the control solenoid on the fan pump. The computer will send a signal (0 to 600 mA) to the solenoid. 0 mA will deactivate the solenoid allowing the pump swash plate to stroke, causing the pump to operate at full pressure of 186 bar (2700 psi) (POR setpoint), up to a maximum pressure of 186 bar (2700 psi) which supplies oil to the fan control valve which controls the oil flow direction to the fan hydraulic motor which drives the cooling fan (forward or reverse).

The amount of pump pressure is determined by the computer which receives signals from temperature sensors in the engine cooling system, hydraulic oil tank and charge air cooler. Signals from the temperature sensors, signifying cool temperature, prompt the computer to reduce the cooling system requirements. This results in a higher signal output from the computer to the pump control solenoid. Maximum output is 600 mA which places the pump in minimum flow at 19 bar (280 psi) standby pressure.

Signals from the temperature sensors, signifying hot temperatures, prompt the computer to increase the cooling system requirements. This results in a lower signal output from the computer to the pump control solenoid. Minimum output is 0 mA which places the pump at maximum

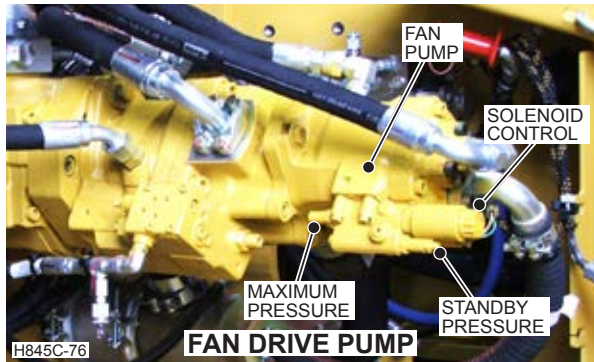


pressure.

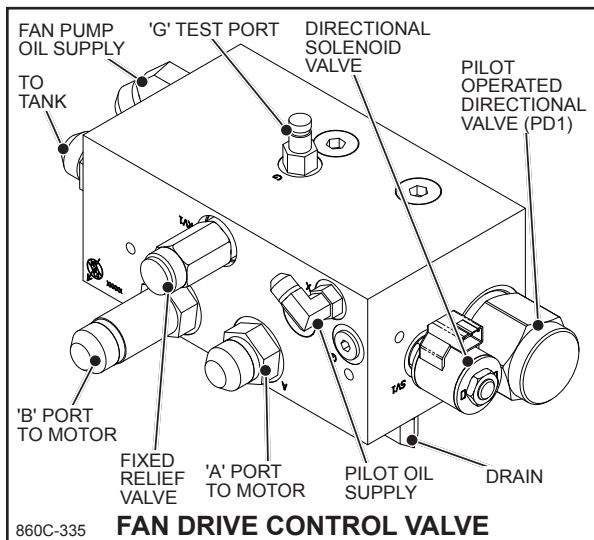
NOTE: If the COOLING FAN SWITCH is placed in the FULL ON position or momentarily pressed in the CLEAN position the computer control is disabled and the fan will either reverse or go into the FULL ON mode depending on switch position. Refer to COOLING FAN SWITCH in SECTION 2 of the OPERATOR'S MANUAL for details.

NOTE: If the wires at the solenoid control on the fan pump are disconnected the pump will automatically stroke to maximum pressure.

SET STANDBY PRESSURE:



The standby pressure adjustment is made at the fan pump controller attached to the pump. The pressure gauge connections are the 'G' test port on the Fan Control Valve Manifold.



1. Connect a 0-70 bar (0-1000 psi) gauge to the 'G' test port of the Fan Control Valve Manifold, located in the main service compartment.

Ensure that engine coolant and hydraulic oil temperatures are below the normal operating temperatures of coolant (91°C/195°F), hydraulic oil (varies with oil grade selected) and charge air cooler (44°C/111°F) during the test or the computer will activate the fan pump resulting in a pressure rise above the recommended standby pressure and the test will be invalid.

Using the computer display, monitor the Fan Speed COUT signal which should read 600 mA (fan pump on standby) throughout the entire test (MAIN MENU PAGE ~ MEASURE~OUTPUTS~FAN SPEED COUT).



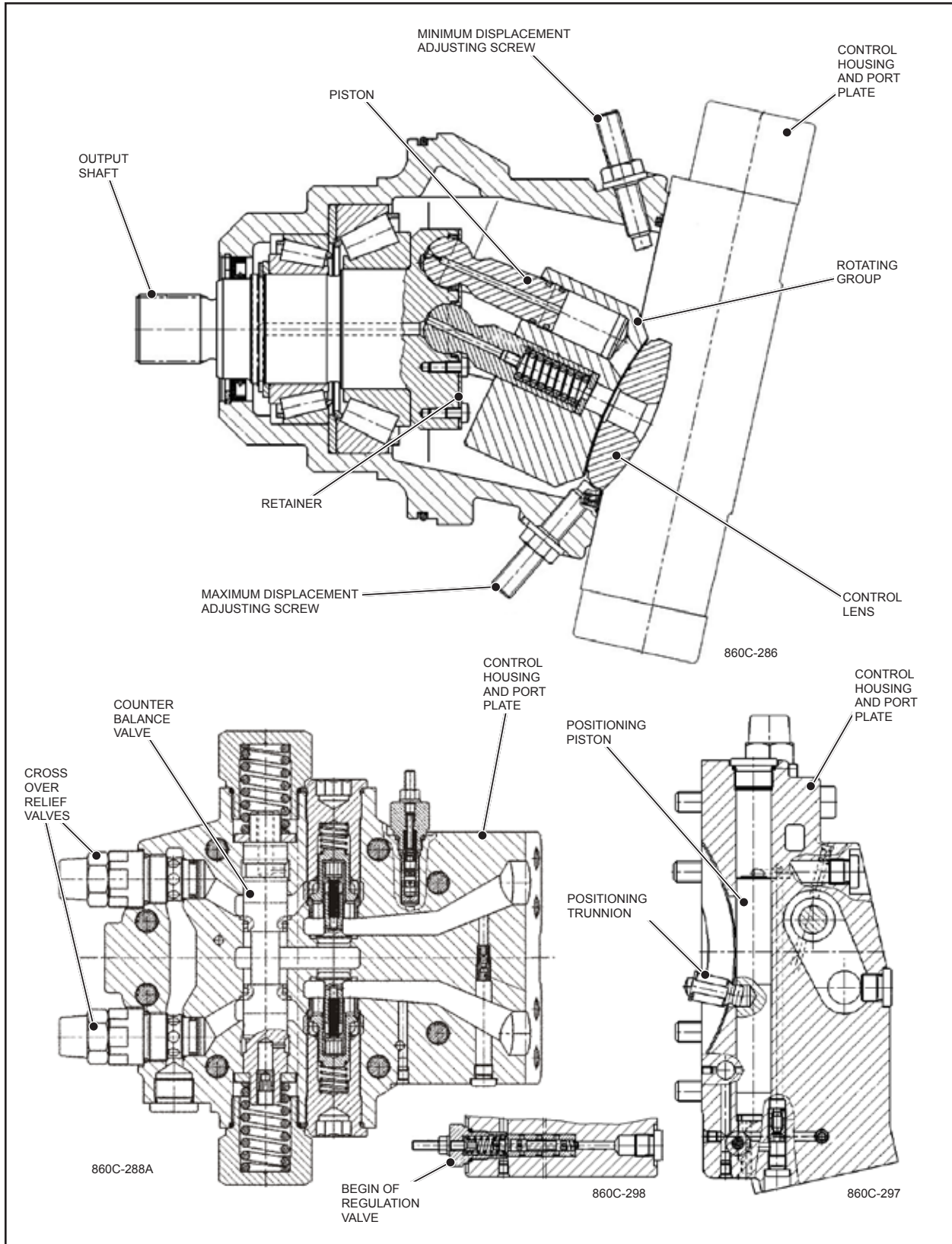
Refer also to COMPUTER~MAIN MENU PAGE - MEASURE MENU~EXAMPLE ~ MEASURE MENU in SECTION 6 of THIS MANUAL for an example of measure menu navigation.

2. Start the engine, set the fan control switch to **AUTO** and set the engine speed to **HIGH IDLE**.
3. Read the pressure on the gauge. The pressure reading at the 'G' test port should meet **fan pump stand-by pressure specifications***.

DRIVE MOTOR DESCRIPTION

The drive motor is a variable displacement rotary group of bent axis design. The motor is interchangeable from side to side.

The motor rotating group consists of a cylinder block with seven pistons and an output shaft that is attached to the rotating group by a retainer plate.



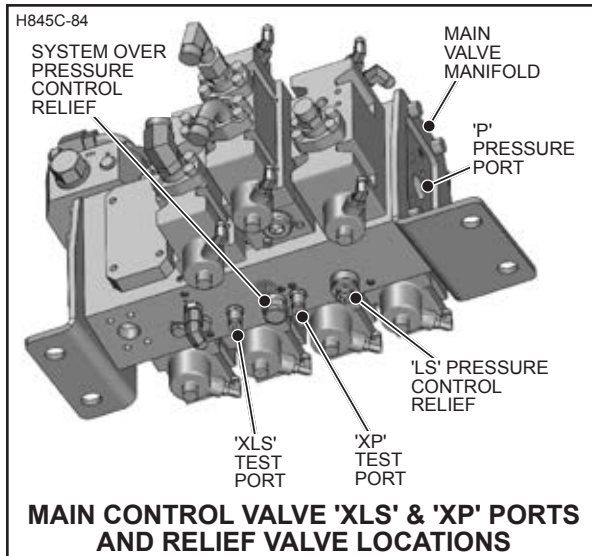
DRIVE SYSTEM PRESSURE SETTINGS

DRIVE MOTOR CROSSOVER RELIEF VALVES

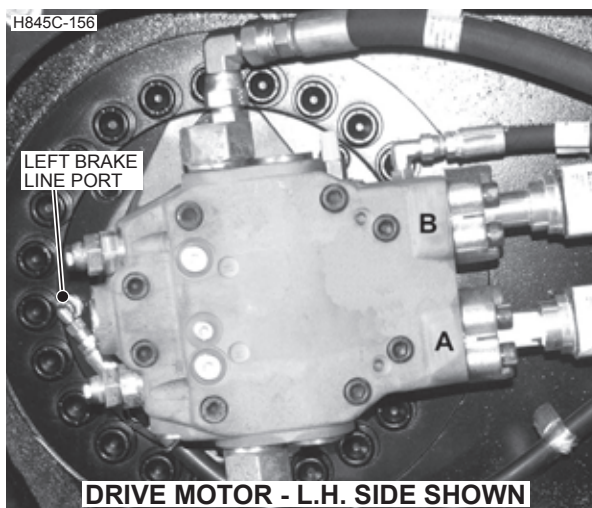
TEST PROCEDURE:

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 0-700 bar (0-10 000 psi) gauge on 'XP' test port on main valve manifold.



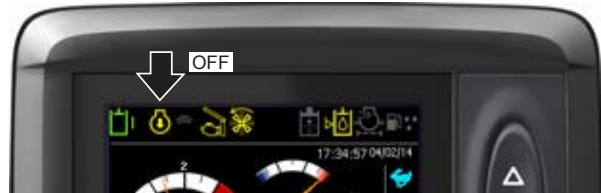
4. Disconnect LEFT brake line at port on final drive gearbox. Plug hose and cap port adapter on gearbox.



5. Start engine and set throttle speed to **LOW IDLE, 950 rpm** or slightly above (to prevent stalling).
6. From inside the cab close and *latch the front door* and press the PILOT RESET button to activate the pilot system.

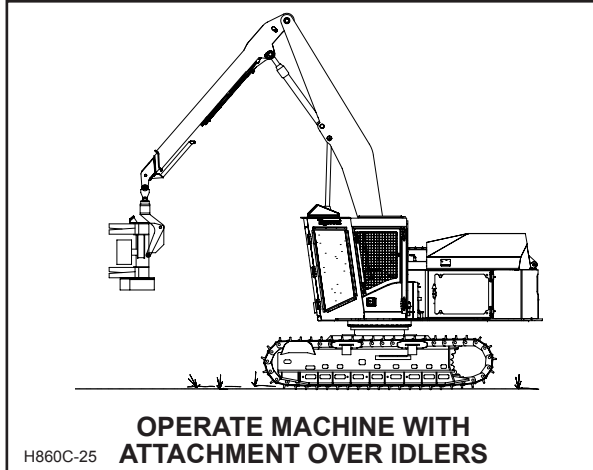


7. Use the IQAN MD3 to set fan service mode to ON. Refer to COMPUTER - ADJUSTMENT MENU - COOLING FAN SERVICE MODE in SECTION 6 of THIS MANUAL.



8. Place the anti-stall switch to the OFF position. It is located on the forward control panel in the cab. The anti-stall icon on the MD3 computer displays GREEN when the switch is in the ON position or YELLOW when it is in the OFF position. Refer to COMPUTER-ADJUSTMENT MENU-ANTI-STALL MODE in SECTION 6 of THIS MANUAL.
9. Place track LOW/DRIVE switch in the LOW position.
10. Activate LEFT track drive foot pedal in both FORWARD and REVERSE directions to ensure that the track does not move.
11. Check pressure reading on gauge at 'XP' port. the gauge should show Main system 'LS' relief pressure. Refer to PRESSURE AND SPEED SETTINGS in SECTION 3 of THIS MANUAL for specifications.

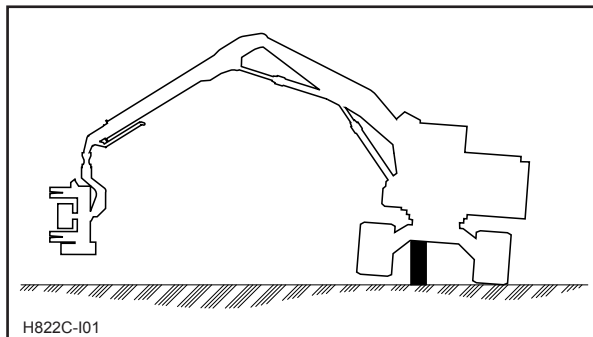
TRACK COMPONENTS



OPERATING THE MACHINE

Whenever possible the machine should always be operated with the attachment head over the IDLERS and not over the SPROCKETS.

Operating over the sprockets will result in overloading of the contact surfaces between the sprocket and the track bushings. Bushings could crack during sprocket impact.



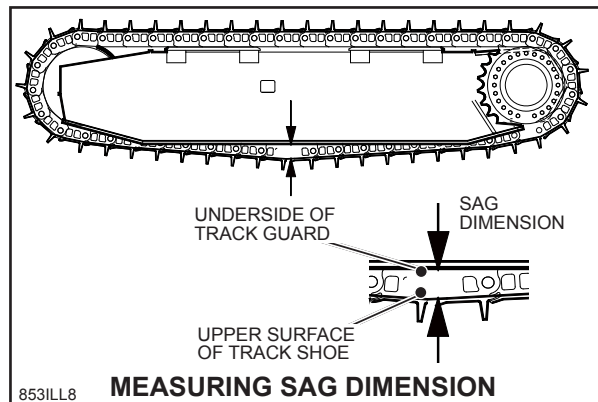
MEASURING TRACK SAG

1. Position attachment head in vertical position and swing boom to side of machine.
2. Use a jack of suitable design and capacity to safely lift the left track clear of the ground.
Refer to serial number plate for machine weight (less attachment).
Refer to attachment manufacturer's manual for correct attachment weight information.
3. Use blocks to firmly support track frame in raised position.

WARNING

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

4. Rotate track in forward and reverse several times. Stop the track while in reverse. Do not clean the track.
5. Stop engine.
6. Measure distance between top surface of track shoe at centre of lower surface of track frame.
7. This dimension should be between 4" and 6" for normal operations.



NOTE: If track sag is less than specified, track chain wear will be accelerated. If track sag is excessive, it is possible for the track to jump off the sprocket.

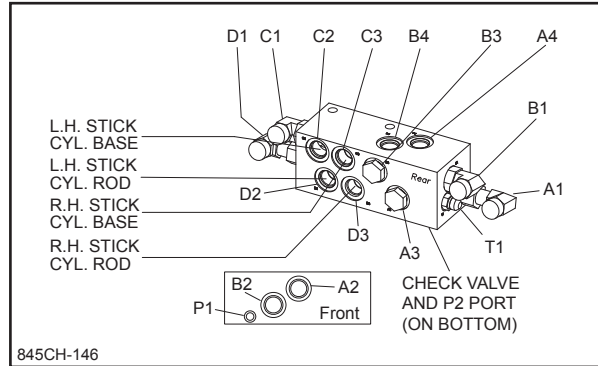
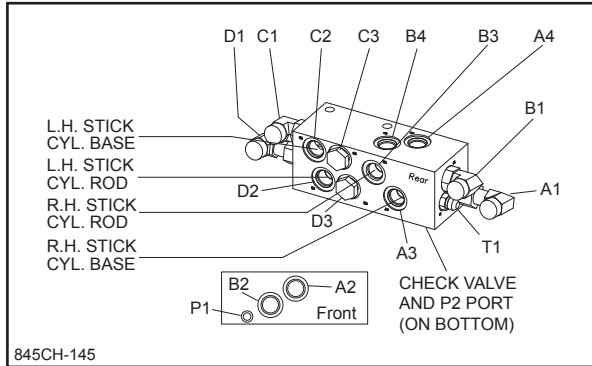
Tigercat H845C/LH845C Harvester

SECTION 12 – BOOM FUNCTIONS

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'ER' BOOM MANIFOLD CONNECTIONS

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

- A1 Hoist Valve 'A' Port
- A2 Plugged
- A3 R.H. Stick 'ER' Cylinder Base End
- A4 Hoist Cylinder Base End
- B1 Hoist Valve 'B' Port
- B2 Plugged
- B3 R.H. Stick 'ER' Cylinder Rod End
- B4 Hoist Cylinder Rod End
- C1 From Stick Valve 'A' Port
- C2 L.H. Stick Cylinder Base End
- C3 Plugged
- D1 From Stick Valve 'B' Port
- D2 L.H. Stick Cylinder Rod End
- D3 Plugged
- 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 Plugged
- A3 Plugged
- A4 Hoist Cylinder Base End
- B1 Hoist Valve 'B' Port
- B2 Plugged
- B3 Plugged
- B4 Hoist Cylinder Rod End
- C1 From Stick Valve 'A' Port
- C2 L.H. Stick Cylinder Base End
- C3 R.H. Stick Cylinder Base End
- D1 From Stick Valve 'B' Port
- D2 L.H. Stick Cylinder Rod End
- D3 R.H. Stick Cylinder Rod End
- P1 Plugged
- P2 Plugged
- T1 Return to Tank

LEVELING CONTROL VALVE

The leveling control valve is located in the upper frame inside the hydraulic valve compartment. Hydraulic oil for the leveling function is supplied by the main pump.

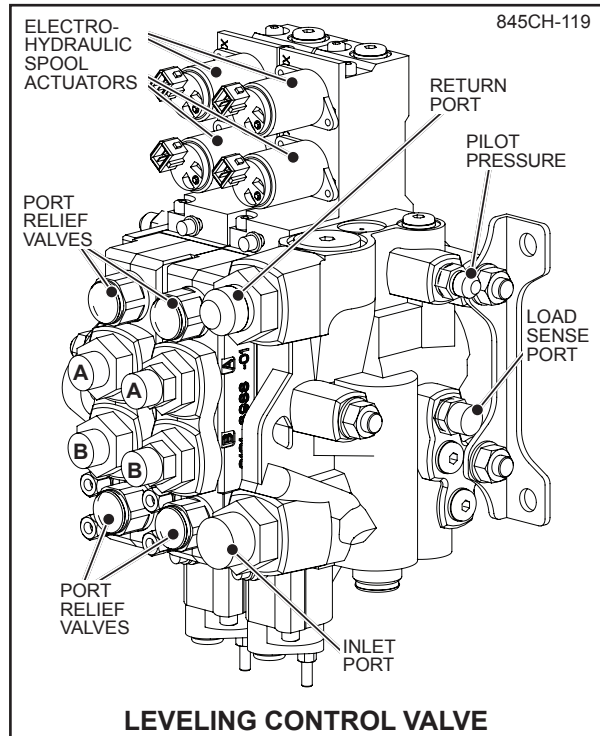
The spool sections of the leveling control valve are equipped with proportional, electro-hydraulic spool actuators. The actuators are spring centred to the neutral position, and are shifted by sending a variable volt signal (from the IQAN XA2-A1 module) to the appropriate solenoid.

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

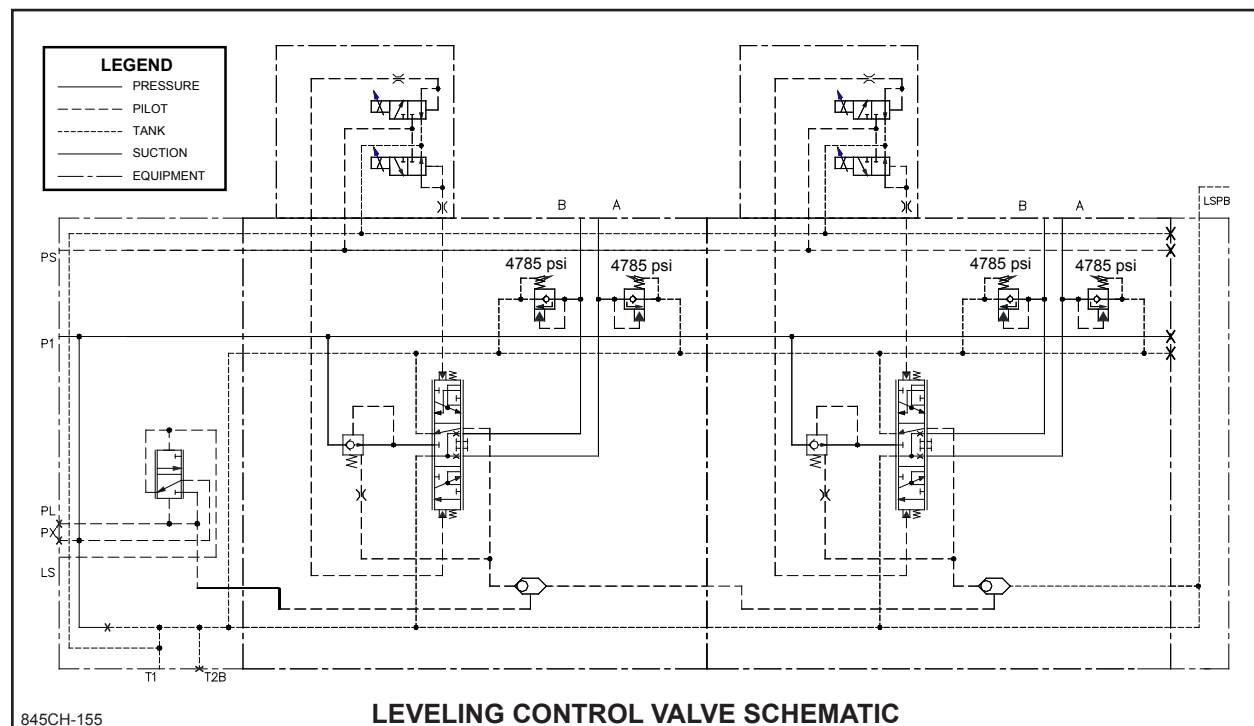
Port reliefs cannot be adjusted. Port reliefs installed in each section are specifically designed for use in that section and should not be interchanged with port reliefs from other valve sections .

PORT CONNECTIONS:

The 'B' ports (bottom ports) are connected to the **base end** of the cylinders and the 'A' ports (top ports) are connected to the **rod end** of the cylinders.



LEVELING CONTROL VALVE



LEVELING CONTROL VALVE SCHEMATIC

SET COUNTERBALANCE VALVE PRESSURES

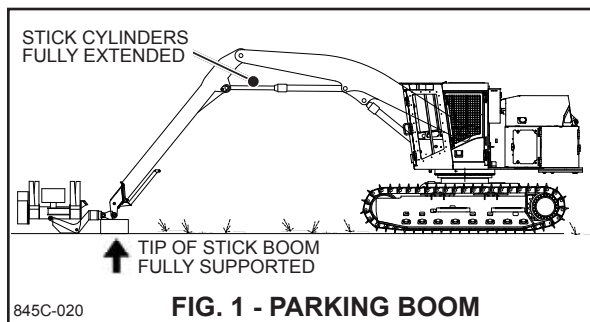


Extreme care and attention must be exercised when making adjustments to the leveling hydraulic and electrical circuits. Ensure that all personnel not directly associated with the servicing are well clear of the machine. The whole upper frame/cab/engine compartment, boom and attachment can tilt unexpectedly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

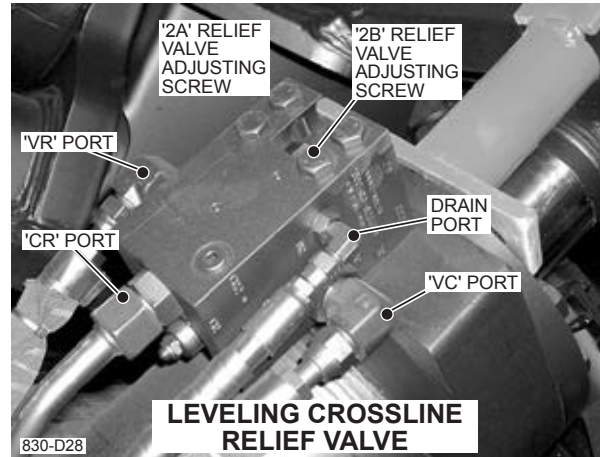


NOTE: Each valve is factory set and should require no further adjustment.

If adjustment is required, counterbalance valves must be set manually per the following instructions.



1. Park machine on level ground, lower the attachment to the ground, engage the swing brake and stop engine. Turn battery disconnect switch off. Install leveling cylinder support brace to prevent tilting of the upper frame during this procedure.
2. Access the leveling counterbalance relief valves located on the leveling cylinders.
3. Loosen locknut on '2A' counterbalance relief valve and turn the adjusting screw all the way IN (turning clockwise).



4. Turn the adjusting screw OUT 5 1/2 turns (turning counter clockwise). Tighten locknut on adjusting screw taking care not to turn the adjusting screw itself. This will set the relief valve at approximately **386 bar (5600 psi)**.
5. Repeat steps 3 and 4 for the '2B' counterbalance relief valve.
6. Repeat steps 3 to 5 for the counterbalance valve on the other cylinder (total of 4 reliefs, 2 on each counterbalance valve).

LUBRICATING CYLINDERS AND PINS

Refer to LUBRICATION SCHEDULE AND DIAGRAM in SECTION 3 of THIS MANUAL.

Check cylinder cycle times as outlined previously. Refer to CHECKING LEVELING SPEED (CYLINDER CYCLE TIMES) in THIS SECTION.

If necessary continue to adjust the Max Current value using the UP/DOWN buttons until the desired speed is obtained.

Press OK, the selection will move to the next adjustment. In this example Start/Stop Ramp adjustments are locked as they do not apply to cylinders, so pressing OK will take you back to the Leveling Menu.

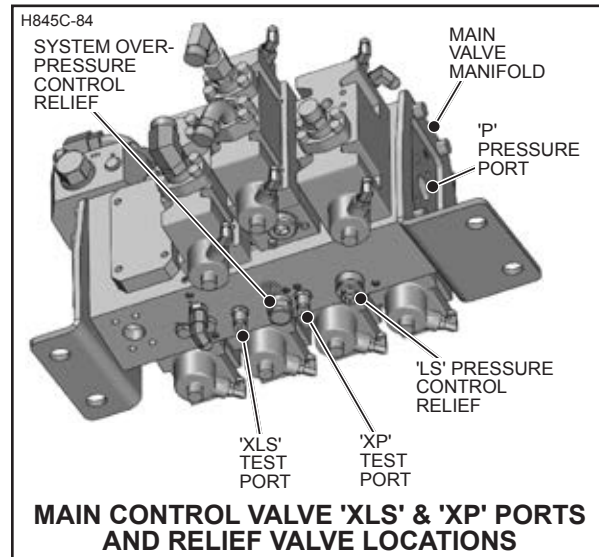
The new Max Current value has now been saved

For the level cylinder function this value is typically about 600 mA, however it will vary slightly from machine to machine (due to slight differences in the coils, spool cut on the valve, and various attachment manufacturers) – and of course, the largest factor in this case is operator preference.

CROSSLINE RELIEF VALVES

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

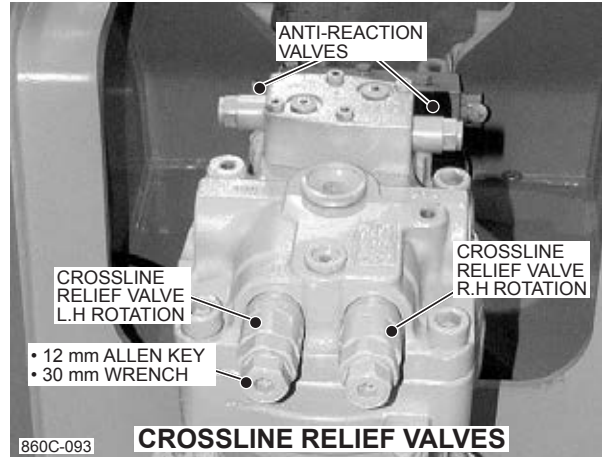
1. Ensure that the hydraulic oil is at operating temperature.



2. Install a 0 – 350 bar (0 – 5 000 psi) pressure gauge in the 'XP' test port on the bottom of the main control valve manifold.
3. Turn swing plate relief screw all the way in.

⚠ WARNING
Do not overtighten. This can cause severe damage to the hydraulic components.

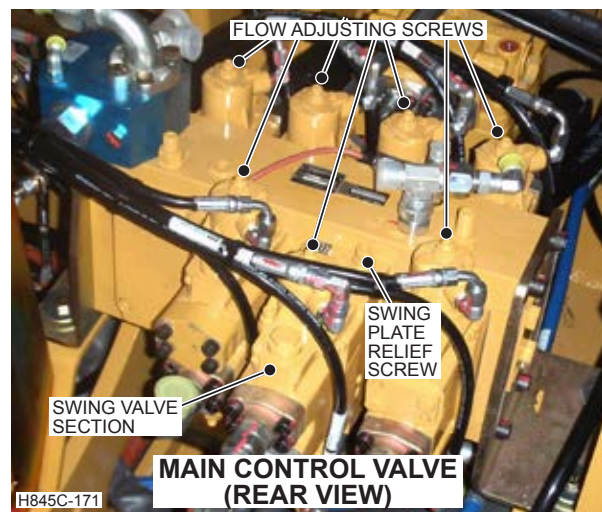
4. Start engine and set engine speed to **FULL** throttle.
5. Close cab door and press PILOT RESET switch to activate the pilot system.
6. Turn anti-stall switch OFF.
7. Turn swing brake ON.
8. Use the IQAN MD3 computer to set fan service mode to ON. Refer to COMPUTER – ADJUSTMENT MENU - COOLING FAN SERVICE MODE in SECTION 6 of THIS MANUAL.

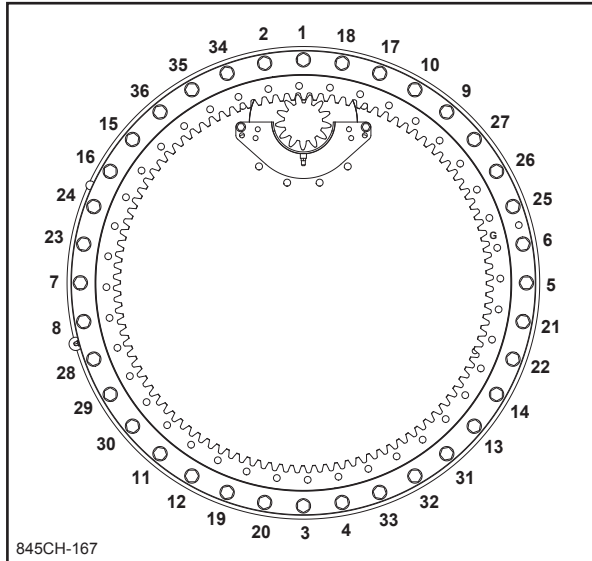


9. While operating the L.H. joystick lever fully in both the LEFT and RIGHT directions, the reading on pressure gauge in 'XP' test port should meet **specifications** for each direction. Refer to PRESSURE AND SPEED SETTINGS in SECTION 3 of THIS MANUAL for specifications.

NOTE: If pressure readings are within +/- 2 bar (30 psi) no adjustment is required. If pressure readings are not within +/- 2 bar (30 psi) adjust valves as follows:

10. Use a 30 mm hex wrench to loosen locknut on crossline relief valve and install a 12 mm Allen key in socket screw. Adjust socket screw IN (clockwise) to increase pressure or OUT (counterclockwise) to decrease pressure. When pressure is set to specifications, hold Allen key and tighten locknut.
11. Refer to SWING PLATE RELIEF in THIS SECTION.
12. Use the IQAN MD3 computer to set fan service mode to OFF.
13. Stop engine, remove gauge.

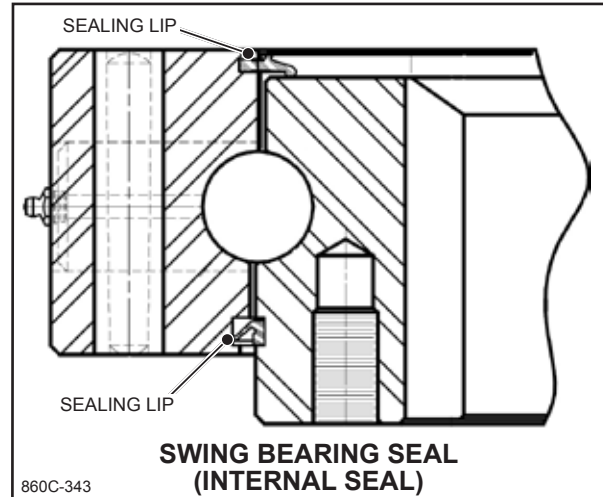




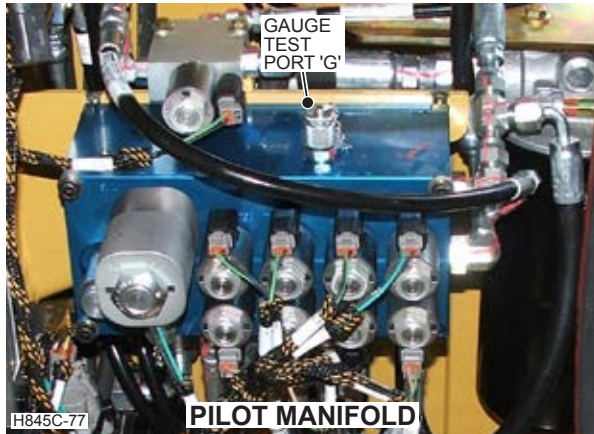
25. Torque swing bearing mounting bolts in numerical sequence as shown above. Refer to TORQUE CHART in SECTION 3 of THIS MANUAL for torque settings.
26. Install all hoses to the rotary manifold and pinion cover.
27. Install the rotary manifold torque arm. Refer to TORQUE CHART in SECTION 3 of THIS MANUAL for torque settings.
28. Attach the boom.
29. Install all hydraulic and grease hoses to the boom. Connect the wiring harnesses to the boom.
30. Install the filter/breather and breather valve.
31. Connect the multi-pin plug to the engine ECU.
32. Before machine startup, refer to STARTUP PROCEDURE AFTER MAJOR MACHINE MAINTENANCE in SECTION 3 of THIS MANUAL for machine startup procedures.

IMPORTANT!

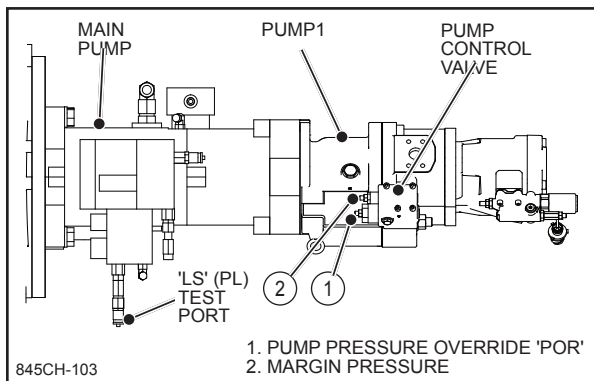
Entrained air in the boom hydraulic system will cause the boom to act slow, sluggish and often unpredictable. Caution should be taken with boom functions until all the air is removed from the hydraulic system.



33. While keeping clear of any rotating or moving parts, lubricate the swing bearing. Inject grease into all grease fittings while rotating the swing bearing until a bead of grease forms from the sealing lips. Refer to SERVICE AND LUBRICATION POINTS in SECTION 3 of THIS MANUAL for information on lubricating the swing bearing.
34. Measure swing bearing wear (tilting). Refer to SWING BEARING WEAR LIMITS in THIS SECTION for measuring wear limits.



4. Connect a 0-70 bar (0-1 000 psi) pressure gauge to the 'G' test port on the pilot manifold.
5. From inside the cab, close and latch the cab door.
6. Start the engine and set throttle to **IDLE**.
7. Press PILOT RESET switch to activate the pilot system.
8. Observe the gauge on the pilot manifold 'G' port, it should be 34.5-35 bar (500-510 psi).
9. Observe the gauge on the pump1 valve 'G2' port. Refer to PRESSURE AND SPEED SETTINGS in SECTION 3 of THIS MANUAL.



10. If required adjust the margin pressure by loosening locknut and turning adjusting screw (2) IN to increase pressure or OUT to decrease pressure. Set pressure to above pilot pressure. Refer to PRESSURE AND SPEED SETTINGS in SECTION 3 of THIS MANUAL.

WARNING

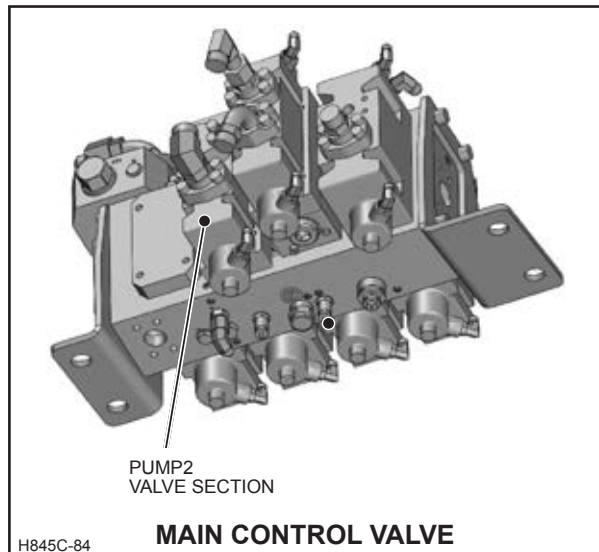
The harvesting head will be operating during this procedure. Operator must ensure that no one is near the harvesting head during this procedure. The swing brake should be applied at all times during this procedure.

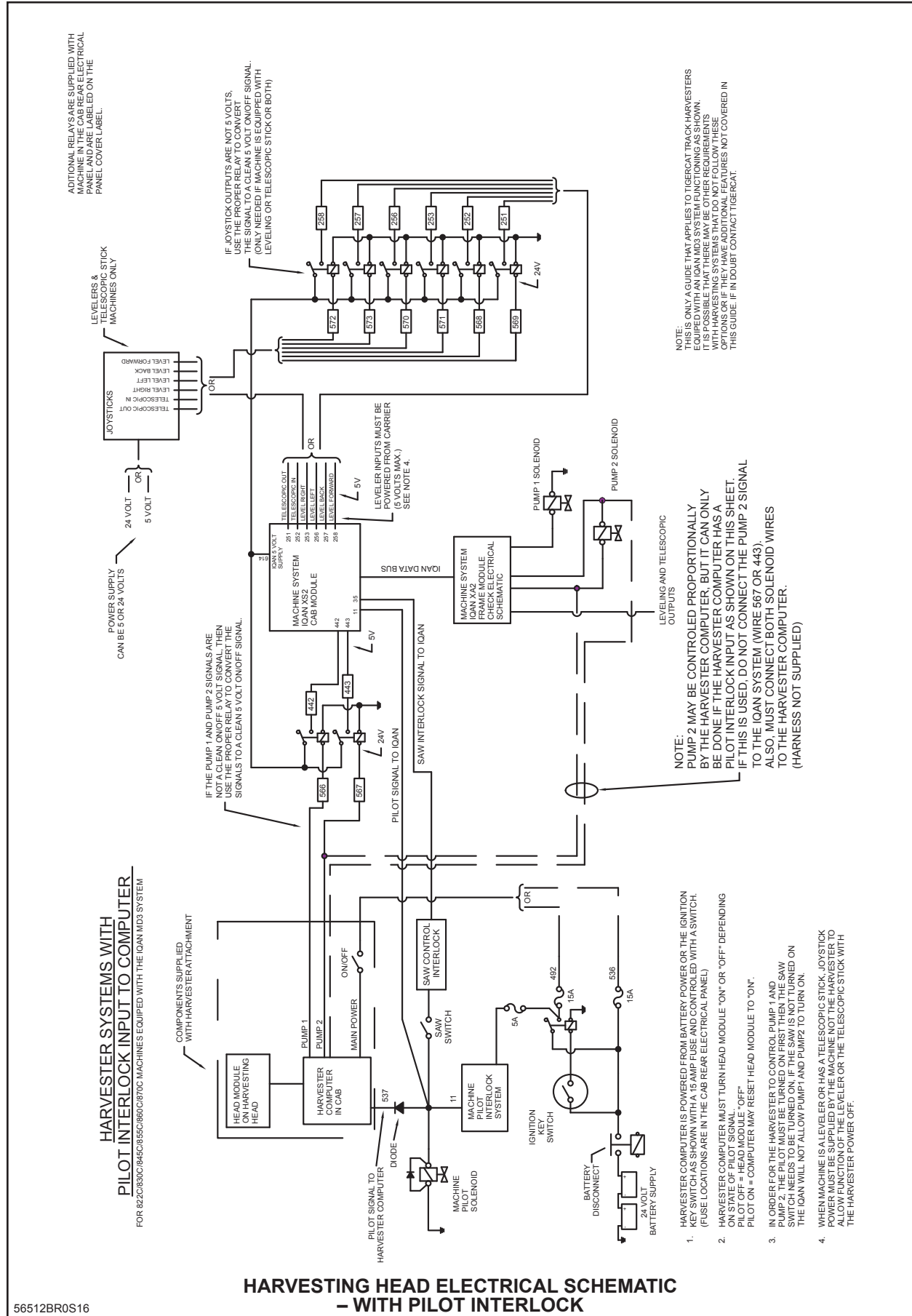
11. Set throttle to **FULL**.
12. With aid of an assistant operate the pump1 function, observe gauge on pump1 valve 'G2' port.
Pressure reading should be for standard operation. Refer to PRESSURE AND SPEED SETTINGS in SECTION 3 of THIS MANUAL.
13. If required adjust the 'POR' pressure by loosening locknut and turn adjusting screw (1) IN to increase pressure or OUT to decrease pressure.
14. Set throttle to **IDLE**, shut engine off and remove gauges.

CHECKING PRESSURES ON PUMP2 VALVE SECTION ON MAIN CONTROL VALVE

NOTE: Refer to SECTION 4 of THIS MANUAL for checking and setting Main Pump pressures.

On the main control valve there is a valve section that supplies additional oil to the harvesting head when required. This valve section is called Pump2 Valve Section. Oil for Pump2 Valve Section is supplied by the Main Pump.





Tigercat H845C/LH845C Harvester

SECTION 21 – TELESCOPIC BOOM

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